A practical working handbook in the diagnosis and treatment of diseases of the genito-urinary system, and syphilis : being the revised and enlarged notes, with additions / by George Parker Holden of clinical lectures delivered in Flower Hospital Amphitheater / by F.E. Doughty.

Contributors

Doughty, F. E.
Holden, George Parker.
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Doughty's Genito-Urinary Diseases

- Holden

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ERRATA.

Page 27; read the number 27 under the illustration of grooved director

Page 40, paragraph 2, line 4; read innocuous for "inocuous."

Page 65, paragraph 2, line 5; read urethra and vesical neck for "urethral and vesicular neck."

Page 66, paragraph 2, line 7; read out of court for "out or court."

Page 96, paragraph 2, line 1; read Henry J. Bigelow for "Henry I. Bigelow."

Page 106, paragraph 2, line 4; read incision for "incison."

Page 117, paragraph 4, line 2; read *scirrhus* for "*scirrhu*."

Page 120, paragraph 3, line 15; read bladder for "bladde."

Page 121, paragraph 2, line 5; read (24) for "(27)."

Page 127, paragraph 2, line 16; read destruction for "distruction."

Page 139, paragraph 1. line 4; read although for "athough."

Page 167, paragraph 2, line 4; read iodoform for "idoform."

Page 172, paragraph 1, line 12; read use for "uses."

Page 172, paragraph 1, line 15; read vasa deferentia for "rosa deferentia."

Page 201, paragraph 1, line 10; read symphysis for "symphisis."

Page 230, paragraph 2, line 18; read twelve for "twelves."

Page 240, paragraph 1, line 18; read following for "folowing."

Page 258, paragraph 4. line 5; read idiosyncrasies for "idiosyncrasy."

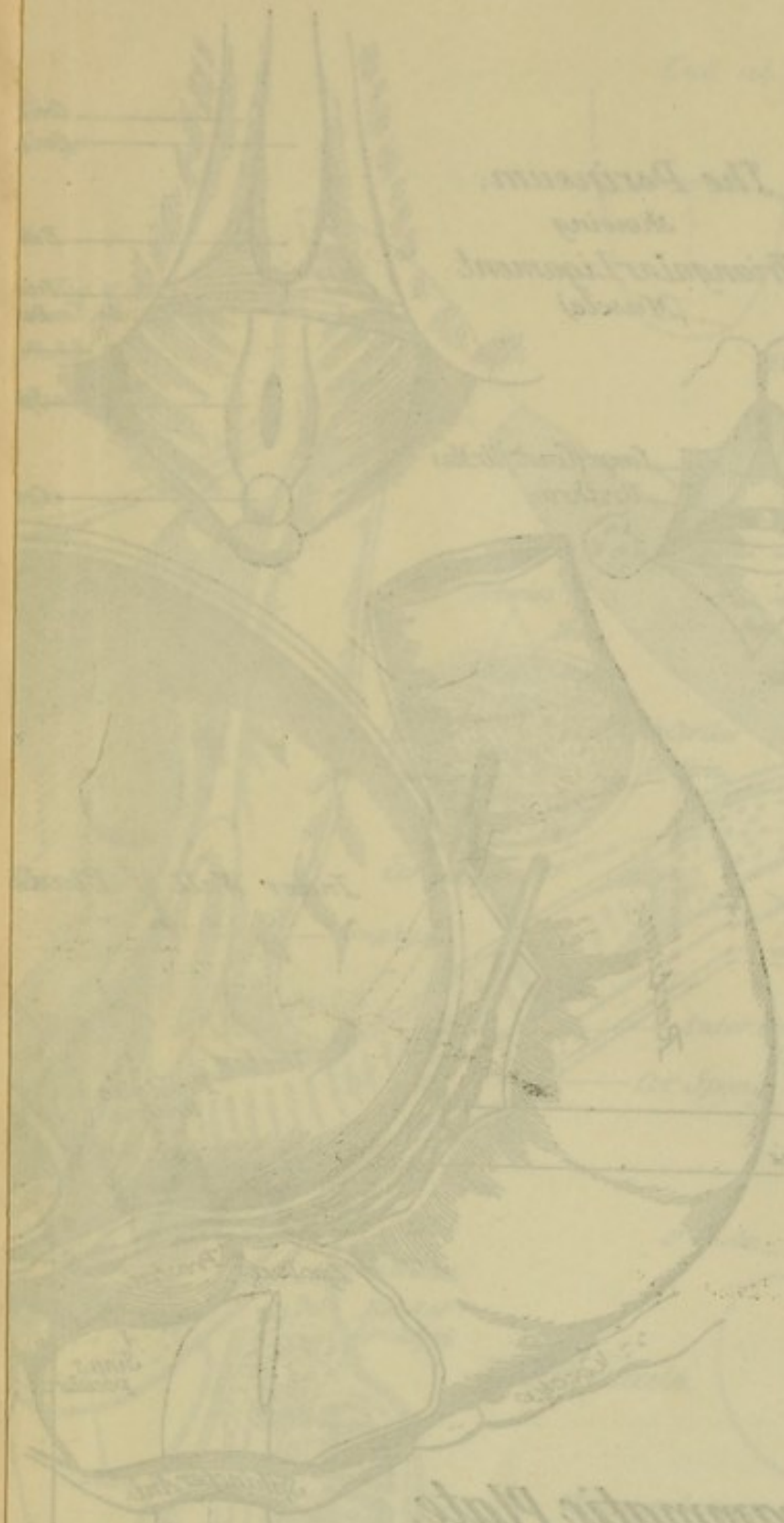
Page 269, paragraph 2, line 18; read *glass* for "*class*."

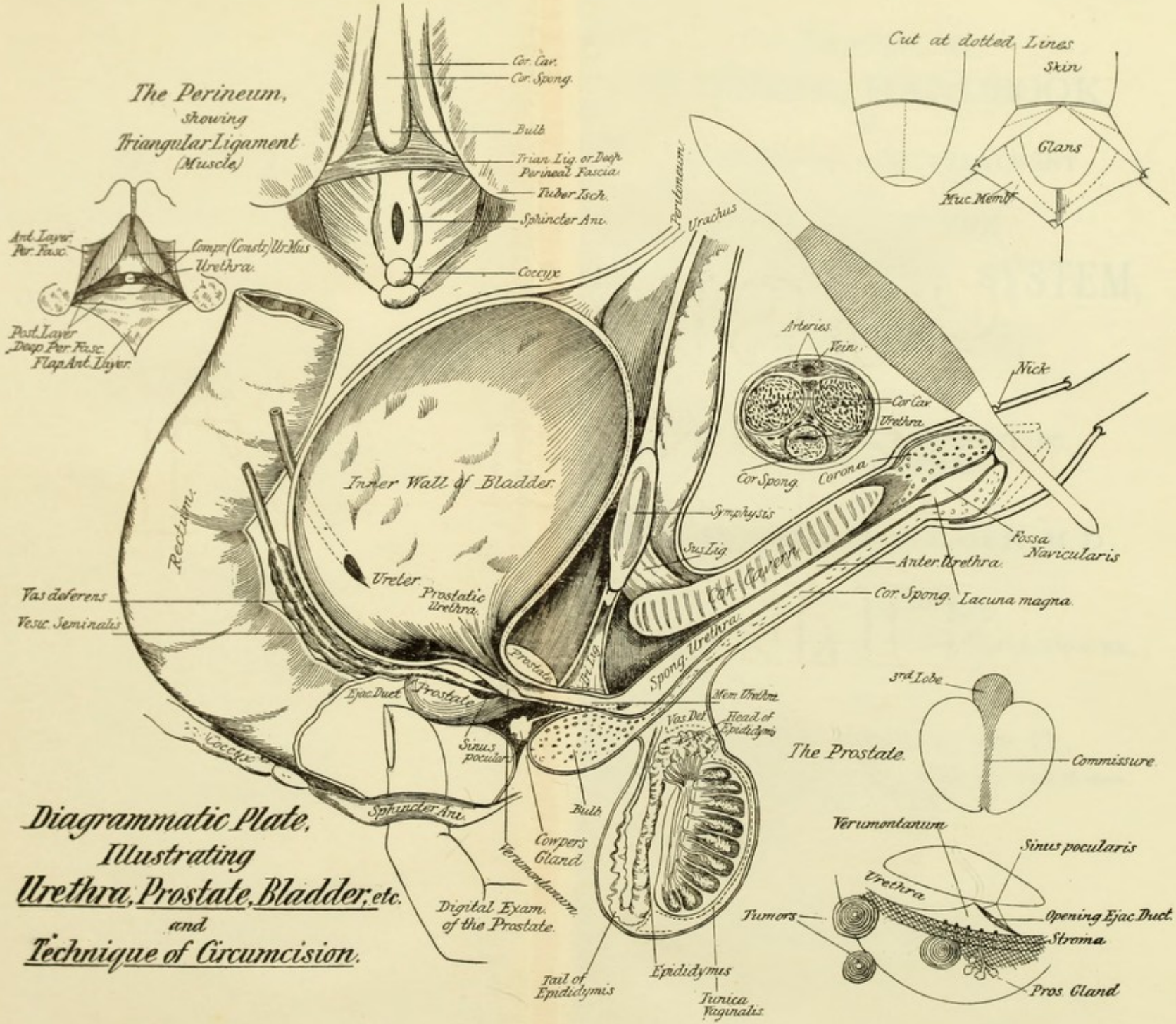
Page 270, paragraph 1, line 10; read vesicles for "vesicals."

Page 337, paragraph 3, line 4; read venereal for "syphilitic."

Page 385, paragraph 1, line 5; read slitting for "sliting."

Page 386, paragraph 2, line 10; read in bits of almost a stony consistency.




The Perineum,
showing
Triangular Ligament
(Muscle)
Cor. Car.
Cor. Spong.
Bulb
Trian. Lig. or Deep Perineal Fascia
Tuber Isch.
Sphincter Ani.
Coccyx
Ant. Layer Per. Fasc.
Compr. (Const.) Ur. Mus
Urethra.
Post. Layer Deep Per. Fasc.
Flap Ant. Layer.
Peritoneum.
Urachus
Cut at dotted Lines
Skin
Glans
Muc. Memb.
Arteries
Vein
Cor. Car.
Urethra.
Nick
Cor. Spong.
Corona
Inner Wall of Bladder.
Rectum.
Symphysis
Sus. Lig.
Fossa Navicularis
Anter. Urethra.
Cor. Spong.
Lacuna magna.
Ureter
Prostatic Urethra.
Vas deferens
Vesic. Seminalis
Prostate
Lig.
Spong. Urethra.
Ejac. Duct
Prostate
Mem. Urethra.
Vas Def.
Head of Epididymis
Coccyx
Sinus pocularis
Bulb
Sphincter Ani.
Cowper's Gland
Verumontanum
Digital Exam. of the Prostate.
Tail of Epididymis
Epididymis
Tunica Vaginalis
3rd Lobe
The Prostate.
Commissure
Verumontanum
Sinus pocularis
Urethra
Tumors
Opening Ejac. Duct.
Stroma
Pros. Gland
Diagrammatic Plate,
Illustrating
Urethra, Prostate, Bladder, etc.
and
Technique of Circumcision.

A PRACTICAL WORKING HANDBOOK

IN

THE DIAGNOSIS AND TREATMENT

OF

DISEASES OF THE

GENITO-URINARY SYSTEM, AND SYPHILIS;

BEING THE

REVISED AND ENLARGED NOTES,
WITH ADDITIONS,

BY

GEORGE PARKER HOLDEN, M. D.,

OF

CLINICAL LECTURES

DELIVERED IN FLOWER HOSPITAL AMPHITHEATER,

BY

F. E. DOUGHTY, M. D.,

Professor of Genito-Urinary Diseases, in the New York Homeopathic Medical College.

PHILADELPHIA:
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1897.

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LANCASTER, PA.

To

My Classmates of '94,

This Book

is affectionately dedicated,

in the

hope that it may be to them,

both a pleasing memento,

and

a helpful aid;

and with the best wishes of

The Author.

PREFACE

This little work originated through the solicitation of a number of the author's classmates, during his College days. Its beginning appeared in the Fall of 1893, in printed unbound leaves of 88 pages, entitled "*Clinical Lectures on Genito-Urinary Diseases, Part I, Session of '92–'93, by F. E. Doughty, M. D., etc.*" The little edition was quite rapidly disposed of to the students of the different classes, and, attracting the attention now and then of an already-established physician, there came an entirely unexpected demand from this outside source, with many inquiries concerning "Part II," or the lectures of the session of '93–'94. The notes upon this second half of the lectures, were prepared in manuscript but never published. The present form comprises an entire revision, made at a recent date, with addition of much new matter.

These lectures were delivered from headings merely, and in an off-hand style. Some of the subjects were treated twice during the entire course, extending over two College years, and again referred to in the clinic—several times it might be. This very repetition served to impress the facts but the more forcibly. In these completed lectures, these factors have been harmon-

ized, yet without entire pruning of this iterative and reiterative feature; to which the writer deems is due, in great measure, whatsoever there is herein of *practical* worth: and it will be readily understood that this valuable characteristic, appropriate enough in the present circumstances, could not be retained in a more pretentious book which must needs preserve a stricter literary and classical form.

We trust that the reader of these pages—presenting, faithfully as we could make them, the eloquent and practical instruction received from our esteemed Professor—will receive from perusal, a generous share of the pleasure and help received by the author in hearing and seeing; and, as the Doctor has retired from the Chair of Genito-Urinary Diseases since the original notes were penned, we further hope this may prove worthy to stand as a lasting tribute to the Teacher's genius and the Surgeon's skill.

Grateful acknowledgment is due Professor Doughty for his review of proof-sheets.

Thus this little treatise is finally launched upon its perilous journey amidst the world's august and ponderous volumes constituting medical literature.

G. P. H.

Kingston-on-Hudson,
December, 1896.

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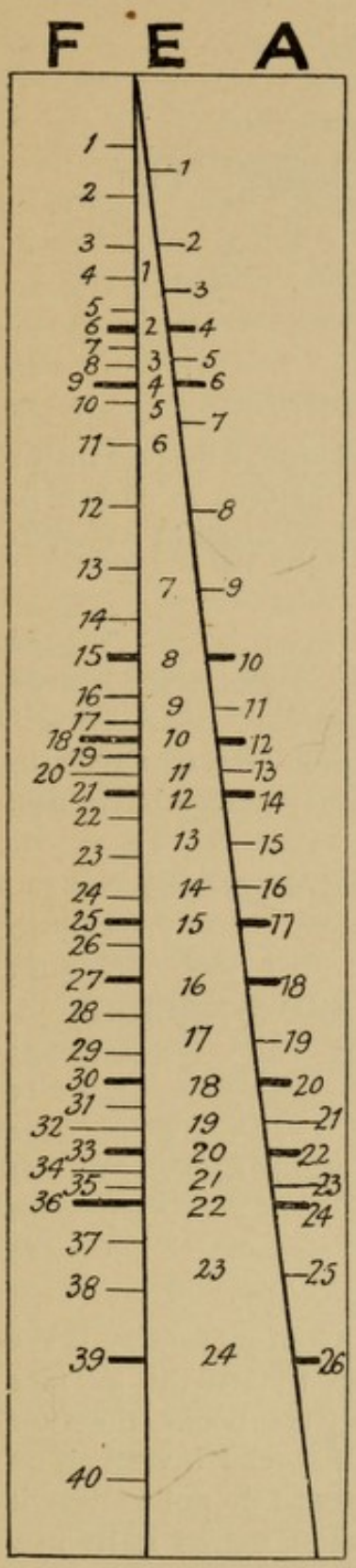
SCALES, GAUGE TABLE, ETC.

[Considerable confusion often arises from the fact that there are three different scales according to which the *sizes* of urethral instruments, are numerically designated. These are the *English*, *American*, and *French scales*, respectively. The English scale is an arbitrary one: the American and French recognize the millimeter as the unit, but the American was devised to have instruments increase in size by coarser gradation, and thus diminish the total number in a "set." By the French scale, the instruments grow larger by very minute degrees, and thus the numbers run respectively higher according thereto: they advance one-third of a millimeter in diameter, for each size, commencing with No. 1, which is ⅓ mm. The No. 1 of the American scale is ½ mm., and that scale advances ½ mm. in diameter for every size.

The following table shows that for a given size of instrument, the number thereof, according to the English scale, is the lowest; next higher is that designated according to the American, and highest of all is the number according to the French system. *Thus any English instrument is larger than the same number American, and still larger than the same number French.*

E.	A.	F.						
—	—	1	7	9	—	—	—	28
—	1	—	—	—	14	17	19	—
—	—	2	8	10	15	—	—	29
—	2	3	—	—	16	18	20	30
1	—	—	9	11	—	—	—	31
—	—	4	—	—	17	19	21	—
—	3	—	10	12	18	—	—	32
—	—	5	—	—	19	20	22	33
2	4	6	11	13	—	—	—	34
—	—	7	—	—	20	21	23	—
3	5	—	12	14	21	—	—	35
—	—	8	—	—	22	22	24	36
4	6	9	13	15	—	—	—	37
5	—	10	—	—	23	23	25	—
—	7	—	14	16	—	—	—	38
6	—	11	—	—	24	24	26	39
—	8	12	15	17	25	—	—	40
—	—	13	—	—	26			
			16	18	27			



The actual diameters of the instruments, numbered as represented, are shown in the diagram by the widths of the middle triangle (enclosing the English numbers) at the points indicated by the transverse lines. Often, instruments bought in the shops will vary from this, but the difficulty will be avoided, if, in prescribing a sound, for instance, you direct that it be tested by the scale.

THE POINTS AT WHICH THE THREE SCALES APPROXIMATE IN SIZE, ARE DENOTED BY THE HEAVY TRANSVERSE LINES.

While the relative size of the meatus differs much with different individuals, yet we may say, as a general rule, that a penis with a circumference of 3 inches, should take a No. 30 of the French scale, and 2 sizes are added for every increasing ⅛ inch in circumference of the organ The size of the *meatus* is no index to the size of instrument that the *urethra* should carry, and the former, the smallest part of the canal, is liable to be preternaturally *small in proportion to the redundancy of foreskin.* (See page 304.)

Instruments should always be thoroughly *cleansed* and lubricated, before use. Oil, or preferably *glycerine* or the glycerite of starch, *in the urethra*, is the best *lubricant;* if the substance be placed upon the instrument it is soon wiped off—before the point gets very far into the canal. The French elastic catheters will *stick together*, unless sprinkled with finely-powdered soapstone dust, and kept in a cool place.]

INDEX OF INSTRUMENTS.

PAGE.

(18) ASPIRATOR 24
(22) BISTOURY 26
(14) BOUGIE À BOULE (BULBOUS BOUGIE) 23

[An instrument having a pyramidal-shaped bulb, with prominent shoulder, is preferable to the more ovoidal pattern as shown in illustration. The former catches better upon attempt at withdrawal past a contraction.]

(12) BOUGIE, TAPERING, FLEXIBLE 23
(41) CANULA, SHIRTED (CANULA À CHEMISE) 32
(5) CATHETER, ENGLISH WEB, GUM, OR GUM ELASTIC 21

[The English web (yellow), and French gum (black or red) instruments, while not exactly identical, are interchangeable in use: both are elastic or *semi-rigid.*]

(9) CATHETER, ENGLISH (WITH POINT WITHDRAWN BY STYLET) 22
(10) CATHETER, MERCIER 23
(11) CATHETER, OLIVE-POINTED, NARROW-NECKED, GUM 23
(2) CATHETER, METAL 19
(8) CATHETER, PROSTATIC 22
(6) CATHETER, (VELVET EYE), SOFT RUBBER 21
(35) CATHETER, ULTZMANN'S 30
(33) CAUTERY, PAQUELIN 29
(47) CYSTOSCOPE 34

An instrument that we hear a great deal about nowadays, is the *cystoscope.* Perhaps it is quite harsh language to term this a "nice plaything," but I can't do with it what, in the books, they say they do. I made this instrument a matter of special investigation while abroad last summer, with the result that I do not believe it of practical value in the hands of any except an expert in its use. [It requires special skill and opportunity: it is not an instrument for the general practitioner. The cost alone (about $50) is enough

to debar its general use.] So I think it is fair to say that the cystoscope is a valuable instrument, but of limited capabilities.

We are told that "having once acquired the technique" of the instrument, the rest is very easy. But it is just this technique—the optics of the instrument—that is such an important and considerable matter. The image is changed and reversed, as with the laryngoscope. And yet, after all, the cystoscope has great capabilities; but I think it should be reserved for the most ambiguous cases, and as a last resort at the end of all other investigation by means of questioning, observation and instruments.

In brief, the instrument has a turned up point, in the upper side of which there is a little window covered by rock crystal. The image of anything before the window, is reflected back from a mirror in the extreme point, by means of a small electric light, also situated in the point just under the tip and before the mirror. This light comes from an extremely minute lamp, which is speedily burnt out and must be replaced by a new one. There is also a telescope inside the tube, which magnifies the image. But the current lighting the instrument also heats the point. Yet while there is water in the bladder, you can let it burn an hour without materially raising its temperature. If the point comes in contact with the bladder wall, however, it will then burn it, there being no water between. So you must keep moving the instrument. An improved form has a water mantle flowing around the lamp. [The Nitze-Leiter instrument, or Brenner's modification of the same, is about the best.]

In hematuria, which gives us the most embarrassing cases, when rectal exploration and instrumental examination of the bladder yields nothing—here, if we could only look into the bladder, we might get very valuable information. But it is just here that in many cases we are shut off from the use of the cystoscope, because, first, the successful use of the instrument requires a bladder holding ℥vj of fluid; and second, it must be that amount of *clear* fluid. Suppose you cannot wash the bladder so free from blood that clear water injected will not soon become opaque? Yet we are told that some men abroad have seen the "blood trickling from the ureters," etc., and, moreover, have "made photographs of what they saw."

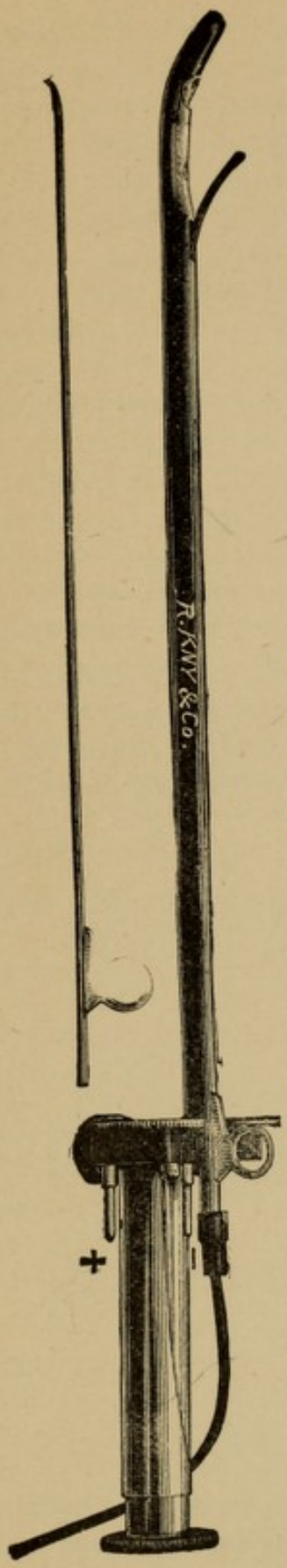
[Of course, the procedure is much simplified in the female; and the first attempts in this direction were made upon women patients. Much of the credit for pioneer work in this line, done

in this country, is due to Dr. Howard A. Kelly, of Johns Hopkins Hospital. With perhaps cocaine only, the head-mirror, and the genu-pectoral position,—or dorsal, with hips raised and thighs extremely flexed—even ureteral catheterization is a *comparatively* easy operation, performed upon the female.]

URETER-CYSTOSCOPE.—And now a few words concerning this other subject of *catheterization of the ureter.* Perhaps a few men have accomplished this; but go into the dissecting room, obtain a bladder, cut it open and lay it out flat, in a good light. Now see how easily the openings of the ureters are to be found, and then judge of your own ability to introduce an instrument in the case of a living individual. I can't pass a catheter into the ureter, neither can I "palpate the ureter" through the anterior vaginal wall. Understand, I do not say that catheterization of the ureters cannot be accomplished, but that—in the male, at any rate—it may be considered without the pale of practical consideration. [As already referred to, with the female subject, because of the short, extremely dilatable urethra, (by gradual dilatation, may be made to tolerate the index finger—see page 50) and the fact that through an endoscope placed therein, air may enter and distend an otherwise empty bladder, it is a much simplified matter. We can understand how a ray of light may be thrown through that short canal and into the viscus beyond, enabling one to diagnose the position of the ureter by the urine trickling therefrom. (See pages 14, 15. See Dr. Kelly's article in American Journal of Obstetrics, No. 1, Vol. XXIX, 1894.)

The idea of draining each kidney separately, for examination, without any previous cutting operation, is certainly very "taking," as is also that other performance of "palpating the appendix" through the abdominal wall. It is not that these things are impossible of accomplishment, but they are talked of too glibly; as though all one had to do, were simply—to just go ahead and do it: whereas the truth of the matter is, I repeat, that success requires the specially cultivated skill of the trained operator, and even such an one fails in a good proportion of cases. There are just a few men in the world who have catheterized the male ureter.

But difficult as the procedure is,—remembering, as I have told you, that it takes a trained cystoscopist to make an ordinary observation of the interior of the bladder—yet perhaps we can make somewhat apparent the possibility of approaching the ureteral openings when they have come into view. The instrument is handled the same as is a "simple" cystoscope, in examining the fundus of the bladder. The intermittent protruding and receding of the region about



the ureteral openings, as jets of urine issue therefrom, together with an intra-ureteral bar,—a ridge of membrane joining the ureteral openings—are important landmarks. The handle of the instrument is carried to the opposite side of the patient, and the prism being brought nearly as possible to the desired point, magnifies the tiny hole so that it is possible to observe the flexible catheter become engaged in the opening: it may then be pushed up to the pelvis of the kidney. Even when the base of the bladder is brought into view, it is often most difficult—if not altogether impossible—to find the orifices on account either of their small size, or pathological conditions which obscure them.

The ureter-cystoscope has a groove in the top of the shank of the instrument,—transformed into a canal by a sliding lid—which carries the ureter-catheter. At the vesical end, some little distance in front of the prism (window), the ureter-catheter emerges at an angle of 45 degrees, and before the prism, so the magnified tip shows just in front of the eye. The lamp is not situated in the beak, but behind it (and ahead of the prism), being here less liable to be obscured by any foreign bodies encountered.

The principal instruments are those made under the direction of Dr. Leopold Casper, of Berlin, and of Dr. Max Nitze, of Dresden, respectively; and there has been much discussion concerning the claims of these gentlemen, with regard to both priority of introduction, and superiority of instruments. Dr. Casper brought the subject before the Berlin Medical Society, in 1891, having then introduced a ureter-catheter, 30 times in 22 patients, 21 of whom were men. The illustration shown is that of his modern instrument. The Nitze make is somewhat lighter, and has a straighter beak.]

(27) DIRECTOR, GROOVED 27
(34) ECRASEUR 30
(3) DOUCHE APPARATUS, KEYES' TWO-WAY STOP-COCK 20
(23) ELECTRIC LAMP, EXAMINING 26
(15) FILIFORM (GUIDE), WHALEBONE 23
(32) FORCEPS, ARTERY 28
(39) FORCEPS, STONE 32
(24) FORCEPS, VESICAL 26
(31) KNIFE, FINGER, AMPUTATING 28
(28) KNIFE, TENOTOMY 27
(20) LITHOTRITE 25
(26) NEEDLE, ASPIRATING 27
(29) NEEDLE, VARICOCELE 28
(38) RECTAL BAG, PETERSON'S 31
(19) SEARCHER 25
(4) SOUND 21, 33

[An old device, recently revived, consists of a sound having the double curve shown (44). The end of this may be screwed to the end of a flexible guide, which has been successfully introduced into the canal; and the sound then pushed in, follows the guide, which doubles up within the bladder.]

(43) SOUND, ANTERIOR 33
(16) SOUND (OR CATHETER), TUNNELLED 24
(17) STYLET (MANDRIN, STEM), FLEXIBLE, PROBE-POINTED 24
(7) STYLET, METALLIC 22
(1) SYRINGE, BAG 19
(40) SYRINGE, DAVIDSON 32
(36) SYRINGE, DEEP URETHRAL 30
(26) SYRINGE, HYPODERMIC (WITH ASPIRATING NEEDLE) 27
(13) SYRINGE, ROYAL PEA, RUBBER 23
(3) SYRINGE, FOUNTAIN (WITH KEYES' IRRIGATOR ATTACHMENT) 20
(30) TENACULUM 28
(25) TROCAR, AND CANULA 27
(42) URETHROMETER 32
(45) URETHROSCOPE (ENDOSCOPE) 33, 34

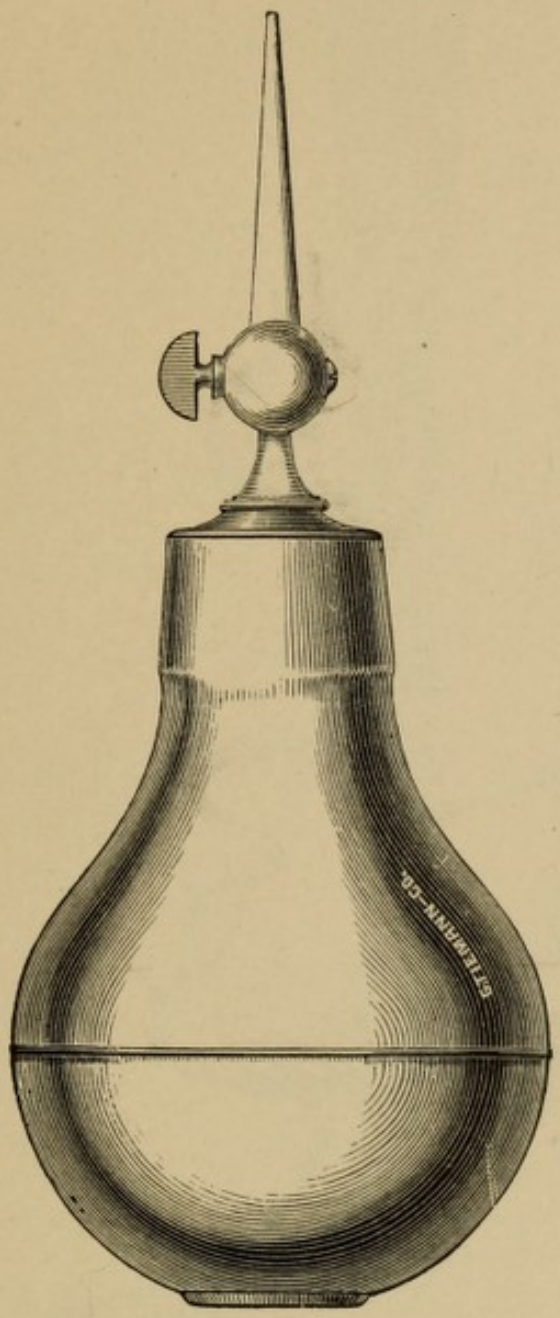
[The *urethroscope*, or *endoscope*, consists of a metal tube having something of the appearance of a Ferguson vaginal speculum. It

is introduced into the urethra, and a pencil of light then reflected into it and upon the point of the mucous membrane that folds over the end of the instrument. In introducing it, an obturator is inserted within the tube, so that the whole then presents a blunt end.

Ordinarily, this instrument is not used for examination of the deep portions of the urethral canal, posterior to the triangular ligament, but a straight instrument *can* be introduced into the posterior canal of the male, by observing the directions referred to in discussing the subject of *litholapaxy*, viz: making firm traction upon the penis, to obliterate the depression of the urethral bulb, and keeping the point of the instrument directed towards the roof. Pass the tube directly down into the urethra until it is thoroughly within the bulb, and goes no further; then withdraw it about one-fourth of an inch, make the traction upon the penis, and push. You will appreciate when the point has engaged within the membranous urethra, and, still continuing your traction, the penis will now come down, and with a little spiral motion imparted, the instrument goes on in. There is also an *electric urethroscope* (46) made. In examining the urethra, have the patient preferably lying down: he may faint. (The term "cystoscope" is also applied to a form of urethroscope, so modified as to facilitate the examination of the interior of the female bladder: this is a very different instrument from the cystoscope already described on pages 10–13.)]

(37) URETHROTOME, OTIS' DILATING (see page 310) . . 31

Armamentarium.



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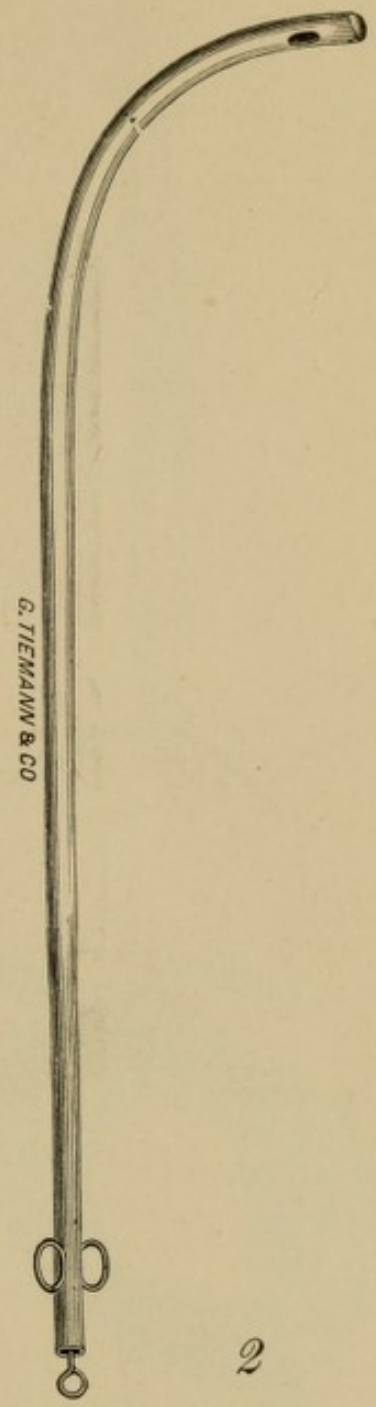

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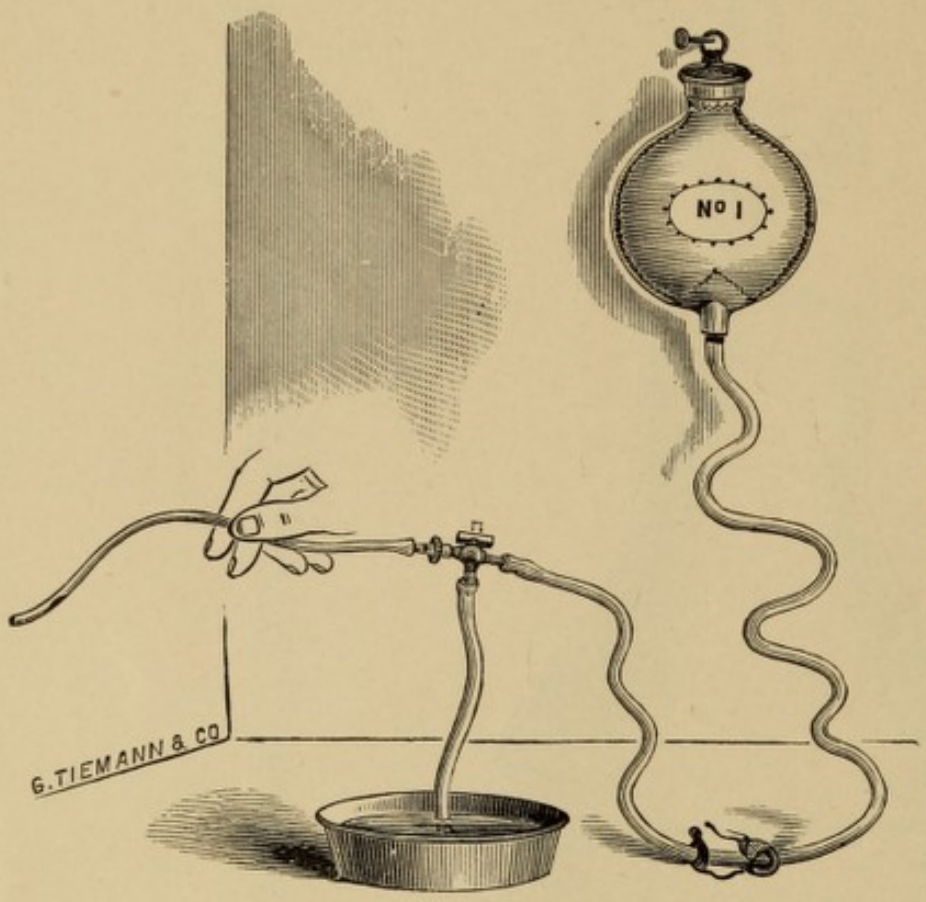

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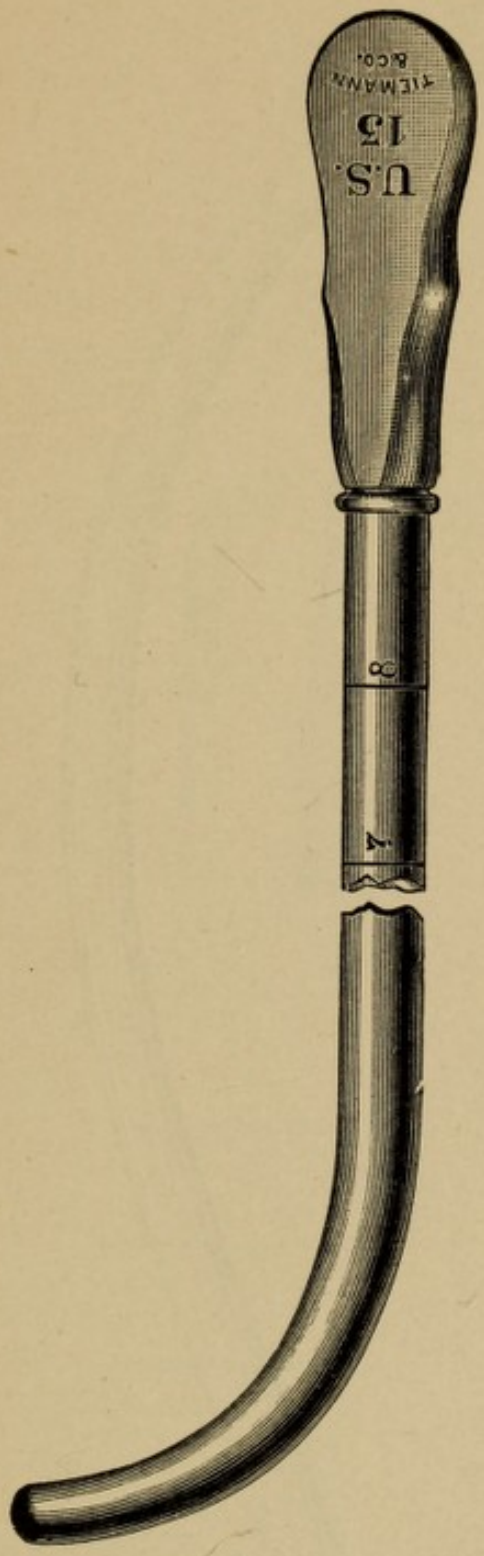

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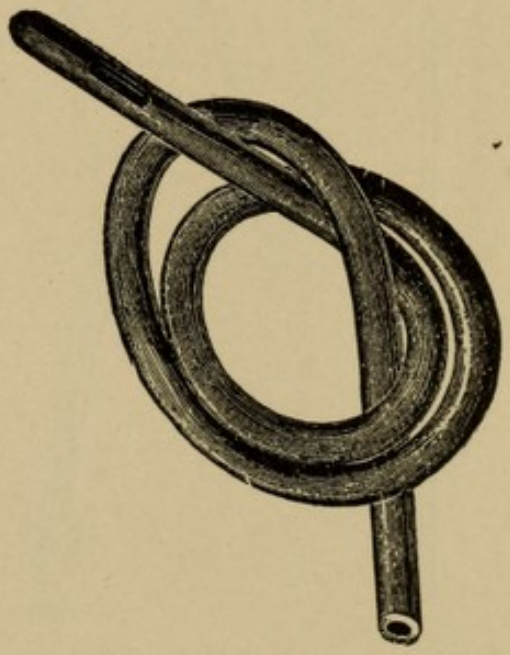

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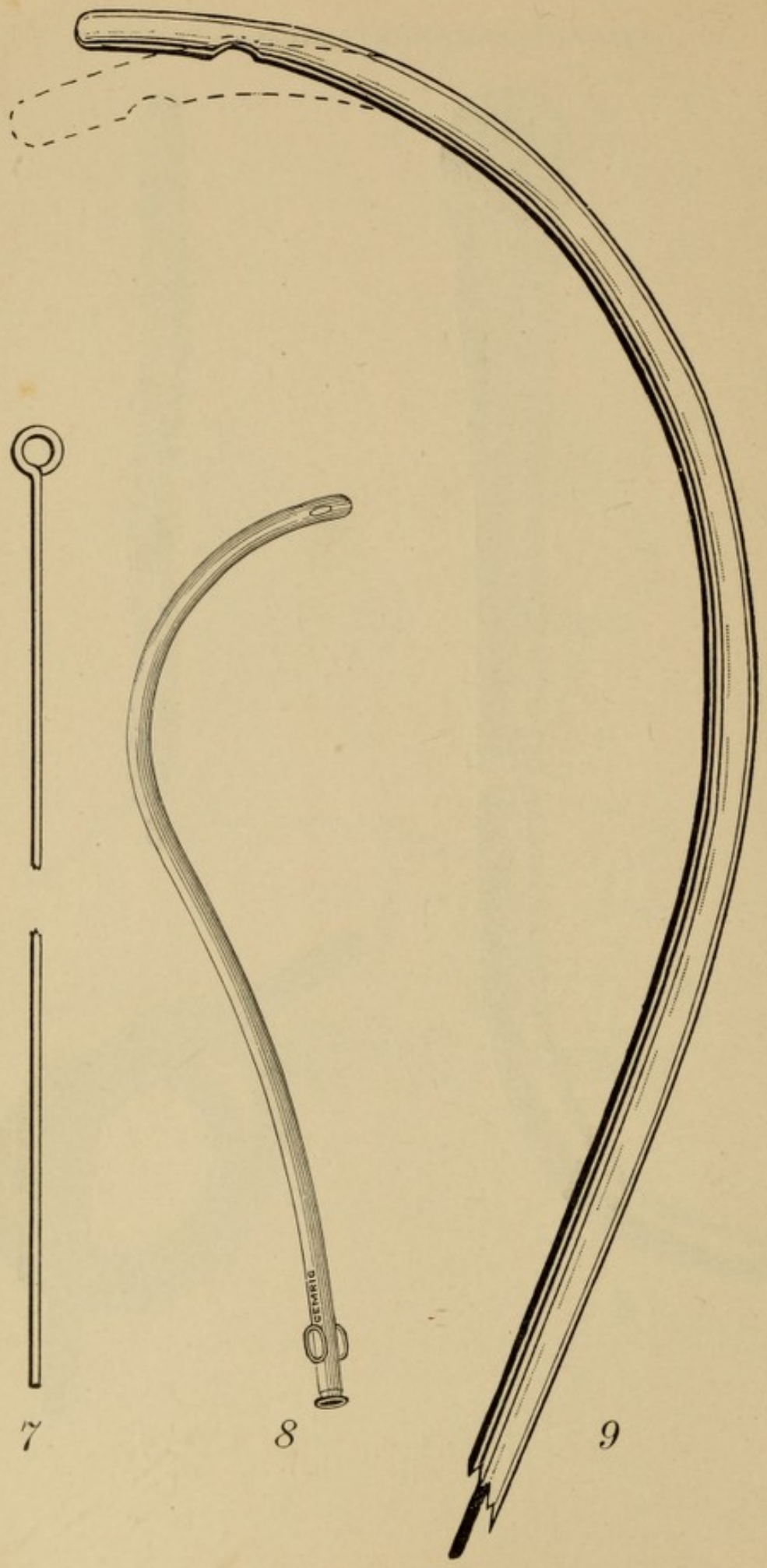
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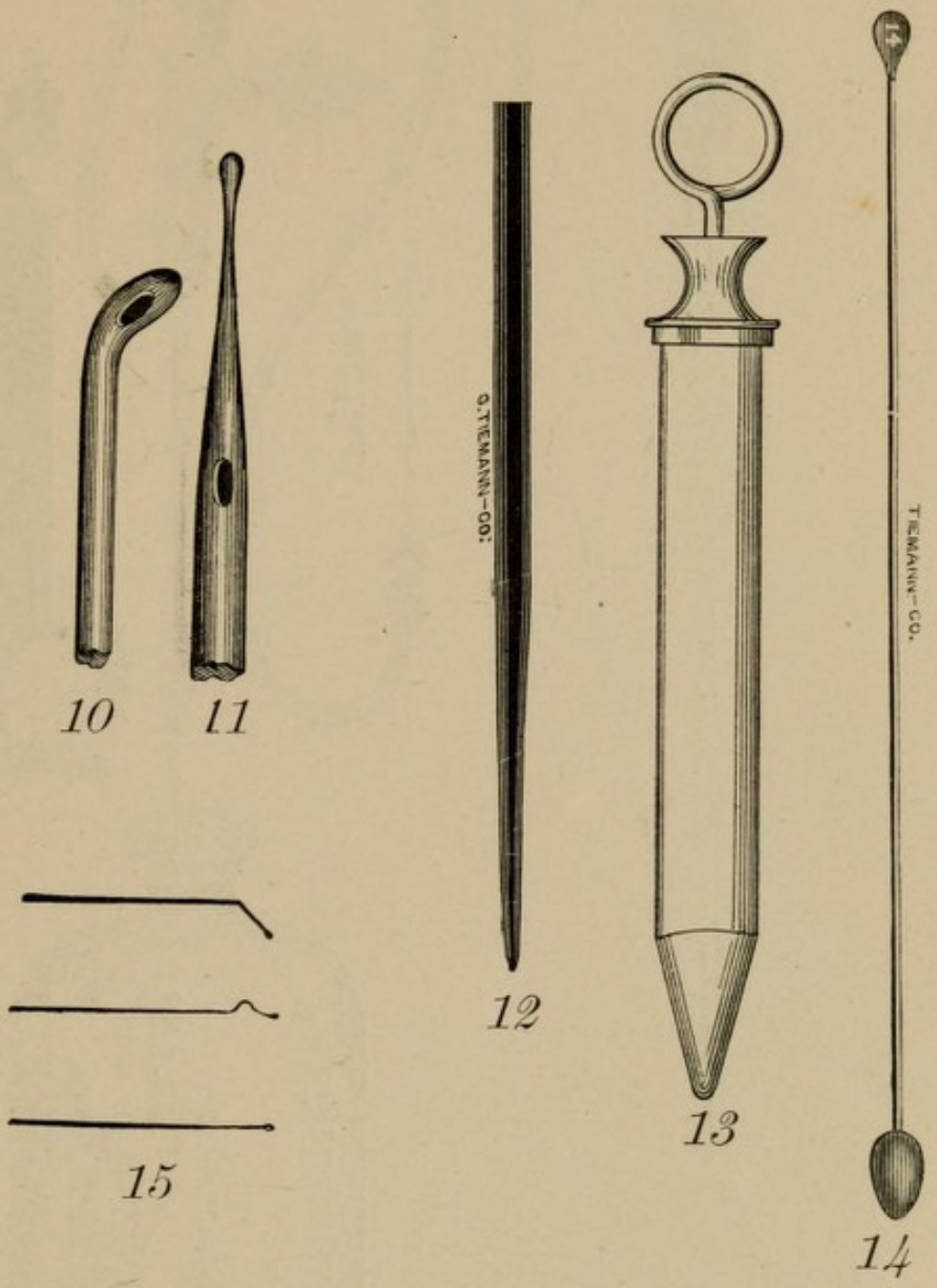
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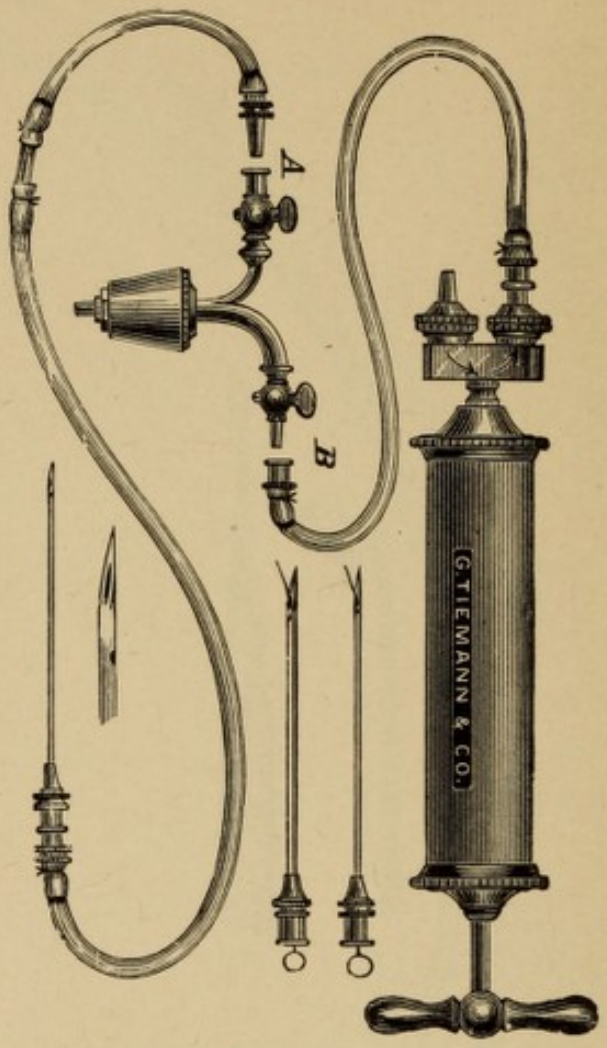

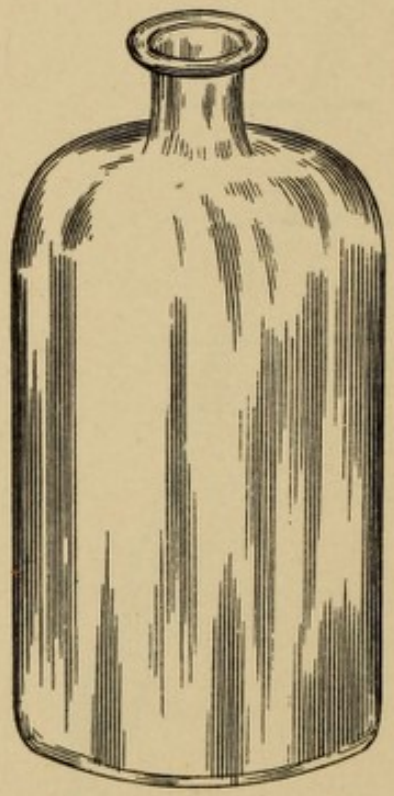

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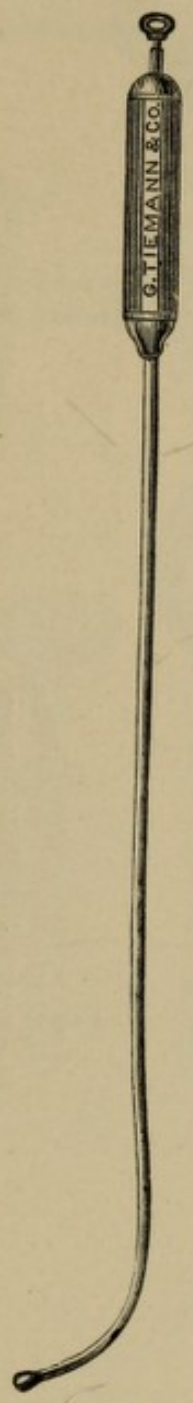

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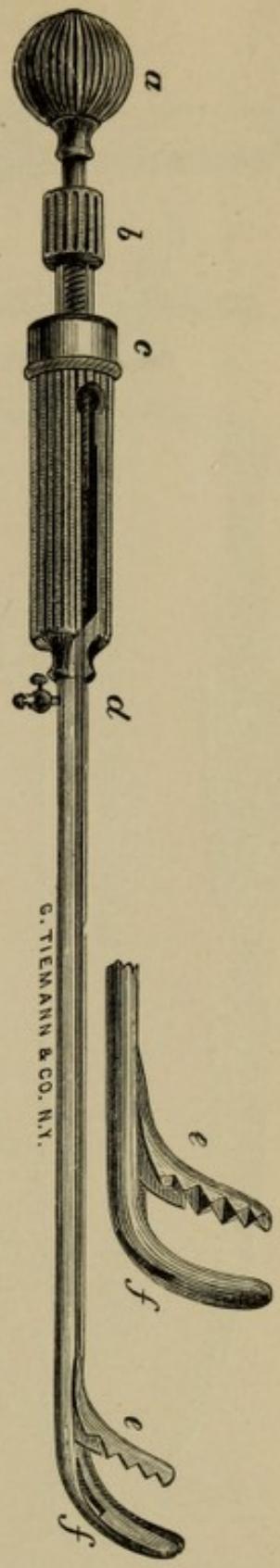

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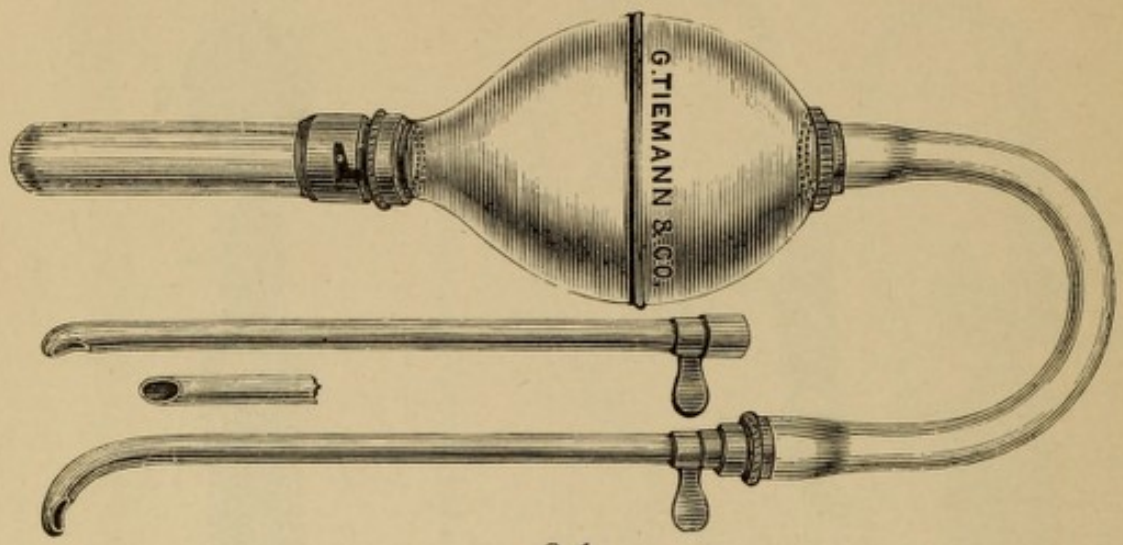

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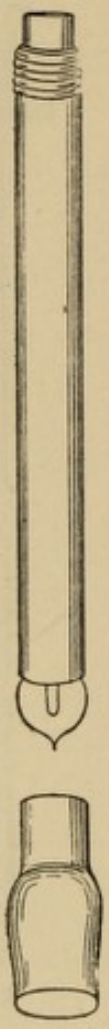

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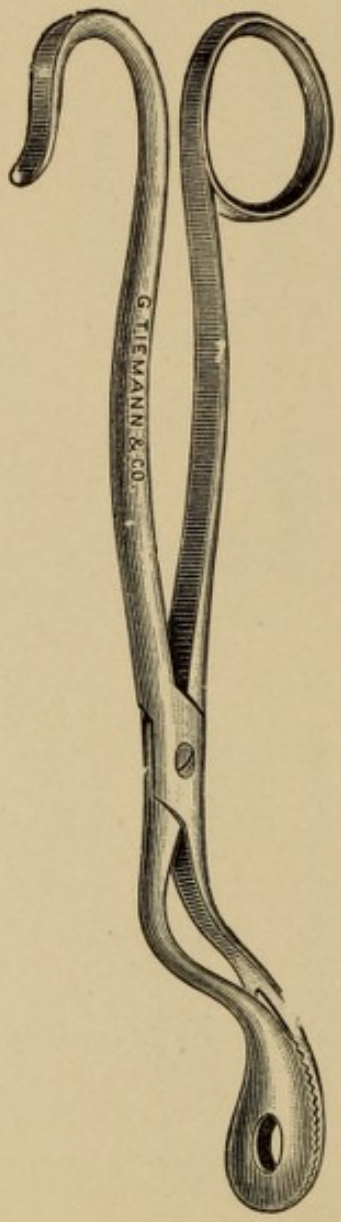

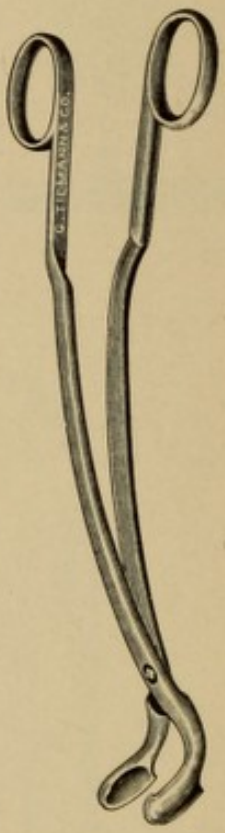

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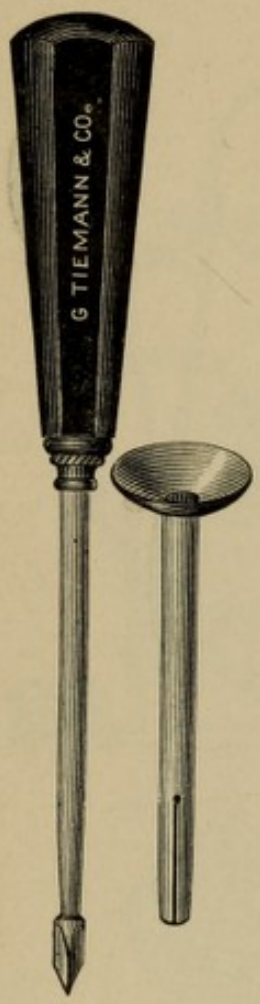

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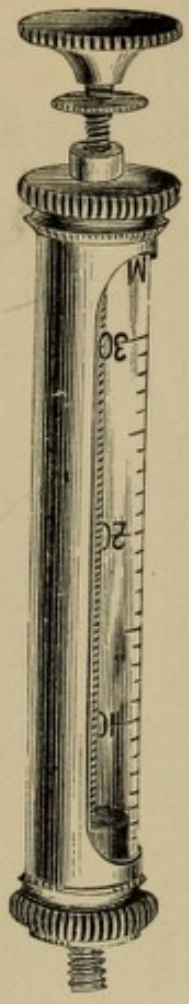

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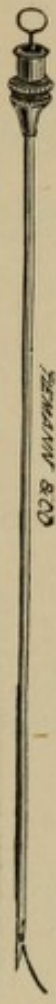

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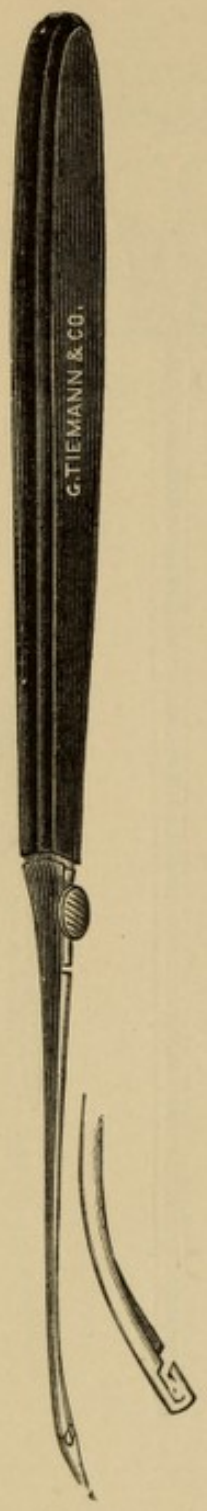

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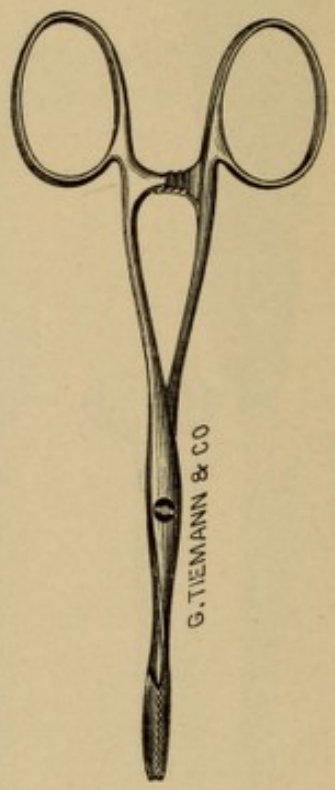

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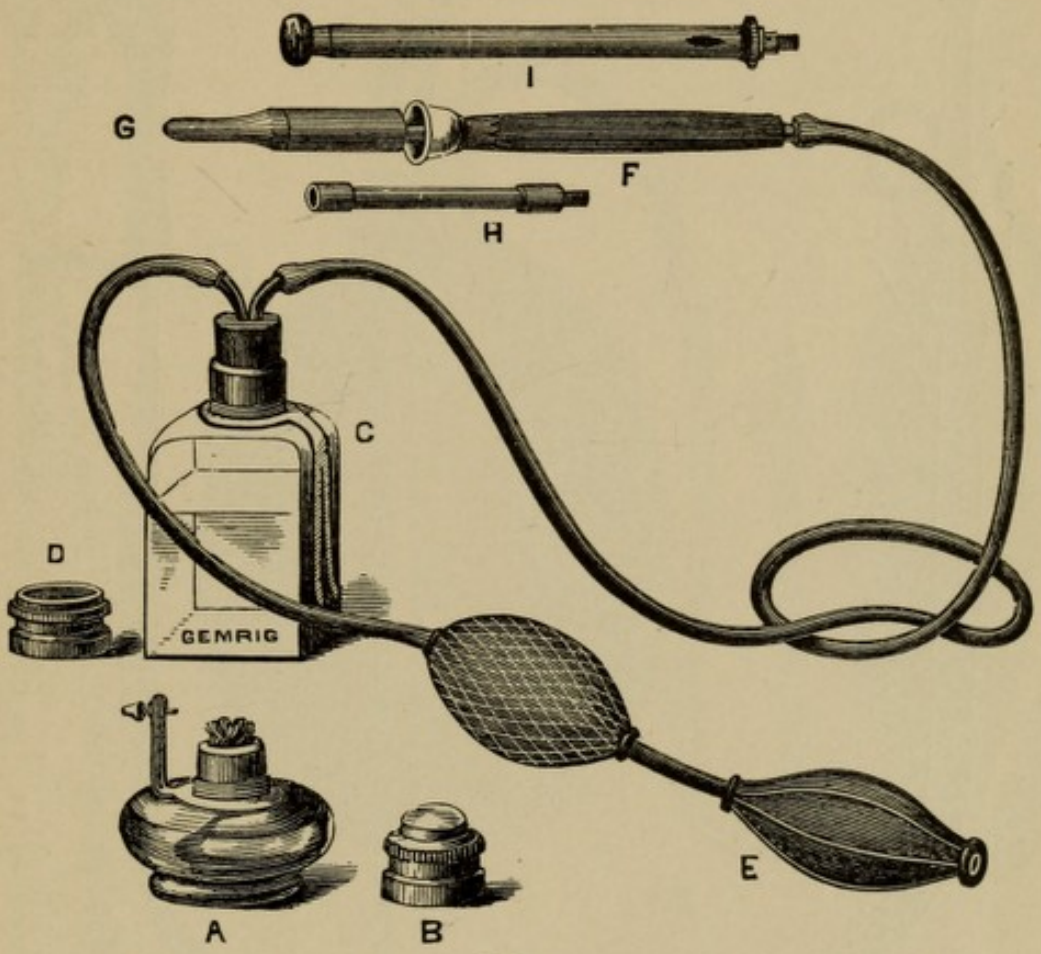

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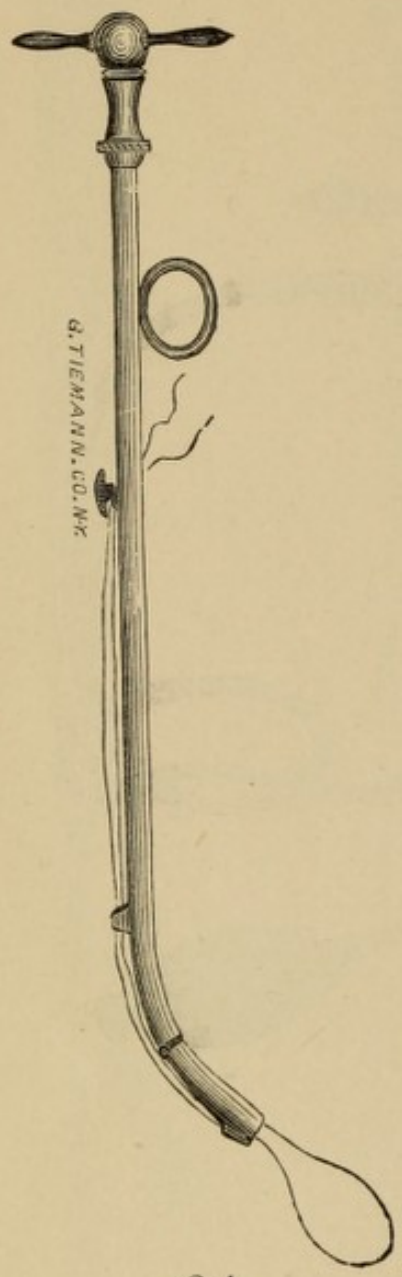

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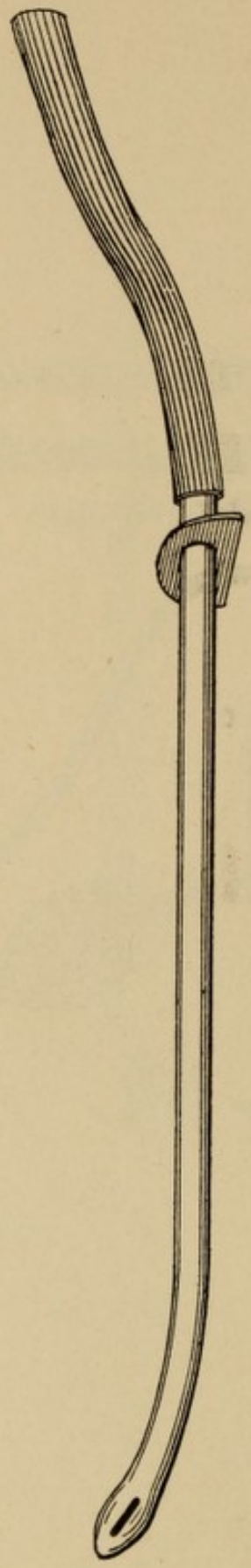

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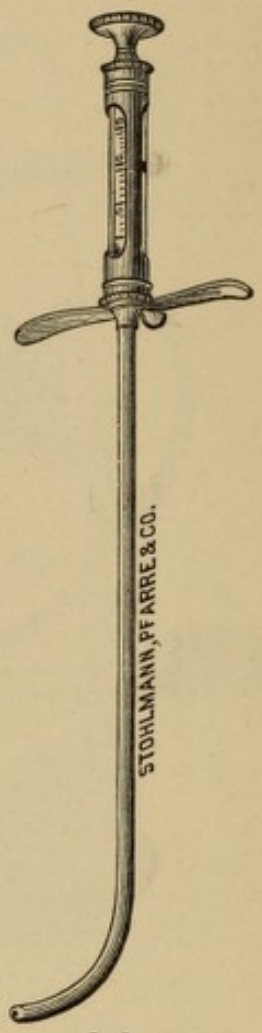

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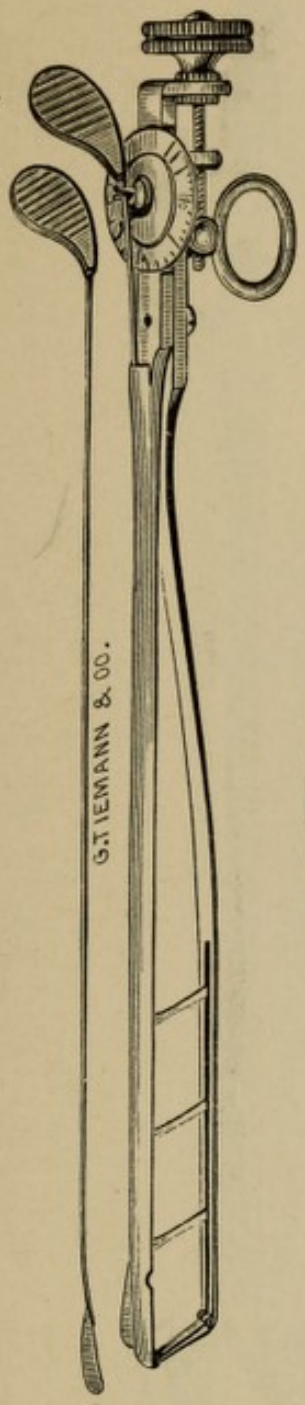

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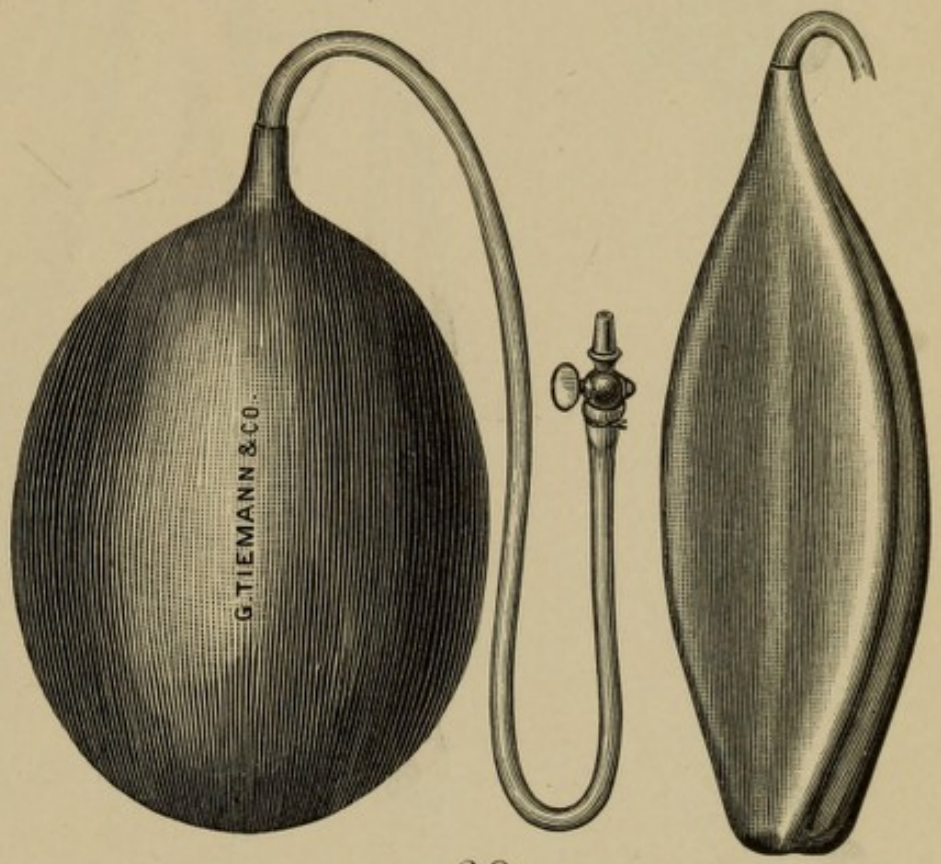

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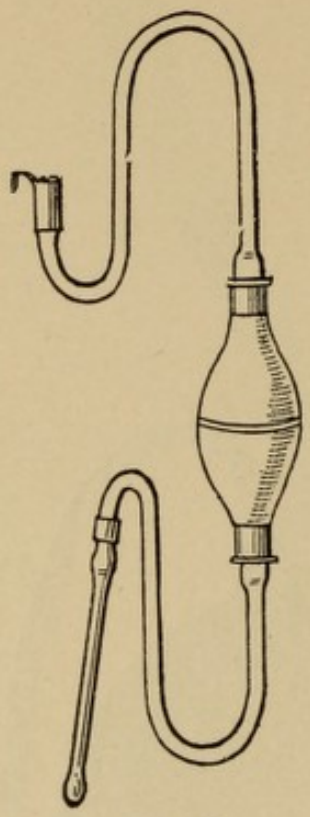

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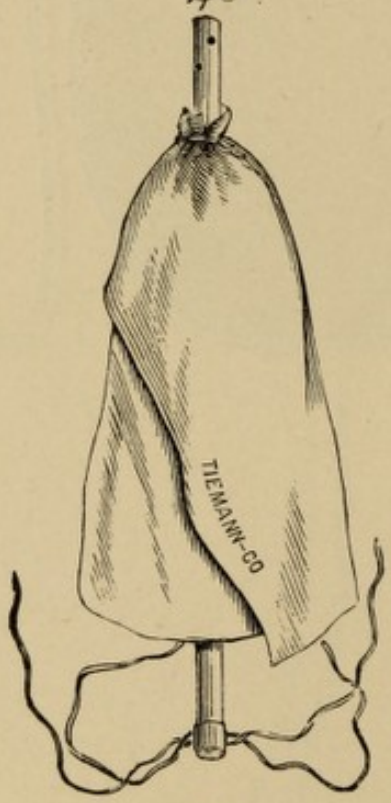

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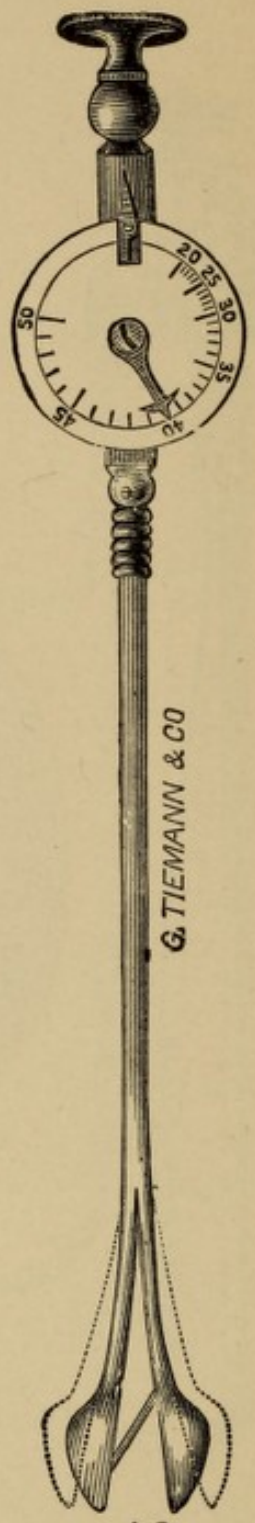

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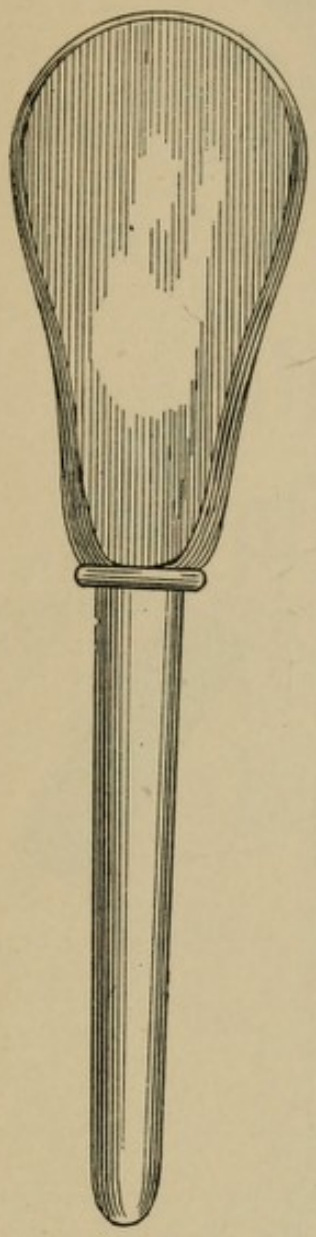

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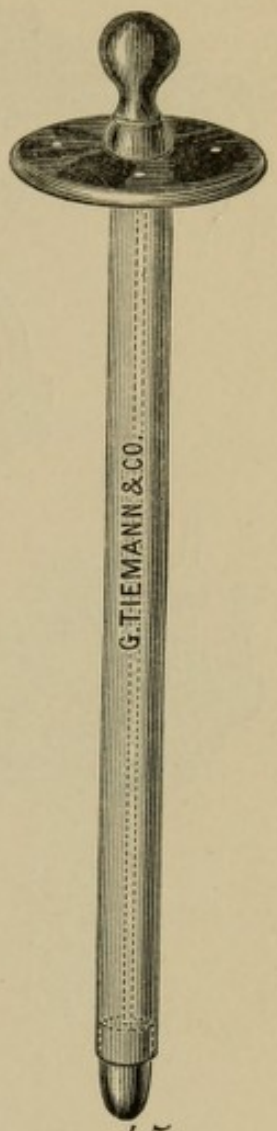

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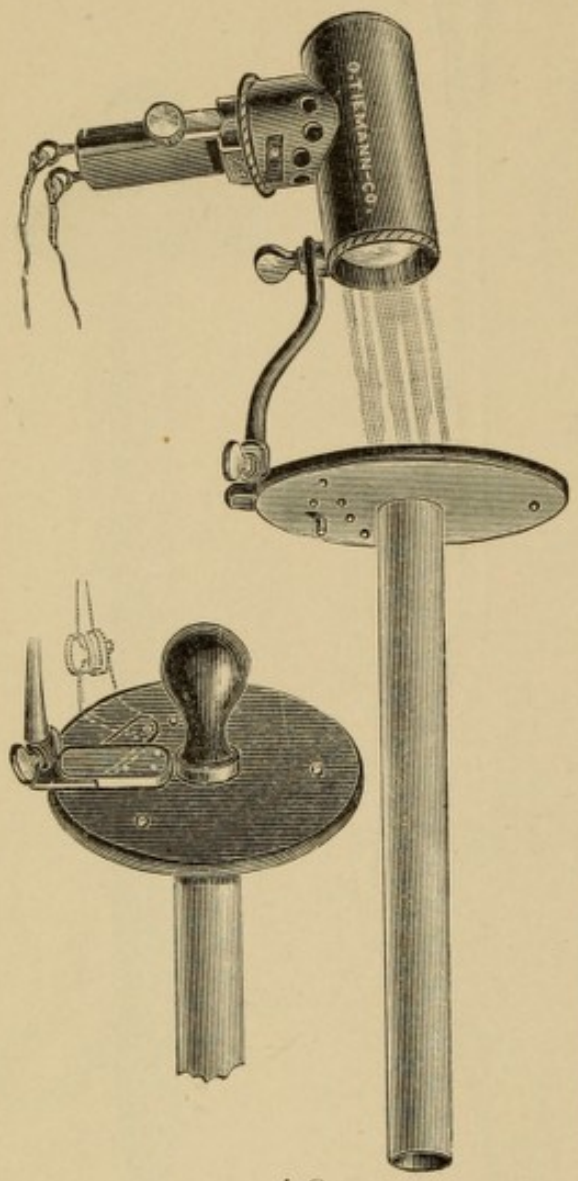
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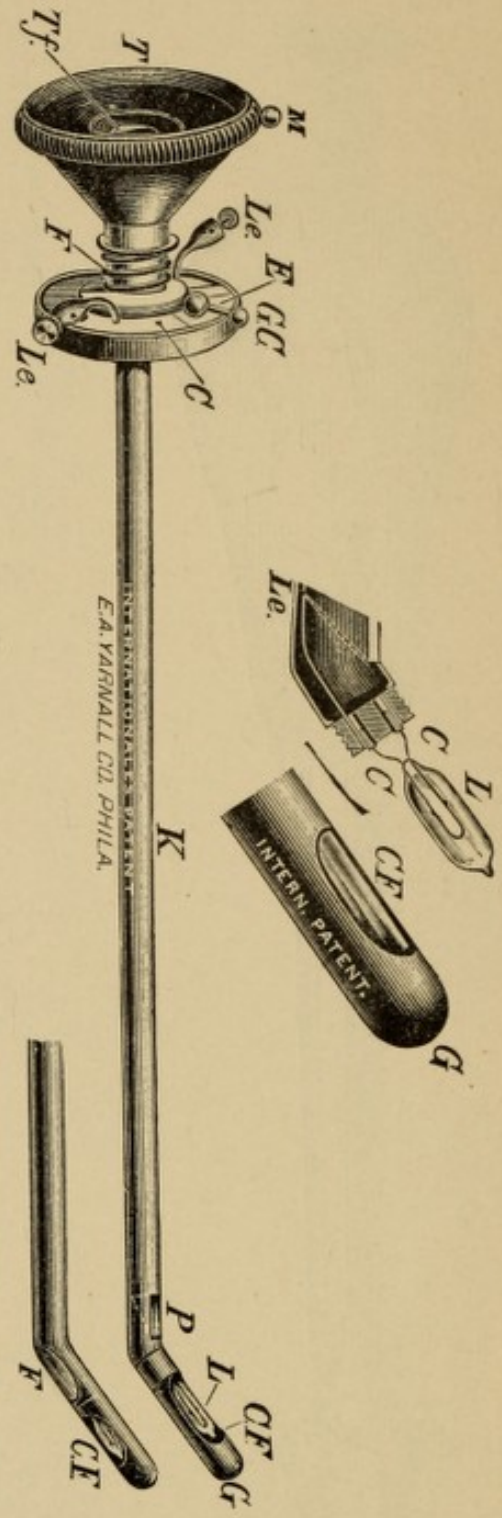
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Diseases of the Bladder.

CYSTITIS.

(CATARRH OF THE BLADDER.)

Cystitis indicates inflammation of the bladder. We may have an acute, chronic, diphtheritic, or interstitial inflammation, or an epicystitis or pericystitis.

Etiology and Pathology.

Causes are traumatism, chemical agencies, the presence of a foreign body, or overdistension, the latter occurring especially after parturition, from bruising and swelling of the urethra. Displacement of the uterus, forward by pressure or backward by tension, may also be a cause, or the inflammation may have extended from surrounding parts. *Involuntary escape of urine in an adult male generally means overdistension.* The traumatism may be a blow received upon the hypogastrium, or be caused by instruments during delivery. Chemical agencies, used in the treatment of urethritis, may find their way into the bladder. A chronic condition of mere hyperemia may develop into an acute attack from exposure to wet or cold, although it is denied by many that such can be the solitary cause. *But such conditions can certainly call into existence an acute attack from a pre-existing chronic state.*

Improper food may be a cause, as onions and asparagus under certain circumstances; also some drugs, as cantharis, turpentine, arsenic, and nitrate of potash. Altered urine might by some be termed a chemical cause; I

would say it might aggravate a previously hyperemic condition, as *I do not think any urine can create an inflammation in a healthy bladder.* Gouty people are prone to affections of the mucous membranes, especially of the intestinal tract, and so the gouty and rheumatic diatheses are predisposing causes of cystitis, which you should inquire into in lieu of any other cause. Yet there must be some other element in the case; *I doubt if gout or rheumatism alone can produce it.* But people with such constitutions are in a condition which plus drinking stale beer, champagne, or eating onions, asparagus, etc., will result in cystitis.

There is a decomposition of the urine and development of carbonate of ammonia from the breaking down of urea. The first change is that of hyperemia, and then the increasing secretion of alkaline mucus diminishes the acidity of the urine. *Fermentation may be caused by bacteria introduced on an unclean catheter.* Amorphous phosphates are precipitated, and uniting with ammonium phosphate, form the ammonio-magnesium or triple phosphates. Carbonate of ammonia increases the irritation and inflammation and finally we get a full alkaline urine and the gelatinous condition of mucus and pus. But there must have been the pre-existing inflammation. You may have pyelitis, or pelvic abscess in the female, as the source of pus, which then gets into the bladder from the outside, and setting up an inflammation, you get an acute cystitis.

There is an acute inflammation of the bladder lining membrane; it is swollen, infiltrated, relaxed, and of heightened color; especially around the neck and base

are seen patches and streaks of bright red, the normal color being salmon pink. The membrane is covered with a tenacious yellow or drab muco-purulent secretion. The tops of the rugæ are of a brighter color than the sulci between them, and in these depressions are seen the products of inflammation, *i. e.*, epithelium, mucous corpuscles, blood cells, etc., as revealed under the lens. *A favorite site for inflammatory action, tumors, etc., in the bladder, is about the neck and base;* the cause partly may be that decomposed urine lies longer in contact with these parts.

If great inflammation be present, the infiltration extends into the sub-mucous tissue, among the muscle fibers, etc., and ulceration may expose the cellular tissue, or extend through to the muscle itself. First there is hyperemia, then a shedding of the superficial epithelium, then of the middle and deep layers, basement membrane, cellular elements, connective tissue, etc., until you have now a real molecular death, which, extending to the parenchyma, gives suppuration in the walls of the bladder, and causing an abscess of a very small size. These are likely to be multiple and about the size of a small pea. This is interstitial or parenchymatous cystitis, a rare condition and *one impossible to diagnose from the form wherein simply the mucous membrane is involved.*

This theory of the carbonate of ammonia developed from decomposition being the cause of cystitis is the one that has been long in vogue; but this being the germ era in medicine, we now have a theory that is quite a departure from the old one as noted. We are now told that certain *bacteria* are essential to the pro-

cess, and that the carbonate of ammonia is not the primary cause. It is claimed that micro-organisms produce the inflammation, the condition being intensified, however, by the production of the ammonium carbonate. A healthy, normal urine contains no bacteria and is aseptic, but whenever there exists suppuration we find present the *streptococcus* and *staphlycoccus*. In the great majority of inflammatory affections of the bladder the *bacilli coli communis* are said to be present; also, in many cases, the *baccili ureæ liquefaciens septis*, but not so commonly as the former.

Also the *bacillus tuberculosis* and the *gonococcus* may be present, the latter in gonorrheal cystitis and gonorrheal prostatitis. But the *gonococci* alone placed in the bladder are inocuous, in "gonorrheal cystitis" it being other micro-organisms contained in the pus that are the real cause of the inflammation. A pure culture of the gonococcus or of the tubercle bacillus introduced into the bladder will have no effect. The mere presence of tubercle does not of itself cause cystitis; but having formed an obstruction it causes interference with the circulation and consequent hyperemia, when the *ground is now prepared for the entrance of other germs. In order to gain a foothold in a given locality micro-organisms must find the part depreciated below the normal standard.*

We may say, then, that the presence of cystitis depends upon the presence and activity within the bladder of certain bacilli or cocci, and that there is also required some lesion of the parts, the term "lesion" being construed to mean not necessarily an actual tear but a departure from the normal resisting capacity.

If no local trouble be present, this depreciation of normal tone may exist in the system at large. These germs must make their entrance either from without the body, or into the bladder from the system at large, as coming down from above via the ureters; the latter case is a rare one and presupposes some abnormality in the kidney. In the female it is a very easy thing for germs to ascend from the vulva up the urethra into the bladder, while the constrictor urethræ in the male might not be so easily passed.

Symptoms and Course.

As we ordinarily see it, the disease is comparatively insignificant as to the question of life or death; but it yet may cause great discomfort and is by no means a light affair. Indeed not infrequently it is fatal, and it is always very severe if extending to ulceration. *You may get a gangrenous condition in cases associated with nerve lesions*, as overdistension from coma, etc., at times throwing both the patient and physician off their guard, and death following. Excessive vascularity of the bladder walls, especially of a venous nature, may enlarge the bladder as well as urinary distension. And so we must *look out for overdistension during fevers*, and, as already referred to, *particularly in cases of coma*, or in any condition where the normal intelligence of the patient is greatly abated. *Neglect of this precaution may lay the foundation for a terrible cystitis.* There may occur a complete exfoliation of the whole lining of the viscus, particularly with spinal troubles, although the bladder was previously healthy. In such cases the urine becomes rapidly ammoniacal and the

bladder is tremendously distended because of the paralysis. Or the disease may be but the beginning of an incurable difficulty leading to a fatal end.

The patient may experience discomfort in the hypogastric region without any premonitory symptoms, and may also complain of chilliness. Soon he urinates with increasing frequency, and gradually burning pains on micturition are developed, or pains darting down the thigh. He urinates still more frequently, and tenesmus appears, the relief after emptying the bladder gradually lasting for a progressively shorter and shorter period of time. Increasing pain and straining efforts are now experienced, and finally the urine is voided every few minutes day and night. The straining may be so great as to bring on hemorrhage or produce hernia or hemorrhoids.

But it is not usual for the bladder to become distended in cystitis as we see it. The patient may simply pass *the surplus of urine*, the bladder never being really empty; or he may pass it all, from irritability, on account on the excessive hyperesthesia. *Always examine the hypogastrium to see if the bladder be distended*, in which case a tumor is made out and there is dullness on percussion. Overdistension may be symptomatic, and when present it aggravates the difficulty.

The urine soon clouds as it settles quickly—is flocculent. Under the microscope you find epithelia, blood cells, mucous shreds, and connective tissue if the inflammatory process extends deeply enough. Before long it is alkaline as soon as voided; it has a stinking odor and contains sediment deposited in gelatinous chunks. The urea changes into ammonium carbonate.

The specific gravity may not be materially affected; it is high if a marked febrile condition be present.

All the symptoms are thus increased after six to eight days, and *a highly alkaline urine containing shreds of connective tissue, as mentioned, indicates that the inflammation has involved the bladder walls;* it is significant of ulceration, rendering the prognosis much graver. Or, in another case, *the trouble may run on to a chronic state and still the frequency of micturition decrease. The acute condition rather has a tendency to run into the chronic form and extend up to the kidneys.* If an acute attack is to terminate fatally, the patient becomes sweaty, there is a jerking pulse, followed by coma and the end. *But such a termination rarely ensues except as following a chronic condition.*

Diagnosis.

We must find out if the pus comes from the bladder, or from some other part of the tract, higher up, which observation applies also to the chronic form of the disease. Is the albumin present due to pus or blood? Or does it originate in the kidney? If there be present much albumin and but a small amount of pus, we can suspect organic kidney disease. *In general, given pus with an acid urine and excess of albumin, we can say it is from the kidney; pus and albumin originating from the bladder are generally associated with alkaline urine.* It may be that the kidney is the real site of the difficulty, and that the bladder symptoms are but reflex.

LOCATING THE LESION.—To determine approximately the particular part of the genito-urinary tract that pus and blood come from, the *Henry Thompson*

process is useful. You proceed to wash the bladder with repeated injections of warm water, until the fluid returns approximately clean. Now leave the catheter in the urethra, the point resting just within the bladder neck; cork it, and in ten to fifteen minutes draw off the urine that has descended from the kidneys; put this aside and wash the bladder again. *If it washes clean by a single washing, and the urine withdrawn contains pus or blood, we can say it originated from above the bladder. On the other hand, if a single washing does not effectually cleanse the bladder, we may say the pus or blood came from the bladder.* This test is made more absolute by repeated washings.

Treatment.

As a result of my investigations I would recommend the following remedies, used as homeopathically indicated: *Aconite*, *Apis*, *Belladonna*, *Cannabis Sativa*, *Cantharis*, *Colocynthis*, *Equisetum*—a tea made of which is a popular remedy for retention of urine, *Mercurius Corrosivus*, *Nux Vomica*, *Arsenicum*, *Kali Nitricum* and *Chloricum*, and *Turpentine*.

CHRONIC CYSTITIS.

This form of the trouble is rarely idiopathic. There are many *causes*, such as inflammation of the genito-urinary tract following an acute attack, following urethritis, or an inflammation originating in the prostatic sinus may creep back to the bladder. *You find it associated with stricture, and yet oftener with prostatic hypertrophy, from the obstruction to the flow of urine* consequent upon these conditions. An inflammation

may extend to the bladder from its origin within the kidney, or from neighboring parts. A displaced uterus dragging upon the bladder, pressure of a tumor, certain rectal difficulties, foreign bodies in the bladder as gravel or stone—it is easily understood how these may be the source of irritation. *In adults the most frequent causes are three: prostatic hypertrophy, stricture and stone.*

Pathology.

The flow of urine is impeded and the bladder has to squeeze harder in order to empty itself; this means a consequent hyperemia, and the increased amount of blood brought to the part means an increasing amount of mucus, decomposing urine and its attendant evils. Also hypertrophy ensues from this increased activity—*the bladder walls are thickened. It must now act oftener and more powerfully than previously.* Pockets are formed by the pushing out of the mucous membrane between muscular columns thus developed. In prostatic enlargement the bladder becomes distended and the urine flows out, so nature in a measure overcomes the difficulty. *But there is more or less residual urine in all cases.* And as phosphates will crystallize around anything serving for a nucleus, if stone be not already the original cause of the trouble, the *formation of calculi constantly threatens.*

Symptoms and Course.

Chronic cystitis is a very common affection and especially so in women. The acute symptoms may subside and the disease quietly pass into the chronic phase with little remaining discomfort, but the increased frequency

of micturition and the character of the urine passed remain to determine the presence of the trouble. *The condition varies from one of slight discomfort to a most grave state, the amount of cystitis present being largely proportionate to the amount of obstruction.* Offensive urine may be the first thing to attract the patient's attention. In all such cases you should ascertain if it be due to cystitis. *Investigate first* to see if there be present a stone, stricture or enlarged prostate, then *give your remedies afterwards.* You may have pathological changes inconsistent with recovery. We cannot give a patient back a lung, but we may be able to remove or modify the condition that was making things worse, thus enabling him the better to get along with part of a lung. In other words, while we cannot restore, we can often retard a destructive process. Therefore your rule in dealing with chronic cystitis is to *hunt the cause, remove it if possible, and if you cannot, do the best you can with it.*

Treatment.

In addition to the remedies mentioned for the acute form, the following have proved useful in both high and low potencies, also used in the form of teas: *Eucalyptus*, *Hydrastis*, *Epigea*, *Triticum Repens*, *Buchu*, *Pareira Brava*, and *Copaiba*. *Benzoic Acid* and *Benzoate of Ammonia* will change the alkalinity of the urine to acidity, thus rendering it bland. The patient should also drink freely of spring water, or *Poland* or *Clysmic.*

Of empirical remedies I might also mention *Hydrobromic acid; Oil of Eucalyptus*, gtt. iij. to v given

on a lump of sugar t. i. d.; fluid extract *Stigmata Maidis* (cornsilk), gtt. viij, t. i. d.

WASHING THE BLADDER.—This must frequently be resorted to. In an alkaline urine the mucus gelatinizes, giving a dirty surface, and the indication for washing is that the debris in the sulci in the walls is not cleaned out by the mere emptying of the bladder. *Excluding the presence of a foreign body the great cause of chronic cystitis is an enlarged prostate or stricture obstructing the flow of urine.* There is inability of the bladder to empty itself, and consequently *residual urine;* and the carbonate of ammonia present changing the normal urine coming down from the kidney, the already existing inflammation is continually aggravated. And if no residual urine were present, yet there still remain the inflammatory products, evidenced by an injection of clear water into the bladder coming away clouded. *So it is desirable to wash a chronically inflamed bladder.*

However, in dealing with the genito-urinary canal this caution is to be forever borne in mind: *the introduction of any instrument into the male urethra is an evil, and to be resorted to only in the presence of a greater evil;* it is the choosing of the other horn of the dilemma. It may cause an anterior or posterior urethritis, prostatitis, swelled testicle, or some other trouble. *You may have catheterized an innumerable number of times even an old, tough canal, without evil effects, and the very next time set up a severe urethral fever; and persons of certain temperament are peculiarly susceptible to dire effects from instrumentation.* But in the majority of cases *the patient, suffering from prostatitis, has to use a catheter anyhow,* and you

can inject your cleansing or medicated solution at the time of catheterization.

The normal bladder holds comfortably ℥ vj to viij of fluid, but it is rarely advisable to inject more than ℥ iij to iv—say use ℥ij and inject it slowly. Use a bag syringe (1) attached to a catheter (2), as a piston is jerky. Continue the washing until the fluid returns clear. It may be desirable for the patient to douch himself, and in such cases a more convenient affair is Keyes' "two-way stop-cock" apparatus (3). The distal end of the tube is attached to a fountain syringe (3), the other to the introduced catheter (2), and near the middle of the tube another—short—tube is joined at a right angle; above this there is the two-way stop-cock. *The force is regulated by the height of the reservoir.* When fluid enough has flowed into the bladder so that he feels the desire to urinate, he shuts off the supply from the bag and empties his bladder through the catheter and via the short tube into a receptacle. After washing thus with the warm water, he should introduce a medicated solution to remain from one-half to one minute. [A similar device may be easily arranged by means of a metal T that is sold in the stores. This has a thread guage made to fit a Davidson syringe (40). One end of the cross-arm of the T is connected with a catheter, the other with the syringe, the vertical portion with the evacuating tube. While injecting, simply pinch the evacuating tube between the thumb and forefinger and close up to the T; when flushing, release the evacuating tube and pinch the syringe tube close up to the cross-arm.]

Many practitioners oppose this idea of local treat-

ment, *but if the evil present is greater than the risk from introduction of the instrument I approve of the plan.* It is a question of judgment in the individual case. If the *cause of the inflammation be not previously removed, washing and local medication only palliate*, as is the case where the inflammatory changes are organic. If you cannot remove the cause, as an enlarged prostate, you can at least *remove the pressure and irritation of the residual urine and keep the disease from extending up the ureter to the kidney*, leading to death from kidney disease. Of clap, chancre and chancroid, *clap kills the most people;* the sequence is clap, stricture, dam, chronic cystitis, pyelitis and finally death from nephritis. Strive to overcome the *results of the dam* and thus spare the ureters and kidneys, if you cannot remove it. So I put considerable stress upon local measures to modify aggravating conditions as much as lies within your power.

Bladder injections may be made up as follows: *Acetate of Lead*, gr. ⅓ to the oz., increasing to gr. j. *Argentum Nitrate*, beginning with a weak solution, say gr. $\frac{1}{10}$ to the oz., and running up to gr. ¼ to ½, or possibly gr. x to xv in aggravated cases, the rule being to *test the bladaer irritability, beginning always at the minimum and gradually increasing the strength of the solution only as you fail to get results or as the bladder tolerates it.* If ammoniacal urine be present and there is a tendency to phosphatic deposit and formation of calculi, you may use *Nitric Acid* C. P., gt. j to the oz. to begin with. *This will not succeed in preventing the formation of calculi*, but is beneficial in such cases. If no acute symptoms be present a very nice and

soothing preparation is *Borax* or *Boric Acid*, ℥j; *Glycerine*, ℥iij; water, ℥iij. Of this take from a teaspoonful to a tablespoonful to a ℥iv injection. This is a very mild solution and of but little influence in the higher grades of inflammation. The *Borax* alone, or *Listerine*, are also of value. *Thiersch's fluid, composed of Salicylic Acid*, gr. j, *Boric Acid*, gr. iv, and hot water, ℥j, is a good irrigating solution. *Hydrastis* may be used singly or in combination with some of the other substances mentioned. The frequency of these injections will vary from once every other day to once a day, in ordinary cases, while in aggravated cases twice a day will not be too frequent.

CASE NO. 1.

DIGITAL EXAMINATION OF FEMALE BLADDER.—Shall paralyze the sphincter, to drain the bladder and rest it. This woman's urine has been loaded down with pus for a year. Too much overdilatation of urethra would cause incontinence. *In the average female urethra the index finger may be tolerated.* In one instance I introduced a vaginal speculum into an urethra that had been used for intercourse.

Examination revealed no body in bladder. Stones are very elusive; in one instance one weighing ℥ v was not discovered in a woman notwithstanding daily washings of the bladder through a metal catheter, and by a competent physician. There are various causes of irritation and inflammation of the bladder, of which *fissured rectum* is one.

SPASM OF THE BLADDER.

(IRRITABLE BLADDER.)

Spasm of the bladder may simulate cystitis, also what is known as irritability, or neuralgia. *Unfortunately there has been a much mixed use of these three terms—spasm, irritability and neuralgia*—by the various authors. Irritability means simply an increased frequency of the act of micturition, not due to diabetes, and it is unattended with pain; *it is not a disease but a symptom present in most genito-urinary troubles.* We might include it under "spasm," but we certainly should not include all irritability under "neuralgia." Then our use of the word "neuralgia" is not like that of the French, with whom it means trouble of the nerves; the English use it to indicate a painful affection of the nerves. And so it is best to retain these two terms of "spasm" and "neuralgia" which, although plainly not synonomous, are yet not clearly differentiated. We will define spasm as an irregular, frequent contraction of the bladder.

Etiology.

From continuance of this spasmodic action you can get congestion and consequent hypertrophy. The now stronger grown muscle bruises itself by its violent contraction, augmenting still more the hyperemia, *and may even lead to an actual inflammation, which thus*

has been reached from an original purely nervous condition.

I recall the case of a patient who was operated for stone in the bladder, following which, from the neurotic condition it had induced, he retained all the symptoms experienced prior to the operation. *The pressure of the calculus against the bladder had caused a hyperesthetic condition of the nerves, and so the symptoms yet remained although the stone had been removed from him.*

Symptoms and Course.

In the mild type there is an abnormal frequency of micturition with little distress. This may be later followed by *all degrees of pain from mild distress to agonizing suffering.* The pain may occur at the beginning, end of, or throughout the entire act of micturition, and may resemble that of stone; or it may be like the pain experienced with hemorrhoids, prolapsus or hernia, and *it may be located in any portion of the hypogastrium.*

Some people cannot control the action of the bladder, or they urinate in an eccentric, forked, or twisted stream. *This usually indicates stone, but the condition may exist with spasm alone.* You may have a spasm of either the detrusor or sphincter muscle alone, or both of these may be affected. Again there may exist alternating spasm of the two, or they may act unequally—incoordinately. *A violent spasm of the sphincter muscle shuts off the stream suddenly and causes retention of urine.*

After an operation for hemorrhoids, or even after

an amputation or other operation affecting parts remote, you may have inability to urinate, due I believe to spasm of the sphincter muscle from nervous reflex action, the *detrusor* meanwhile being normal and not paralyzed.

Diagnosis.

Spasm closely resembles cystitis but with the neurotic affection inflammatory products are absent. Yet in the course of time you might have a true cystitis superadded to the original condition.

Treatment.

Irrespective of the numerous homeopathic remedies which will be indicated according to the individual cases, the introduction of sounds (4) more or less frequently is advisable. Hyperesthesia is a common cause of spasm and the introduction of sounds will blunt the sensibility of the parts. This treatment is also applicable to all genito-urinary troubles of a neurotic character, prominent among which is spermatorrhea. Spasm may prevent the introducton of an instrument into the bladder, and anesthesia for the first few introductions may be necessary; indeed *spasm of the urethra or of the vesical neck may even under profound anesthesia, be severe enough to prevent instrumentation.* Use cocaine if necessary, and in your selection of instruments grade from a soft instrument, such as the gum-elastic bougie (12), to a steel one (4). In an adult you would ordinarily begin with a No. 16 or 18 of the French scale, grading from this up to the full size

that he should take, even if you find it necessary to incise the meatus in order to introduce it.

As to the question of the frequency of repeating the introduction of the sound, *so long as improvement following one instrumentation continues, do not repeat it; and if the process utterly fails to respond favorably after a number of efforts, then discontinue*, as persisting may now set up an urethritis, and even more. Following this treatment the patient is generally worse at first and urination is accompanied by a scalding sensation, but he feels better after a few hours, improvement continuing for a variable period of time.

CASE NO. 2.

Man about 35. Has to urinate about every hour or hour and a half. Been doctoring for two years. No clap. Occasionally pain in the back. Four or five years ago had swelling of legs, for which he was treated and has had none since. Desire to urinate more urgent when standing. No history of accident or any exciting cause. No discomfort before, during or after micturition. Desire not intense enough at night to wake him up. Meatus of normal size. No redness to speak of. Specific gravity of urine 1030; no sugar, no albumin; acid reaction. He passed his water about an hour ago.

Upon sounding the patient no stricture and no stone discovered. A No. 30 bougie à boule (14) stops just at the peno-scrotal junction, canal therefore being free to that point. A No. 28 goes to the bulb, but detects a little stricture at that point. A No. 29 sticks more, but goes. So we have a stricture

at the peno-scrotal junction, producing reflexly a *neurosis of the bladder*. It is not an inflammatory condition, as he is not called upon to urinate during the night. It is especially true, of a neurosis, that as long as the patient is awake, and particularly if he is idle, he has frequent calls to urinate, but if his mind is occupied, as being at a theatre, etc., he can hold his water; but the desire returns when his mind is again unoccupied. The condition may be attended or not by discomfort.

Always search for a cause for the neurosis. It may be a *general disturbance of the nervous system, or a local condition* as here. The stricture is just where the penis bends. This demonstrates that a person can have acquired an organic stricture and there be no venereal history, and such generally occurs at just this point, and particularly in those of *rheumatic or gouty tendency*. In such persons the urine is loaded with *crystals which catch in the kink here*, and the urine passing over it means an irritation of this *crest of mucous membrane*, which finally means denudation of the epithelia and the setting up of active inflammation, resulting in stricture. If no rheumatic history, you would yet think such a stricture due to faulty condition of the urine.

Treatment.

I think he can be cured by the persistent use of the sound (4). This case illustrates the impossibility of detecting strictures of large caliber by the sound. The No. 28 sound slipped in easily enough, and the No. 30 sound went because the instrument is a *wedge*,

which stretches the stricture while going in, so you are not conscious of its going through. It must be smaller than the tip of your instrument to be detected by the sound, and *no examination for stricture is complete without the employment of a bougie à boule* (14).

We will have a No. 30 sound passed every third day and see if it produces absorption. And if not, we will carry him to a No. 31, enlarging the meatus if necessary. If this is not effective, we will cut him; that is perform an internal urethrotomy.

Often this neurotic condition exists at the neck, and perhaps without pain, but as a sound enters the neck of the bladder it causes much pain, and this hyperesthesia of the neck frequently gives rise to *seminal emissions with unnatural frequency*. Here none of this has been noticed, and there is no pain upon the sound passing into the deep portion of the urethra; and there is ability to sleep at night. So the disease is neurotic and reflex from the stricture, yet there is not a condition of actual hyperesthesia.

Two years ago I saw a patient who had the mumps and a double orchitis. The testicles became fistulous, one of them discharging now. I think the inflammation had travelled back from the anterior canal, inoculating the posterior portion. He had to urinate every ten to thirty minutes and the act was attended with agonizing suffering during the flow, and there was tenesmus afterward. He was highly nervous and actually had hysterical convulsions, the most pronounced I ever saw in the male. He was a great student and highly accomplished.

TWO-GLASS TEST.—To test if the case be really

cystitis or a *neurosis*, examine the urine by the *two-glass test.* If the *first gush is cloudy and the second is clear*, it is strong presumptive evidence that the *canal and not the bladder is involved*, and you can make assurance *doubly sure* by first washing out the anterior urethra by passing a catheter to the bulb and thoroughly irrigating. If *now* the first is cloudy, and the second is clear, it *indicates* posterior urethritis. But if *both* are cloudy, the constriction of the urethral muscles prevents the discharge coming out of the meatus, and it goes back into the bladder. If the patient urinates very frequently, the canal is kept so washed out that none can find its way back. To recapitulate. The first gush cloudy and the second clear, after first cleansing the anterior urethra, means posterior urethritis; and the first cloudy and the second cloudy means cystitis, or pus from the kidney, or wholly due to backing up from the urethra.

The prominence of the vesical symptoms helps to eliminate cystitis, and the absence of renal pains, albumin and casts, excludes kidney trouble. The microscope may be used to see if *bladder epithelium* is present in profusion. Also you may find *tripper fäden* in the urine, which are composed of epithelia and pus corpuscles. These are not of much diagnostic value, though some claim the pollywog or tack-like ones are characteristic of posterior urethritis, and that the long thin ones, of more uniform size, come from the anterior canal. *I don't think you can put much confidence in this.* But if they *sink to the bottom* of the glass readily, it indicates the presence of *many pus corpuscles*, while the lighter they are and the greater

tendency to float, *the less pus is there present* and the better the prognosis; and they will become lighter and lighter as the case improves. *The sooner such a condition is attacked by local measures the better the chances of cure.* The gonococci have a tendency to penetrate deeply in the prostatic urethra, and while you may allay the superficial inflammation the deep is still there. If attacked early there is no chance for them to penetrate deeply. (See "Posterior Urethritis.")

CASE NO. 3.

Man about 20. External hemorrhoids since childhood. May have been a little prolapse. Had little lumps, always external and not bleeding. We would hardly expect internal piles as it was seldom that anything came down, and then it was more of a simple prolapse; it could be easily put back and there was no bleeding. Three years ago he noticed *increased frequency of micturition* and a little attendant discomfort. Distress diminished as soon as the flow began, that is being mostly before the act and being relieved by the flowing of water. Little later he had mumps and a double epididymitis or orchitis. First one testicle swelled, became very sore and was lanced, mostly blood coming out. Other testicle went through the same course and was lanced. Both have remained fistulous ever since. Upon slight irritation they become swelled and tender, this condition lasting two or three days and then passing off without any increased discharge; so the swelling is not from occlusion of the opening by the plug formed from drying up of discharge; in such case, when the secretion had increased sufficiently to

push out the "cork," there would be an increase of the discharge.

Total loss of virility; no erection since the orchitis; increased micturition, urine being clouded, containing flocculi which are occasionally streaked with blood and requiring straining to pass them. Progressively increasing irritation of the bladder, and now for some time he has had to *urinate every ten to fifteen minutes.* Capacity of bladder much diminished, holding only a wineglassful; and he wears a urinal, having a rubber cup-like receptacle, into which the penis hangs, and joined to a tube which runs down along the inside of the leg. It requires much straining to start the stream; pain diminished as soon as it begins to flow. Occasionally flows pretty freely. Urine loaded down with pus, there being a thick, greenish, purulent sediment on precipitation. At other times the sediment is lighter, not gelatinizing. Reaction varies—sometimes acid, sometimes alkaline.

He was phimotic, and two years ago was circumcised without any amelioration of the symptoms. Was in a sanitarium during the last two years and had morphine given him without his knowledge to relieve his pains. Contracted the morphine habit, which is now broken, and at present he has an intractable diarrhea—liquid stools, chiefly in the morning and with much tenesmus; he gets along very well for the rest of the day. Was operated for hemorrhoids a year or so ago and has had none since. Stopped the morphine in March and the diarrhea came on two months ago; was sometimes liquid, again of a consistency sufficient to hold together. Occasionally a lack of satisfaction after stool.

Diagnosis.

This trouble evidently started with an irritable bladder, becoming cystitis or possibly originating in a cystitis. Yet no history of gonorrhea, cold or traumatism. Vesical symptoms began prior to the orchitis, but he had piles prior to the bladder symptoms. Sodden and excoriated condition of the penis from ammoniacal urine and wearing urinal.

URINALS.—He has one with flat valves to prevent regurgitation ;when the feet are raised. This arrangement is all right if sufficient urine is passed to make weight enough to open the valve, but when it dribbles, as in supra-pubic drainage, there is not weight enough to make it work. Then take out the valve and substitute a little glass tube which hangs from its upper end. This permits the smallest amount of urine to pass readily, and regurgitation is prevented by the urine pushing the tube to one side instead of re-entering. There is quite a knack in emptying an urinal. There should be a stopcock in the end to prevent emptying till the end is unscrewed and the man is ready; or he can make a kink in the end before unscrewing, and thus empty when he wishes, without spattering himself.

Epididymitis after mumps rarely terminates in suppuration but generally in resolution. Upon examination of the right testicle I find it elastic and non-resistant anteriorly but resistant prosteriorly. Anteriorly it is almost fluctuating; posteriorly it is almost nodular.

This is the epididymis and the hard lump is the head of the epididymis. (See diagrammatic plate in front.) There are adhesions between the left testicle and the scrotum, evidenced by the scrotum drawing the testicle up as the former is raised between the fingers. Left testicle very shrunken and an indurated mass at the lower part, which you can trace until you come to the cicatrix of the fistulous opening. Tail of the epididymis is occluded; the semen could not pass even if the organ were still active. Anteriorly on the right side, the tumor on palpation is too soft for the testicle. Dark-room test would show a layer of serum. Adhesions between the tunica vaginalis testis and reflexa from inflammation, and so serum does not pass backward. Therefore encysted hydrocele of right side. There has been more or less effusion into the whole cavity of the tunica vaginalis after the inflammation, or into the sac made by the adhesions. Right testicle normal, as evidenced by the feel to the patient when squeezed; back of that the indurated epididymis. *Were it tuberculous or syphilitic testicle, especially the latter, it would be absolutely insensitive to pressure.* Patient well nourished and solid, and so tuberculosis excluded; and history and sensitiveness exclude syphilis. (Patient here succeeded in urinating a little.)

The anus looks healthy, and upon digital examination I find the prostate all right—median depression well marked, etc. No especial tenderness in vesiculæ seminales on palpation. No spasm of the sphincter, as it doesn't grasp my finger with any unnaturally firm grip. Base of the bladder in the vicinity of the vesiculæ seminales all right, but the rectum does not

feel "exactly right;" there is more rectum there than there ought to be, as though the canal had been much stretched and thrown into folds, giving too much membrane. At first, thought I detected some prolapse, of which there are varying degrees. The sensation to my finger is as though the upper part of the rectum had telescoped into the lower, though I can't get my finger far enough to push it into the pocket that would be formed by such a condition. He has to strain even if his bowels are loose, the invaginated gut being pushed farther in and causing the feeling of something left.

EXAMINATION OF BLADDER.—Canal too tender and *Cocaine* introduced by deep urethral syringe (36). This has a short end, as I want to put it just inside the triangular ligament; otherwise a spasm would close the canal. *Keep instruments out of the prostatic sinus if you can, as there is danger of exciting prostatitis.* So this beak is made short to reach only just within the ligament. Discharged a few drops of *Cocaine* in the canal and then in the bulb, as the instrument was introduced. Penis in the left hand up against the belly and *Cocaine* worked back with the other hand, through the scrotum, to the deep part of the canal. If it is deposited thoroughly within the triangular ligament no fluid appears at the meatus on pushing the piston.

In sounding the bladder it is desirable to have *sufficient water present to distend it enough to make excursions with the instrument without scraping against the bladder walls.* The searcher (19) has a shorter beak than the sound (4) and so is more desirable here where the bladder walls are contracted down. Bladder grasps the instrument and could make no excursion. Next I

try the gum elastic catheter (5) and find that he had not really emptied bladder when he urinated. Bladder emptied, and now he has an emptied contracted bladder.

To thoroughly examine we must put him under an anesthetic, distend the bladder with fluid and use the searcher. Also a more thorough, and visual examination of the rectum is called for. The trouble probably *originated with an irritable bladder*—a neurosis—there being no lesion. Cystitis was afterwards set up, and the neurotic condition was aggravated by hemorrhoids and the pathological condition in the scrotum. This gave a vesical catarrh grafted onto a nervous condition. The bladder condition might be reflex from the rectum or the prolapse come from straining; either may be the cause of the other.

Treatment.

Irritable bladder is a very unfortunate condition, and often in the female you get a condition similar to this. There is no lesion and *stretching of the sphincter*, *dilatation of the canal*, *liberation of the clitoris*—all may have no effect. *Electricity* may have a good effect.

I would suggest here the remedies for catarrh, and if we get no effect would wash the bladder; but the harm done by the instrument may negative the good of the washing. So the best thing is internal medication. *Mercurius* or *Gelsemium* suggest themselves, or the morning diarrhea suggests *Podophyllum*. *Conium*, *Aurum* and *Kali Iodatum* are good to cause absorption of the exudation. Then there is the whole class of drugs having a specific action on mucous membranes

—*Ustilago Maidis*, *Copaiba*, *Buchu*, *Triticum Repens*, etc.

This is a very knotty case and he suffers out of all proportion to the inconvenience that should attend the pathological condition; so we say that it is a neurosis, the symptoms largely reflex. The scrotal troubles may aggravate the bladder condition, yet the irritation antedated the mumps and his hemorrhoids were removed. Also I would recommend Pratt's operation of stretching the sphincter ani, although I don't expect a great deal as there was no spasm upon introduction of the finger; it did not hug my finger.

Irritable bladder case upon which a Pratt's operation was performed. He also had an intractable diarrhea. Stopped him up temporarily with *Camphor* to tide him over the operation. He went several days without any movement and since the operation has only had a few loose stools. We can report but very little gain in the bladder trouble.

CASE NO. 4.

Woman about 35; had two children. This is a case of irritable bladder. Sediment in her specimen of urine, which renders the fluid opaque, but it mixes readily with the supernatant fluid upon shaking. We would think of *pus* in the urine, if it were not acid, or neutral; for *pus gelatinizes in alkaline urine.*

History of pain on micturition, frequent urination, and foul-smelling urine. We would think of *acute cystitis and ammoniacal decomposition.* No leucorrhea; periods regular. Evidently the trouble has run on to

a chronic form now. Several months ago she was urinating every three to five minutes.

Irritable bladder in women is a miserable thing, and you must look for a cause outside the bladder, as uterine or nervous trouble, where there has been general disturbance incident to the menopause, etc. In such cases dilatation of the urethral and vesicular neck will often accomplish much.

There is nothing in the history to suggest stone, but the searcher (19) is naturally the first thing in the examination. The clitoris is quite adherent. Always be careful in examing a specimen of woman's urine to see that *the external parts, vagina, and uterus, are thoroughly washed so that the urine is not contaminated by leucorrheal or vaginal discharge.* Bimanual examination reveals quite a *lacerated condition of the cervix*, also a tumor posteriorly which would suggest retroflexion, but it is *doughy*, and due to feces in the rectum. The uterus is thoroughly movable, and therefore we have no evidence of peri- or parametritis. Sims' position and speculum reveal a lacerated cervix with a patch of erosion as large as a finger nail. It is a *granular cervix.*

Treatment.

We apply a 10 per cent. solution of *Ichthyol in Glycerine* painted over the spot or applied on cotton. Or cleanse, and dust with *Aristol*, *Iodoform*, etc. Or equal parts of *Creosote* from the willow, and tincture of *Iodine.* We will order a daily douche with two quarts of hot water, and have the *Ichthyol* applied

every third day, and when the erosion is improved the cervix should be sewed up.

Then for special action upon the mucous membrane of the bladder, such remedies as *Triticum Repens*, *Uva Ursi*, *Buchu*, *Pareira Brava*, etc., may be used. The fiuid extract of *Ustilago Maidis.*, gtt. viii, t. i. d. is beneficial; or the *Oil of Eucalyptus*, gtt. v, t. i. d. on a lump of sugar. *Arsenicum*, *Belladonna*, *Cantharis*, etc., are "out or court," as they have not the tenesmus and burning on micturition marking the acute condition.

ENURESIS.

(INCONTINENCE OF URINE.)

This condition is one in which the bladder is unable to retain the urine; it is also termed incontinence of urine. *The involuntary escape of urine in the adult male generally means that the bladder is full.*

Etiology and Pathology.

Many theories have been offered in explanation of this difficulty, the more prominent of which are as follows:

(*a*) One theory is that there exists a hyperesthetic condition of the neck of the bladder, and that urine of a normal quality coming in contact with this part, causes premature desire to urinate, and the detrusor muscle proceeds to respond in spite of the volition of the patient. In a great many cases you cannot differentiate between spasm and enuresis.

(*b*) In poorly nourished, scrofulous, or rachitic children, there exist also feebleness of muscle and a lack of sensation, along with the general constitutional debility. The sensation of the desire to urinate is carried from the bladder to the spine, and from there is reflected back to the bladder along the motor nerve fibers, but the sensation was not strong enough to carry the impression to the brain; it was sufficiently strong to suceeed in overcoming the weak sphincter but too weak to cause cognizance of the desire to

urinate. If this theory be correct it is plainly a hint for constitutional treatment; *it is the theory that the enuresis is but one manifestation of a generally weakened muscular system.*

(*c*) Again, it is claimed that superficial epithelia become detached from about the base of the bladder or the vesical orifice. Although not proven post-mortem this theory is accepted by some authorities.

(*d*) Finally, *it is always important to interrogate the condition of the prepuce*, noting if it be unusually long, or conceals accumulation of smegma. Also *you must not overlook the possible presence of worms in the rectum.*

In some cases it may be impossible to definitely decide upon the cause, and after eliminating the system at large, a morbid condition of the urine itself, and other local conditions, you may be forced to the explanation that it is a pure neurosis or to the acceptance of the erosion theory.

Symptoms and Course.

Enuresis manifests itself in varying degrees. The bladder may cease to act as a reservoir at all, the whole genito-urinary canal acting as a continuous tube; this is the worst form in which the difficulty manifests itself. The bladder may still continue to act, but holding only a little water when it must at once be emptied, and the act of voiding the urine may be performed unconsciously or without volition. Or, in milder cases, the capacity for retaining urine may be present in a normal degree, but the organ is involuntarily emptied, or partly so. Thus the cases vary in degree from a

partial loss of the capacity as a reservoir, to wholly ceasing to act as a reservoir at all; *and the patient may or may not be conscious of the passage of urine, but in either case he cannot control it.*

The difficulty is rarely seen in men, and when it does here occur *it is generally in old men and is the result of prostatic hypertrophy, or atrophy.* Rarely there is present an enlargement that expands the neck of the bladder. In atrophy there is a loss of tone of the constrictor muscle of the urethra. But both of these conditions are very exceptional. So we may say that, *as a rule, men are excluded from enuresis from conditions originating within themselves;* there being a few exceptions, however, as the trouble might ensue as the result of cancer, an ulcerative process with destruction of tissue, an operation for stone, etc.

Women frequently suffer from it, and often in a form peculiar to themselves—that is, it is incomplete. They hold their water all right when they are quiet, but owing to a lack of power in the constrictor muscle, the act of rising, sneezing, coughing, etc., causes a spurt of urine with every descent of the diaphragm. You find this particularly in multiparæ. It is a very annoying trouble and difficult to relieve.

Young children often have this trouble and with them *it ordinarily disappears at puberty. It is mostly boys who do this bed wetting*, the enuresis being *principally nocturnal* and giving little trouble during the day.

Treatment.

First, you must *impress parents that this is not a habit;* whipping, frequently resorted to in these cases,

is extremely cruel. You will help to eliminate the cause of the trouble if you prevent distension of the bladder. Keep away fluids during the latter part of the day; and yet the excessive diminution of the total fluid drunk within the twenty-four hours means a concentrated and abnormal urine resulting—of itself a cause of enuresis. *Give the little patients, in the early part of the day, all they want to drink, and toward evening restrict the supply.*

It may be useful to rouse the patient from sleep two or three times at night and have him empty his bladder; even when awake the brain is not conscious of the desire to urinate, and much less is it likely to be impressed during sleep.

With collodion you can glue the prepuce shut at night, which becoming distended, hurts the patient and thus awakens him.

Such palliative measures generally suffice as the trouble ceases at puberty in the great majority of cases.

[Dr. M. J. Stumpf advocates the raising of the pelvis of the child during sleep, sufficient to form an angle of from 130 to 140 degrees with the vertebral column; this position obstructs the passage of urine into the urethra, and the sphincter is not excited. He claims to have cured twelve children and one adult in this way, and says that after three weeks of treatment there need be no fear of recurrence, and the child may be allowed to sleep in the normal position.

Acting upon the theory that the difficulty lies in the deficient tonicity of the lumbar cord centers, which control micturition, some physicians have reported cures in a large per centage of cases, from the stimulating

effect of cold douches applied to the spine, and immediately followed by brisk rubbing before putting the patient to bed. This may be accomplished with any vessel having a spout, or the water may be thrown from a syringe. Or an ice bag may be applied to the back, over the lumbar region. With phlegmatic individuals this line of treatment must be more vigorously pursued than if of a highly nervous temperament.

For remedying continued incontinence in woman, there has recently been offered a surgical device which we may accept as a welcome suggestion; but by no means should it be received as wholly reliable until it has been further tried and proven. This consists in cutting branches of the pudic nerve by parallel vertical incisions, about half an inch long by one-third of an inch in depth, made in the vestibule at either side of the meatus. To retain the severed nerve ends apart, a silk suture—one on either side—is inserted through the upper and lower angles of the incision, and which on being tied brings these points together and practically converts the original vertical incision into a horizontal wound. A catgut suture taken at either side of the silk one, brings the parts into more perfect apposition. Thus we see this gives a result similar to that which is accomplished in the Tait flap splitting operation upon the perineum. A well known surgeon has reported a complete cure following the performance of this operation on a fourteen year old girl, who had suffered distressingly from incontinence of many years' duration; but there also existed an eroded cervix, and in addition to the operation described, the uterus was curetted.]

Remedies are generally very difficult to select, as

very often only the single symptom of bed wetting may be present. The following have been found useful: *Belladonna*, either in small or appreciable doses, *Causticum*, *Equisetum*, *Ferrum*, *Gelsemium*, *Hyoscyamus*, *Pulsatilla*, *Secale*, *Sepia*, *Chloral*, and *Mullein Oil*, gtt. iij. to x, given t. i. d.

RETENTION OF URINE.

Retention of urine is a common difficulty, especially in the male, where the *causes* are very numerous, and may be inherent in the bladder itself, or be situated wholly without that viscus. In cystitis the trouble is with the bladder itself. There may be thickened mucous membrane about the bladder neck ; or calculus, atony, paralysis, or polypus may be the origins of the difficulty. Very often the cause is a mechanical one, there being some obstruction in the urethral canal: hunt for stricture or prostatic trouble. A displaced uterus may press the canal against the symphysis. Or pelvic inflammation may be the cause. But whatsoever may be the seat of the trouble *the cause has its effect either in a mechanical way or acts reflexly through sympathy.*

Diagnosis.

A distended bladder may be confounded with pregnancy, ascites, or ovarian dropsy. Be alive to the possibility of an error in diagnosis. Also *make a sharp distinction between retention and suppression of urine.* You can ascertain this by means of the catheter; or with retention the patient feels as though he would burst; also, if the abdominal walls are thin, in the former case a distinct tumor can be made out, which is elastic on palpation, and pressure thereupon increases the desire to urinate. Also the patient tells you he

has not passed his water for some hours. Yet you can have retention without these symptoms being manifest, *the healthy bladder holding one to two pints or more without danger*, while another—weakened—bladder might contain only a few ounces and be at the point of rupture. In the latter case no tumor would be made out in the hypogastrium. Finally, you must estimate how long the condition has lasted—that is, what stage it is in at present, and when you should see the patient again.

Treatment.

Very many of these causes can be readily removed by appropriate medication, aided by the hot bath or local heat, ice in the rectum, etc.; or, if a catheter is needed, it can be passed with the utmost readiness even by a tyro. *But before giving your remedies, a search for the mechanical obstacle should invariably be made.* There may be no time for your remedies to act, immediate relief being imperative and *delay meaning a ruptured canal and infiltration of urine into the adjoining tissues.*

Excluding all such simpler and remedial cases, we will confine ourselves to the consideration of such as are prone to offer unusual difficulties, and which, indeed, may tax the skill of the specialist; and even he may be wholly unable at times to carry any instrument into the bladder *per viam naturalem.* It will be our endeavor to point out the obstacles in such cases, their nature, and the best way of overcoming them; also to consider certain embarrassments that frequently attend catheterization.

URETHRAL INSTRUMENTATION.—*We consider that urethral instrumentation is an evil and is only to be resorted to in the presence of a greater evil.* Imbued with this idea one naturally inquires, "Can this evil be in any degree mitigated?" Undoubtedly yes! by attention to the following points:

First.—All catheters should be *perfectly smooth.* On many occasions we have had an involuntary shudder as we have contemplated the lot of instruments, soft ones in particular, which the practitioner had been in vain trying to introduce in a bladder: brittle from age, rough and blistered from frequent use, chipped and ragged or cracked from careless contact with other instruments, or from neglect in summer to dust them with some powder to prevent mutual adhesion. How can such tools do otherwise than scratch and irritate the delicate urethral membrane? Be as economical as one may please in all matters save this: never keep in possession—for if at hand they may be used—any but perfect instruments.

Second.—*Cleanliness.* Catheters are like the whited sepulchers of old: they may indeed appear beautiful without, but within be full of all uncleanness in the form of micro-organisms. These are ever ready to light up an acute cystitis, if nothing worse, if the careless practitioner but carries only the eye of such an one within the vesical cavity.

Third.—*Gentleness.* This is a natural qualification with many; with some it cannot be acquired. A rough man may try to be, and may think he is, acting with gentleness, and yet his gentleness is roughness itself. While such an one may never be able to attain this

quality, still much may be gained by constant self-reminding, while handling the urethra, of his natural deficiency; and to this should be added, for all, a thorough anatomical knowledge of the parts involved, a clear appreciation of the nature of the obstacle to be overcome, coupled with infinite patience; for a moment's loss of temper may cause irreparable harm to the patient.

We will confine our remarks to the class of cases in which the obstruction to urinary exit and instrumental ingress is located within the urethra; and we will still further simplify by excluding from this class examples of calculi, foreign bodies, false membrane, polypoid growths, etc. *This narrows the subject down to prostatic hypertrophy and stricture. Given a case in which retention exists, and either from having been called late in the case, or because treatment has yielded only negative results, the time has arrived when medical must give place to surgical methods.*

If the patient has passed middle life we may assume he is a *prostatic*, and the cause of the retention is congestion with increased swelling of the gland that had already encroached upon the lumen of the urethra. We would select a soft rubber velvet-eye catheter (6) of about a No. 16 French in size. These we regard as the safest and best to employ under ordinary circumstances, and *are to be especially recommended to patients for self-catheterization. One great objection to them is their flexibility in some cases*, but this can be overcome, when desirable, by employing with them a flexible metallic mandrin or stylet (7). Such a catheter is carried down the canal *and will likely be arrested, when it has*

penetrated some five and a half or six inches, by the spasm of the constrictor urethræ muscle. Steady pressure will soon cause this to relax and it will advance to its destination. If not, after a moment's trial it should be removed. *The finger should now be inserted into the rectum in order to ascertain the condition of the prostate*, for from the information thus obtained we can make an intelligent selection of an instrument that should the most readily overcome the difficulty, and thus *avoid the passage of a number of catheters, in a blind endeavor to find one that will, by chance, effect an entrance.*

If the examining finger encounter a large, round gland projecting into the rectum, we may assume that the organ is enlarged in its entirety, and, consequently the prostatic urethra is lengthened and at the same time the vesical orifice is carried upward. *This is about the simplest condition*, and the indications are to choose a catheter having a large open curve (8). *Whether this should be a metallic or flexible one is somewhat a matter of individual opinion. We are partial to the former, but it should be made of virgin, not coin, metal, so as to admit of alteration of its curve without kinking; and the eye should be located on its concave aspect instead of laterally*, as is customary, for we have repeatedly demonstrated that in the former position its passage is attended with less discomfort to the patient.

For general use, perhaps the English gum catheter (5) is the best; certainly *it is far safer when used without the stylet, as it should be when that is possible. When not in use it should be kept upon its stout stylet,*

which has been bent to an exaggerated curve, so that when it (the stylet) is removed for introduction, the catheter will maintain its shape; *and this may be greatly aided by dipping it into cold water just prior to its use.* Or, it can be converted into a rigid instrument by using it with the stylet. Of greater importance, however, is *the possibility of increasing the curvature, while it is in situ*, to a degree that would be inconsistent with its passage under the pubic arch, were the curve imparted to it before its introduction. To accomplish this, the catheter should be armed with its stylet and have imparted to it as large a curve as is consistent with its introduction at all, the curve being accentuated in its last inch. Thus prepared, it is carried down to the obstruction and firmly but gently held in position with one hand, while with the other *the stylet is withdrawn half an inch or more*, thus causing the point of the catheter to advance a little (9). The handle is then depressed between the thighs, while the eye glides safely into the bladder. This maneuver may also succeed in the next class of cases.

Should the rectal exploration discover that *the gland retains its normal dimensions, or nearly so, we may conclude that the hypertrophy is confined to the median portion* (third lobe); *or that it is in the form of a tumor or outgrowth in the prostatic floor* by the vesical orifice. In either case the length of the prostatic urethra would be increased somewhat, but not by any means to the extent found in general enlargement; hence a catheter as just described is not called for. Now we have an obstruction occupying the floor of the canal and *offer-*

ing a rounded eminence, step, or bar that must be mounted before entrance into the bladder can be effected. This calls for an instrument so shaped or manipulated that *its point will keep in contact with the roof of the passage all the time*, and hence not impinge against the impediment which is located in the floor. Such an one is the Mercier catheter (10). Before introduction, *a notch or other mark should be made upon its proximal end corresponding to the beak, so that the operator can readily tell in which direction the point has turned* after it has disappeared from sight. For such cases as we are now considering, this is our favorite instrument, and it is the exception that it fails us, though we are sometimes obliged to *still further increase the anterior or upper direction of its point by employing with it a wire stylet* (7) having the standard urethral curve or less. If it does not at once enter the bladder, a little more pressure may be made. If it still refuses to pass, we picture to ourselves the obstruction in the floor occupying a central position or involving one side more than the other. If this is the case, *the passage may be by the side of, instead of over, the obstruction. We would, therefore, withdraw the catheter a little to disengage its point and rotate it slightly on its axis so as to incline its point to one side*, and then advance it. If unsuccessful, we repeat the maneuver, addressing the opposite side.

Still failing, we use the stylet (7). *A word of caution here. We never introduce a wire stylet into a catheter, especially a Mercier* (10), *while it is in the canal, unless we have first tried it outside of the body, and have determined that the wire will not protrude at*

the eye. Not infrequently, as the instrument is carried down the canal, the stylet will be pushed back a little, and this may not be detected until the prostate is reached. It is now that pushing the stylet home may cause it to escape at the eye and plough into the tissues. In view of this, we always apply the finger to the end of the stylet while introducing the instrument. If we are still unfortunate in our efforts, we must now trust to chance, and select a flexible instrument having an olive point surmounting a narrow neck (11). Such an one is admirably adapted to find its own way through the narrow sinuous passage, while at the same time it is incapable of inflicting injury on the parts. *The length of time we devote to these manipulations is determined by the following considerations:* If the canal, especially in its prostatic portion, is tolerant of instruments—that is, if their use does not induce much pain nor provoke much bleeding—we continue our efforts for eight or ten minutes. If, on the other hand, opposite conditions obtain, we think five minutes or less sufficient; for we bear in mind that the present retention is but the beginning of the case and is due to congestion. *A long continued prodding of the prostate, while it may be crowned with success for the moment, cannot fail to augment the congestion*, and hence a repetition of the retention and call for catheterization a few hours later; and this, too, under conditions less favorable than obtained in the first instance.

Turning from prostatic to *stricture* cases, we have a totally different condition to cope with. Here we may have retention *due to narrowness of the stricture itself, or to a spasm of the vesical neck* as a reflex from an

organic contraction, of large or medium caliber, situated in the anterior part of the canal. Usually the latter condition offers no special difficulties, and most any catheter will quite readily overcome the spasm. *Nevertheless, we have encountered examples of this variety in which, even under an anesthetic it was quite impossible to introduce any catheter into the bladder.* Dismissing such cases, however, we have now only to deal with an obstruction located in the canal *anterior to the triangular ligament, for organic contractions posterior to this point are rare at best, except as they recognize trauma as a cause.*

The age of the patient immediately suggests that we have a stricture and not hypertrophy to cope with. *Before doing anything we obtain from the patient some idea of the size of his stream before the present attack.* If we elicit the information that he could void a stream as large as a slate pencil or knitting needle, we may expect to be successful with an instrument of about that size. If, however, we learn that his stream is hardly that at all, but rather his urine passes almost *guttatim*, it will be almost a waste of time and provoke unnecessary irritation to attempt to pass any catheter without preliminary processes. Nevertheless, if proper instruments are not at hand, or we have been unsuccessful with them in finding the opening in the stricture, we may select such a catheter as is shown in Fig. 11, or an ordinary English one (5); in either case being governed as to its size by the data already obtained. For, though the point may not *enter* the contraction, if we are so fortunate as to address it *against* the opening, *steady pressure, with possibly a*

spiral motion, may cause it to dilate so as to admit its point and then its body. Or, possibly a tapering flexible bougie (12) may effect dilatation to a degree that a catheter may subsequently engage.

First, we fill the canal with olive oil, and laying aside the syringe (13), compress the meatus so as to prevent its escape; we then *lay the penis against the pubes and stroke the under side of the organ from before backward so as to force the oil through the stricture*, thus securing thorough lubrication and, perhaps, a slight amount of dilatation by hydrostatic pressure. Taking a bougie à boule (14) or flexible bougie (12) *of a size larger than we suppose the opening in the stricture to be*, we pass it down the canal to locate the contraction. This having been done we select a whalebone filiform guide with its tip bent at an angle as in Fig. 15, and introduce it, taking care *to keep its tip against the floor, until the lacuna magna has been passed.* It is advanced until it meets with an obstruction, which if anterior to the known locality of the stricture, may be a dilated follicle, fold of membrane, or another stricture. In any event we *withdraw the guide slightly and rotate it a little on its axis and again advance it*, and usually it readily reaches the stricture. If it does not at once enter the opening we repeat the maneuver as before, but always rotating in one direction so *as to address the point against the face of the stricture in its entire circumference, and in an orderly manner.*

Failing still, we withdraw the guide and either impart to its tip a *different angle of deflection by bending it over the thumb nail*, or we select another whose

point is already so bent or slightly spiral (15). This one is manipulated as before. If it does not enter we leave it *in situ and pass down to the stricture one guide after another, with or without the angular point, until five or six have been introduced, and then we try advancing one after another.* It is unusual that we fail in finally finding the opening, as is announced by the guide readily passing on to the bladder, though often it may be arrested by an enlarged follicle or be caught in the sinus pocularis. Its withdrawal and rotation readily disengages it, however. If it is in the bladder we carry it onward until only an inch or less projects from the meatus, and generally *we withdraw and advance it a few times to be sure that it is free in its movements*, and that it has not ploughed into the submucous tissues. We now take the projecting end of the guide between the fingers of the left hand, while the right hand threads upon it the smallest sized tunnelled catheter (16) and slips it down to the obstruction, always following the rules for introducing a catheter. If it binds and fails to advance before it has reached the stricture, we are sure *the axis of the tunnelled eye of the catheter does not conform to that of the guide*, and this we rectify by *raising or lowering the handle, at the same time pressing the catheter onward and making traction on the guide.* Indeed, this withdrawing of the guide while the catheter advances we observe throughout the whole procedure, for *if it quite readily yields to traction we are sure that the guide is not kinking or doubling on itself before the advancing catheter. We are exceedingly careful, however, never to withdraw it so far as to disengage it from the strict-*

ure. If we have withdrawn it nearly to the contraction and the catheter has not yet entered the bladder, we unthread the latter and push the guide in again, and begin the process all over.

When the catheter has reached the stricture and the guide is movable, we make gentle, steady pressure—indeed much greater pressure than would be admissible without the guide, for we have no fear now of making a false passage. In a few moments the obstruction yields and both guide and catheter are pushed on together into the bladder, always observing the rules about depressing the handle. When sufficient of the instrument has passed and its position indicates that the eye should have penetrated the bladder, *we remove the guide and an escape of urine confirms its safe arrival at its destination.* We now remove this catheter, *retaining the guide in position, however*, and thread on a larger instrument, which we also carry to the bladder; *this is followed by a third still larger catheter, and with this we draw the urine. We do this so as to secure such a degree of dilatation that if catheterization is again demanded* (and usually it will not be) *we can readily introduce a catheter without resorting to the guides.* And also we have made a long step in the direction of cure. *The amount of time spent in trying to introduce the guide may be half an hour or more if properly done.*

If in either prostatic or stricture cases it is impossible to introduce any instrument within the time limits we have mentioned, we proceed at once to *hypogastric aspiration; or, in cases of stricture, external urethrotomy.* In our judgment *it is better to aspirate as often*

as may be necessary to relieve the bladder, during the succeeding twenty-four or forty-eight hours, before another attempt is made to pass instruments through the urethra. This will give time for remedies to act and congestion to subside, and under these more favorable conditions, if it is still necessary, we may easily do what was impossible before—pass a catheter. You can aspirate several times a day, continuing for several days, and without danger. This is better than to tamper with a congested canal. The needle should be so introduced as to graze the superior border of the symphysis. In old men, with enlarged prostate, if much difficulty is encountered in introducing the catheter, undue persistence might set up urethral fever or an epididymitis.

Turning now from the obstruction itself, we will consider some of the embarrassments that may obtain after the bladder has been successfully entered and no urine flows. What a moment of disappointment and anxiety ! This state of affairs may have several explanations. There may be a clot in the instrument resulting from some blood finding its way into it while its eye was detained in the prostatic sinus; or, in cases associated with chronic vesical catarrh, the thick mucopus characteristic of this condition may cause the occlusion. Again, the whole urine may be too thick from grumous blood or gelatinized pus to enter the eye of the catheter at all. Or, a mass of gelatinized pus or a clot of blood may occupy the lower zone of the bladder, and the supernatant fluid can only be removed by passing the catheter through this stratum. In connection with any of these conditions we remember the dimin-

ished *vis a tergo; for in many of these cases the bladder is organically diseased and crippled, superadded to which is the present overdistension, producing more or less paresis, so that even an urine almost normal in consistency may flow from the catheter in a small, feeble stream.* To meet these emergencies we are always provided with a flexible, probe-pointed stylet (17) to pass down the catheter while *in situ*, as many times as may be necessary to free it from whatever obstruction may lie within. If this does not suffice, we attach a syringe (1) to the catheter by means of a bit of rubber tubing and inject a dram or two of warm borated water. If this fails to dislodge the obstacle we try aspiration by means of the attached syringe, or alternating injection and aspiration, *always remembering that the mucous membrane may lie in contact with the eye of the catheter and be injured by too forcible suction.* If the non-flow is due to altered conditions of the urine in the bladder, or to atony, and *hypogastric pressure by the hand* is not sufficient, we either use the syringe as described until the viscus is emptied, or attach a regular aspirator (18). These methods are generally successful, even when the bladder is occupied by a large clot, *and no attempt should be made to break it up by introducing an instrument for that purpose.*

In conclusion we would emphasize what we have written elsewhere :* " *The indiscriminate employment of the catheter is highly reprehensible.* True, immediate relief can be obtained if it is possible to pass the instrument, but in some cases this provokes undue irritation, *increases the congestion or inflammation, and*

* Arndt's System of Medicine, Vol. XI., p. 249.

seems to perpetuate the tendency to retention, not to speak of the possibility of exciting urethral fever, epididymitis, etc. On the other hand, it may well be claimed that *too much censure cannot be accorded to the physician who will suffer a bladder to become distended to an extreme degree, exposing the patient to the dangers of paralysis, atony, cystitis, gangrene, etc., while vainly waiting for relief from the exhibition of internal remedies.*"

"Neither the degree of distension of the bladder, nor the length of time during which the retention has existed, can alone determine when the proper moment for mechanical interference has arrived. Hence *the critical moment when we should abandon medication and auxiliary treatment * * * can only be determined by a careful consideration of all the factors in each given case.*" "*Avoid the catheter if possible; when it is needed, delay is dangerous; to withhold it altogether is criminal.*"

VESICAL CONCRETIONS AND CALCULI.

(GRAVEL AND STONE.)

The term "gravel" is used to denote the presence in the urinary passage of *concretions of a size not inconsistent with natural voiding thereof.* When they are of such dimensions as to exceed this limit of spontaneous expulsion, they receive the name of "stones" or "calculi." The frequency of the formation of such masses varies considerably in the different countries; they are very common in France, England and Egypt, being not so frequently found in the United States and mostly in the west and southwestern portions. They are also common in Iceland, and are very rare in Norway and Sweden.

Etiology and Pathology.

The explanation of these differences, based upon the lime, etc., found in the natural waters of the various localities, is an exploded theory. In England perhaps much beer and wine drinking is a cause, Englishmen being proverbially rheumatic and gouty, and a majority of all calculi found being formed wholly or principally of uric acid.

Stone is oftenest encountered in the male and is there much more fatal than in the other sex. Of all classes *it is mostly seen in children under five years of age;* next in frequency it is seen between the ages of

ten and fifteen years; during the period *from fifteen to thirty-five years is seen its occurrence in the minimum of cases;* and from thirty-five years on there being a gradual increase as advance is made in life. It is most fatal at the extremes of life, and *is more fatal in the aged than when occurring in the very young. Children stand operations well; they are more fatal when undertaken in advanced life.*

The component parts of a stone are a nucleus, the body and a crust. It starts with a nucleus, inviting crystallization; also it has a body; and ultimately—the patient surviving—it has a crust. *The nucleus and body are always present.* The crust comes in the last stage of the formation and is often absent because death has interrupted the development.

THE NUCLEUS.—The nucleus is something of the relative nature of the string in rock candy; it may be a foreign body, plug of mucus, or clot of blood, and *it is generally the crystalline form of some of the natural salts, especially uric acid and oxalate of lime.* A stone largely made up of one of these two substances is the commonest kind. These crystals occur in varied form, and it has been found that the nucleus of a calculus is a rounded form of crystal, and not one having the ordinary shape which approaches in appearance that of a dumbbell. This globular form occurs under two conditions: when precipitated slowly, and in the presence of a colloid medium, as mucus or any albuminous substance; and if this theory be a correct one, then the presence of colloid material is the initiatory step in the building up of a calculus. The presence of such material within the genito-urinary tract is presumably

due to subacute inflammation of the kidneys, with a consequent excess of mucous secretion. The crystals, preferably those of uric acid and oxalate of lime, as mentioned, mix with this colloid material, and sticking thereto, form a minute mass, and the stone is crystallized about the nucleus thus formed.

THE BODY.—The character of the body of a stone *is determined by the prevailing character of the urine at some one time or at a series of periods of time.* It will be composed of uric acid, for instance, if the urine be rich in uric acid during the time of its formation, or, if both uric acid and oxalate of lime conditions prevail alternatingly, the stone may also alternate in character; and upon making a section, concentric layers of varying thickness are shown, and composed either of the same or of varying substances, arranged like the layers of an onion. The majority of stones are of this type; an exception being those calculi made up of cystin, which crystallize not in a concentric arrangement of strata, but in a manner that shows radiating rays upon section.

THE CRUST.—A stone *may be of large size and still be innocuous, that is there be no traces in the urine of a coexistent cystitis.* Such stones will have no crust, that coming from decomposition of urine, which is the result of an alkaline urine consequent upon cystitis. Or a stone may be innocuous until it is built up to a certain size, and then, producing cystitis from the irritation it causes, there now comes the phosphatic deposit.

The different *varieties of stone* may be divided into two great classes: *primary* and *secondary* calculi. Primary calculi occur in an urine having no strictly ab-

normal ingredients. Such include eight kinds, as follows: (*a*) uric acid, (*b*) urates, (*c*) oxalate of lime, (*d*) cystin, (*e*) xanthin, (*f*) urosteolith (the fatty stone), (*g*) phosphate of lime (bone earth, not the phosphate of decomposition), (*h*) carbonate of lime. The secondary calculi are composed of the triple phosphates of lime and of ammonio-magnesia.

Uric acid comprises five-sixths of all stones, the uric acid diathesis being comparatively common. Uric acid gravel presents little irregular or smooth concretions with more or less pigmentation. Various shades of yellow, brown, red or fawn are seen in the stones, which are of oval or circular outline and disc-like or flattened. The gross surface is generally irregular, but the individual mammillations are very smooth and polished. Or an uric acid stone may be quite smooth with but occasional irregular or rough spots. Again, some are almond-shaped, with more rounded edges; or they occur in a pea-shaped form. *But all have the characteristic reddish tint.* Of all stones *they are second in hardness, breaking with difficulty, and into sharp, angular, splinter-like fragments.*

Urates occurring in the bladder are not common, but they may often form the nucleus of a calculus. There is some uncertainty as to just what makes up the urate of soda and such stones; *they are of a soft consistency and generally found in young children.* Youngsters are very subject to short attacks of fever, when the urates are deposited in the kidneys, and descending to the bladder the calculus is then built up.

It is comparatively *a rare thing to find oxalate of lime forming the entirety of a stone, but quite fre-*

quently it may alternate with uric acid in the formation of a mixed calculus. When occurring alone it is of oval or rounded form and has been called the "*mulberry calculus*," from its resemblance to that fruit. *It is of dark color*—brown or blackish. *It is the hardest of all stones and breaks into extremely sharp fragments.*

The *cystin* stone is of very rare occurrence, and the *xanthin* and other calculi practically need not be considered.

The determining cause of uric acid and oxalate of lime stone, which we study particularly, may be the excessive proportion of precipitating ingredients in the urine, as a *too concentrated or too acid urine interfering with the solution of the urates.* Deficiency of sodium chloride may also be of influence. Foreign bodies, decomposed urine, etc., lead to the formation of the triple phosphates calculi. *Before using a rubber catheter always test its elasticity; a piece of it may break off and remain in the bladder to form the nucleus of a stone.*

Symptoms and Course.

The symptoms of stone in the bladder are similar to those of cystitis, irritable bladder, and neuralgia, or spasm. *Increased frequency of micturition, attended with pain, is the most pronounced external feature.* The pain may occur with the last gush of urine, or just after all has ceased to flow. Or the pain may attend the whole act, reaching its acme at the close. Generally the stone lies on the floor of the bladder and is rolled back away from the vesical neck until it is

seized by the final contractions of the viscus in the effort at emptying, and squeezed forward toward the neck of the bladder at the end of the act of micturition. *But this characteristic symptom of pain at the end of the act may not be present.*

The formation of *secondary calculi* is largely due to decomposition of urine due to chronic cystitis, an enlarged prostate or other interference with emptying of the bladder being often the cause of the latter. *When the prostate is enlarged there is formed behind the bladder neck a pocket in which the stone lies*, and during the act of micturition it is forced against the prostate and not against the vesical orifice.

There may be *a sudden mechanical interruption of the stream* during urination, the stone lying against the internal meatus urethræ and thus forming an effectual ball valve plug; as the stream ceases it drops back perhaps to be immediately thrown up again, or remaining quiescent until the patient has relieved himself. But *spasm of the bladder or urethra may simulate this very closely*, and also there may exist some pocketing of the bladder as described and yet without this feature of interrupted stream.

The presence of *blood in the urine* is also an important symptom. But a large stone may be present and the discoloration not be noticeable, or much bleeding occur with a small stone. The character of the surface of the stone is a factor here, also how violent motion the patient has engaged in. Stones may be very rough or very smooth, and the presence of many small ones would cause to the bladder less irritation than would a large one.

There are also objective symptoms to be noticed: the presence of more or less pus in the urine would show evidence of chronic cystitis; the less the irritation, of course the less would be the amount of pus.

Diagnosis.

We must differentiate between simple cystitis, spasm, neoplasm and stone—*by elimination.* First, a physical exploration is necessary and we are obliged to pass an instrument. *Stone in the bladder has often been treated for a simple cystitis* and the presence of the calculus not determined, because no exploration of the bladder had been made. *In using the searcher* (19) *we must first have a certain amount of fluid in the bladder.* The ordinary sound (4) is not a good instrument with which to explore for stone; the beak is too long, causing the point to make too great an excursion and to touch the bladder wall when the handle of the instrument is rotated between the fingers. Because it is not desirable to touch the bladder wall with the point of the searching instrument, this is the reason for the presence of the fluid, but we should see that we do not have the viscus too distended, else the stone is harder to find. The searcher should have a lumen and be furnished with a stop-cock, enabling us to let out or inject more fluid as we continue the examination.

Have the patient hold his water for one to one and a half hours, when ℥j to ij will have accumulated. If he cannot do this, on account of excessive irritability, introduce through a catheter, by means of the bag syringe (1), ℥ij to iij of fluid. If you fail to get the *sharp click of the instrument against the stone*, inject more—perhaps

ʒvj in all—or empty the bladder and then make another trial. Failing still to detect its presence, you may now try with the point of the s archer against the bladder walls, as *the stone may be encysted.* But do not engage in this latter maneuver until you have made a thorough search for a loose calculus, pulling the instrument toward you from the posterior aspect of the bladder, and turning the beak from side to side meanwhile, thus covering systematically the whole inner surface of the organ. *And don't say, "No stone!" upon the result of a single examination.* Should you strike the stone you will hear a little clear click as described, after getting which, *and positively before resorting to an operation*, you must then or at a later period, *repeat the examination, looking to the handle of the searcher in order to make sure that the sound did not arise from that striking against a button, your watch-chain, etc.* Also, if a brother physician be present, turn over to him the handle of the instrument and let him confirm the diagnosis. There may sometimes occur a calcareous deposit upon the floor of the bladder and as the beak of the searcher is drawn over this trigangular space, bound by the ureteral openings and internal meatus urethræ,—the *trigone vesicæ*—a grating sensation is felt by the hand of the surgeon; but this is quite distinct from the clear click imparted by contact with a stone.

If unsuccessful in our efforts to find a calculus, we must look for the existence of neoplasm, cystitis or spasm; and if our further efforts in these directions are yet unsatisfactory, we will go back once more to the original idea of stone, but *examining our patient this time under anesthesia.* Do not give up the search if you

feel satisfied that a stone is present. *Stones in the bladder are the most elusive things imaginable; even immense ones may persistently elude the searcher of the expert and yet a mere tyro succeed in striking it the very first thing. But never use the knife upon a patient unless you can find the stone just before beginning to operate*, no matter how many times you have previously found it. The uric acid or oxalate of lime stone gives a very clear ring, the phosphatic stone a less pronounced one. By turning the beak of the searcher down, hooking it over the farther side of the calculus, and now repeatedly tapping the superior surface by short turnings up and down of the point as you withdraw the handle, at the same time noting at the external meatus urethræ the distance the instrument has moved, and where it is when the stone is lost—all this will enable you to tell the approximate size, and contour of the stone, and whether its surface be very rough. An *uric acid calculus presents a smooth surface;* if the instrument *feels as though it were being drawn over sandpaper it is probably a phosphatic stone* we are dealing with. *The character of the prevailing crystals in the urine at the time will shed light upon the kind of stone we may expect.*

Treatment.

To Dr. Henry I. Bigelow, of Boston, is due the credit of revolutionizing the old crushing operation, and he gave to his improved procedure the name of *litholapaxy*. It used to be the custom to leave the crushing instrument *in situ* only for a minute to a minute and a half at a time—crush, remove instrument, reintroduce, crush

again, etc. The result was that sharp-edged fragments of stone were left behind, to irritate the bladder as it squeezed down upon them.

LITHOLAPAXY.—Dr. Bigelow advised the careful removal of the fragments following the crushing process, and his method is to let the operation extend over hours if necessary—that is to finish the job at one attempt. We will illustrate his method by these fragments of coal, which may be readily seen in this bottle of water; with the lithotrite (20)—the crushing instrument; and with an accompanying irrigating apparatus (21). The lithotrite is supplied with a screw in the handle; and it has both a sliding and a screwing motion of the jaws. By means of the first, the calculus or large fragment is carefully secured preliminary to breaking it. With the syringe (21), which is attached to a metallic evacuating tube having an eye in the end, the fragments, after crushing, are set into a whirl; you then aspirate and catching them "on the fly," suck them out of the bladder and into the eye of the tube, from where they are carried into a little glass receptacle, in which may be seen your success at fishing. *If the bladder wall is caught into the eye of the evacuating tube by the suction, the sensation imparted to the hand upon the bulb is quite like the bite of a fish.* If the aspirating apparatus becomes plugged by too large a fragment for the metallic tube to carry, detach the instrument, poke the fragment loose, go back to crushing again, etc. You can tell when large fragments are left by hearing them click against the aspirating tube.

Of course it is much easier to introduce the straight evacuating tube within the female than in the male

bladder, but it can be done in the latter case, by observing these directions: Make firm *traction upon the penis* to obliterate the depression of the urethral bulb, and *keep the point of the instrument directed toward the roof of the canal.* Pass the tube directly down into the urethra until it is thoroughly within the bulb, and goes no further. Withdraw it about a quarter of an inch, make your traction, and push. You will appreciate when the point has engaged within the opening of the triangular ligament, and still continuing your traction, the penis will now come down if the handle of the instrument be depressed and a spiral motion imparted at the same time.

This operation is a very successful one, "the longest case I had remaining in bed but from two to three days." Its limits are largely "mercenary." It requires a greater degree of skill upon the part of the surgeon than does the cutting operation, and yet you will get a larger fee for the latter. In doing a litholapaxy you have to do continuous "hunting" for the stone and fragments, and you must be methodical in your exploration. Also there are many details concerning the manipulation—a minute technique governing the opening of the blades, picking up of the fragments, etc., as, for instance, trying a side-turning motion to make sure the bladder itself is not caught within the blades. So it has been relegated to a minority of cases since the supra-pubic operation became so much in favor, the mortality following this procedure being small.

Stricture, or an enlarged prostate, for instance, might not permit crushing; yet, in case of an existing stricture you might cut that and enlarge the meatus. But

you can do nothing with an enlarged prostate. If you are wedded to the cutting operation, the kind of stone present has no particular bearing upon the matter, but if you contemplate crushing, the character is of considerable importance. *Oxalate of lime and uric acid calculi are difficult to crush*, and the kind of fragments into which the stone breaks makes a difference—that is whether the stone *crumbles or splinters. Sharply pointed fragments are more of an irritant when left behind in the bladder, and more difficult to remove through the evacuating tube. Oxalate of lime or uric acid calculi, over one and a half inches in diameter, it is impracticable to crush.*

For the crushing operation you must have ℥vj to viij of fluid in the bladder—℥iij to iv in while breaking the stone, and another ℥iij to iv thrown in in the washing, to stir up the fragments in order to catch them. If the wall of the viscus is greatly weakened from a long existing cystitis, or if ulceration has thinned it in patches, *force is likely to rupture the bladder; therefore the organ must tolerate ℥x to xij in order to make the operation safe. And even under anesthesia, spasm may frustrate a contemplated litholapaxy.*

SOLVENT TREATMENT.—The *solvent treatment* has been carefully studied, many experiments having been made to ascertain the effects of different baths upon the various calculi, with results that are very unsatisfactory so far as vesical stones are concerned. If the patient suffers from a renal concretion and is not willing to submit to a litho-nephrotomy, he might try "*Piperazine*," a preparation upon the market. This has wonderful solvent effects upon uric acid concretions and is not de-

composed within the system. I have seen the best results from it, however, in phosphatic deposits, for which it is not advocated. It is prepared in five dram vials, one dram of which is to be taken in 24 hours, dissolved in one pint of filtered water, kept at a moderate temperature. Or half fill a glass with some of the pint solution, adding to it vichy or spring water.

Washing the bladder with *Nitric Acid*, etc., has been advocated, but *all this is simply dilly-dallying when the operation is so simple.* So as a general rule I would advise you to *waste no time with any solvent treatment.*

CASE NO. 5.

Stone is the result of some preceding morbid condition. *Calculi in the urinary tract, so small that they cannot pass without artificial aid, are called gravel;* if too large to thus pass, they are called stone. Now most stones have a *nucleus, body and a crust.* They are arranged in concentric layers, like an onion, these layers being composed alternatingly of different urinary salts, mostly *uric acid* and *oxalate of lime;* and there may be a crust of phosphates outside. Calculi are the result of a vitiated condition of the system, causing an excess of salts in the urine; or there is diminished solvent power of the urine. The condition is similar to an over-sweet solution of sugar inviting crystallization, as is seen in the string of rock candy.

Stones are generally formed in the kidney; then we have *nephritic colic* following, the degree of severity being according to the size of the calculus passing from the pelvis of the kidney into the ureter. The pain stops as soon as the stone drops from the

ureter into the bladder. If the stone is voided that ends the case. If not, it is now a foreign body in the bladder, sets up irritation and the result is that catarrh of the bladder or cystitis is lighted up. There is present an excess of mucus or muco-pus, which is alkaline. Uric acid is changed into carbonate of ammonia, causing alkaline urine and a tendency to precipitation of the phospho-magnesium salts; these are precipitated and adhere to the calculus, forming the crust. The original nucleus may have been oxalate of lime, but the excess of uric acid in the bladder in people of uric acid diathesis, causes the stone to be built up of uric acid.

A stone may remain years in the bladder and not excite cystitis, but as a rule cystitis comes sooner or later, and following it the phosphatic deposit forming the crust.

You must differentiate from prostatic irritation, inflammation of the neck of the bladder, and cystitis. In all of these the patient complains of vesical symptoms.

This man is 45 years old.

Diagnosis.

Frequent micturition, small stream; no venereal disease nor stricture apparent. First irritation was noticed twenty years ago. Worse till two years ago; treated then and no stone found. Stone found a year ago; stream stopped, and great pain. Renal colic two years ago last January. Never obliged to use catheter.

We can't say here if the stone dates from twenty years ago or from the attack of renal colic. An uric acid diathesis may have caused irritation long ago. Search

in the history for an attack of kidney colic in all cases of stone, to see if there exists a reasonable supposition of stone having been formed in the kidney, and passed on to the bladder; also ask if the patient ever passed gravel. *Phosphatic stone grows rapidly, uric acid slower, and oxalate of lime still slower.* No history of cold here, and the patient is too young for prostatitis. The patient is now urinating every hour or so, and has severe pain, particularly upon involuntary straining at the end of the act. He empties his bladder, and then the organ squeezes down upon the stone itself, which is crowded against the neck of the bladder, which is the tenderest part. This may cause laceration and bleeding, especially if the stone is rough, though the damage is ordinarily insignificant.

Sudden interruption of the stream is one of the pathognomonic symptoms of stone. It is caused by the stone being washed against the orifice and acting as a ball valve. The stream stops and the stone drops back. These interruptions are generally attended with pain. The stone may be too large to be thrown against the bladder. It may be pouched or encysted. A little tumor growing from the back of the prostate, with a neck, may stimulate it; but a foreign body is present in either case.

Pain is produced by anything jarring the patient, as riding over a frozen road, stepping off the curbstone or the last step of stairs. He may be conscious of the stone moving from side to side upon turning over in bed. Some symptoms may be absent; and one may *have stone with very slight symptoms. But in all cases of chronic cystitis explore the bladder*, if disease has

been long lasting, before resorting to remedial treatment. Otherwise you lose valuable time. The patient undergoes long and unnecessary suffering, more profound cystitis is allowed to develop, and the chronic inflammation may have travelled up the ureter and *fastened upon the kidney, giving nephritis as the result of procrastination.* This materially complicates the case.

Treatment.

I will use an anesthetic here; ether or chlorofrom is the question? Give no ether if the kidney is diseased. If organic heart disease be present, and you are afraid of chloroform, use nitrous oxide gas. This is more expensive and you have less facilities for its use, but it is safest. He evidently has nephritis.

The *supra-pubic operation* was discarded many years ago, but is to-day the dominant cutting operation. *Lithotrity* was used for some time after the supra-pubic operation was abandoned. *Litholapaxy* is the crushing operation with removal of fragments by aspiration. We might do it here, but in view of the kidney being involved it is better to do the supra-pubic, as it causes less irritation.

SUPRA-PUBIC LITHOTOMY.—Raise the bladder *to get as much space above the pubes as possible uncovered by the peritoneum*, which is reflected only part way over the anterior surface. It was customary to introduce a Peterson's bag (38) in the rectum, and inject ℥viij to xii ounces of fluid in the bladder. The rectal bag is now discarded by many, and so great distension of the bladder is unnecessary.

You can do the operation successfully without more than four ounces. I don't think the rectal bag increases the distance, but it does *raise the base of the bladder* so that its floor is more accessible to the eye and finger.

The bladder is washed with a boracic acid solution, gr.vii to x to the oz. In injecting the bladder and the rectum the amount is a question of nice judgment. I have found that twelve squeezes of the Davidson bulb (40) will answer nicely in the rectum. Into the bladder I will inject as much as I think it will hold. *Normally the amount is one to one and one-half pints*, but with a cystitis and subseqnent weakened wall this amount would be risky. *As a guide inquire how much urine he has made on his best days, when he has held it as long as he can.* The weather has considerable influence in these cases; some bright and sunny day should be selected for the experiment. Also, in injecting use a bag (1); that will indicate against the hand any resistance from a spasm. When the person coughs the fluid is sent back into the bag of the syringe and is appreciated by the hand.

Make the incision in the hypogastrium, cutting well down onto the pubes, between the recti muscles, reaching the epi-vesical fat. You do not know where the peritoneum is; it may be reflected high or low on the bladder, *so keep close to the pubes.* Now I will go back and tease the fat off the bladder, pushing back with it the peritoneum if it is in the way.

Diagnose the position of the bladder by the sound; or it is a fluctuating tumor under the finger. Hold it up with a double ligature or tenaculum, cut through the

wall, and enlarge the incision with the finger in the bladder as director. Diagnose the position of the stone, grasp it with the forceps (39) in the long diameter. Don't drag a stone through too small an opening, and use only moderate traction. Enlarge the incision, no matter to what extent, to accompish this, making transverse incisions if necessary. You are at liberty to cut the insertion of the recti muscles if need be.

The searching instrument (19) has a short beak and is perforated so you can inject fluid through it. The presence of a stone is indicated by a click; and from the clearness of the ring you can determine if it be soft or hard. With the searcher you can also determine the approximate size. The curve of the searcher is so small you can bring it direct to the horizon and down, without sweeping it up to the belly. If the click is very dull you will judge it a phosphatic stone, or possibly uric acid with a phosphoric acid crust. *Stones the size of a cake of soap have escaped detection by the most skillful, so it is a rule to diagnose it by the click, after the patient is under the influence of the anesthetic, before proceeding with the operation. Failing in this do not operate.*

Five ounces is all his bladder will hold of this warm boracic acid solution. He doesn't empty his bladder, having residual urine, so his full capacity is probably more than ℥v. Use a rubber bag (1) or fountain syringe (3) for injecting, as a piston jerks.

This rubber bag (38) is placed in the rectum, a Davidson's syringe (40) attached to its tube, water injected and the end of the tube ligated to retain the fluid injected. The bladder is now injected, the only pressure

felt upon the bag (1) being from the descent of the diaphragm when he groans; there is no bladder resistance. Spasm sometimes throws the water out.

In making your incision, place a sound in the bladder and have the handle depressed to cause the point to ride up externally. The bladder is now held up and our incison made with a sharp pointed bistoury (22). A gush of water generally appears as the bladder is entered or soon afterwards. *Be chary about enlarging the incision upward on account of the peritoneum.* Here we find a stone of about two inches by an inch and a quarter, which is removed and the bladder washed. The stone has a phosphatic crust. *You can sew up the bladder, leaving the external wound open, or leave the bladder wound open entirely*, and the external wound, to the bottom, so that any urine may come out. You have to look out for infiltration. *If not sutured, in 48 hours the lips of the bladder wound will often have come together;* later the drainage tube may be removed and the external wound drawn together with plaster.

A little vessel at the neck of the bladder, cut by the last incision downward, is now ligated. A catheter is placed in the lower angle of the wound for drainage; which we will see if efficient by squirting water in.

Here I will put no stitches in the bladder, simply leaving the catheter on the floor. But I put a *stitch through the integument and the catheter to keep it in place;* and will leave it in for a few days. The upper part of the external wound is now closed, the catheter projecting through the lower, to carry off any urine and to prevent any infiltration.

This is the man whom we operated for stone. About half this man's urine now comes through the abdominal opening, and only when he urinates. This *fistulous tract* may remain open quite a little while, but *I have never known one not to heal.* An excellent plan is to cauterize it and thus stimulate granulation, which I will proceed to do. *You can build up a little cautery bead on the end of a small probe, by melting lunar caustic in a test tube over the spirit lamp, and dipping the end of the probe in it.* Sometimes the drainage, with one or two catheters, won't work well no matter how hard we try to make them. I have sometimes used the fistula for *permanent drainage* for months and even years, in cases of chronic cystitis. Then, at the end of that time, the patient was improved enough to close up the opening. You have no granulations to deal with, but a *pseudo-membrane is formed, which must be destroyed* by the cautery, or the opening enlarged and curetted. This man has not urinated since 10:30 A. M., and so if the caustic goes into the bladder, there is urine in there to dilute it.

This case of *supra-pubic lithotomy* operated two weeks ago is now ready to go home. It presented a feature unique in my experience. The day following the operation he had a little temperature, rejected food, and complained of a distended feeling—said he was "all blown up." Evidently there followed a little vasomotor paralysis from the shock, and there was no peristalsis of the intestine. Introduction of the *rectal tube*, and an *enema of warm water, glycerine and turpentine* (tablespoonful glycerine, teaspoonful turpen-

tine, to a quart of warm water and soapsuds) did not relieve him. Finally the stomach tube was introduced, when he flattened out like a pricked bubble, and has had no trouble since then. He also had *Asafetida*, *Carbo Vegetabilis* and *Lycopodium*.

CASE NO. 6.

This man, suffering from "bladder trouble," says he has had many doctors, and that his affection has been variously diagnosed as neurosis, cystitis from cold, etc.

Diagnosis.

He suffers from *pain on micturition*, especially at the *end of the act;* there is also *frequent* micturition. *Jarring* is not painful. There is no urethral discharge and no especial *tenesmus*, although there is pain at the end of the act of passing his water. I will now *explore the bladder*, and I think that you gentlemen upon the front seats can plainly hear the *click of the stone*. I will now empty his bladder through the lumen of the searcher (19); I want a definite amount of fluid in his bladder and will inject a *borated* solution. The urine withdrawn looks *purulent and shreddy*. We will now introduce a soft rubber catheter (6) and wash the bladder with a warm boric acid solution, injecting by means of a bulb syringe (1) attached to the end of the catheter. Detaching the syringe, now we let the injection run out. We will repeat this two or three times. Ordinarily in *washing the bladder*, ℥ij, not more than iij, is enough; nothing is gained by distending the bladder.

Treatment.

EPICYSTOTOMY (SUPRA-PUBIC LITHOTOMY).—Our object is to *raise the bladder* in the pelvis, at the same time raising the *parieto-vesical fold of peritoneum*, to get more working space above the symphysis, so we may get into the bladder below the fold and thus *without cutting the peritoneum.* (See large plate in front.) To raise the fundus, a *rectal bag* (38), although going out of date, is often used. But if the bag be of doubtful utility in raising the bladder in such a way as to increase the operating space, as mentioned, yet it does *lift the base* of the bladder, so that the finger introduced through the hypogastrium would more readily get to the bottom of the bladder where the stone is lying.

So, after introducing the collapsed rectal bag (38), I distend it by injecting water through a Davidson syringe (40); we then double the tube and tie it to retain the injection. You might ask how I know how much water to inject? I have tested the bag and know how big it is when I get in ten "bulbs" of the Davidson syringe; so I have given ten squeezes, which I know to be safe.

The amount of fluid that can be safely introduced into the *bladder* varies greatly—according to the *irritability* and amount of *organic disease.* There is not much irritability here, as he retains considerable of his own water; and you can guage also by the *resistance offered to the hand upon the bag of the syringe* (1). But if it is an old *prostate* case that you are dealing with, where his water is passed frequently, it is not safe to inject too much, because of the *danger of rupture.* Also, be-

cause of varying degrees of strength of different diseased bladder walls, you have no definite guide as to the length of time and degree of distension to which you can go before the viscus will rupture; one man's bladder safely holds two quarts while another is at the point of rupture when it has ℥vj in it.

Everything being now ready, I make a *cutaneous incision in the median line, right above the pubes.* Getting through the fat, the *fascia* is now divided, and the separation of the *muscles* completed by the fingers, and by dry dissection with the director (27).

The *epi-vesical fat and the peritoneum are now pushed up out of the way*, if encountered.

We have now reached the bladder, and *before making our incision therein we will take a stitch through the walls on either side, giving us the sutures to hold it up by*, making it tense, and also the elevating of the edges of the wound preventing our injected solution from running out. Now we introduce a perforated searcher (19) through the urethra, and *lift the bladder up into the wound.*

We make our incision into the bladder and remove the searcher. We will *enlarge the bladder wound* a bit, putting a forefinger underneath and using it as a director as we cut with the scissors.

Next the forceps (39) are introduced to *grasp the stone*, the left index finger guiding. *Be careful not to catch the walls;* the left forefinger, or that and the second finger, spread apart, see that the walls are free. *Better enlarge the opening rather than try to get a stone out through too small a hole.* Here comes our stone—about one inch in diameter. We now make a

careful *digital* examination in order to see that there are *no more*.

Examining our stone more carefully we find that it is a very peculiar mammillated calculus—almost stellate—of the *phosphatic* variety; it is very soft and would have been an easy stone for the operation of *litholapaxy*.

As a rule I have put no sutures in the bladder wall; it is similar to vaginal hysterectomy—leave alone and the parts will fall together and heal up themselves. But you may suture if the bladder is not much diseased, and *I think perhaps it is better to suture* even if there is much disease. Having first irrigated with boric solution through the abdominal wound, I will suture in this case.

The great danger in these cases was urinary *infiltration* into the cellular tissue between the pubes and bladder, and *peritonitis;* but this is obviated by the use of catheters for urinary drainage. We use *two for safety*, and it also gives us a chance to *irrigate from without*, instead of through the urethra—what we inject through one comes out the other. Then we reverse the current. The products of inflammation settle in a little pool of water at the bottom of the bladder and are thus washed out. And in *chronic cystitis* we want to rest the bladder, not distend it.

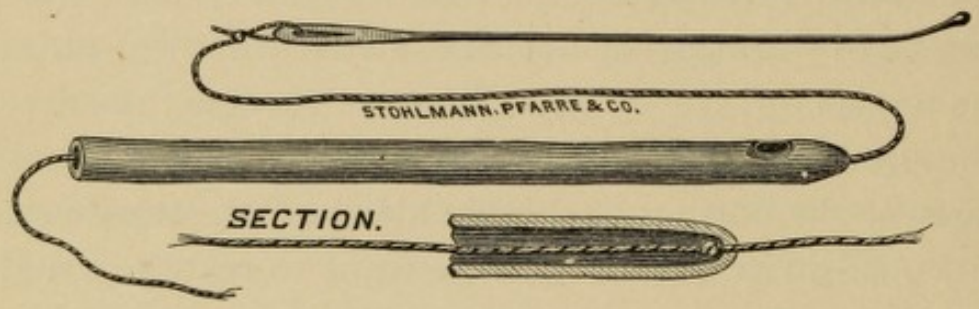
The rectal bag should be removed before arranging our catheters, as the floor must drop before we can see how far in we want them.

Our *sutures will not include the mucous membrane* of the bladder. Placing the finger within the bladder as a guide, we sew the catheters to the integument with a stitch of gut; they reach to the floor. Now we bring

the sides of the bladder wound together. *I will not fully close the abdominal* (outer) *wound*—will only suture it at the upper angle, and will introduce a small drainage tube into the pubo-vesical space so that it will give any urine an abundant opportunity to *leak out and not burrow*, thus preventing *infiltration.*

CONTINUED DRAINAGE.—The urethra and bladder generally will not tolerate drainage through a *catheter left in the penis;* the trouble is the *neck* of the bladder will not tolerate the catheter if you want to drain for two to three months. Also, the urine will *well out the top* in preference to coming through that way. A few surgeons prefer to drain *through the perineum*, which requires but a small incision. But the patient keeps himself wet, and the iodoform or bichloride gauze dressing has to be constantly renewed

[The appended illustration itself sufficiently explains Keyes' device for applying perineal drainage through the



smallest possible perineal incision, after a supra-pubic cystotomy.

But Dr. R. H. M. Dawbarn, of New York, has directed attention to a simple and reliable method for securing automatic supra-pubic drainage of the bladder, which should do away in great measure with the necessity for a double cystotomy—the lower or perineal

of which is made for purpose of drainage only. The following description of the same will be readily understood by contrast with the douching apparatus pictured on page 20:

The essential parts comprise simply a fountain syringe, several feet of additional small rubber tubing, and a soft rubber catheter (6).

(*a*) The clamp, which comes with every fountain syringe, is removed from the end, and is snapped upon the side of the tube, close up to the bag, so as almost to close it, permitting flow only drop by drop.

(*b*) Taking the place of the stop-cock in the apparatus (3) on page 20, the connection is made by a T-tube of glass, metal or vulcanite; (or, in lieu thereof, the joint can be made by cuttiug out a circle from the side of the tube of exit from the bag, sewing the end of a preferably smaller tube to the edges of this small hole, making tight with rubber cement made by dissolving gutta-percha tissue in chloroform, to saturation, and strengthening by wrapping with narrow strips of rubber adhesive plaster).

(*c*) In the place of the evacuating tube leading to the receptacle—as pictured in the douching apparatus—is a tube leading to the bladder; or, better, to the end of this is secured a short glass tube, and to the other end of the glass tube, a catheter, which leads to the bladder. The walls of a catheter are thicker than those of ordinary drainage tubing, and hence the catheter is less likely to become flattened if accidentally sharply flexed at the wound or elsewhere. Where it escapes from the bladder, pin its side with a safety pin to the dressings.

(*d*) The evacuating tube will take the place of the catheter, shown in the grasp of the fingers in the cut, and it will be composed of the end of the exit tube of the syringe, farthest from the bag. An absolutely essential and self-retaining "trap" is made in the evacuating tube by either coiling it into a circle a short distance from its end, and so holding it by snapping on an elastic band, or by tying a single knot in it; in either case making a circular trap not larger than three inches in diameter. Beyond this we must be careful to have no other bends or kinks.

From the reservoir the water trickles down, in as nearly a straight direction as possible, until the trap becomes filled: as soon as overfilled it siphons off with a little rush: this in turn makes a partial vacuum above the trap, and the urine in the bladder is drawn up to fill this vacuum: and thus a second siphon is created, the fluid running freely from the bladder until it is empty. This process of intermittent siphonage repeats itself at regular intervals of any desired frequency. As a rule, if the flow from the reservoir be no faster than from one to two drops a second, this will suffice to prevent a bladder from overfilling; and at this rate of flow it is not necessary to replenish the bag of the fountain syringe oftener than once in several hours.

It is better to cut an extra eye opposite the original one, in the large-sized soft catheter used,—which runs through the supra-pubic wound to the bottom of the bladder—thus obviating total obstruction from sucking in a fold of mucous membrane.

Should we wish to wash out the bladder, it is easily

accomplished without disturbing the wound, by moving the clamp to a point below the T-connection, when the contents of the fountain syringe will run freely into the bladder; cease pinching with the clamp and the fluid will as vigorously run by siphonage out of the bladder and into the bucket below.

If we wish to ascertain the exact amount of urine drained away, or to analyze that urine undiluted by fluid from the reservoir, insert a wash bottle—with its usual equipment of tightly fitting rubber stopper, and two glass tubes—in a break at any point in the tube leading to the bladder.

It makes no difference in the working whether the bag be hung above the patient or lower.]

TUMORS OF THE BLADDER.

Tumors occurring within the bladder are classified as *homologous* and *heterologous*, according to whether or not they are analogous in tissue to the structure found in that locality, or of a tissue unlike that normally found there.

Pathology.

Of the homologous variety the *myxoma or polypus* is of soft consistency, and found almost exclusively in children, up to five years of age. It is a rare form.

The *villous type is that most frequently encountered*, and is not a heterologous tumor as formerly classified. It is a fimbriated papilloma; it is something like a piece of red velvet; or better, it resembles seaweed, having many delicate fimbriæ or villi which are not appreciated unless floating in water. Under the microscope you see it involves only the mucous membrane. The base consists of a delicate connective tissue with which a few smooth muscle fibers are intertwined, and from this base—which you cannot recognize by a searcher, nor would it be appreciated by a finger passing over it—spring up the villi, giving the effect of a velvety "nap." These villi may bifurcate and subdivide many times. This tumor is extremely rich in its supply of blood vessels, and therefore we say *the freer the bleeding the more likely is the tumor to be a villous one.*

The *fibro-papilloma* goes deeper than the foregoing, extending into the sub-mucous tissues. It has also a thicker base and contains large quantities of smooth muscle fibers, which form trabeculæ, and from these extend secondary trabeculæ, the whole being covered with a basement membrane supporting columnar epithelium, and from the latter come the fimbriæ. *The solid basic character is the predominant feature*, the villi being here incidental. *This tumor you can readily feel*—the top like a mushroom with a pedicle like the stem.

In the *transitional form the solid character still more predominates*, but unlike the condition observed in normal tissue, the fibers are irregularly scattered, and within the spaces thus formed are found cells of an uncertain character; they are not like the normal cells of the tissue, nor yet do they exactly correspond to those of cancer or sarcoma. Also these cells tend to form themselves into groups. We cannot call this form of tumor heterologous nor yet strictly homologous. Therefore we class it separately. If left to itself it might develop into a carcinoma or sarcoma, possessing as it does a tendency to retrograde metamorphosis.

The foregoing are then the four forms of the homologous or non-malignant bladder tumors, viz: *myxoma*, *villous*, *fibro-papilloma*, and *transitional.*

The *heterologous* are classed as follows: *epithelioma*, *scirrhu*,—which is rarely found in this locality—*encephaloid*, *melanotic*, and *dermoid cyst*; which latter is extremely rare. The encephaloid form lacks strict anatomical demonstration.

Outgrowths from the prostate gland are excluded from classification with bladder tumors proper.

Some authorities claim that three-fourths of all kinds of tumors of the bladder are found about the neighborhood of the ureters. But in the course of the observance of a large number of cases, Sir Henry Thompson found them *mostly occurring either upon the fundus or in the neighborhood* of the upper zone.

Symptoms and Course.

In the case of tumor of the bladder *of the innocent variety, bloody urine is what sends the patient to the doctor.* The tumor *may* have existed for months and even years, with symptoms of an increased bladder irritability and yet *no hemorrhage. This symptom, with actual pain, etc., is reserved for a later period in the history of the case.*

In cases of heterologous tumor, bleeding does not become a symptom until the condition has advanced to the stage of ulceration. First there is the pain, *a sense of discomfort in connection with the bladder or rectum, the hematuria being a final symptom and one indicative of extensive disease.* Various grades of abnormal conditions of micturition precede the bleeding.

Diagnosis.

Tumor of the bladder, especially of the innocent variety, is the most frequent cause of bloody urine. Particularly is this condition to be suspected if the hemorrhage is very severe and the patient much prostrated. Yet you must sift the case and *determine that the blood does not come from the kidney or some other*

locality; you must also exclude the presence of stone, ulceration of the urethra, etc. Sometimes the bleeding is peculiar, which is strong presumptive evidence of of vesicular origin: *the first show of urine is clear or but slightly bloody*, but at the end of the flow the water is richly and brightly colored red. Also it is to be remembered that *the absence of pain upon the jarring of the patient tends to exclude the diagnosis of stone*, and with the latter difficulty there is also the peculiar character of the micturition.

The condition of *fibrinuria*, that is the presence in the urine of an amount of fibrin in excess of what the amount of blood accounts for, is suggestive of tumor. The water passed, although only a yellowish red in color, *may yet gelatinize so readily as to become stiff within a few minutes.* Upon stirring the mass it again becomes liquid. Or you may detect in the urine semi-gelatinous and semi-transparent particles which the microscope shows to be made up of fibrin. Pure blood clots slowly and does not again become liquid upon stirring. Fibrinuria is generally the result of the presence of a tumor of the villous variety, according to Ultzmann, who says that severe contractions of the bladder rupture the capillaries, thus interfering with the venous return, and the blood, or—if not enough force was present to cause actual rupture—the plasma is exuded; hence the presence of the fibrin. These villi will become readily detached and are likely to be torn off during the process of washing the bladder, employing the searcher (19), or they may be sucked off into an aspirator (18) bottle and thus brought out.

To recapitulate. The villous tumor is soft and the

finger cannot appreciate its presence; the fibrous variety would be felt by the finger; while the transitional variety has a still harder base than has the fibro-papilloma.

Treatment.

The treatment is surgical. Medicine is of no practical value; it could only be given to arrest hemorrhage, and if relied upon there the patient might die exsanguinated.

Having finally decided that we have a tumor, our next move is to examine the bladder. This may be done from underneath or above. In the first instance, after introduction of a grooved sound (16), a finger is introduced within the anus and resting at the point of the prostate. Now insert a bistoury (22), with the cutting edge up, about one inch in front of the anus, and enter the groove in the sound just anterior to the prostate, the rectum being avoided by the guarding finger. Slit up the urethra, and in withdrawing the instrument elevate the handle in order to avoid wounding the bulb of the urethra. You have made a hole large enough to admit a finger, and now by pressing upon the hypogastrium with the other hand you are enabled to palpate the inside of the bladde. This constitutes the digital examination of the bladder by the perineal incision—*perineal section*, or *external urethrotomy*. (See article on "Stricture.")

Epicystotomy,* the opening of the bladder from above, —the supra-pubic operation—is a little more danger-

* For a description of the operation of epicystotomy see article on "Vesical Calculi."

ous proceeding than the foregoing, but you can get at the matter much better in this way. You can see infinitely better into the bladder, using the examining electric lamp (23) if you desire, and you are in a much better position to operate.

Curettage, not excision, is the treatment to be pursued, and the finger nail may here prove a very effective instrument. Or you may chew off the tumor with rongeur forceps or those having blades possessing serrated edges (27). These are made with the blades set at varying angles upon their respective shafts. *If the tumor be sessile it is usually advisable to remove only the more prominent portion;* a very fibrous tumor of the sessile variety it will often be impossible to wholly remove without including also a part of the bladder wall; and this is not always followed by a fatal termination.

Diseases of the Testicle.

EPIDIDYMITIS.

Epididymitis, an inflammation affecting the epididymis alone or principally, *is the most frequent of all the diseases of the testicle, occurring oftener than all the others together.* It has been estimated that fully twenty per cent. of clap patients suffer from this disturbance; but from my own experience I would say that the proportion is not more than five per cent. The disease may manifest itself in either an acute or subacute form.

Etiology and Pathology.

Some physicians regard the trouble as a metastatic one; the symptoms suggest that the prostatic sinus is involved at the neighborhood where the ejaculatory ducts open, and that the inflammation has simply travelled from the urethra along the continuous mucous membrane, down into the testicle, just as a cold travels down to the lungs. However, the metastasis idea is supported by the fact that an urethral discharge ceases when the testicle has become well involved; but I do not regard this as sufficient evidence to prove the theory. *Perhaps the discharge, if suppressed by violent measures, such as the use of powerful astringents, is driven backwards and inoculates a deeper part of the canal.* In such cases I would favor such remedies as would restore the acute affection to the penile urethra, and then give medicine for the urethritis.

As the fluid gradually disappears, in the course of the

disease, you can now distinguish the enlarged epididymis. A lump remains there, for months perhaps, or never disappears altogether. There has been a seroplastic effusion into the cellular tissue covering the epididymis, and also inside the vas deferens. These tubes are blocked, and if the trouble is double—occurring in both sides of the scrotum—*it renders the patient sterile, although not impotent, for the time being at least;* he is capable of experiencing the sexual orgasm and of the discharge of a fluid resembling semen, *but there are no spermatozoa present.* The lumen clears as the induration gradually disappears, and also after a time the spermatozoa reappear. The tunica vaginalis pours out lymph as well as serum, and the touching of the two lymph covered surfaces may cause adhesions to form between the testicle and its sac, thus obliterating part of the cavity. The exudation may be bloody in character.

Symptoms and Course.

The acute is the more common form and generally manifests itself about as follows: We will say that an urethritis has been running for from three to five weeks, the discharge now being upon the decline. Then there appears a little backache; and a fullness in the groin, with discomfort, is noticed a few hours before there is found anything the matter with the testicle. But patients of the lower class, not being so observant as the better educated, may think that the trouble first manifested itself in the testicle. The local tenderness and swelling now increase rapidly, until the tense and red scrotum, fluctuating upon palpation, has reached the size of an orange or more, and the pain

has now become so excruciating that the patient is compelled to lie down, standing erect greatly increasing his suffering.

Meanwhile these symptoms may be accompanied by a temperature of 100° to 102°; but ordinarily the constitutional reaction is not pronounced. A patient of nervous temperament may have a fever of 103° or 104°, but this is an exceptional case; generally it is 100° or 101°, and this fever may or may not be preceded by a chill or other marked phenomena. After an increase of the pain and swelling for from three to five days, the pain, which is at its height the first week, then begins to diminish; the patient is convalescing the second week, and in three weeks it is all over with. The organ can now be handled and he may go about *with the scrotum in a sling*; but the swelling may yet remain Finally also the enlargement disappears to a considerable extent. *There is no tendency to suppuration, nor toward permanent distruction of functional activity; so the prognosis is invariably a favorable one.*

Diagnosis.

In the earlier stages of the affection you can handle the organ gently and ascertain that the onus of the disease rests upon the epididymis, and not upon the secreting portion proper of the testicle. In the late stages of the affection you cannot distinguish the testicle within the scrotum in order to make this differentiation, as there is a periorchitis—inflammation of the tunica vaginalis—obscuring the testicle because of the height of the swelling. This is not so at first, be-

cause the tunica vaginalis resists the inroad of the inflammatory process. *And yet you may even at a late period be able to ascertain that pressure posteriorly is more painful than at the anterior aspect of the scrotum.*

In the *chronic* form of the trouble there is no fluid present, and you can then readily and effectively diagnose the presence of epididymitis by palpation. The patient may have had the disease for some time and have discovered it now only by accident.

Treatment.

So long as chronic clap exists there is always present the possibility of the inflammation extending backwards to the testicle, particularly toward the tail of the epididymis, and showing upon the back of the testicle in the hard swelling noted. And as the trouble is produced by clap, urethritis, or some manner of irritation of the canal, *instruments should be used as little as possible and with all gentleness.* Their employment might irritate the prostatic sinus, causing a chronic and quiescent condition to be lighted up within a few hours into an acute epididymitis. *The same caution applies to the use of injections.*

Pain and a dragging sensation being very characteristic, the patient suffering an acute attack is therefore put to bed at once, if he has not already been driven there. If present in the subacute form, he may be fitted with a suspensory bandage and allowed to go about. The pain is caused by the very great distension from the presence of the fluid. *Aspirating will magically relieve the pain*, but as the sac will refill the operation must be repeated. *But the operation is comparatively*

harmless and the relief so immediate that the patient will desire it after the first time.

LOCAL APPLICATIONS.—Warm "*Pond's Extract*," or the white tincture of *Hamamelis* may be used locally on absorbent cotton, in a pure state or diluted one-half with water. Outside the wet cotton place a layer of oiled silk or rubber tissue protective, and *suspend the scrotum;* it must not be allowed to hang. If the pain is severe you may add to this solution *Laudanum* or a decoction of *Poppy;* or if very severe indeed, the narcotizing effect of a *Tobacco* poultice may be tried. To prepare, add a paper of chewing tobacco to a pint of water, and mix this with your flaxseed. You will not often find it necessary to resort to smearing on *Belladonna* ointment, or one made up with powdered *Opium.*

As to remedies, *Aconite* will often prove useful in the beginning, if indicated by the dry, hot skin and other symptoms characteristic of that excellent remedy. *Pulsatilla*, when indicated, may be given in teaspoonful doses every two to three hours, of a solution made up of gtt. v to x in one-half glass of water. It is often used as a routine remedy in the active stages. For clearing up the remaining induration: *Clematis*, *Kali Iodatum*, *Sepia*, *Sulphur*, *Aurum.*

CASE NO. 7.

Young man with lump on testicle, which came gradually. Had it about a week. Has had a discharge from the penis for about three weeks. Testicle considerably swollen and feels heavy as you balance it on your hand. Cord feels normal. Probably vas

deferens inflamed. No cough impulse with the hand at the external ring. A simple hernia should be reduced on lying down, though a strangulated or incarcerated hernia would be irreducible. On pushing the swelling toward the neck it does not enlarge or show any tendency to reduce. Scrotum does not glide over testicle as it should; it is adherent and you cannot define the anatomical parts—cannot separate secreting portion from epididymis.

Diagnosis.

Diagnosis is between hernia, hydrocele, swelled testicle (orchitis), or hematocele. The distinction between epididymitis and orchitis is not always made. The history doesn't correspond to hernia, being that of a gradual, not sudden, appearance of tumor. The swelling is not at the external opening, in line with the inguinal canal. An epididymitis starts with an urethritis which passes back, and the pain in the cord along the inguinal canal and at the external ring is evidence of a swelled testicle with urethritis; it is not a metastasis. The discharge diminishing with the appearance of a distinct swelling, was the only reason for terming it a metastasis, but this may be present due to different causes; an inflammation of the eye is relieved by an inflammation behind the ear, etc. It is too heavy for hydrocele and too ovoidal laterally, retaining the shape of the normal testicle. It is not a hematocele, as there is no history of strain or traumatism. Also this would give a round swelling instead of a flattened ovoid—if there were blood in the cavity of the tunica vaginalis. So we are limited to

some testicle trouble and not disease of the sheath. It may be a disease of the secreting portion, or of the epididymis, or a complication of both. Has had no mumps, so it is not an orchitis associated with mumps, and this would seem to exclude trouble with the secreting portion ; and the fact of discharge renders epididymitis probable. The swelling merges into the secreting portion, obliterating the sulcus between the epididymis and testicle proper, which you can make out in the early stages.

Our diagnosis is that this is gonorrhea in the stage of decline and complicated with epididymitis. He has not urinated since seven A. M., and I get a little discharge on "milking."

Treatment.

No injections, and get him a supporting bandage to relieve from weight. He has noticed that the discharge from the penis is diminished upon swelling of the testicle. He should stay in bed if possible. Of remedies, *Pulsatilla* is the best for the acute inflammation of epididymitis or of the testicle proper. Try *Gelsemium* if you believe it to be metastasis, giving it to bring back to the penis the urethral discharge which has ceased.

ORCHITIS.

Most cases of epididymitis are erroneously called orchitis, which latter is an inflammation of the secreting portion of the testicle; and *true orchitis is a rare affection.* It often accompanies mumps, but it is not of a metastatic nature, for when mumps are prevalent you may get cases of orchitis without the parotids being affected. And yet it bears some relation to mumps. The disease is more likely to occur at about the period of puberty, and at the end of the second week in parotiditis. Very rarely the trouble may end in atrophy or suppuration of the testicle; *most of the cases recover.* Traumatism is the most frequent *cause*, and *in such cases it is likely to prove a serious affection.*

Symptoms and Course.

The constitutional symptoms run high. There is considerable fever, with restlessness, thirst, clammy sweat, hiccough, nausea, vomiting, etc., *resembling the symptoms of strangulated hernia.* The pain may be so severe as to cause syncope.

The attacks often terminate in resolution, or you may have simple atrophy as the result. In cases of severe trauma the organ is very prone to suppurate or the morbid process to run to gangrene. In the latter instance the violent pain suddenly ceases, owing to death of the part, and gradually the necrosed tissue bursts through the adherent tunica albuginea; an open-

ing is formed and an odorless, yellowish, soft and dry slough protrudes. With it comes the ducts, etc., and the organ is destroyed.

Or, in case of suppuration, the patient is seized by a chill followed by a decrease in the pain and a simultaneous enlargement of the testicle, the tunica giving way, thus permitting the swelling. From the burrowing of pus you may get a fistulous opening, remaining for years, perhaps, and finally drying up.

Rarely *exposure to cold may cause an orchitis;* and ungratified sexual excitement has also been cited as a cause. High livers, people of gouty diathesis, etc., are likely to suffer occasional pain in this locality and slight inflammatory attacks, as a result of general systemic disturbance; rheumatic inflammations are particularly liable to attack fibrous tissue. Children may have mild attacks from no appreciable cause.

Treatment.

As in epididymitis, so here also *the treatment is largely local* in nature. The narcotization of the immediate part is even more imperative here, or it may be found necessary to use an anodyne internally.

[In the subacute stage, strapping with adhesive plaster may help to make the patient comfortable. After shaving the scrotum, it is grasped by the whole hand so as to gently force the testicle downward, while the scrotum is at the same time made tense about it. The first narrow strip of plaster encircles the scrotum below the hand and just above the testicle, thus "cornering" it. Overlapping radiating vertical strips and horizontal

ones are now applied alternatingly until the whole testicle is covered in.]

The same remedies as mentioned in the treatment of epididymitis apply here likewise. If the condition be due to trauma, *Arnica* or *Hypericum* may give relief; if it came from getting wet, *Rhus Toxicodendron* suggests itself. My advice is that you *do not let the other symptoms, of syncope, etc., deter you from using such medicine as has a direct action upon the testicle.* You may use intercurrents for these other symptoms.

NEURALGIA OF THE TESTICLE.

Neuralgia of the testicle and "irritable testicle" are more chronic affections than is orchitis, neuralgia being classed as simply a severe form of irritability.

Symptoms and Course.

The organ is normal to the feel, occasionally showing a little fullness and softness. It may be that there is only a certain small area that is sensitive to contact, there being no pain at all experienced when the part is not touched.

The trouble is one likely to occur in those cases where the sexual hygiene is at fault, as in old bachelors; or in the recent widower—those who have for years been accustomed to a certain usage of the organ and are now deprived thereof. *When these latter marry again the trouble usually passes off. So we must look for the cause in the sexual régime and sexual relations*, as, for instance, the constant excitement of the passions without any consummation of desire. Persons of this class are also subject to severe pains in one testicle, of a spasmodic, violent, intermittent character, made worse by standing, etc.

I had a case in the person of a man who stood up and leaned against a desk all day long; his pain was aggravated by his sitting down. Such is neuralgia. *The patient may be free from pain for hours and during other hours experience intense suffering.*

Treatment.

A man with neuralgia of the testicle may suffer so much as to demand castration; *but be careful how you allow yourself to be drawn into such an operation.* If you do operate, guard yourself in every way. The nature of the trouble is such that *the pain may cease at any time*; and even *removal of the offending organ does not mean a cure*, insomuch as *the neuralgia may return in the stump or in the other testicle.* And yet at an *advanced age* the patient may very readily sacrifice the organ for even the prospect of relief.

Remedies do not seem to do much good; there is little hope of success with them. But the following have a specific action upon the testicle or cord, and you may generally make your selection from this list for use in any testicle affection: *Argentum*, *Arsenicum*, *Capsicum*, *Cinchona*, *Cocculus*, *Mercurius*, *Nitric Acid*, *Phosphoric Acid*, *Rhododendron*, *Spongia*, *Staphysagria*, *Thuja.*

CARCINOMA OF THE TESTICLE.

This is by no means a common affection. The only form of cancer found in this locality is the *encephaloid* or soft variety; and, as a departure from the general run of cancerous growths, which are found particularly in those persons who are past middle life, *cancerous affection of the testicle may occur at any age—even in infants.* It is much less frequently found after sixty years of age, then previous to that time, as a rule occurring in early manhood and generally but one organ being affected.

Symptoms and Course.

The pathology is the same as with a similar morbid process elsewhere in the body. The disease commences, not by infiltration into the tissue, but as separate deposits, which later coalesce to form a single mass. The growth as a whole is rapid, but is somewhat slow in the early stages; and it is then that you may confound it with some other affection. Although *the characteristic pain of cancer may be minus*, yet there is generally experienced more or less suffering. Pain generally first attracts the attention of the patient, or he finds the organ somewhat enlarged. There is a steady increase in size, but *the scrotum is not reddened*, remaining normal in appearance except that it is stretched.

The tumor is tender upon pressure and alternatingly

hard and soft in different places. In some spots you may get distinct fluctuation. This sensation of fluctuation upon palpation is very deceiving; you may feel sure that there is fluid in a given locality and upon aspirating get nothing but blood, there being no cavity present although the tissue is surcharged with fluid. And in this disease of carcinoma *you may perhaps get fluctuation over the whole extent of the enlarged testicle*, tempting you to use the aspirating needle (26). Reference to the literature of the subject will reveal the fact that the different authorities are not consistent upon the subject of carcinoma of the testicle. Van Buren and Keyes say that both hematocele and carcinoma vary in size from time to time.

The pain is of a burning, darting character, and is soon developed, even if there be none present at first; it shoots up the cord, which may be involved in the cancerous process, and making it impossible to isolate the vas deferens. Also the pain may extend into the groin and loins, in which latter locality the first pain may be experienced. Both the abdominal glands and groin lymphatics are involved. A cancerous cachexia may have developed or not when you see the case.

Later on in the progress of the disease the scrotum now becomes reddened, finally rupturing, and allowing to extrude a readily bleeding fungus, which gives off a thin discharge. This is the true "*fungus hematodes*," and is very different from the dry, non-bleeding fungus of suppurative orchitis. Now the general health suffers; there is emaciation, loss of appetite, development of boils, and more or less cachexia. But there have been observed cases of unmistakable and well advanced

cancer, in the course of which a cachexia was not developed until very near the dissolution of the patient; therefore do not place too much confidence in the fact of its non-presence, athough the books do lay so much stress upon it as a characteristic feature of cancer in general.

In the later stages an edematous condition of the leg of the side affected is possible from pressure upon the veins by the enlargement of the abdominal or pelvic lymph glands.

Diagnosis.

Only in the early stages of the disease may it be confounded with a *syphilitic or tubercular testicle, both of which latter occur particularly in young men, as does also the cancerous;* at this time it may be absolutely impossible to make a positive diagnosis, and it is probable that many tubercular testicles have been removed for cancerous ones. But time, and *not a very long time, is sufficient* to clear up the diagnosis; its not breaking, failure to involve the general constitution, presence or absence of pain, tubercular deposits, etc.—such are the signs that will serve sooner or later to indicate the true nature of the trouble.

Treatment.

Remedies are absolutely helpless; at most the best they can do is to palliate. *Extirpation* is the only thought and it should be done early.* This may possibly be effective at least in postponing the unfortunate issue, for *even if removed early it is doubtful if this measure*

* For description see "Sarcoma of Testicle."

will prevent death from cancerous disease finally. The lymphatics are already involved before the patient is led to seek the advice of a physician, or before the latter is enabled to make a positive diagnosis, and it is then too late to operate with enough chance of success to hardly warrant the attempt.

In any case of true cancer the slightness in extent of the disease does not assure the final success of an operation A small, apparently insignificant tumor, no larger than an olive maybe, and situated within a large and well developed breast, may be fully removed in the most thorough manner known to the surgeon, including perhaps the removal of the entire mammary gland, and yet the disease return within three months, in the cicatrix or elsewhere. Yet the knife went far beyond the apparent roots of the disease. Notwithstanding all this, it is yet true that the earlier the diseased tissue is removed the greater are whatever chances of success there may be; but *never, in cancer, give a positive opinion regarding its return.*

[In this connection it might prove profitable to look into the recent method of the treatment of malignant tumors by the *mixed toxines of the erysipelas streptococcus and the bacillus prodigiosus.* Notably Dr. Coley, of New York, has been conducting some extensive experiments in testing this method, and has reported a number of cases, some of which seem to have been thus cured. However, the success of the treatment has been most marked when used in cases of *sarcomata*, while little has been demonstrated for it in the case of the more malignant carcinomata, or truly cancerous growths. It is also worthy of remark that Dr. Senn

reports a number of cases treated by this method with the result of complete failure, and he predicts the early abandonment of the treatment. The injection of *Carbolic Acid* in these cases is also a present fad.]

SARCOMA OF THE TESTICLE.

Sarcoma, occurring in this locality, is a very uncommon disease, and in a work of this character need occupy but little of our attention.

Symptoms and Course.

When present, the affection *generally occurs in young men. There is no pain* and the patient discovers the trouble by accident. The tumor is generally ovoid, bears handling, and is quite fluctuating generally or in localized areas. You get this fluctuation when the cystic formation predominates, ordinarily the tumor being chiefly composed of solid elements, and is consequently of a hard but elastic consistency.

Diagnosis.

The trouble *may closely resemble hydrocele;* it is similar to hydrocele in form, the *integrity of outline of the gland not being involved.* Tapping by a trocar (25) or aspirating needle (26) may be the only means of diagnosis, and it is often difficult for the most expert to make a positive diagnosis.

Treatment.

If you are sure the case is one of sarcoma, *the sooner the testicle is removed the better. With sarcoma there is a tendency toward degeneration into a malignant growth*, and especially is this true in this locality. If the tumor be *removed prior to this change, it will not*

return, otherwise the prognosis in the case is of the same unsatisfactory nature as in carcinoma.

CASE NO. 8.

ORCHIDECTOMY (CASTRATION).—Grasp the scrotum from behind in the left hand, in such a manner as to *raise the testicle between the thumb and fingers, at the same time making the skin tense* over the tumor. Now make a longitudinal incision* *through the skin* only, about three inches long, beginning well at the upper border of the growth. [If the testicle is quite free within the scrotum, this will admit of a much shorter incision being made, and in the firmer tissue near the root of the penis; when there is likely to ensue much less swelling following the operation, than when the cutting is done through the cellular structure of the scrotum. The contents of the scrotum may be easily drawn up through the wound made in the former location.]

The testicle, which you see is very adherent to the whole sac, is now *dissected free by means of the handle of the scalpel and the fingers*, and finally brought up out of the wound.

The next thing is to ligate the cord, and in preference to doing this *en masse*, *we separate the vessels and tie each one* with catgut. If a single ligature is put around the whole cord, it must be of stout silk and *tied*

*The knife—as when about to make any free incision—should be well balanced in the hand, being held between the thumb and all the fingers, as a violinist holds his bow; it is thus in advantageous position for cutting full with the belly of the blade—not with the point. The latter is used when slowly making your way through the tissues by dissection; and then the knife is held as is a pen.

very firmly, close up to the ring. The separate ligatures obviate the danger of *slipping*, *and of secondary hemorrhage* occurring from the stump when it has retracted high up behind the ring and is difficult to get at again. The testicle is now cut free. [Ligating the cord *en masse* is certainly much the quicker method, and there are good operators who adopt this plan. It would seem that in the hands of the careful surgeon, there is small danger of the ligature slipping.]

Now we make sure that all the diseased tissue is removed. The scrotum itself is quite largely involved here, and we trim it off freely, *until we reach healthy structure.*

As the disease was so extensive, we will arrange for *drainage* of our wound, by placing some iodoform gauze along the bottom of the sac, extending from the top of the wound and coming out at the lower angle. Or we might use a small drainage tube, or twisted strands of catgut.

Now and then, for esthetic reasons, a celluloid or silver hollow ovoid is inserted to fill the space within the scrotum.

In closing the wound, on account of the vascularity of the dartos, and so to prevent secondary hemorrhage, the edges are carefully coapted by a fine *catgut continuous suture.* Occasionally we may find it useful, on account of the great laxity of scrotal tissue, to first put in two or three *tension sutures* of silk or silk-worm gut, and held by small *lead buttons.* Under the buttons we place, on either side of the incision, a strip of iodoform gauze, and then complete the dressing after the usual fashion.

Hydrocele,
Hematocele,
Galactocele,
Spermatocele,
and
Varicocele.

HYDROCELE, HEMATOCELE, GALACTOCELE, SPERMATOCELE.

CASE NO. 9.

Here is a young man with an enlarged right testicle. The tumor is quite *symmetrical, and fluctuating* upon palpation; there is a lump upon the under side.

Diagnosis.

He experiences *no pain* and so *epididymitis* and *orchitis* are excluded. *Tubercle* and *cancer* are excluded because the tumor is *smooth* and *elastic.* With regard to the testicle itself, it may be a *sarcoma* of the hard variety, which is a *rare affection* anyway, or a *syphilitic* testicle. But the latter would be hard and of a generally *lumpy outline.* A solid tumor of the testicle *hangs*—the *pendant* feature is emphasized. There is no pain upon squeezing the testicle anywhere, nor yet the peculiar feeling of the normal testicle when squeezed. We will *exclude affection of the testicle itself.*

Concerning the *scrotum*, *hydrocele* and *hematocele* are left to choose from. The latter is generally *acute and of traumatic origin;* it may be subacute but would *not be so chronic as this case.* Also it would present a *heavier* and *less elastic* tumor. Again, *hematocele* is *not translucent*, and its *walls are thin.*

With other troubles, as *epiplocele* or *enterocele*, there is *no translucency*, and the former may give a *doughy feel.* We can here *make the cord out* perfectly, and

there is *no cough impulse;* and *taxis* in the direction of the inguinal opening does *not cause a reduction* of the tumor. So *hernia is excluded.*

VARIETIES OF HYDROCELE.—So it *must be a hydrocele*, which, though strictly meaning a watery tumor, is the term generally applied to a collection of *serous fluid within the areolar tissue of the scrotum, or within some of the coverings either of the testicle or spermatic cord.* The first of these varieties is called an *external hydrocele*, the second is the *internal hydrocele* or collection of fluid in the *tunica vaginalis testis;* and when the interior of the membrane in which it is situate, still communicates freely with the cavity of the abdomen, it is termed *hydrocele congenita.* You may also have an *encysted* hydrocele of the testicle alone, or of the spermatic cord, or a *diffuse* hydrocele of the cord; an encysted hydrocele of the cord comprising a collection of fluid within the funicular pouch,*—the part of the sac covering the cord—previously obliterated by adhesions at the abdominal opening and again at the upper level of the testicle. But here the structure of *the cord being clearly defined*, affection of the cord is

*During the eighth month of fetal life, the testicle descends from the abdomen into the scrotum, pouching the portion of peritoneum that lies ahead of it and carrying it along. At first, the pouch thus formed connects by its upper extremity with the peritoneal cavity, but just before birth it usually becomes closed, the obliteration extending gradually downwards to within a short distance of the testicle: this obliteration may be more or less complete. The process of peritoneum left surrounding the testicle, and which is, in event of complete obliteration, entirely cut off from the peritoneal cavity, is the tunica vaginalis; the portion surrounding the cord is the funicular pouch or process.

These facts also have a bearing regarding the occurrence of congenital and infantile hernia, similar to their connection here.

excluded. It is either of the tunica vaginalis or encysted, on the testicle. [It has already been observed that *congenital hydrocele* is the name given to the congenital sac with its collection of fluid, formed by the funicular pouch remaining open from the abdominal cavity to the testicle; in short, there remains direct communication between the scrotum and peritoneal cavity, as in the later fetal condition. Now, varied uses of the terms "congenital" and "infantile" hydrocele, have created some confusion regarding the subject. It will simplify matters if we consider *infantile hydrocele* to be the congenital form in which partial occlusion of the funicular process has occurred. Congenital hydrocele is mostly seen in infants, although it may persist into adult life. The swelling is *smaller in the morning*, after the child has been lying on its back all night.

Concerning the *outline of hydrocele*, though varying, due to different points of adhesion of the sac, it is generally *spherical or ovoidal* in shape in the *adult;* it may be pyriform, with base downward, and the cord can generally be made out at the apex. In the *child*, the sac of the tunica vaginalis is most always of a *pyriform* shape.]

We will make a diagnosis of *simple vaginal hydrocele;* if of the *encysted* variety the tumor would *probably not be so large. And cysts generally occur in connection with epididymitis*, at the head of the epididymis, the fluid accumulating beneath the serous membrane covering the epididymis. They are generally small—varying from the size of a pea to that of a horsechestnut—and you *can distinguish the testicle underneath.* In this case you can't feel the testicle—

can only elicit some pain by squeezing the tumor posteriorly. *Rarely do you have fluid beneath the tunica vaginalis* and the covering of the testicle proper; then, drop after drop forming, lifts it up and makes the cyst. But in this case such a condition would be disguised; it might exist, but such a case of affairs rarely causes a tumor as large as this, and the *translucency would indicate that we have not an encysted condition.*

[As to the *cause* of hydrocele, the presence of fluid is due to either excessive secretion, passive exudation, or defective absorption; thus the origin may be *inflammatory or not;* and depending upon this factor, will the chemical composition of the contents vary.]

TRANSLUCENCY TEST.—*Translucency is the crucial test in the diagnosis of hydrocele.* Examine the tumor in a *darkened* place, have the scrotal *walls tense*, and place the *light behind the scrotum* with your hand behind that. A candle is handy; and be careful that you do not burn the scrotum. And yet *hydrocele is not excluded if there be no transparency* of the tumor, because the fluid may be made opaque by a little *blood effused* by rupture of a small vessel; or in *chronic* cases where the walls are much *thickened* from the inflammation, you may fail to get this effect. It may be impossible to differentiate between hydrocele and hematocele until the exploring *aspirator* (26) settles the matter. If the fluid drawn is bloody, especially if the *blood be very dark and thin* and there is a *history of traumatism*, it is a hematocele. *A hydrocele with effusion might be equivalent to a slight hematocele.* There has been a mixed use of this word "hematocele." Its general meaning is a tumor formed by blood. Some

have used the term to denote a tumor thus formed by blood effused into the areolar scrotal tissue, and it has also been applied to bloody effusions corresponding to the various forms of hydrocele. Practically then, it differs from hydrocele only in the character of the effusion, and in the fact that it is more of an *acute affection*, being commonly due to *trauma*.

Cancer is the only other condition that we might confound this with; cancerous tumor of the testicle in an advanced stage presents fluctuating points, and the thick wall of a hydrocele might simulate cancer; but the *history of the case* is generally sufficient to differentiate here.

To *differentiate hematocele and cancer, aspirate*. You will draw blood in both instances, but *in hematocele the tumor is decreased in size by the use of the trocar*, while in cancer there is no decrease in the size of the tumor corresponding to the amount of blood drawn.

Treatment.

Medicines and local external applications are useless. The radical cure usually consists in the injection of some irritating liquid through the canula of the trocar (25), which has been *left in after puncturing*. This causes inflammation of the serous coat, adhesion takes place, and the cavity is obliterated.

Whether of the simple or encysted variety, the best thing is the *injection of Carbolic Acid*. After completely emptying the sac, give 40 to 100 minims of the pure deliquescent crystals. This is the latest treatment and has been so successful as to crowd the others out of the field.

Formerly we relied upon the injection of an *Iodine* solution, made up of *Iodine* gr. xl; *Kali Iodatum* gr. xxx, and *Alcohol*, ℥j. We will now tap this tumor, removing the fluid, inject now dr. ss. of a four per cent. solution of *Cocaine*, which, after working well around within the sac by manipulating the scrotum, we suck out, and follow it by the injection of dr. j to ij of the *Iodine* solution. This latter we now proceed to *work well around*, and we may finally remove all or only half of the amount used. I think it generally preferable to let about half remain, the exact amount being decided by the size of the sac. Where you have a very *large tumor and sac, it is not advisable to radically operate the first time the case is seen, because there is such a vast extent of surface to become inflamed.*

Also first draw off the fluid in order to *examine the testicle, to see if there exists there any primary disease* which might be the cause of the hydrocele, in *which case radical treatment for hydrocele is not the proper course.* After this preliminary withdrawal of the fluid, now *wait until a small quantity reaccumulates*, and then go ahead with the operation. You want some fluid present in order to *know if the canula* (25) *leads into the cavity* of the tunica vaginalis. Also you can then insert your trocar (25) *without danger of wounding the testicle. Be careful also that the point of the instrument remains within the cavity*, else you may provoke an inflammation in the cellular tissue.

If you have used a hypodermic needle (26) to confirm the diagnosis, you know it is in the sac, so *leave it in place* until you introduce at the same point a larger tube (trocar) in order to remove the fluid quicker.

Occasionally you will draw off a *milky fluid* resembling chyle, in which case you have a *galactocele*, which is very rare. Or you may get a *milky fluid filled with spermatozoic elements;* in that case you have a *spermatocele*, which generally exists only as a *part of a hydrocele*, in the form of a cyst situated at the head of the epididymis, and one of the little ducts breaking into it. Properly, only this small sac on the epididymis, which might rupture into the general hydrocele, is the spermatocele. The treatment for this is identical with that for hydrocele.

Thick-walled cases of hydrocele will not be cured by a *Carbolic Acid* injection, unless you first incise the scrotum and slit up the sac, on a director (27), to the bottom, cutting away the thickened walls and leaving it to granulate.

The *treatment of hematocele* would vary from that of a hydrocele, in proportion as it deviated from a chronic trouble towards an acute, in which latter form symptoms similar to those of orchitis would very likely be the most prominent. But even if considerable pain be present, it might be advisable to drain off some of the effused blood.

Ordinarily, *after operating for hydrocele put the patient to bed*, or at least require rest upon a lounge for from twelve to twenty-four hours. The next day he may be allowed to be out and about unless too much tenderness still remains, in which case keep him quiet longer, of course.

CASE NO. 10

The *translucency test* confirms the diagnosis of

hydrocele in this case, but at times the *thickened walls of the sac may prevent your succeeding in this.*

Treatment

The testicle is situated in the posterior and lower portion of the scrotum—*behind and below; so introduce your needle or trocar into the front of the tumor, meanwhile holding the testicle back and out of the way behind the fingers of the other hand.*

[Not infrequently a testicle is displaced, lying in the anterior part of the scrotum perhaps, or the organ may be turned half way around with the epididymis directed toward the front.]

TAPPING AND INJECTION.—Tapping is itself of no curative value; it only clears up the diagnosis, also enabling you to ascertain if there exists a *primary disease of the testicle*, with the hydrocele as an affection of secondary origin. You also tap the sac when it is very large and *you do not wish to perform the radical operation upon so large a surface of membrane.* After the first tapping, when the tumor again enlarges, and has attained, say the size of a small orange, then tap it once more, draw all the fluid off, and if the walls are not very thick, inject into the sac either compound tincture of *Iodine*, *Kali Iodatum* and *Spirits of Wine;* or pure *Carbolic Acid*; the latter is something of a local anesthetic. Inject 40 to 60 minims of the *Carbolic*, which can be kept liquid by the addition of sufficient pure glycerine for the purpose.

The object in this injection treatment, is to *excite an inflammation within the sac*, but not too much. After operating, *the sac will refill rapidly*, and remain sore

and tender, so *the patient must remain in bed.* You may have to tap again after operation. Usually the next day *following the injection of Iodine, the sac has increased to the size it was at first,* but each day following that, for from three to six weeks, it will gradually grow smaller. *With Carbolic Acid there is not this tendency to the reproduction of fluid* immediately following the operation.

You see here that I left the point of the syringe (26) *in situ, until I substituted a trocar* (25) through which latter the fluid is squeezed out, and via which I now inject the *Carbolic Acid, rubbing it well around* within the sac by manipulating the scrotum between my fingers. *When using Iodine, you can first inject about dr. j of a four to five per cent. solution of Cocaine.* The amount of irritating fluid you inject is to be *determined by the size of the sac. You can generally put in dr. j to ij, working it well around, and then suck out half or two-thirds of the amount introduced, leaving the balance there.*

[*In congenital hydrocele,—after a truss has been worn without result—as injection treatment would risk causing a peritonitis, some other operation should here be chosen.*

INCISION AND EXCISION OF SAC.—The treatment by *incision* of the sac is an old one that has again come into repute since the advent of asepticism. The scrotum having been previously shaved, and the field cleansed, the sac is now made tense, and a vertical incision about two inches long is made in the lower part of the swelling anteriorly, cutting through the layers one at a time, and controlling all hemorrhage by pick-

ing up the vessels as you proceed, until the tunica vaginalis is reached. Now open the sac, allowing the fluid to drain away, and then sew with catgut the cut edges of the tunica vaginalis to the skin edges. Insert a drainage tube into the cavity, or pack with iodoform gauze; dress the wound; and place the patient in bed, where he will probably have to remain for some ten days at any rate. In about three weeks he should be in shape to get around comfortably.

An amplification of the preceding operation, consists of *excision of a portion of the tunica vaginalis*, thus doing away at once with much of the pathologically secreting surface.

Having proceeded as far as the tunica vaginalis, as already described, first make a small incision therein to admit of a finger being inserted to locate the testicle. Making sure that this is out of the way, now split the sac, with blunt pointed scissors, throughout its whole length. Dissect the tunica vaginalis away from the scrotum, and having sufficiently freed this parietal layer, cut it away as close to the testicle as possible. Ligate, and remove any cysts or other growths upon the visceral part. Now, on either side, unite tunica and skin edges by a few sutures at wide intervals. Surround the testicle with sterilized gauze, and plug lightly with gauze what remains of the sac. The use of a drainage tube is a matter of taste, based upon personal experience. The whole wound is now partly closed externally, by drawing the skin flaps together over the gauze, by two or three stitches.

The dressing is changed every few days, the cavity being progressively plugged more superficially (or

drainage tube shortened) until it is quite closed, which takes about three weeks.

The injection treatment will cure the great majority of cases, and when that has failed, simple *incision of the sac*, as described, will most always be indicated; the removal of a portion thereof rarely being justifiable.]

CASE NO. 11.

ATONY OF BLADDER—HYDROCELE.—This patient is a man of about 30. There is no history of previous accident or sickness, but he complains of experiencing a sudden sense of pain in the hypogastrium, and of a feeling of fullness in the rectum not relieved by stool. Sometimes he has had to urinate as often as six or seven times an hour; then again, he would retain his water for some time. Also he has had to urinate two or three times during the night. An examination has shown his urine to be normal.

Diagnosis.

There is a difference between senile hypertrophy of the prostate gland, and acute or subacute inflammatory attacks which come earlier in life, or an enlargement perhaps from the presence of fibrous growths that are analogous to uterine fibroids. Digital examination *per rectum* finds his prostate, if anything, smaller than normal, and so we *exclude prostatic hypertrophy.* Also the finger detects a very soft tumor having no tenseness. (This afterwards proved to be the bladder.) My *catheter* goes to the bottom of the bladder sac and, as you see, *draws nearly a pint of water, although he had just urinated a short time ago.* In order to get the bladder as nearly empty as we can, we siphon out the

water by *depressing the handle of the catheter, meanwhile making pressure upon the hypogastrium.*

Here we have a case of *atony of the bladder, which may come from too long retention of urine.* The muscular fibers in the wall of the viscus become so overstretched that finally they do not contract, and the nerve filaments have also become depreciated in tone from the stretching—they do not convey to the spinal cord and brain the desire to urinate; and so this man holds a great quantity of water and yet has no desire to empty his bladder.

Treatment.

Don't allow the bladder to become overdistended; catheterize at least twice within twenty-four hours.

After using the catheter, *inject water into the bladder, beginning at about a temperature of 80°, and gradually working down to a cold douche of 65°.*

Electricity is useful here. Internally, *Belladonna, Stramonium, Opium,* and *Nux Vomica* may prove of service.

Also his scrotum is enlarged:

Diagnosis.

We would suspect hydrocele, possibly hernia, effused blood, cancer, or other tumor.

It is like hydrocele in that there is no inflammation, nor hardness or irregularity of swelling.

There has been *no history of injury and so we exclude effused blood*—hematocele.

Hernia would not give this *pyriform* shape; and *no pressure and expansion against the hand upon coughing throws out hernia.* Also, hernia generally follows

some sudden *strain*, as lifting, and it comes down—from *above*. Hydrocele begins at the *bottom*, with the accumulation of fluid.

If it be a syphilitic testicle then it is *disguised by a hydrocele.*

In sarcoma, the testicle is elastic and the trocar draws blood only.

Finally, this *swelling is translucent*, which you get only in hydrocele; although this sign *may be absent owing to the thickened sac walls, or to the presence of effused blood*, which is mixed with the contents of the tumor. A hydrocele may feel hard, but it is an *elastic* hardnesss, and the tumor *contains only fluid.* An *encysted hydrocele* would have a sac in addition to the tunica vaginalis. The diagnosis is *simple vaginal hydrocele.* The fluid we removed is *albuminous, and in the encysted variety the fluid is hardly at all so.*

Treatment.

Acute hydrocele may accompany some primary disease of the testicle, so before operating for this condition, first ascertain if there is any trouble with the testicle itself.

Occurring in the adult, and not as an acute condition, hydrocele is *beyond the pale of medicine.* And remember that *the simple introduction of the trocar and withdrawal of fluid, is of no permanent value.*

But operate in order to *excite an adhesive inflammatory action, by injecting dr.j to ij* of the following solution: *Iodine*, gr. xl; *Kali Iodatum*, gr. xxx; *Alcohol*, ℥j. If the sac is a very *large one, reduce it* by repeated tappings if necessary, *before injecting, so that*

there is less surface to inflame, otherwise so extensive an inflammation of a serous surface *may prove dangerous.* This same inflammatory effect may be accomplished by using for your injection, gtt. xxx to xl of pure deliquescent *Carbolic Acid.*

Introduce the trocar (25) *anteriorly and directed upwards, the normal position of the testicle in the scrotum being below and behind.*

After injecting the solution, work the fluid *thoroughly around* inside the sac. *The next day the condition will be about as bad as ever, and don't forget to tell your patient this;* but after a time the fluid will absorb.

CASE NO. 12.

Man with inflammation of testicle—either epididymitis or orchitis of the left side and some little fluid in the sac. He had a congenital phimosis. The right half of the scrotum less tense than the other. Diagnosis is double acute hydrocele from epididymitis or orchitis of the left side, the right half being involved from sympathy.

VARICOCELE.

CASE NO. 13.

Here we have a case of *varicocele*. This is a very common trouble, it even being claimed that five per cent. of men suffer from this cause.

Etiology and Pathology.

A varicocle is a *varix of the veins of the testicle*; or, more strictly speaking, of the veins of the pampiniform plexus of the spermatic cord, and *it most always occurs on the left side of the scrotum.* The condition varies from a mere venous fullness, to the expanding, as well as lengthening, of the vessels to a considerable size. As a result of the process the walls of the veins may become either thickened or very thin. And the veins may become so large as to be actually discernable through the scrotal structures, which latter have become attenuated from their distension. The chief explanation of this left-sided preference, is that the left spermatic vein enters the renal more nearly at a right angle than is true in the case of the right vein. Another reason assigned, is that the sigmoid flexure of the colon is more or less always occupied by hardened feces, which, pressing upon the left vein, impede the circulation of the blood therein. But this latter does not seem to be a satisfactory explanation, because when we have an *acute attack*, *as from straining*, etc.,

the trouble also then most frequently makes its appearance on the left side.

Symptoms and Course.

Some physicians say that this trouble should be *regarded as a neurosis*—not at all because it is of neurotic origin, but because *the symptoms which the patient experiences are chiefly nervous in their nature.* There is more or less pain in the testicle of the affected side, and in the small of the back and running from there down into the testicle. The *dragging* sensation may be relieved by supporting the scrotum; but this does not help the pain, however. There is *diminished erectile power and sexual desire* in this case. He says he has "always been naturally *nervous*, and has recently been much worried by the pain and *fear of impotence* —of losing his manhood!" He has worn a suspensory for four or five years.

In warm weather the testicles naturally hang lower in the scrotum than they do when it is cold, owing to the stimulating effect of a bracing temperature upon the dartos muscle, causing it to contract. Similarly, the effect of a generally debilitated condition is locally evidenced in scrotal laxity, thus furnishing an "old woman's" index of the state of health of male babies. And with varicocele we find every degree of variation in the length of the scrotum; at times *the testicles may hang half way down the thigh.* Examine the scrotum and see if the contractile power is good. *A patient is never very sick when good peristaltic motion is retained by the dartos.* The patient accidentally discovers his trouble, noticing that *he hangs lower than usual*,

which leads him to handle the parts, whereupon he discovers their *changed feeling to the hand. The veins feel like a bunch of earth worms—the characteristic "angle worm" condition. At this early stage there is as yet no pain.*

Treatment.

The advice which this man had, to *wear a suspensory*, was good; but in spite of this measure he has experienced the distress of which he has told us. *Do not forget the nervous state which is so often associated with varicocele*, consisting of various neurasthenic manifestations and *oxaluria.* The mind becomes centered upon the trouble in *hypochondrical* fashion and this aggravates the pain. *The influence of the mind in this condition is wonderful.* As already stated, the patient imagines that he is "losing his manhood"—to use that favorite expression of the quack specialist's advertisement; he is quite sure his testicle is shrunken, etc., and this state of mind has already rendered him impotent, or he has temporary erections.

The majority of cases do not require operative measures if you can succeed in gaining the patient's confidence sufficiently to assure him that he is not losing his virility by this trouble, and have him *wear a suspensory day and night.* But if there is a very great involvement of the veins, and the scrotum is stretched tremendously long, and you cannot make the patient look at the matter in the light you would have him, *then an operation may justifiably be resorted to*, being performed quite as much for relief of the *mental worry* as on account of the pain. The *old operations* of compression by clamps,

injection of perchloride of iron, etc., because of subsequent phlebitis, embolism, gangrene, etc., were attended with such danger that the *honest* surgeon could not conscientiously recommend such risky procedure for relief of a condition possessed of no danger in itself. And there is little doubt that the quite appalling results from the more scientific ligating and cutting operations as previously performed, were mainly due to non-familiarity with *modern aseptic methods.*

THE OPERATION.—First shave and cleanse the scrotum. Proceed to make a *natural suspensory by removing the lower part of the scrotum.* Clamp it, cut off a piece, secure it with hare-lip pins, or lead button sutures. *This lays the patient up for from ten days to two weeks.*

Second.—A better way is by *subcutaneous ligation*, which is attended by very little danger. There are various ways of accomplishing this. Ricord's method is that by the *single ligature*, and is probably of greater value in recent and moderate cases. You *may have to repeat this operation* to effect a perfect cure.

Pass the structures (of the spermatic cord within the scrotum) between the fingers until you *isolate the vas deferens*: it feels and slips away from under the fingers *like an ordinary hard cord:* and the needle must be so introduced that *the plexus of veins is in front of it, and the vas deferens behind. You must also avoid the spermatic artery.* A prominent French surgeon was shot by a patient whose spermatic cord he had ligated. Then you proceed to *strangulate the veins by tying your ligature*,—placed in position as I will show

you later—securing the ends about a pin placed externally against the scrotum.

Third.—Or without using the pin, after catching the veins you can *allow the ends of the ligature to retract through the needle aperture into the scrotum*, leaving the ligature itself to become encysted. This is the operation which I will do here. *It is always better to ligate at two points at least*, and when you find large veins at the *globus minor*, *put a third ligature there. The pain comes principally upon tying the first knot.* It is short and sharp in character, and in comparison the pain felt upon passing the needle amounts to very little. Especially *in the first stages you cannot use an anesthetic, because lying down causes the veins to become emptied. You can have the patient stand while you are passing the needle.* Then you may let him lie down upon the table and employ general anesthesia for the balance of the operation. Or if he should faint upon passage of the needle, it is all right so far as the operation is concerned, which then may be concluded under the anesthetic effect of syncope. When you have introduced the ligatures, *give the thread a sharp pull as you tie the square knot, in order to cut it loose from any fibers of the dartos* muscle which may have been caught. The ends of the ligatures are cut off and withdraw into the wound.

When the needle is threaded, *one end of the silk ligature is left longer than the other*, and the needle (29) used has an eye in the point, one side of the eye being made by a little rod which drops so as to change the eye into an open notch when you press upon the "button" on the handle. This needle is introduced

subcutaneously, *worked along just behind the veins* and brought out at the opposite side; *the loop formed by the short end of the ligature is then pulled out of the needle aperture of exit* by a tenaculum (30), but the needle still remains threaded. Now withdraw the needle along the course in which it entered, but *instead of bringing it out at the point of entrance, turn the point, yet within the scrotum, forward, and carry it along in front of the veins, just under the skin, and out at the hole through which was pulled the looped short end of the ligature.* Release the needle. You now tie the silk sharply, as mentioned, and the ends, being cut off, withdraw into the wound to become encysted.

Or you can ligate in two places, and cut the veins between the ligatures with a tenotomy knife (28). This —a modification of which is termed Lee's operation— is an approach to the open method, which we will now consider.

Fourth.—The *open method may perhaps be preferred in the most severe cases*, when in spite of the collapse of the veins under anesthesia, they are sufficiently enlarged to be discerned. Make an incision long enough to enable you to do the ligating and excising with as little pulling upon the veins as possible, to avoid a subsequent orchitis. Having exposed the veins, bear in mind the precaution *not to tie the spermatic cord and artery*, but to have them posterior to the two ligatures, which latter should be so placed that in excising the veins included between them, you *leave a small portion of the plexus; and take out a section rather up toward the ring and thus avoid cutting too close to the testicle.* One end of each ligature is cut short and the

long threads now tied, thus drawing together the cut ends of the veins. The veins *not having been separated from their supporting fascia*, we get a firm union of the latter, causing a permanent shortening of the cord and scrotum upon that side.

The external wound is now brought together with appropriate sutures, and perhaps some slight drainage left at the lower angle of the wound. The usual dry dressing of powdered idoform or boric acid, with sterilized gauze and cotton, is now applied, and held by a bandage and supporting sling; and the patient will be placed *flat on his back in bed for a week.* In about ten days we can allow him to get about the house, *wearing a suspensory, which he should retain for five or six months.*

Diseases of the Prostate.

ENLARGED PROSTATE.

(SENILE HYPERTROPHY.)

Of the diseases of the prostate, the condition most commonly seen is a departure from the normal contour and size, and of the varieties of enlargement, *hypertrophy* is that form *common to advanced life.* The organ has received its name because it was presumed to "stand before the bladder."

ANATOMY—(See plate).—The gland is situated at the neck of the bladder, and its shape has been compared to an ace of hearts or a *French chestnut.* Its antero-posterior diameter, measuring from apex to base, is from 1 ¼ to 1 ½ inches; transversely, it is 1 ¾ inches; and vertically, the man being in a standing position, it measures from ⅝ to ⅞ of an inch. Years ago the operation of lithotomy was done through the perineum, the incision being carried through the prostate; and it was then absolutely important to know the size of the organ in a given case, in order to know how deep the incision could be carried without getting into the rectum.

The prostate is developed from two lateral halves, being composed of two cones as early as the fourth month of fetal life. The two halves are anteriorly closer together than posteriorly, making the organ somewhat pointed at the front. Subsequently the two portions are fused together by the formation of a structure between them; this, the *isthmus*, at once

unites and separates the parts. The *upper isthmus* is the bridge above the urethra, and there is also one below it. The urethra runs nearer to the upper surface of the gland than it does towards the lower. Above the urethra the intervening substance forms only a very thin layer, and the two portions of the prostate come close together. But the halves diverge as they extend posteriorly, and the *intermediate substance here becomes more pronounced, this posterior intermediate portion of the lower isthmus having received the name of third lobe*, as it is denoted in most of the books; but Sir Henry Thompson protests against the uses of this term and calls it the "intermediate portion." *Into this portion enter the ejaculatory ducts*, as they unite with the rosa deferentia to form the common ejaculatory ducts.

Normally, the finger palpating per rectum, should be able to appreciate the two distinct lateral lobes of the prostate, *and the little "gutter" between them. As the "third lobe" is oftenest affected in hypertrophy, obliteration of this little shallow gutter is one of the first departures from the normal that may be noticed*, being observable in advance of any other excess of measurement. The finger passing along the posterior inferior surface of the gland, finds it uniformly rounded, instead of bi-lobed, *this increased rotundity and effacement of the central depression being important to remember.*

Cutting the gland in two vertically, and lengthwise through the urethra, we note an elevation just at the orifice of the bladder, which is the *uvula vesicæ*. This is a more or less prominent tubercle formed by the anterior angle of the *trigone vesicæ*, the triangular

space at the base of the bladder left between the openings of the ureters and urethra.

Just ahead of the uvula we see the *verumontanum*, *crista urethralis* or *caput gallinaginis*, an oblong rounded projection of mucous membrane upon the floor of the urethra. Upon either side of it open the prostatic ducts, and a little cul-de-sac in the anterior part of the verumontanum is the *sinus pocularis*, into the lips of which, one on either side, open the common ejaculatory ducts.

During coitus, just at the orgasm, the semen is discharged with a rush into the prostatic urethra, which is about the size of a little finger; at the same time there is a spasm of the involuntary muscle fibers, lying in and about the prostatic sinus, which serves to raise the verumontanum and thus prevent the semen from being discharged backwards into the bladder. This is why one cannot urinate during an erection of the penis.

The end of a filiform bougie (15) might easily catch in the sinus pocularis; this is particularly true if it be much dilated, as sometimes occurs with stricture, from the urine flowing back into it; and a spasm shutting the membranous urethra within the triangular ligament (deep perineal fascia) would render the instrument all the more liable to be caught.

There is some question as to the propriety of calling the prostate a "gland," there is such an excess of stroma in its substance, which consists of an intermixture of elastic, connective tissue, and involuntary muscle fibers—principally the latter. There is a longitudinal layer of muscle just underneath the urethra, with decussating transverse fibers. The glands them-

selves are supported within the interstices of the stroma, and are compound racemose, there being from thirty to forty of them, and situated chiefly within the lateral and middle lobes—not within the commissure. The ducts of these glands open in the floor of the verumontanum. But although the true glandular portion of the organ is so much in the minority, yet its function is such as to quite warrant the application of the term gland to the prostate as a whole.

Etiology and Pathology.

VARIETIES OF ENLARGEMENT.—(*a*) When the enlargement is comparatively *slight*, although the disease may have been long-lasting, it is more commonly a case of enlargement of the gland *in its entirety*—excessive growth both of the stroma and glandular portion. *This is the more common variety.* Sir Henry Thompson found it to be the condition existing in the majority of cases coming under his observation. (*b*) Second in frequency is perhaps the enlargement of the intermediate portion—third lobe; or either the right or left lobes, or the anterior commissure, may be the especial point of enlargement. (*c*) Again, the prostate *may attain to double or more than four times its normal size*, in which case there is an excessive increase of the stroma over the glandular structure. (*d*) Very *rarely* there may be an excess of the glandular tissue over the stroma. (*e*) Often there is a rearrangement of both the stroma and glandular structure. *Very peculiar tumors* develop in the prostate at times, and in fact are *nearly always found in cases of enlargement; they are of a fibrous character* and vary in size from a pin's

head to a small nut. They are thoroughly isolated, and upon cutting into the organ, they often pop out like a wen; however, they may have a little pedicle. These tumors may lie partly within the prostate and partly within the bladder—be *marginal;* they may be *pedunculated* as just stated—perhaps being freely movable within the bladder and attached to the prostate by a little neck. *We classify these tumors with enlarged prostate because of their identical microscopical structure;* they are made up of the normal stromal elements of the organ, and contain rudiments of glands within them—*they are not heterologous but are homologous growths.*

The prostate is quite *the analogue of the uterus*, Professor Thomas claiming that 95 per cent. of women have a more or less fibroid condition of the latter during the entire period of life. And these tumors of the prostate are very similar to fibroid growths of the uterus, where we have the intramural, subperitoneal, submucous, and polypoid form, the latter being those that project into the cavity of the uterus. But there is this difference: that *they occur a little later in life in man than do these corresponding fibroids in woman.* As with the uterus, so with the prostate, it is quite common to find post-mortem little tumors of the prostate which have occasioned no inconvenience to the individual. After passing the meridian of life, there is a tendency for such growths to approach the mucous and serous membranes, and for them to become polypoid as they reach the free surface.

You must *disassociate enlarged prostate from any idea of inflammation;* it is hypertrophy. *There are*

no abnormal elements present, as engorgement from blood, deposit of fibrin, etc. And, to repeat, *this hypertrophy may affect different portions of the organ, or all portions.* More commonly the median portion is developed in advance of the lateral; or the right or left half has taken on an excessive growth.

Many *causes* have been assigned to account for the condition, such as a *gouty diathesis*, *sedentary habits*, *horseback exercise*, *venereal excesses*, etc., etc. Sir Henry Thompson concludes it to be the result of structure—a "necessity of structure." He is probably correct in saying that "as the wrinkles come and the hair turns gray, so likewise is this an evidence that the man is past the prime of life." We will agree with him and say that it is a senile affection—the "natural" accompaniment of laxity of skin, silvered hair, the arcus senilis etc.; not exactly *necessarily* occurring, but very frequently putting in its unwelcome appearance. Once more we emphasize the point that it is not a growth of heterologous character, all the tissues entering into hypertrophy normally belonging there.

Symptoms and Course.

As a rule, prostatic hypertrophy, of the class just spoken of is never developed under 50 years of age, and *very rarely under 55 years.* Generally it does not show itself until after 60 years; occasionally it is much later. But although a *very common affection after 60 years of age*, all men past that time of life are not *prostatics.* But the fact of occurring late in life, points to this condition and not to "enlargement," *which latter is due* to *inflammatory*

conditions occurring in early and middle life. The age of the patient generally puts us upon the right track, *exceptions being those cases where the enlargement takes the form of the tumors already mentioned.*

There is a great difference in the development of symptoms according to just how the organ does enlarge. There may be a commencing hypertrophy at 50 years, palpable upon examination, and yet no symptoms presented, the increase forming all *toward the rectum;* the gland may be half the size of an orange, and perhaps the only discomfort experienced being a sense of fullness in the rectum, and a lack of satisfaction upon defecation: there is no impeding of urine. In such a case the patient may reach the age of 70 or 80 before developing marked vesical symptoms, although he has had hypertrophy for twenty years. There would exist a similar state of affairs if the portion *above the urethra* were alone involved. But the *median* portion, in the posterior part of the prostate, is *just below the floor of the urethra*, and as it hypertrophies—and it is the part frequently involved in hypertrophy—it *pushes up the floor of the urethra* ahead of it; the gland may not appear enlarged to the examining finger, and the catheter measures a canal of normal length, yet there is difficulty in passing urine. The elevation of the floor of the urethra has *closed the vesical orifice* so far as voluntary efforts at micturition are concerned, and it also interferes materially with the introduction of a catheter.

Another effect of the lifting of the urethral floor, is that a *reservoir is created at the bottom of the bladder, that being no longer at a level with the vesical orifice;* con-

sequently the patient can only empty his bladder down to the level of that orifice, and *the result is residual urine at the base of the bladder*. This, decomposing, irritates the bladder wall, and further trouble is developed in the shape of inflammation. The carbonate of ammonia freed tends to make alkaline the remainder of the urine, and there is development of the triple phosphates and *increased irritation*.

Again, a *growth occurring just at the vesical orifice*, need be of no great size to form a very great impediment to the exit of the urine, and in such a case vesical symptoms would be developed early—at 55 years perhaps. So the character and location of the increase in size determine whether or not our patient becomes a comparatively early prostatic—a "young old man."

A characteristic symptom of *stone in the bladder may be simulated by a prostatic tumor* as follows: When a tumor, increasing from below, *strikes the roof of the urethra*, it continues to grow in the *direction of least resistance*, *which is backwards towards the bladder cavity*, into which it in time drops. The *sphincter vesicæ squeezing down* at the bladder orifice upon the tumor, in the effort to hold the urine, *contracts the neck* to the extent that we finally get a regular *polypus within the bladder*. Of course this may easily be the source of quite as great irritation as would a stone, particularly in the respect that the urine washing against it in its attempt at exit, readily *pushes it against the orifice* with effectual "ball valve" results; there is a *sudden interruption of the stream*, the tumor drops back, micturition begins again, etc. Thus "fre-

quent and painful micturition, with interrupted stream" do not infallibly mean stone.

The usual history of a call at your office from a prostatic is about as follows:

We will say that a man of from 60 to 65 years of age, from getting his feet wet or sitting out upon a cold veranda, finds the next time he attempts to relieve himself that he can't urinate. He has had no previous local trouble to send him to a doctor. The physician relieves him by baths, medicine, or catheter if necessary, and finds upon examination an enlarged prostate that has perhaps existed for years. The patient has thought of any little inconvenience he has previously experienced, as the "usual old man's trouble;" and he *has not paid any particular attention to the matter* because he looks upon it as part and parcel of getting old, and does not at all consider it a disease. But careful inquiry by the physician, and retrospection by the patient of the past few years, elicit the following: For some time he has had *increased frequency of micturition;* he has had to *wait longer* than previously for his water to come; he has had to *strain* to start the stream, which is feebler than it was. He may even have to "milk" out the urine; and on account of the dripping, he is compelled to straddle in order not to soil his shoes.

The patient first comes to you for retention, or, if fastidious, it may be for the bad odor. Individual peculiarity has much to do with this. Some people watch themselves very closely, dwelling at length upon any slight abnormal sensation. Others often think nothing of their physical troubles until they have

reached a very severe stage. There is *hemorrhage in some cases, but it has been exceptional in my experience;* when present it is ordinarily very slight—a little blood appearing at the end of the act of micturition, or the whole urine slightly stained. Again, the urine may be loaded with blood which *may have flowed back into the bladder and clotted there.* The bleeding comes from the *congestion of the vessels in the prostate, and instrumentation* to relieve retention perpetuates the hemorrhagic condition by rupturing the capillaries.

If his water be cloudy, ammoniacal and alkaline, probably there is residual urine to deal with. To ascertain about this, *first have him urinate,* noting the size of the stream, and allowing for his nervous hesitancy due to your presence. Inquire now if he is *sure that he has finished,* asking him to retire if necessary, giving him every favorable chance to pass all he voluntarily can. *The sound of running water from a nearby faucet may prove stimulating.* When he has all done, *then catheterize him* and see if you get anything more.

Or he may *urinate involuntarily*—not freely into his trousers, but from a few drops to a teaspoonful comes out of the bladder, and especially at night. (*All involuntary discharge of urine in the adult male, barring paralysis and certain rare lesions, means a distended bladder and retention—not incontinence.* Nature in order to protect the bladder lets off the surplus. *Look out for retention in typhoid;* the nurse may say that the bladder condition of the patient is all right, because he "passes his water very frequently, or all the time," but this very thing means *distension*). In certain very rare forms of prostratic hypertrophy the growth may

open out the neck of the bladder, causing a condition of *incontinence. Interrogate the hypogastrium* in all these cases, observing the nature of the flow of urine, and passing a catheter if necessary.

When an elderly man can't pass his water, hedge on the prognosis; look with suspicion upon the case. I don't think this is emphasized enough in the books. While the *majority of men get over the immediate effects and live for years, yet you should think of it as the beginning of the end;* it is a signal of nature's breaking up. Afterwards he may be able to pass some water without a catheter, but some is retained. He finally passes into a typhoid state—the appetite fails, tongue becomes dry, pulse weakens, and he is a little "off in his head;" there is some flightiness, drowsiness, etc. and he may drift into a coma and die. Still a great number get over an attack of retention, so don't take too gloomy an outlook, although you are *on the alert for the tendency to drift into a typhoid stage and death.*

Diagnosis.

When you have a case of an old man with retention of urine, *first examine by the finger in the rectum.* You may be able to recognize an *enlarged posterior lobe;* or in the face of marked symptoms, if no appreciable enlargement of the prostate, you may suspect tumor or an enlarged middle lobe that *encroaches upon the urethral aspect.* Even if the sense of enlargement is not distinct, yet you can appreciate that the whole posterior surface as traversed by the point of the finger, *is not flattened but is rounded*, and that the central commissure *no longer forms a gutter between the*

two lateral lobes of the gland. Again, the rectal finger may butt up against a large tumor.

It used to be stated that "senile hypertrophy" never occurred in men under 45 to 50 years of age; but the tumors mentioned do occur early, and if one be only situated at the vesical orifice, it may cause very emphatic and dangerous symptoms in a man even 40 years or younger. But *the younger the man presenting vesical symptoms, the more we would be inclined to think of stricture* in preference to prostatic trouble.

Regarding the *stream*, remember, that *in stricture, while the caliber may be small, yet the velocity increases in proportion to the augmented vis à tergo; but a prostatic cannot increase the force of his water by straining.*

*INSTRUMENTATION.—Take a *Mercier catheter* (10), not a curved one, and make a mark upon the side of the handle which corresponds to *the direction in which the point is deflected.* Also mark upon the shaft of the instrument at the point of the meatus *when the eye has just reached the bladder*, as indicated by the urine beginning to flow. In this way you can measure the length of the canal, which is *increased if the prostate be enlarged in its entirety.* If the middle lobe be pressed up against the neck, this also increases the length of the urethra. Ordinarily, the normal distance from the external to the internal urinary meatus is about eight inches, *the urine usually flowing upon the introduction of seven and one-half inches of catheter*, but here the distance before reaching the bladder may be from eight to ten inches; and to get into the viscus it may require a very flexible instrument or one with a very large curve.

*See "Urethral Instrumentation," page 75.

Try now a *prostatic catheter* (8), which is much longer than the ordinary one, and is very much curved in order to go around the anterior part of the tumor; it curves until the point is directed back towards the handle. Or there is the *gum catheter* (5), which you can bend to suit yourself, or fit with a stylet, by pulling which the point is brought nearer the handle (9). A prostatic catheter is made of virgin and not coin silver, *so you can bend it with impunity.*

If one side of the gland is increased more than the other, you get a corresponding deviation in the urethral canal, and the condition is diagnosed by the direction the handle of the instrument takes in going in. *Allowing the instrument to find its own way, and not forcing it*, if the handle is deflected to the right, the right lobe is involved, as *the handle goes to the side that is enlarged.*

You can generally succeed in effecting an entrance with the flexible Mercier instrument (10). If you find that there is a tendency for it to revolve upon its axis, let it do so, and *when at the bulb bring the point up to the roof of the urethra*, being guided by the notch you have made.

Or the searcher (19) or sound (4) may be used for diagnosis. Note the degree that you have to *depress the handle* before the point will enter the bladder; it should slide in when the instrument has reached the horizontal or a little less. If you have to go *below this and push upwards, the neck of the bladder is elevated and there is some obstacle to be mounted over*—viz., an enlarged third lobe. *Ordinarily, if you reverse the point of a sound within the bladder, turning it downwards, you can withdraw it* through the vesical neck, al-

though you feel it stick; but when there is a tumor there, or the projection of the third lobe into the urethra, *the point of the instrument hooks against it*, and a distinct step or dam is appreciated.

To recapitulate. The manipulations are as follows: (*a*) To ascertain the length of the canal; (*b*) to detect deflections in direction, either to the right or left; (*c*) rotating the tip in order to insinuate it within the internal meatus; (*d*) "hooking" the tumor, or diagnosing the condition by rotating the point of the instrument, while at the same time we are pushing it backwards and forwards—first having a little water in the bladder. In practice I have found it *easier to rotate the point towards the patient's left* than to his right side.

Treatment.

Being a condition resulting from "necessity of structure,"—simply an increase of pre-existing and normal tissue—it is very different from trouble occurring in this locality in the *young* man. There, "enlarged prostate" means an *inflammatory condition*, and we find urethritis and cystitis complicating the prostatitis. This also is really "hypertrophy," *but we should limit this term to cases of senile enlargement.* In the young man's *prostatitis*, we may hope that our remedies will cause absorptive changes, and in the great majority of cases the swelling will go down. But for use in the senile difficulty, so far as I know, there are *no authoritative accounts of any reliable remedy.* About the latest, and a much vaunted one, is the *Saw Palmetto.* I fail to see any real value in this, further than some decrease in the pain and urging, etc.; under its administration

there was no *decrease in the size of the gland* that could be detected. So *we must regard the condition itself as incurable.*

The systematic passage of large sounds, to promote absorption; and of bulbs per rectum, to abort the process by pressure, has accomplished nothing worth mentioning.

The injection of *Iodine* has been tried; in fact the whole materia medica has been ransacked in the attempt to find some remedy acting specifically here, with the result that nothing has been found entitled to our confidence.

But you can give your remedies as indicated, for the relief of the *cystitis* accompanying and secondary to the prostatic trouble; and for *kidney* complication. The main standbys here will be: *Chimaphila*, which I have seen given gtt. iij to v of the fl. ext., t. i. d., with occasional good results in relieving the tenesmus, frequent urination, and general discomfort; *Pulsatilla*, *Kali Iodatum*, *Kali Bromatum*, *Epigea*, *Populus*, *Digitalis*, *Mercurius* especially comes in at times as very efficacious, *Buchu*, *Triticum Repens*, *Uva Ursi*, *Pareira Brava*, *Ustilago Maidis*, etc. The foregoing possess specific action upon the mucous membrane of the urinary tract. The symptoms in all these cases are very much alike: frequent micturition of more or less painful character, discomfort—feeling of fullness—about the neck of the bladder, pains down the penis, and altered urine.

An enlarged prostate does not kill. It is the result of the complications, rather than the trouble itself, that causes the mischief; as is the case in stricture. If he

has to *strain violently* in order to get his water out, there is going to be trouble; congestion tends to cystitis, and *that is just what we are afraid of;* as continuing long enough, that means *pyelitis and degenerated kidney. So we want to prevent distension of the bladder and frequent urination.* First, we must see if the patient really empties his bladder, by having him do all he can voluntarily, and then introducing a catheter. You may have little or no appreciative enlargement per rectal examination, and yet, after every opportunity afforded him to urinate under the most favorable circumstances, the catheter draws as much as half a pint perhaps. If over ℥ss. be found remaining behind, it is probably ammoniacal urine—urine that has undergone *decomposition*, the breaking down of its urea giving rise to the *development of carbonate of ammonia.*

Do I make the point perfectly clear? it is a very important one—that the inability of the patient to expel all the urine in the bladder voluntarily, causes urine to be left behind. If allowed to remain there, it decomposes, freeing irritating chemical substances, and *contaminates the normal fresh urine as it comes down from the kidneys*, causing the same process to be continually repeated in the latter. This explains the catarrh of the bladder, the stringy pus in the urine, the frequent micturition, etc. *So there must be some systematic drawing off of this residual urine.* Our remedies are of little avail because the trouble is *mechanical —there is a dam.* If we cannot succeed in getting rid of the dam, yet by *completely emptying the bladder at least once in twenty-four hours, one factor at least of*

cystitis has been modified or removed, and remedies may then have some chance of working with effect.

Ordinarily, *the healthy bladder holds ℥viij to x before there is noticed an urgent desire to micturate*,—although the amount varies in different individuals—and the urine is voided every four to five hours; but the prostatic, having already perhaps half a pint in his bladder, —left over from last time, plus what has since descended from the ureters—as soon as he secretes, say another half pint, must urinate again; *he urinates twice as often as he would if he had a pint capacity. And the inflammation, causing irritability, is an added factor.*

Nature, in trying to overcome this dam, causes the bladder to make *violent contractions* down upon the contained fluid. What is the result of this? The mucous membrane tends to bulge between the muscle fibers, as does the rubber bulb of the atomizer into the meshes of its supporting net. This gives a *sacculated condition of the bladder wall*, and owing to the increased activity of the muscle, *bands of fibers hypertrophy until regular trabeculæ are formed.* All of which means increasing cystitis, pyelitis, and finally death.

We must prevent the condition that we have dwelt upon with so much emphasis, and its dire result. If we can do it by drugs, why all right! *But if we cannot, we must, in the presence of a "greater evil," choose to use the catheter more or less frequently.* In doing this we have to consider the fact that *the "catheter habit" produces after a time an inability to urinate.* Some writers place the time in which this change occurs at three years; Sir Henry Thompson, whom we have freely quoted in this subject, says *if a person goes for*

two and a half years without any voluntary voiding of urine, the result is the absolute inability of the bladder to empty itself.

But "What's the difference?" you ask. *It has an important bearing regarding operation.* If the patient gets into such a condition that a prostatectomy—the cutting away of some portion of the gland—is deemed advisable, it is to be borne in mind, although you succeed, by removal of the obstruction, in restoring the canal to a new and seemingly "normal" condition, that after a prolonged period of catheter life the patient will be unable to urinate anyway; the operation can be of no use regarding the restoration of the function.

And yet *operative measures may be fully justified.* Suppose you can't catheterize your patient "condemned to catheter life?" Here is a case where we must use the instrument every hour or two; so extreme is the distress, with the burning pains in the penis, etc., that the sufferer must have relief. The catheter means tremendous suffering every time it is employed —it is torture! *With such a case of frequent, difficult and intensely painful catheterization, how long will it take to use the patient up with the pain?* In addition, there is the constant *interruption of his sleep* to help wear him out. It is in such places as this, when all else fails,—we may even have *tried to bore a hole through the obstruction* to let the urine out—that we think of *prostatectomy*, or of *permanent supra-pubic drainage.* The latter is accomplished by performing an *epicystotomy—making an incision into the bladder from above.* It is done for the double object of *drainage* and in order to thoroughly explore the vesical neck *digitally*

and *visually*, to ascertain if the form of the enlargment *admits it within the scope of operative procedure upon the growth itself.* A little electric lamp (23) comes in nicely here. If we think favorably of the matter, we do the two operations at the same time. Some of the hypertrophied tissue, at least, we may succeed in *cutting away*, removing by the *ecraseur* (34) or *chewing* off with appropriate forceps (24). This may prove either a very simple or a very formidable and bloody task. If *pedunculated*, the removal is easy by *twisting* or *ligating*.

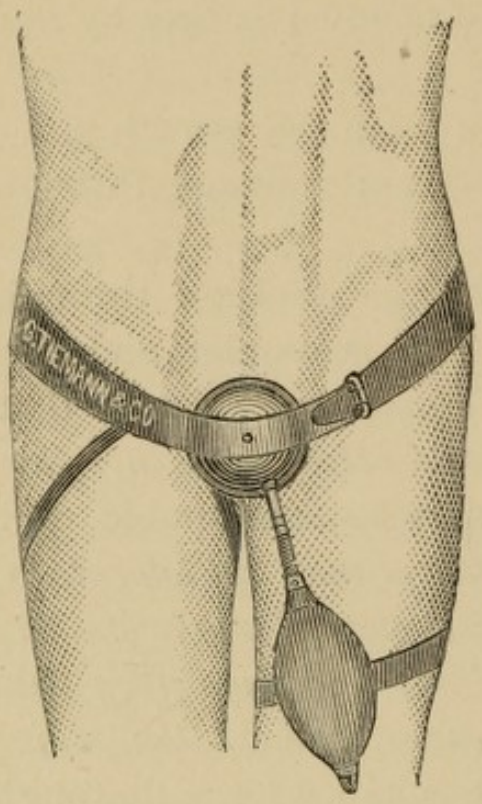
If you find an operation upon the growth not indicated, you can make permanent drainage through the hypogastrium.

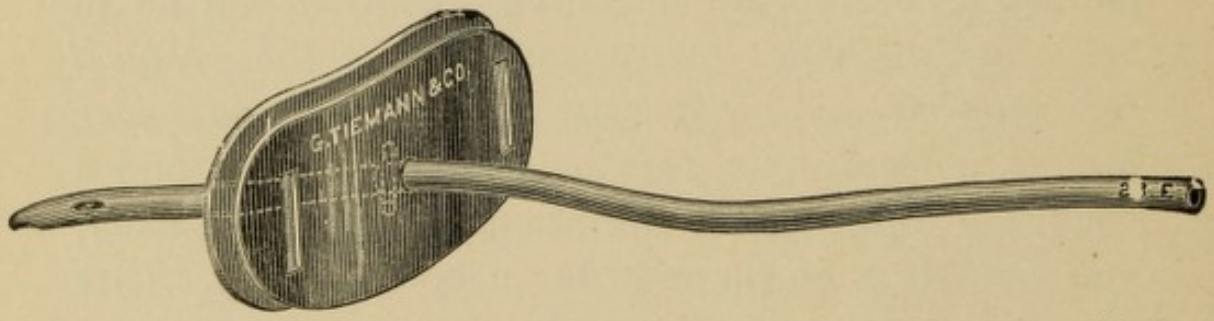
Some surgeons claim that an incision through the *perineum* is preferable. This is simpler, and all right so far as *drainage alone is concerned;* yet in that case the bladder, *emptying itself below*, *does not act as a reservoir at all.* Not only is supra-pubic drainage easier cared for, but *the patient may not tolerate a tube within the vesical orifice*, even though it be first thoroughly dilated. *And any operation upon the bladder is very difficult to perform through the perineum;* you have nothing like the chance for a thorough examination, nor for an operative area, that you do in the other method. Again, some prefer the *perineal incision simply for diagnosis. It can be done under cocaine*, *without much pain or danger.* If you find a condition requiring an operation within the bladder, you can then go on and do an epicystotomy. (See pages 103 and 109 for details.)

[PERMANENT DRAINAGE.—When in cases of ex-

strophy of the bladder, or for relief of urinary retention and intractable cystitis due to enlarged prostate, it becomes necessary to institute *permanent drainage of the bladder*, recourse is had to an apparatus such as one of these herein illustrated.

The catheter, held *in situ* by one of the methods indicated, leads either to a collecting pouch,—as seen in the top, left hand figure—or to a leg tube similar to the urinal shown on page 60.





Another drainage device is Dr. Nicholas Senn's self-retaining silver tube. This an *S*-shaped affair, with

one end enlarged into a hollow bulb that is perforated by many openings through its walls. The tube is secured in an opening through the abdominal wall, just above the symphysis, the external end turning down over the upper border of the symphysis, while the bulbous end turns backwards and upwards into the bladder.]

A prostatic must guard himself carefully against all forms of cold—standing or sitting in drafts, or in damp places, on cold stones, getting his feet wet, etc. These are all causes of congestion, consequent swelling of prostate, and retention. *He should wear flannel in winter and summer. Also he must avoid stimulating food and condiments.* A careful general hygiene, including simple and plain but liberal diet, is the idea.

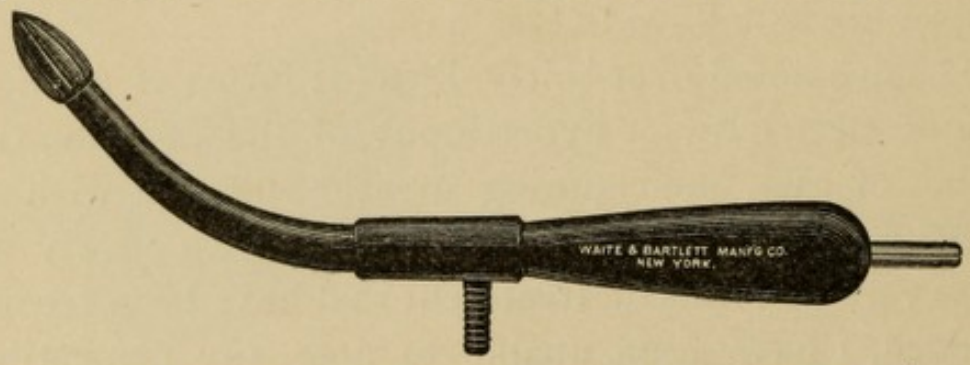
ELECTROLYSIS.—It is claimed that *electricity* will reduce an enlarged prostate. I have had no personal experience in this line, but the experts do not seem to be highly successful. In many cases we find their patients to be from 25 to 30 or 35 years old, which excludes *senile* trouble. They have been dealing with *inflammatory* conditions of the gland, in which I think myself the electric current may be of value.

[Professor William Harvey King's views upon this subject are as follows:

"I have noted over thirty different forms of application of electricity for hypertrophy of the prostate, the author of each one claiming great results. I wish to state here that after a large experience with nearly all these various forms of treatment that have been recommended, I have been unable to note any perceptible lessening in the size of an enlarged prostate.

"It is true that puncture of the prostate and the production of electrolysis through the rectum can be performed a few times, with due care, without any particular harm; but tolerance of this form of treatment soon ceases, and no matter how much you relieve the rectal portion of the prostate, it does not remove the annoying and dangerous vesical symptoms, which is the one thing to be accomplished in the successful treatment of hypertrophy of the prostate.

"While, as we have stated, we do not believe electricity reduces the size of a hypertrophial prostate, we do believe that it can be used to advantage in certain conditions of prostatic enlargement, as a *supplement to local and hygienic measures.* The treatment I use is generally given with the faradic battery, but the galvanic may be used. It is always better to begin with the faradic current, and if it should not prove successful, try the galvanic. Great care should be exercised when this is done, and if any symptoms occur which indicate that the treatment is producing irritation, the galvanic current should be discontinued until all signs of the irritation have disappeared. Of late I have used the electrode which I invented for the purpose, and which is here represented. *It is covered with hard rubber, which*



perfectly prevents the metallic parts from coming in contact with the membrane. The end to be introduced

has a small metal bulb inside the rubber sheath; in this sheath are narrow slits, and, as it is much larger than the metal bulb, it is absolutely impossible for the latter to come in contact with a fold of the mucous membrane, no matter how small that fold may be.

"It is used as follows: Introduce the bulb well up into the rectum—about two inches, attach a Davidson's syringe (40) to the projection seen at the lower surface of the instrument, and inject water or a saline solution, which is forced through the hollow tube and through the slits of the bulb into the rectum. The patient will inform you when the rectum is full, and it is best not to inject too much, as it may be forced back by a spasmodic action of the intestines. *This liquid acts as a conductor, and the current acts upon the whole surface of the rectum*, or as far as the liquid has gone.

"*The other, flexible, hand electrode of large size, is first placed over the perineum, and afterwards over the hypogastric region.* The whole treatment should last from *eight to twelve minutes.* The strength of the current, when the faradic battery is used, should be governed by the feelings of the patient—*that is, never cause distress;* a slight bearing down in the rectum is sufficient, and it is just as well to stop short of this sensation. *If the galvanic current is used, from five to ten milliamperes may be passed for the same length of time.* Treatment may be given more frequently with the faradic current than when the galvanic is used. *Ordinarily, from one to three treatments a week will be sufficient.*

"When we bear in mind that the blood returning from the vesical veins has to pass through the plexus

surrounding the prostate, on its return to the general circulation, we can easily see how any *enlargement of that organ is liable to obstruct the venous circulation and thus cause a venous congestion* of the bladder walls and membrane. This venous congestion, together with the obstruction of the free flow of urine, thus causing greater labor for the bladder wall, at first causes slight hypertrophy of the muscular fiber of that organ. This hypertrophy, however, never entirely compensates for the obstruction, and soon the walls of the bladder are in a state of atrophy. As a consequence of this, mucus is thrown off, which makes the obstruction still more complete. Finally, *the bladder is incapable of completely emptying itself.*

"Now the treatment which we have given, *if administered in the early stages*, while it does not remove the enlarged prostate, it *stimulates the walls of the veins, improving the circulation and removing the venous congestion of the bladder. It also stimulates the atonic bladder walls*, so that it can overcome to a great degree the obstruction, thus *leaving less residual urine and lessening the liability of general cystitis.* I have seen *this treatment alone in the early stages* of a hypertrophied prostate, *reduce the mucus* so that it was only noticeable by carefully looking for it; when, before the treatment, it left deposits covering the entire bottom of a chamber; and *it also decreased the frequency* of urination from one hour to three hours. A case which came into my hands some time ago, illustrates the benefit that may accrue from this treatment. A gentleman, 63 years of age, had suffered from hypertrophy of the prostate for years—that is he had consulted a

physician three years previously, but he had some time longer suffered from a frequent desire to urinate, but no date of beginning could be given by him. During his three years of treatment, before he consulted me, he had taken various medicines internally, and had faithfully washed out the bladder with borax water once a day; and had also drawn his water once a day besides. When I first saw him he was urinating on an average of once in an hour and a half. The residual urine was from one to one and a half ounces, and contained considerable mucus. *The amount of enlargement was not great.* He had discontinued internal medication for some time, and as I was desirous of not changing his treatment as far as medicine was concerned, so as to be able to judge just what benefit had been derived from electricity, I continued with the borax water wash. Treatments were given with *the galvanic battery every other day for three weeks, and twice a week for six weeks. At the end of the tenth week the mucus had decreased 75 per cent., the intervals of urination increased to four to five hours, and the residual urine amounted only to from one to two drams.* The patient greatly improved in general health. *After the tenth week he was treated once in three or four weeks with the faradic battery.* He still continues the wash once a day, and is now living a very happy life; but I do not believe that the enlargement of the prostate has in any way decreased. Of course, when the posterior median hypertrophy is very great, neither electricity nor anything else will cause the base of the bladder to contract sufficiently to empty it entirely, but *electricity helps.*

"Another very annoying condition which *this treatment will generally relieve, either wholly or partially, is the rectal symptoms.* These are of a large variety and are mostly reflex. It is, I believe, *a universal law in the administration of electricity in organic diseases, that the symptoms, both local and reflex, are relieved out of all proportion to the removal of the disease itself.*

"The physician who has had no experience in the treatment of enlarged prostate, may think that, as *I do not pretend to remove the disease*, the treatment is of little use; but to those physicians who have had experience, and realize how great the suffering is and how *thankfully a little relief will be received*, I have no apology to make."

CASTRATION, ETC.—Recently there has been considerable written concerning *castration* as a remedial measure in prostatic hypertrophy; and the statement is made that wonderful reductions in the size of the organ have followed the operation, due to a diminution of congestion, followed by atrophy particularly affecting the glandular elements. Acccording to this, extirpation of the testicles would be of little use in myomatous or fibrous prostates.

With regard to mortality, it is said that the operation of *prostatectomy* has a slight advantage over castration; which seems to us a doubtful claim: the former surely has the added advantage of permitting a thorough examination of the bladder and the remedying of previously unsuspected conditions, as, for instance, the presence of calculi. The disadvantages are that it lays the patient up for a greater period than does castration, and it may be followed by fistula.

Beneficial results are of *doubtful permanency* after either operation—with the chances in favor of prostatectomy; while in some cases unwelcome results in the form of general constitutional and *nervous derangement* are seen to ensue following the removal of the testes.

Yet it is nevertheless true that castration, in carefully selected cases, may afford great relief and thus prove a very desirable operation: and *resection or simple ligation of the vas deferens* are advocated as causing atrophy of the prostate as well as does castration.]

PROSTATITIS.

Acute prostatitis is a rare affection occurring independently of urethral or bladder difficulty; in the latter connection it is not uncommon. Some form of *urethritis —whether gonorrhea or not—is the most frequent cause.* An anterior urethral inflammation is prone to travel backwards and locate itself within the prostate, in the neck of the bladder, or even reach within the bladder itself. Stricture is quite commonly the cause of an inflammation travelling back in this way; but *urethritis is the parent of stricture.*

Etiology and Pathology.

The disease may be caused by the introduction into the prostatic sinus of *irritating agents*, as injections given for an urethritis; or by *instrumentation.* It may arise from the presence of *stone* in the bladder, or more particularly a calculus imbedded in the substance of the prostate or in the prostatic sinus. Other, rarer, *causes* that have been noted are: condiments, alcohol, cantharis, copaiba, cubebs, turpentine; but it is a question if these drugs do cause prostatitis. Horseback riding has been assigned as a cause. We can say that it may be due to any local chemical or mechanical application, and any *application of damp or cold to the perineum.*

The inflamed organ is increased to from two to four times the normal size, and there is increased redness of the mucous membrane of the prostatic sinus; if the in-

flammation be severe, there is a formation of a grayish false membrane. Upon section, the cut surface exudes a semi-turgid, red fluid, which under the microscope is seen to be made up of semen, lymph, prostatic secretion, and pus corpuscles. In an inflammation of a higher grade, we see upon section, here and there, little particles of pus of pin-head size; these are the little crypts of the prostatic glands, containing pus which is secreted by their walls. If the condition be still further advanced, we find not so many dots of pus, but pockets of a large size—large as a pea or the end of the finger; here the individual crypts have been broken down into one another. The organ may be gangrenous, or simply consist of a dense capsule containing pus, and the urethra running through it; the muscular structure being all gone.

Symptoms and Course.

Generally the patient with either an acute or chronic urethral discharge, suddenly notices a feeling of *discomfort about the perineum*, anus, etc.; sitting is uncomfortable; then the perineum is tender and painful, walking increasing the discomfort.

There is *frequent micturition*, and finally the act becomes *painful*, the stream being of *reduced size and may stop entirely*. This is followed by greater tenesmus, and the pain is more at the end of the act of micturition. He has *sharp pains in the perineum*, shooting down into the thighs; and backache. There is annoying *desire for stool, and defecation is painful.*

Very likely he also has *fever*, with some rigors, dry hot skin, thirst, and restlessness.

Diagnosis.

Now the question is, have we a case of prostatitis or *cystitis?* Cystitis has not the marked tenderness in the perineum, and no, or but little, pain upon defecation. In prostatitis, the introduction of *the finger per rectum causes great suffering*, but if it be done very gently, and advanced as the spasm of the *sphincter ani* relaxes, it causes less pain; the finger appreciates an increase in the size of the prostate—as much as four times the normal, perhaps—and the *tumor bulges into the rectum. It is throbbing and tender, and the parts unusually hot.*

Treatment.

The following of our remedies have been found helpful: *Aconite*, *Belladonna*, *Bryonia*, *Clematis*, *Mercurius Solubilis* or *Corrosivus*, *Digitalis*, *Pulsatilla*, *Thuja*, *Chimaphila*, *Sabadilla.*

Short *hip baths*, given as *hot* as the patient can stand them,—a number of them a day, and not continuing over five minutes—will draw the blood to the surface of the body and so relieve the deeper congestion. The results justify the practice whether the theory is good or not. Also *local heat* may be applied in the form of poultices, hot *Chamomilla* tea, decoction of *Poppy;* and applications to the *hypogastrium* as well; such as flannels wrung out of *hot* water or camphor water, turpentine stupes, etc. [A specially shaped water bag is made for convenience of application to the perineum.]

It is a question to be decided by the exigencies of the individual cases, as to whether the introduction of a *catheter* is a greater evil than *aspirating*. Try a

small catheter, using all gentleness, and if you can coax it in, it may not hurt much; but if it doesn't go readily, and a second one won't go, *then stop.* Try placing bits of *ice in the rectum* to enable the patient to urinate; also hot baths for this purpose. But if all these fail, and you still have retention in spite of your remedies, *I would then aspirate.* A distended bladder may cause you to fail in finding the top of the pubes, but there is a *transverse wrinkle* which always represents the top of the symphisis; and there put your needle. You *may aspirate two to three times a day, for days and days, without any harm;* and a post-mortem would show no indications of where the needle had punctured the bladder.

Perhaps the patient cannot wait six to eight hours for you to aspirate him; then continue catheterization, or aspirate every two to three hours; and, if need be, use *Opium* to restrain the powerful spasmodic vesical contractions, thus conserving his strength and affording some relief from the horrible suffering. Give gr.ss. of the solid extract, with *Belladonna*, gr. ¼, in *suppositories*, administering few as possible and repeating more or less frequently according to the effect produced. I think *the tenesmus causes more harm than such palliative measures.*

CHRONIC PROSTATITIS.

In the case of the chronic form of this disease, there may have been an antecedent urethritis or not.

Etiology and Pathology.

It may follow the acute form, and when it does, the patient having previously had an enlarged prostate,

would have in the present instance; or, if any other change, it would be to an *atrophied* gland. Upon section we find the membrane of the sinus much thickened, and of a cherry red or ashy gray color. Within the prostatic sinus itself there is cast-off epithelium and pus cells. The lobes are softer and more juicy than normal; from the cut surface there may ooze mucus and blood, or the same admixed with pus. The *causes* are an extension of an inflammatory process originating elsewhere, or the continuation of the acute form instead of resolution. You may have it, resulting from the acute form, with *a tendency to get well.* It may start with an antecedent inflammation caused by masturbation or venereal excess; or be consequent upon bad cases of spermatorrhea, hemorrhoids, ulcerations, etc., of rectum; the use of drastic drugs as turpentine, cantharis, etc.

Symptoms and Course.

There is a gleety discharge,—*prostatorrhea*—perhaps only in the morning or after each urination, similar to the state of affairs in clap. The patient experiences a sense of *burning about the meatus*, *anus*, or lower portion of rectum, *after standing or walking*. Also there is tenderness from sitting, or from *perineal pressure*, as in *horseback riding*.

Impotence and nocturnal emissions are characteristic features, the latter trouble probably sending him to you. Ask him to pass his water into *two separate glasses. A cloudiness of the first represents the washings of the canal*, and in the glass are little *mucous threads*, *looking like tacks*, having one end larger than

the other. Some claim that these "tacks" are characteristic of *posterior urethritis.* If you now pass a sound into the prostatic urethra you will cause much pain; the patient may faint. This locates the trouble here, and we would probably diagnose the cause as *venereal excess.*

Treatment.

You must first gain the *confidence of your patient;* tell him you will do all you can, but *don't promise too much.* If you can find what is the cause of the seminal emissions, you can then better judge how much you can help him. In all cases of *prostatorrhea*, if there is a *great loss of nervous energy*, *the prognosis must be guarded.* Impotence is very difficult to handle.

Our remedies are: *Digitalis*, *Causticum*, *Conium*, *Aurum*, *Iodine*, *Ferrum*, *Secale*, *Cyclamen*, *Populus*, *Selenium.*

(See "Sexual Neuroses.")

[Concerning the use of *electricity* in this connection, again we will quote from Professor King:

"Galvanism applied in any way is very liable to aggravate the symptoms of a patient suffering from an *active congestion* of the prostate; but *faradism* given in the manner described under "Hypertrophy," particularly if the *secondary coil*, *which is used*, is made of a long, thin wire, will almost invariably relieve the distress *temporarily; but I hardly think it is advisable to use it.* I have, however, seen one case where the *deposit thrown out by an inflammation was absorbed*, and the symptoms accompanying a *chronic congestion* relieved, by the *galvanic* current.

"The patient had been treated for stricture. Sounds had been introduced by a physician who evidently did not understand his business, for when the sound became obstructed in the deep urethra, he forced it past the obstruction, using nearly his whole strength to do it and causing great pain to the patient. The next day a prostatic inflammation set in, but subsided in ten days without the formation of an abscess. Three weeks after this an examination by the rectum revealed a hard unyielding mass surrounding the prostate, of a fibrous material thrown out during the stage of active inflammation. The prostate was only slightly sensitive on pressure. The patient felt a *fullness and distress in the perineum*, but no actual pain, and frequent desire to urinate. He also had a *feeling as if he must have a movement of the bowels continually*, but was unable to have any kind of a movement without an enema. There seemed to be a total inaction of the rectum.

"A small, flat, rectal electrode, which was first covered with absorbent cotton and then all covered with a tightly fitting piece of chamois, was introduced. This was *before I used the water electrode previously described*. The other electrode was placed *upon the perineum* and a current of *ten milliamperes passed for ten minutes*. This treatment was given *three times a week for two weeks, and once a week for three weeks*. The deposit disappeared so that *the cellular tissue became soft* and yielding to the feel; *the frequent desire to urinate disappeared, and the rectum resumed its normal function*.

"A case of *prostatorrhea* has recently come under my care, which presented the following history: Two

years previous he had an attack of gonorrhea, during which he had symptoms indicating a congestion of the prostate, but which subsided after three days perfect rest in a recumbent position. After the gonorrheal inflammation disappeared, there remained a slight muco-purulent discharge, and from that time until I saw him he had been treated for gleet, stricture and spermatorrhea; all of which seemed to increase the discharge instead of relieving it. The only inconvenience he suffered was a slight irritation of the vesical neck. He would occasionally notice a slight discharge in the morning and also at other times, but he noticed it principally after straining at stool. A microscopic examination of the discharge showed that it contained fatty débris, leucocytes and some prostatic secretion. The case was diagnosed as one of *prostatorrhea.*

"A large-sized steel sound (4), No. 17, which completely filled the urethra, was *insulated with rubber shellac* to within two inches of the end. This was introduced so that the insulated part came in contact with the prostatic urethra. This *sound was attached to the negative pole of a galvanic battery, the positive being placed above the pubis. Four milliamperes were passed for three minutes. This treatment was repeated every ten days until five treatments had been given.* At this time the *vesical irritation had disappeared, the drop in the morning was no longer noticeable*, but occasionally a very slight drop—very much less than before the treatment was given—could be seen after straining at stool. He now left the city and treatment was discontinued. Whether more treatment

would have entirely eradicated the trouble, of course cannot be told, but it is fair to suppose it might."]

CASE NO. 14.

PROSTATITIS—PERIURETHRITIS.—Dr. N ——brings this patient to us. You see he is a young man not much over 30. We understand that he has some trouble at the neck of the bladder. He has ridden horseback a great deal and thinks in that way he has bruised the perineum. For days he would urinate every half hour and sometimes his water would be bloody. The present acute attack of the trouble has now lasted three weeks. He complains of almost constant pain at the vesical orifice. An examination of his urine shows the presence of muco-pus and albumin, but no casts. He has been running a fever of from 100° to 104° during the last ten days. He has movements from the bowel of formed but *flattened* character, which would suggest a *stricture of the rectum.* The doctor says that digital examination per rectum ten days ago, detected an enlarged prostate, which has since then decreased in size. A few days ago he had some slight rigors followed by some rise of temperature.

The patient, who is a very intelligent man, says that he caught cold two years ago, after which his urine came clear at first, but with a few drops of blood at the end of the act of micturition. He consulted a doctor and became better. But after this he found that upon getting a fresh cold his water would become cloudy, and there would be increased frequency of voiding. This condition would last from one to a few days, after

which he would consider himself well. One year ago he had a "terrible time," passing pus, "slugs" of blood, etc., and was sick for five weeks. He also suffered much *perineal pain* and also pain *over the kidneys.* In January he had apparently recovered from this, but last March there was a renewal of the trouble, with the added factor of rectal difficulty; he could hardly pass even flatus from the bowel. *Previous to a year ago* he had perfectly formed rectal movements all right, but after a later cold his stools become "*flat as tape*," as you see them now (in March).

Diagnosis.

The patient presents a history that is somewhat obscure. We will now proceed to *examine* him.

There is some inflammation about the lips of the meatus. It is two hours since he has urinated, and we notice also some *moisture at the meatus*, which should not be there. Also he has a hydrocele of the right side.

Putting my finger into the rectum ("*don't surprise the sphincter, but exert steady, gentle pressure and it will relax*") I can detect a *swelling the size of a small orange situated at the site of the prostate.* It is smooth anteriorly. The *central depression in the prostate is obliterated.* The whole gland is *enlarged.* Going higher up, I find the swelling more pronounced; it is in contact with the sacrum and I can't crowd my finger between it and the sacrum. The most enlargement is upon the left side—the posterior portion of the left lobe; indeed there is a depression where the right lobe ought to be. The surface of the tumor is quite

uniformly smooth. I fail to find the *soft spot* for which I am feeling [spot of fluctuation from suppuration.] There is a little projection from the left side, like the tip of the tongue; it is not movable. *Apparently it is not an abscess;* there is no collection of pus near the rectal surface. *But the rigors, and his running a fever of 100° to 104° for the last ten days, are suspicious.* The membranous portion is much shortened, the gland being much nearer the perineum than it should. *The projection toward the rectum is uniformly dense and extremely hard.* If I can't get my finger behind it, *that explains* the "ribbon" stool.

He is passing his water now about every two hours, with a little smarting, but *most of the pain is in the perineum.*

I will make a diagnosis of *acute prostatitis.* It may be an enlargement of a subacute condition. But *the gland is generally uniformly enlarged in acute disease,* although it is not impossible for one side to be mostly affected; or the purulent form may be more on one side.

He presented a moderate picture of *cystitis* originally, yet one element was wanting; for a diagnosis three things are necessary: *frequent urination, pain, and pus.* The three may vary in degree. We are *minus the pain* in this history of the original trouble. I think the blood came from the "neck" of the bladder,—probably from the prostate—and was incidental to the *rupture of some capillaries. In cystitis the trouble includes the posterior urethra, and we include the prostatic urethra in the "neck" of the bladder.*

We have also to differentiate between cancer, or sarcoma, tubercular disease, and prostatic hypertrophy.

He has *not the pains* that should go with *cancer;* and that generally presents an *uneven surface;* although it might be a malignant, smooth condition.

Tuberculosis of the bladder is not uncommon, yet until recently we did not read of it in the books. "Always suspect tubercular disease when you can't otherwise explain a cystitis," some say. But if it were a tubercular condition, we would expect to find *evidences of the trouble elsewhere*—about the testicle or cord. And *it would not be attended by an acute inflammatory condition here at this stage.*

He is *too young for hypertrophy*, so we will exclude that.

I think he has an *acute prostatitis*, *lighted up from a chronic condition*, and that the bladder affection came from the prostatic one.

The *chills*, *fever*, *and also sweat* point strongly to *suppuration*—where, I cannot say. There is no *fluctuation*, and so it is not a general prostatic abscess; and there is *no localized tenderness.* There may be an abscess, which has not broken, but is oozing from the mouths of the prostatic ducts, and the *moisture at the meatus may be this purulent matter.*

Treatment.

We may either wait for an abscess to break, or *anticipate it* by a deep incision. *Prostatic abscesses do not tend to break in the perineum; and you must be prepared go very deeply with your knife;* it is surprising how deep—two inches or more. Thus *the ordinary scalpel won't do;* use a finger amputating knife (31).

As the swelling encroaches more upon the *rectum*,

the bladder is not much affected, and *urination is less interfered with than might be the case.* And now the inflammation is expending itself more particularly upon the substance of the gland.

In his condition *nothing is to be gained by instrumentation.* We don't suspect a stone. If there were one, *there is no retention.* There is no indication for passing an instrument in view of the present state of affairs. In all probability it would simply make a bad matter worse. His temperature to-day is 99½°; pulse 76; and tongue coated. I would give him *Mercurius Solubilis* 1st—gr. v in half a glass of water, and a teaspoonful every two hours. Also we will *keep his bowels open by enema*, and put a *hot water bag against the perineum.*

The chances are that *pus* will soon manifest itself by the softening of some part of the tumor or by breaking into the urethra. *Such abscesses ordinarily heal if left to themselves*,—even though the urine gets into the fistula created—*by breaking into the urethra or rectum;* but it is a tedious process. They are liable to break when the patient is *straining*, as while passing his water. It may be necessary to *pass a catheter*, *and often that causes the rupture.*

We will put our man *to bed*, *having his diet light* and leaving a minimum of residue. *Milk we will use sparingly*, because of its constipating qualities. That leaves us *oatmeal*, *gruels*, *broths*, *soups*, etc., to choose from. Also, we will make dry or moist *heat applications to the perineum and hypogastrium.* Internally we give the indicated remedy, and you will probably

draw from these: *Chimaphila*, *Mercurius*, *Pulsatilla*, *Aconite*, *Digitalis* possibly.

Etiology.

Acute prostatitis is rare, occurring idiopathically; first, *urethral inflammation*, and second, *trauma*, being the most common causes. *Instruments*, *foreign bodies* as calculi, or the *deep injection of chemicals*, may cause. We may recognize *trauma* as the origin in this case—he was accustomed to much horseback riding. The older writers, Civialé and others, lay considerable stress upon *horseback riding as a cause of senile hypertrophy*. But later investigations, among the army cavalry, have proved that this is not so. But an *injury received while in the saddle*, as being thrown against the pommel, is an entirely different thing.

Symptoms and Course.

There is *frequent*, *painful micturition*, *and vesical or rectal tenesmus*, the latter in proportion to the degree of the inflammation, and also depending upon the exact location and amount of the swelling; you can readily see that in this case his tenesmus is more in the rectum, even though it be produced by the passage of urine. *There is more vesical tenesmus in proportion as the neck of the bladder is involved.*

The perineum is tender, which is not the case in *cystitis*, and *the pain may extend down the thighs*, *or be felt in the buttocks*, *sacral region*, *etc.* Digital examination shows a *hot*, *tender and swollen condition;* and this is not found in *cystitis.*

The disease pursues a variable course; if a favorable one, generally things begin to improve in from a week

to ten days. *If it does not get better by this time, it is likely to grow worse, leading to suppuration, etc.* If the course does not go on to suppuration, *it may take months and even years* for the gland to return to its normal size, and *the condition could then be readily mistaken for senile hypertrophy*, especially in such a case as this, where *the irregular enlargement is quite unique to find in acute prostatitis.*

This is the case of the young man with *acute prostatitis*, whom we had before us two weeks ago. Since then his pain has decreased and he micturates less frequently; he has been quite comfortable. But the last few days he has complained of tenderness in the perineum. He has had no rigors, but has sweat a great deal. There was some bulging in the perineum a few days ago, although we could detect no change in examining per rectum; from that aspect the tumor had not softened anywhere. But there was, and is now, *fluctuation in the perineum.* He had a chill yesterday morning. *Too much stress is laid upon suppuration being invariably preceded by rigors.* I find in practice, notably in appendicitis, that it is quite often present in the absence of any chill. Although this symptom is always to be looked for, *don't exclude pus just because you don't find it.* I think *the sweating is a more constant factor.* This man was put upon *Hepar Sulphur* 1st to hurry up the suppurative process.

I think that independent of the prostatic trouble he has a *periurethritis*, and I will now incise the perineal abscess under *Cocaine.* We must not inject the *Cocaine* (four per cent. solution) into the abscess, but just under

the skin into the tissues before it. I now make my incision along the line of the raphé, and you will see how *very deeply I have to go* to reach the pus, although on palpation it seemed to be right under the finger. Here it comes!—great quantities of it.

I think this comes from anterior to the triangular ligament, and is quite independent of his prostatitis; it is a *periurethritis.* In making a perineal incision to evacuate a prostatic abscess, I have *inserted the blade of the knife two and a half inches* before reaching it. The pus has now ceased to flow, but by inserting the blades of a pair of tissue forceps, and simply *spreading the wound apart*, it again flows freely. We now irrigate thoroughly with peroxide of hydrogen, followed by a warm, 1–2000 bichloride solution, insert a drainage tube, cover this with iodoform and sterilized gauzes, and cotton, put on a T-bandage, and will give him *Silica.*

Hematuria
and
Hemoglobinuria.

HEMATURIA—HEMOGLOBINURIA.

(BLOODY URINE.)

The amount of blood which may be present in the urine, varies greatly—from being so slight that the microscope is necessary to reveal it, to a large quantity which coagulates in the urinary passages or *after voiding* the urine.

Symptoms and Course.

The *color*, as a rule, varies with the condition of the urine itself and the source of the hemorrhage. When sufficient in amount to be visible, the fluid may appear either *bright red*, or *brownish* or *black* if it has remained within the bladder for a considerable time. Or there may be so little blood present as to cause the bladder contents to simply appear *smoky or muddy*, and not appearing to the eye as blood at all.

The color is very liable to be darkish, pinkish or smoky if the blood comes *from the kidney*, as in *acute nephritis*, which is particularly likely to *follow scarlet fever*. When the latter disease is present, the parents should be instructed to be upon the *daily watch for a smoky hue in the urine*. Coming from the bladder, or *below the kidney*, *we generally get bright red blood*, a cause of hemorrhage frequently being the repeated inflammatory condition of the bladder; and the association with cystitis of alkaline urine tends to the retention of the vermillion hue of normal blood.

Blood may be *mixed with the whole* of the urine, may show *only at the end* of micturition—with the last gush, *before or with the first gush* of fluid, between the acts of urination only, or *as clots*—not miscible.

CLOTS.—The fibrinous elements of the blood having escaped from the vessels, tend to coagulate, entangling within their meshes the corpuscles or other formed elements with which they may lie in contact at the moment of solidification. Great variety is presented in the shape and size of these coagula, depending upon the *amount* of the blood, the *source* from which it comes, and its *density*.

If the blood is thrown out very rapidly, you may have the formation of an immense clot or clots within the bladder, distending that viscus, and which the contractions of the bladder, aided by the urine being very solvent, ordinarily break up so that they are discharged as irregular masses; yet mechanical interference may be necessary before they can be gotten rid of.

There may be hemorrhage without any clots, the blood being suspended in the urine.

The blood may not disseminate through the whole of the urine—it may trickle to the bottom and clot upon the floor of the bladder. This is an exception to the *general rule that the blood is disseminated in the fluid when the hemorrhage originates from a point above the bladder*. It has been said that long, thin, worm-like clots indicate that the blood is coming from the ureter, or trickling down from the kidney above, the shape of the ureter moulding the clots to correspond. This is not to be much depended upon, and yet is suggestive of an origin of the hemorrhage *above*

the bladder. You may have a hemorrhage from the back part of the prostate into the bladder, and the blood clotting at the latter place. The *relative time of the discharge* of the clot is important. The patient should *void his urine in two portions*—a first gush of say ℥ss. to j, and the remainder separate. *The first portion will contain the washings, and the second what has passed through a clean canal.* If you get clots with the *first gush*, probably the bleeding is from the *urethral canal*, and the back part, anterior to the triangular ligament; and such being the case there is nothing to hold the clots back, and they are also likely to appear in the *intervals of micturition*, staining the patient's linen. If the prostatic sinus contains a clot, it is washed out with the first gush. If there be a *parenchymatous* hemorrhage, you would not expect in the urine any clots visible to the naked eye; the blood then goes into the uriniferous tubules and is only observable under the microscope as blood casts. But if the bleeding comes from the *pelvis of the kidney*, clots may then descend into the bladder; such are usually small and give rise to more or less renal colic in their passage downward. Occasionally, clots from this source are voided having the size and shape of the calices.

Albumin is present in all cases of hematuria, and it will tax you to tell if the blood be present in *amount sufficient to account for all the albumin present* in a given case. It takes only a few drops of blood in water to give a bloody hue, therefore if the fluid passed is only *tinged, yet there be considerable albumin present*, we

would look for a renal difficulty behind the hemorrhage.

HEMOGLOBINURIA.—You may have a specimen of red urine—a bloody appearance—and yet not a single blood corpuscle be present in it: the *coloring matter* alone of the blood gets into the urine. This condition is called *hemoglobinuria*, or *hematinuria*.

Spectrum analysis, Dr. Leal's, Heller's or the guiacum tests, will prove the presence of blood in such cases, but the microscope shows no blood cells in the specimen. This form may be either *primary* or *secondary*. It does not imply a lesion—a rupture of capillaries. We may say that *all conditions of primary hemoglobinuria are renal in origin. Secondary cases originate below the kidney*, and are generally due to the urine becoming alkaline while still in the bladder or after voiding. In *primary*, the blood discs disappear before the blood gets into the urine at all, the free coloring matter getting right into the urine by elimination from the kidney; or if the cells do reach the urine, it is in such a weak state, from the introduction of poison, that they rapidly break down after they are in the urinary tract—the envelope is destroyed and the coloring matter liberated. The excretion of the remains of these disintegrated cells forms a reddish, granular sediment. Such trouble is *primary* —in the system at large, and always originates from the kidney. The *causes of the blood being thus disintegrated within the vessels*, are: cholera, purpura, septicemia, pyemia, continued and eruptive fevers, as malaria, typhus, variola, scarlet fever, etc. Also arsenic, iodine, carbolic acid, and other substances, produce an

affection of the blood corpuscles, whereby they go to pieces and free their coloring matter.

In *secondary hemoglobinuria, the blood enters the kidney and ureters with its cells present* and in a healthy state—there is no *systemic poisoning* here; but *within the bladder* the corpuscles coming into contact with alkaline urine, are there disintegrated, their remnants forming a sediment of variable amount of dark brown or red granules. Or they may be *voided intact* if the urine is acid or neutral, in which latter case alkaline changes soon follow and then they are destroyed, liberating their contents, and thus a hematuria is converted, so to speak, into a hemoglobinuria. The origin here of the breaking down of the cells, is some *germ* that converts the urea into carbonate of ammonia, rendering the urine alkaline; and the ammonia acts upon the corpuscle, destroying it.

So some *dyscrasia*—trouble in the system at large—is the cause of *primary hemoglobinuria;* while the *secondary* form is due to *local disease in the urinary passage.*

Diagnosis—Etiology.

Let us consider for a moment the appearances presented by the blood discs as seen under the glass, and compare such with *certain forms with which they are liable to be confounded.* In a normally acid urine of moderate density,—sp. gr. 1020 to 1025—the corpuscles remain visible and preserve their form for several days. They do not run into *rouleaux* ("money rolls") as in fresh blood, but stand separate, though perhaps aggregated. Should the urine be dilute, they expand from

imbibition, and appear as pale circles with sharp delicate outlines, and minus any appearance of cell contents. In a more concentrated specimen they retain their normal biconcave contour. Again, they shrink and crumple, offering a stellate outline.

Converoid sporules, minute discoid forms of oxalate of lime, and the nuclei of renal epithelium, are the three most common objects that might be mistaken for blood corpuscles. The blood disc does not possess a nucleus, which is always present in the *sporules;* and, again, the latter are generally oval, somewhat elongated, and present evidences of budding. Along with the *discoid forms of oxalate of lime*, can generally be found intermediate forms that connect them with "dumbbells." *Renal nuclei* have a strong refraction, and are generally surrounded by some portions of the material which originally invested them.

But in any event the presence of blood, in whatsoever form or quantity, is *merely a symptom; it is not to be regarded in itself a disease—an entity.* Yet for a time it may prove so engrossing that we must put all other considerations aside in order to attend to it. After that we must strive to place the locality from which the hemorrhage originates, and search for the cause diligently; yet it is by no means uncommon to meet with cases in which this symptom stands alone, and no satisfactory cause can be discovered until death reveals it.

LOCATION AND CAUSE.—But from what part of the long and complicated genito-urinary tract—extending from the Malpighian corpuscles in the cortex of the kidney, to the external meatus—does the blood come?

With any hemorrhage occurring from *the meatus to the triangular ligament*, there is probably a history of *trauma;* but we will have *bleeding independent of micturition if the blood is discharged into the urethra.* So we would eliminate the anterior canal if the patient bleeds only with the passage of his water. This leaves us the kidney, bladder, and prostatic sinus.

When there is a separation of the bloody urine below, with clear fluid above, you cannot always rely upon this as indicating hemorrhage from the urethral canal. Indigestion may cause a fixed *alkalinity of the urine, and you then get a bright red blood;* but you couldn't then rightfully conclude that cystitis was present. As already referred to, *bleeding from the posterior urethra may work back into the bladder*, and even fill it with a huge clot; but if it originated within the prostatic sinus, and *oozes* back into the bladder, then, no matter how large the bladder clot, some clot forms in the prostatic sinus as well, and the first thing appearing in the urine voided is this prostatic clot. Other conditions might simulate this, but if it is a uniform feature of his urination that the *first gush of water always contains a clot, and the rest lacks them—this is a strong presumptive evidence of prostatic hemorrhage.*

In all cases of hematuria the blood should be voided in *two parts;* the first ounce contains the washings of the urethra, and the balance, the products derived from posterior to the triangular ligament, unless they have backed up into the bladder. The relative quantity excreted during the day and night has a bearing upon the site; and if blood, granular, or hyaline casts are

found, they point to a kidney origin. If no casts be present, but the patient is passing much or more water during the night than during the day, and is not in the meantime drinking an extra amount of water, this is a strong presumptive evidence of an organic kidney lesion. While there is no positive rule, in a general way it may be said that *blood from the kidneys is thoroughly mixed with the urine*, and of a reddish, brownish, or *smoky hue*, as it is generally moderate in quantity and associated with an *acid urine;* and after standing awhile in a sediment glass, it will probably let fall a chocolate-colored grumous deposit. *Alkaline urine is generally associated with disease of some part below the kidneys, and imparts a bright vermillion hue* to the mixture. Blood coming from the lower parts may appear bright red in acid urine, and, again, we sometimes find it of a smoky hue. Inquire if there is any pain? where located? etc.; and by means of the sifting process determine whether the hemorrhage be of bladder or kidney origin.

THOMPSON WASHING TEST.—Draw the urine, with the patient standing, if possible, and then try to wash the bladder *clean; if you can't do this, the bleeding is from the bladder*. After this washing, collect in a glass receiver about a dram of the fluid, that passes *guttatim* from the catheter *in situ*. After the first washing, *if the fluid from a second returns clear, while the dram is bloody, then the kidney is the* origin. This test may be made more effective by stirring up the bladder with the finger in the rectum, and by manipulation over the pubes, after the preliminary cleansing. Following this, if the fluid—warm borax solution or plain warm water

will answer—returns bloody, a vesical hemorrhage is indicated. In the same way, the kidneys may be manipulated bimanually, but not so effectually as the bladder. If the blood is thrown out to a very limited extent, it may not be enough to color the injection the few moments it remains within the bladder while washing it. You may be able to see with the cystoscope (see "Index of Instruments") the little swirl of bloody urine as it is ejected from the ureter. But in order to do this, you must be quite expert, and quick enough to get the instrument *in situ* before the ℥iv to vi of fluid injected is made opaque by the blood.

RENAL HEMORRHAGE.—If you have decided the case to be one of true hematuria,—bleeding from the kidney—think what conditions might produce it. Acute and chronic congestions and inflammations, and all conditions producing *albuminuria*, may also cause hematuria of renal origin; also certain drugs, as cantharides, carbolic acid, mustard and turpentine.

Certain *parasites* may cause it. Three kinds of worms are found in the human kidney: The *Bilharzia hematobia* is a thread-like worm, some three or four inches in length, found in the small vessels of the mucous and submucous tissues of the veins of the intestinal tract, the pelvis of the kidney, ureter, bladder, and sometimes the kidney proper. It is almost confined to Egypt and South Africa. *Filaria sanguinis hominis* is a long, round, microscopic parasite, about as wide as a red corpuscle, and $^1/_{75}$ of an inch long. It infests the blood, and by its accumulation in the vessels, stretches and finally ruptures them. These cases are confined mostly to India, China and Australia.

Lastly, the *strongylus gigas* resembles the common lumbricoid worm, but is larger, the male measuring ten to twelve inches long, while the female may reach the length of a yard. These are very rare.

Embolus, thrombus, calculus free in the pelvis, or encysted, or, rarely, *microscopic calculi in the uriniferous tubules*, may be the source of the trouble. The latter condition could only be demonstrated post-mortem, but it should be borne in mind as offering a loop-hole in lieu of any other conclusion; you can fall back on this if every other diagnosis fails. And if the urine *habitually* contains uric acid and oxalate of lime, although you cannot prove the presence of a calculus as such, the foregoing conclusion of minute calculi is the more justifiable. If a stone be present in the kidney, the patient not only tends to have this *excess of salt in the urine*, but often there is a history of one or more attacks of *kidney colic;* if there are slight attacks of *colic accompanying the bleeding*, the pain is caused by the passage of little clots. There is then an aching and tenderness in one loin, but no pain when he remains quiet and when there is no hemorrhage. If it is *when he jars himself* that he experiences pain, and the blood appears in the urine, this is a strong evidence that there is a stone loose in the pelvis of the kidney and "rattling around there"; in which case you also will probably find *renal epithelium* in the water.

Severe hemorrhage, lasting even weeks and months, may follow a *blow received over the loins*, *straining* in lifting a heavy weight, or a strain of the back by a weight being suddenly thrown upon it. The

blood is rarely present in the form of appreciable clots, although an abundance of blood casts may be found. Occasionally we have been puzzled in these cases by their persistency for months after a moderate strain, recurring paroxysmally and without any appreciable exciting cause, and proving most rebellious to treatment.

Tubercle, hydatids rarely, and tumor, as cancer of the kidney,—the latter to be thought of before either of the foregoing—may be the cause. But then there would be present pus and débris also; or the patient would be strumous, presenting other evidence of tubercular deposits, etc. *Before the bloody urine appeared you would have other evidences of the trouble.* In cancer of the kidney there is generally no bleeding; yet rarely there may be frightful hemorrhage from this cause. Also, as with tubercle, there is no blood until a palpable tumor is present, the bleeding arising from the degeneration and ulceration of the tumor which precedes it.

Hemorrhage from the ureters may practically be excluded, as it is so rare; when it is present, being probably due to the laceration incidental to the passing of a calculus, which information the history furnishes us.

Kidney hemorrhages are, as a rule, transitory, and not excessive; but coagulation of blood in the tubules, if they are not washed clear, may plug them up permanently, thus destroying the function of the corresponding portion of the gland, and perhaps leading to fatal renal degeneration.

VESICAL HEMORRHAGE.—Of all hemorrhages from the urinary tract of any moment, requiring treatment

at least, those originating within the bladder form the majority. Many *causes* are recognized: An acute *cystitis* might be intense enough so that violent straining would rupture some of the congested and dilated capillaries; or in chronic catarrh of the bladder a little blood might exude from a patch denuded of its epithelia. With cystitis we would have the other more pronounced subjective symptoms of frequent and painful micturition, alkaline urine, pus, tenderness or pain in the hypogastrium, bladder neck, or head of the penis. Or if a *foreign body*, as stone, be present, and especially if it be stellate or rough, the bladder might readily bleed from squeezing down upon this, and thus wounding some capillaries. We can also recognize other and more distinctive forms of *trauma.* Also, we mention the presence of *varicose veins at the neck* of the bladder. These would be suspected if the patient has reached an age when hypertrophied prostate is met with, and he offers objective and subjective symptoms of an enlarged gland, while there is an absence of evidence assigning the bleeding to some other cause.

But in a very large class of cases the trouble is *tumor of the bladder*, *which causes the freest and most persistent bleeding* of all. And it then may be only the blood that we observe—*constantly recurring and persistent hemorrhage*, *with no increased frequency of micturition*, *no tenesmus*, *no pain*, *no altered urine;* yet the water passed may vary from a smoky appearance to being loaded down with blood. We may recognize such in the great number of cases of oft-repeated and *persistent* bleeding, when we have excluded acute cys-

titis, stone, and know that no chronic inflammation exists on account of the acidity of the urine; and have satisfied ourselves that the blood is not from the kidney or ureter. *The great majority of these tumors are found at the base of the bladder* [according to some writers; in the fundus according to others]. This is usually manifested, as already noted, by clots, in strings and threads, voided with the first gush of urine.

PROSTATIC HEMORRHAGE.—Generally *traumatism* has to account for it. There is blood in the urethral canal and *bleeding in the intervals of micturition.* Perhaps you may elicit the history of the introduction of some instrument, or application of something to the part. The rectal touch will demonstrate an enlarged prostate. There is a *small stream* and catarrhal symptoms as the result of incomplete and difficult micturition; and the *blood may ooze back into the bladder.* In this latter case you get some blood with the first gush of urine; then the fluid comes clear; then more blood with the end of the act of micturition, the prostate squeezing it out. These same conditions may be present in tumor of the bladder; there is blood at the end of the act of urinating, though in this case it is generally not clotted then but at the beginning of the act. With *cancer of the prostate*, the location of the pain would be suggestive—severe pains in the loins extending down in the course of the ureters to the bladder; they may pass either upwards or downwards. Under these circumstances, no enlargement of the prostate and no abnormality of the stream point to renal stone, yet the case might be one of prostatic cancer. In irritation from clots in the urethra, the pain is not

transmitted from the kidney down. Consider the age of the patient with reference to cancer.

Malaria produces hemorrhage in two forms: the *mild* and the *aggravated*, the latter being extremely rare. In the *mild* form it generally occurs in a male, who has had one or more attacks of ague; or who was exposed to malaria, and has attacks of bloody urine seemingly without any cause. He has such an attack; then an intermission for a few days, followed by another attack of hemorrhage, and a shorter intermission; then at increasingly frequent intervals until the bleeding becomes continuous. It may stop of itself, come again, etc. The affection is chiefly met with in the south and west. In the southern part of our country, especially in the *tropics*, but very rarely here, a severer form is experienced. The individual has a violent chill, with black vomiting, marked hematogenic jaundice, cold, clammy sweat; and dark, tarry-like urine is voided in tremendous quantities—even one to two gallons in twelves hours. There is tremendous prostration, and after the first or second attack, he may die or have a recurrence; but often the first kills him. It is a very fatal disease. The malarial poison has broken down the blood corpuscles, causing a true hemoglobinuria. Under the microscope you find no blood cells.

Finally, there may be cases of *vicarious hematuria*, related to either an abnormal or normal function, as hemorrhoidal or menstrual bleeding; also in connection with asthma, etc.

Treatment.

There must be absolute rest of mind and body, and the patient put upon a non-stimulating diet, if in bed.

He may be either allowed to go about or be confined, according to the severity of the bleeding. The treatment will depend largely upon the cause, and you may discover that surgical measures will be necessary. *If a tumor is the cause, remedies won't touch the case—nothing short of an operation will do any good.* And if the bleeding persists in spite of well-selected remedies, tumor is suggested thereby. It is rarely that the solvent property of the urine, and the squeezing received, will not break the clots up, but if you do have big clots in the bladder, do not put an instrument in there *to break them up*, so they may be voided; this generally provokes greater hemorrhage. *Use no instrument in hematuria unless imperatively* called for, as to empty the bladder, or for diagnostic purposes. [*Pepsin* is sometimes injected for the purpose of digesting blood clots.]

Locally, the following injections have been recommended: *Alum*, gr. v to x to the oz.; *Hydrogen Peroxide* of 13 to 15 volume strength, diluted with three-fourths its amount of water; *Argentum Nitrate*, gr. ⅛ to j. to the oz.—rarely using more than gr. ss.; *Persulphate* (more properly *Subsulphate*) *of Iron*, gtt. v to xv, to the oz., which makes tough, leathery clots hard to be broken up and voided; so it is not wise to use this unless the *Alum* and *Argentum Nitrate* fail. Ice may be applied to the perineum, in the rectum, or on the hypogastrium.

Remedies are unsatisfactory because we can never tell whether it is due to the drug or simply in the course of the disease, when the hemorrhage stops; the very nature of the trouble is to run an intermittent

course. But we will mention as most valuable: *Terebinth*, in material doses—gtt. iij to v of the spirits or oil. (Billroth found that turpentine would stop other hemorrhages as well, as secondary bleeding after amputation of the breast. So we do not know if it acts homeopathically or not. And yet it certainly will produce hemorrhage in these parts.) *Oil of Erigeron*, gtt. ij to v on a lump of sugar, t. i. d.; *Secale*, *Millefolium*, *Arsenic*, *Carbolic Acid*, *Cantharis* when associated with tenesmus—it is no good for passive bleeding, *Hamamelis*, *Ipecac*, *Lycopodium* if connected with a gravelly condition, *Mercurius*, *Nitric Acid*, *Nux Vomica*, *Pulsatilla*, *Phosphorus*, *Gallic* or *Tannic Acid*, dr. j a day, may or may not work. Also, the old school use *Lead Acetate*, and tincture of *Iron*, in full doses; which Keyes says are of little or no value. Empirically, *Matico*, fl. ext. *Pichi*, and *Ergot*, are also used.

Urethritis, Periurethritis, and Stricture.

URETHRITIS.

(GONORRHEA—CLAP—BLENNORRHEA.)

The term "gonorrhea" is a misnomer, and an attempt has been made to eliminate it from medical books, which probably cannot be accomplished, as it has been too long current. Urethritis is the proper word. The name of gonorrhea was given by the ancients, who thought that the discharge was an excessive flow of semen.* There is no semen in it; it is simply a catarrhal inflammation of the urethral mucous membrane. But if the term has come to stay, we should endeavor then to make a distinction between *acute gonorrhea* and *acute urethritis*, reserving the former for the higher type of cases, the symptoms of which are not ordinarily manifested *until at least a week after exposure*, *i. e.*, *true gonorrhea.* It may not be practical to make this distinction from the symptoms alone, but a case beginning *within twenty-four to forty-eight*

*"A true Gonorrhœa is that in which the true Semen flows out, for which * * * are the best Medicines: They extinguish Venery, especially if Camphir and Terebinth. are made use of, as also an Emulsion made of ex sem. Cannabin. * * * A spurious Gonorrhœa, called benign. not virulent, is when Matter and not true Semen flows out of the Penis, without Titillation, or a Venereal Itching, continuing a long while without any great Loss of Strength, much like the Fluor Albus in Women. It is usually called a Catarrhal Gonorrhœa. The Parts Affected are the Glandulæ Prostatæ too much relaxed or ulcerated."—John Allen's Synopsis Medicinæ, London, 1749.

hours of intercourse is probably simple urethritis. Also the theory of a specific germ—*the gonococcus*—existing in one class of cases, is gaining ground, much stress being laid upon it, as we shall see.

Etiology and Pathology.

It is curious concerning a disease dating from biblical times, that physicians should so differ as to the nature of the trouble and its symptoms. Yet a great advance has been made since the discovery of micro-organisms; and the medical mind has crystallized around the idea that "clap" is *due to a coccus.* The uncertainty mentioned is due to the evolution of the symptoms; it is difficult to read a satisfactory description of the disease, the writers differ so, and no two agree as to the treatment. [Gonorrhea and syphilis were once supposed to be allied, if not indeed identical, the ancient teaching being that there was "little danger of a gonorrhea turning to pox unless suppressed by astringents."] John Hunter first endeavored to demonstrate a distinction between gonorrhea and syphilis, but unfortunately, the patient of the experiment also had a *chancre*, leading Hunter to decide syphilis and gonorrhea identical.

Then it was advanced that there is a specific virus, and that a gonorrhea must always come from a preceding clap. I didn't subscribe to that, as I had seen it demonstrated time and again that a man *could acquire "clap," so-called, from a woman absolutely clean.* Some of the great Parisian surgeons even declared that a man might *"give himself" the clap.* I knew that many men might have a single connection, with no excessive drinking nor dallying, and would get "clap," and

yet the woman be clean and nothing found upon examination. So this led me to say that it was not due to a specific virus. But now *I believe that it is, as Neisser first pointed out* in 1879. He discovered little points in the pus, which were found to be cocci. It was demonstrated that these were *only found in gonorrheal pus*, so he claimed this the specific element of it. The majority rejected the theory at the time, but with the tremendous strides of bacteriology in later years, and the ability to isolate developed germs, now we may say beyond a doubt that we can recognize a *gonococcus*.

So we are told that we can take a drop of pus from the urethra, and under the microscope recognize whether or not the case is a simple urethritis. But don't you accept that statement just as it is put down in the books. There are peculiar features of the gonococcus not determined by the microscope alone; and to distinguish it from a staphylococcus you must possess a very well trained eye in the use of the glass. You must not expect to distinguish gonorrheal matter from any pus containing staphylococci, unless you have been told beforehand what to look for, and know the difference between a coccus and bacillus. *A coccus is a simple point, and a gonococcus is peculiar in that it is a diplococcus;* there are two, side by side, being separated by a little interval, and the two adjacent sides are flat, giving it the name of the "*biscuit coccus.*"

If it requires a certain degree of training to recognize a simple coccus,—which the tyro cannot do—it requires a very much higher degree of skill to recognize this interval; and I am sure you wouldn't see it if you

didn't know what to look for. But allowing that you have trained yourself, *can you swear to its presence?* This may be an important medico-legal point. It may be mistaken for the coccus found in the vaginæ of some women with leucorrhea or cancer, which is *identical in form with it and also capable of producing an urethral discharge.* A man may have a *damaged patch* in his canal, and the excitement of being with such a woman, otherwise absolutely clean, may develop an acute attack. So *under the glass you cannot distinguish it from the coccus of simple leucorrhea.* [Aside from cleanliness, about as good precaution as any against venereal infection, is thoroughly anointing the penis with vaseline, which should extend some little distance into the urethra.]

Many germs can only be studied through *culture or staining. Fuchsin* is a stain that colors all cocci, so that they stand out distinct from the other elements in the field. You couldn't see them at all without this staining process. If you use *gentian violet*, the staphylococci, streptococci, and any other forms, will color; but *the gonococci do not so readily take it.* Yet your case might be just the exceptional one.

GRAM'S TEST.—Gram discovered that if you first stained with gentian violet and then placed in a *compound iodine and iodide of potash* solution, [iodine, 1 part; potassium iodide, 2 parts; distilled water, 300 parts] the latter will *take the stain completely out of the gonococci* and not thus decolorize the other micro-organisms. Therefore stain the specimen with gentian violet, *note where the cocci are in the field*, wash with the iodide of potash solution; and *if they disappear*

they are gonococci. If they remain stained they are some other form. [Perhaps a more important diagnostic feature of the gonococcus is its characteristic location within the pus cell, or closely adherent to the surface of the epithelia discharged; it is *not found free in the cellular interspaces.*] Thus we recognize that *gonorrhea has a specific origin;* and the cause is a coccus so appearing and acting as we have described.

You will often have curious cases coming into your office; frequently very baffling cases will present themselves. A man will tell you that he has a discharge. When you suggest clap, he says, "How can that be?" He says he was "only with one woman," perhaps that she "is married," and that he "knows her husband," and knows that she was "all right;" or he states that the woman had "been examined," presenting a certificate of cleanliness, etc., etc. How can we explain such cases?

Of the *different forms* of urethritis, only the "*superlatively acute*" *is the result of true gonococci*, the lower forms being due, as already mentioned, to the cocci of leucorrhea, menstruation, etc.; and it is one of these lower forms that the man "*gives to himself*" *from excesses.* They are *due to the lighting up of an acute attack in an already damaged canal.*

And the examination of the woman does not prove that she is not diseased. If the disease were confined to the urethra,—a very short canal in the female—she may have passed through the acute stage and the trouble be located posteriorly; then, in *pressing your finger against the urethra from behind forward*, you might elicit evidence of clap. But if she wishes to deceive

you, *she may urinate just before going to the doctor.* Or the trouble may be up *in the uterus and tubes*, and it be impossible, short of a minute chemical and microscopical examination, to diagnose it. There is no erosion of the cervix, no redness, no pain—*nothing present but the gonococci.* Again, there may be no redness, and the only thing be *soreness of the vulvo-vaginal glands* opening just above the hymen. It is common to suffer from inflammation of these, especially in young girls just entering upon a life of prostitution, and *a colony of germs may get down there. Many of the pelvic diseases of women are due to undetected gonococci derived from their husbands, who presumed that they were well* at the time of marriage, the old urethritis having been called into renewed activity by excesses, or the "first blush of married life," and *the germs find their way up into the Fallopian tubes.* [The folowing is said to be a good test as to whether or not a clap is *cured:* Have the patient drink a quart and a half of beer, and inject a two per cent. solution of *Corrosive Sublimate.* If cured, no reaction follows, but if not, a discharge will be set up, at the latest, after forty-eight hours.]

However, you may legitimately expect that a man has been "somewhere" when he comes to your office presenting the condition mentioned. But I would yet have you *advocate that he may contract trouble from a clean woman.* A few cocci get into the meatus during the sexual act, or from the neglect to wash himself, and if he has a long foreskin the pus gets into the preputial orifice and works its way into the canal, where we have, first, the epithelial layer of cells, then the

lymph spaces and connective tissue, and finally the muscular layer.

The gonococci locate themselves upon the epithelial layer, pass through it and fill up the lymph spaces. Being then *in a favorable soil*, they multiply, which gives *hyperemia and congestion* at this point. The *leucocytes* are brought there by the congestion, then flow into the canal, which gives us the *pus plus the hypersecretion from the glands and follicles. These germs develop particularly well in an alkaline medium*, acid inhibiting their growth. The mucus of the canal is alkaline, and so the urethra is alkaline in proportion as it is full of mucus. Therefore *prolonged sexual excitement, and protraction of the period of intercourse, increases the alkalinity, giving a more favorable condition for the development of the cocci.* This suggested the precaution of letting a good acid urine run through the canal after connection with a suspicious individual.

The membrane is now thickened and soft, and *from the normal pink has become an intense red*, the epithelium being off in places, leaving *denuded patches.* With this condition of the membrane there is considerable swelling, and it is more or less sodden. Later there may be *chordee;* the inflammation having passed through the mucous membrane, furnishes a plastic material similar to liquid glue, *serving to bind the tissues together.* The *cavernous bodies* not being involved, readily swell and elongate in erection, but the *corpus spongiosum cannot do so* because of the adhesions; it is a matter of two against one, and *the poor spongy body becomes the "string of the bow."* And the condi-

tion is aggravated in proportion as the plastic effusion is profuse.

The inflammation is confined to the anterior urethra at first, and *the longer the disease exists the more cocci travel down to locate themselves within the bulb.* When the inflammation is all anterior to the triangular ligament (deep perineal fascia), it is called *anterior urethritis;* behind it, *posterior urethritis;* and, also, when in the membranous urethra, it may be termed *membranous urethritis;* or, yet more posteriorly, in the prostatic urethra (sinus), *prostatic urethritis.* Fortunately, *in the average case the tendency is for the process to stop at the triangular ligament.*

Symptoms and Course.

As we have already noted, we find *different classes of cases.* In some persons the trouble may be very mild, and again, in others, run a severe course. Note especially if the attack is *severe and primary*, that is if it is a virgin attack. Also the time between the supicious connection and the first development of symptoms is significant. There is a difference of opinion as to the time of incubation in these very acute cases. Some lay particular stress upon the time that has elapsed, and claim that it is generally a period of from eight to ten days. Others, equally expert, say that the first symptoms will appear during the first week—within three or four days of the intercourse. But the point is this: *the longer the interval between the exposure and the appearance of the first symptoms, the greater is the probability of its being a case of true gonorrhea*—of specific taint; and, conversely, the shorter the period, the more probable is it

that the woman was clean, and that the man had a *damaged patch* in his urethra, remaining from a previous attack. Therefore we may say that *the larger percentage of those in whom the trouble develops very quickly, have had urethral trouble before.*

As to the *symptoms*, the time of incubation, and whether the urethritis be gonorrheal or leucorrheal, or contracted from a recent menstrual discharge, or the result of excesses upon an already damaged urethra—clinically and practically it makes no difference. *In the great majority of cases the symptoms will pursue the same sequence;* there is the same chordee, the same *tendency to posterior urethritis*, the starting up of an inflammation of Cowper's glands, of *epididymitis*, etc.: the only difference is that the "urethritis" (especially in the initiated) is likely to be *mild* in its nature, and may be quickly cured, and when cured is likely to remain cured, and not so frequently continues as a gleet; while "clap," or true gonorrhea, is more prone to be attended by acute symptoms and is quite often the father of gleet. And this is the reason why it was supposed, previous to the discovery of the *gonococcus*, that there was no specific virus.

TRUE CLAP.—With a "*superlatively acute*" attack, in a few days following connection—from four to ten—there appear *itching and tingling at the meatus;* the lips are just a little *redder and fuller* than natural, and upon squeezing there is exuded just *a little sticky fluid.* A *burning* sensation now developes within a few hours, and the lips are a little more inflamed and swollen, with an increase of moisture. In a few hours more, the glans surrounding the meatus begins to get red, and *micturi-*

tion is burning. The discharge increases and becomes a little clouded. In a few hours more the *burning* is markedly increased, *the whole end of the penis is red, with tumefied lips, and there is a creamy white or yellowish discharge.*

Now follows a gradual aggravation of all the symptoms—*burning is intense, and the act of micturition agonizing*. The whole organ may be intensely inflamed, and there is a preponderance of *edema*,—especially if *paraphimosis* exists—giving a *grotesque appearance*. The longer the prepuce, the greater the swelling. The discharge has now become so profuse as to necessitate the wearing of a rag.

There is at this stage great *sexual excitement*, causing painful erections, especially at night, called *chordee*. The patient may be kept awake all night, and has to *apply ice* for relief. Perhaps there is no sleep for nights together, in extreme cases, but generally the victim is obliged to get up only once or twice during the night to make cold applications.

The height of the trouble is reached in about five or eight days, *continues about two or three weeks at its acme*, when the pain upon urination begins to cease, and we have a reverse order of things: diminished pain and redness, discharge changes from yellow to white, and from white to transparent, at the same time diminishing in quantity, until finally there is but a mere drop of mucosity.

"Only heaven knows how long this stage of decline will last." *Don't risk your reputation by venturing a prognosis here.* It is variously claimed, by men of careful observation, that a discharge will get well

in four to five, five to eight, ten to sixteen weeks, etc. The experience of physicians most familiar with the venereal clinics, both here and abroad, is that *the disease is long lasting*, or at least may be. A late edition of Bumstead and Taylor places the time at from four to five to eight weeks, and more recent writers put it from eight to ten to twelve weeks. How can we account for the discrepancy? It is not the mode of treatment, for the same treatment will yield varying results. It often depends upon individual idiosyncrasy. A number of men may stay with the same woman consecutively, and the subsequent clap run a few weeks in one, for months in another, and a third have complications of *cystitis* and *epididymitis;* so it is not the source. Some men are very susceptible to leucorrheal discharge, and another will apparently place himself directly in contact with gonorrheal matter and escape scot free. One man may come from a woman unscathed, and the very next one entertained gets a dose. "A man may be tough from acquired toughness or be naturally tough." Also, we may say that, in general, the cases getting well so quickly are of the non-specific variety. As already observed, the majority of these are "*old offenders.*" They have had one or more attacks of genuine clap, and have *never gotten well*, even though but just a little moisture and agglutination in the morning remains. But inquiry will elicit the fact that subsequent to the coitus, and particularly if he remained a long time, was drinking wine, etc., the discharge came on *quickly*—within a few hours. *Such cases were never well.* There was some little point in the canal which had never healed, and it only needed a little excess of

exercise, sexual excitement, or of eating and drinking, to light up the old condition into an acute one. But if the disease is specific, and especially if it be the patient's first attack, don't promise when he will be cured; but if you say anything, tell him he will be doing well if he gets over it in eight weeks; and that it may be twelve weeks.

What shall we say then of those who claim they have "no trouble to cure in two to three weeks?" They see cases of simple urethritis, not genuine clap; and cases which, if left alone, would probably cure themselves within a short time. The average case, treated in the most approved fashion, gets well in from six to eight weeks, and if it be a case of the *superlatively acute*, as described, and it is cured in that time, you have done remarkably well.

SECOND GRADE.—This begins with painful urination, and *in from twenty-four to forty-eight hours there is pus*—the case is so far advanced thus early. The patient had one intercourse, say, and noticed a tingling of meatus, etc., the next day. These cases run through the same course as already depicted, only *the symptoms start in within twenty-four to forty-eight hours after connection, instead of four to ten days.*

When a case of urethritis presents itself, always inquire, "*Is this the first attack?*" Did he have a previous attack which ran into the *gleety* stage, and continued for a long time? Had he ever gotten well? He may say "Yes," but you find in the urine *little threads—tripper fäden* or "*clap shreds*"—of one-quarter to three-quarters of an inch in length, *which are positive evidence that the canal has never been well since the first*

attack, although he may have had *no discharge in a year* and the sexual functions have been all right. Such a man may have "given himself" the present urethritis, *lighting up an acute attack from his old damaged patch. These cases, coming quickly after intercourse, do not last long.* As a rule they get well quickly, and it is in these cases that the receipes of the "man about town"—nearly every one of whom has "a sure thing for clap"—have been effective. Here it is not a first attack to be dealt with, but an attack brought on by the multiplication of germs existing within the canal for a period of perhaps a year previously.

THIRD GRADE.—This may be a virgin attack, but if appearing within a short interval of the intercourse, it is due to leucorrheal discharge, venereal excess, or *coition during or immediately following menstruation*, influenced by the introduction of the cocci. If you have exactly the same symptoms, but with them an *incubation period of a week*, then you may predict a "full blown" attack.

And why should there not be these variations? We find the same phenomenon in other cases of poisoning, and in contagious diseases; due to the varying susceptibilities of people. It is the same virus, from the same source, then, that causes *a variety of manifestations.* Yet, as we have already described, *there is also a variety in the poison*, viz.—the gonococci of true gonorrhea, and the germs from leucorrheal, menstrual, or cancerous discharges—all productive of varying degrees of the disease *urethritis.*

Once more. The *time element*, then, is the only feature leading us to suspect whether an urethritis be

specific or *non-specific. The longer the time between the exposure and the first manifestation, the more probable is it that it is a case of specific infection.* The usual time of the appearance of the first symptoms is *after five days*, while in the *simple urethritis* it is *usually soon after twenty-four hours.*

"Men about town" regard clap as insignificant—rather more so than a cold in the head. Of itself, it is of no great moment regarding life and death, but the fact is that *its ulterior effects are the most fatal to man of any of the venereal diseases—it leads to stricture, cystitis, and pyelitis. Chancroid* is rarely fatal; *syphilis* is more or less so.

[A very painful and not uncommon complication of clap, is an aggravated type of rheumatic inflammation, known as *gonorrheal rheumatism.* It may prove very obstinate indeed to treat. Another noteworthy accompaniment of urethritis, is *gonorrheal conjunctivitis.* This, as it may be readily surmised, is simply the result of direct contagion, the specific pus generally being conveyed by the patient's fingers. As to the etiology of the rheumatic attacks, there is not unanimity of opinion on the subject: those who believe the condition to be an expression of general specific pyemic poisoning, term it gonorrheal *arthritis;* while others estimate it a manifestation peculiar to the occurrence and depressing influence of gonorrhea in a patient of previous rheumatic tendency. For treatment of both these joint and eye troubles, the reader is referred to other, special works.]

PARAPHIMOSIS AND STRANGULATION.—The hard, edematous and puckered orifice is more likely to be

seen when there are concealed *chancroids*. The prepuce is swelled in front and there is a puckered portion behind the swelling. Normally, with a larger preputial orifice, the skin rolls back on retraction so that the real orifice is not seen just behind the corona but further back, and that is where the constriction is and where you would cut in *strangulation*. A *tight foreskin* barely slips back of the corona; you would then cut the strangulation ring just back of the corona. The great swelling is caused by simple watery edema. If edema is very extensive and gangrene threatens, cut the band, and then prick the swelling to allow escape of the fluid.

[Concerning the occurrence of *gonorrhea in woman*, we need not specialize further than to say that it is here customary for it to pursue both a milder and shorter course, due to the simplified anatomy of the female parts affected: the *urethra being so much shorter* and more dilatable than in the male, the disease is directly limited to a much smaller area, its seat is more readily reached in treatment, while stricture complications are quite an insignificant feature. But still we bear in mind the baneful results of possible *tubal complication*, and also repeat that the *vulvo-vaginal glands* (glands of Bartholin or Duverney) *are a favorite lodging place* for the disease, and that indeed these alone may be affected.]

Diagnosis.

Don't accept that of the patient! [Generally he has "strained" himself, in contradistinction to having "burnt" himself when he has acquired a chancre, or,

more particularly, a chancroid.] Examine the organ to exclude all conditions that might cause similar symptoms, as a *chancre;* which, though not likely to be confused, yet might be mistaken by a layman. The discharge here would be scanty, but the patient might consider it profuse. Or he might be congenitally phimotic, or be suffering from acute *phimosis*, and think that the pus from the prepuce came from the canal. He might have a simple *balanitis*, or balano-posthitis. Therefore *exclude chancre*, *chancroid*, *balanitis*, and *balano-posthitis*. And sores upon a distorted penis may not be chancroids, but simple ulceration from inflammation.

Treatment.

Nearly every remedy in the materia medica has been resorted to. The greatest diversity of opinion exists here also; and you will find new prescriptions in every medical journal that you pick up. All of which goes to show that no method, up to the present time, has given perfect satisfaction. Yet every "man about town" has a receipe that will "cure in a week." Well, it may!—in individual cases; but another time, and even in the same man, it will utterly fail. Again, a certain thing may cure eight out of ten and not touch the other two. *So don't jump from one thing to another without a thorough trial.* Tell your patient that you don't know if he will be well in two or sixteen weeks, but you will do the best you can. *Just so soon as you make promises, you will have to qualify them and be defeated.*

One of the latest things is the *prolonged irrigation*

by a warm *Bichloride of Mercury* solution—the "bichloride treatment." *Copaiba* and *Cubebs* were standard in the old times; and later, *Sandal Oil*, of which I think highly. *Hot local baths*, twice a day, diminish the inflammatory process, and tendency to *chordee;* have these hot as the patient can bear them, and continued for from five to ten minutes. The pain upon urinating is lessened, if he urinates with the penis submerged in hot water.

Concerning remedies, the trouble is that the disease itself is self-limited; *it gets well if left to itself.* So while drugs may moderate and cut short the attack, they don't seem to have anything like *specific action. Aconite* is indicated at the beginning, while the acute inflammatory symptoms last; with *Cannabis*, low—Dr. Helmuth says 3d, 6th, and 12th. I have tried them from the tincture to the 30th. I use them in alternation. Of the *Cannabis Sativa*, I give gtt.v of the tincture four to five times a day; it may act promptly and beautifully or disappoints you. *Apis* is often found remarkably efficient with associated edema; the integument is very red and the whole organ much swollen. Many do much with the *Mercurius Solubilis*, *Corrosivus*, or *Cinnabaris*. The latter is indicated with the greenish or bloody discharge, and pain on micturition. There is intense, violent inflammation, and an erysipelatous appearance. *Belladonna*, when there is extreme burning upon micturition, and a purulent or bloody discharge. *Argentum Nitricum* 3d, or 3x trituration, is often beneficial. This is also indicated when inflammation is high, with bloody discharge, and pain on micturition. *Gelsemium* gives good results in some cases,

particularly when the discharge suddenly ceases. The starting up of trouble in the testicle may cause this stoppage; or if from taking cold, and without the development of scrotal trouble, *give Gelsemium to bring back the discharge.* When vesical symptoms develop, —not necessarily cystitis—with frequent micturition, tenesmus amounting to *strangury*, and pain during the tenesmus, *Cantharides* is the remedy of all remedies. You can generally make a selection from the above list for the acute stage.

For the stage of decline—when the discharge is reduced and there is no pain, or but slight, upon micturition—the selection is difficult. Many cases are due to a debilitated condition not only of the canal, but of the system at large, and *require a constitutional remedy:* try *Ferrum*, *Capsicum*, *Gelsemium*, *Sepia*, *Thuja*, *Sulphur*. There are often but few symptoms to enable you to differentiate your remedies.

Render the urine bland by drinking freely of spring water, as *Poland* or *Clysmic;* and by taking *Bicarbonate of Soda* if much urates are present in the urine passed—dr. ss., two to three times a day, two to three hours after meals, so as not to interfere with digestion. *Drink from two to three times as much fluid as ordinarily*, which will cause more frequent urination, but making the urine thus very dilute, reduces the suffering. Also this diminishes or removes the bladder source of irritation. *Avoid all stimulants—beer especially—throwing extra work of elimination upon the kidneys.* Have the patient observe the *strictest hygiene and personal cleanliness. He must avoid coitus, of course.*

LOCAL MEDICATION.—Is anything of this kind ad-

visable during the *acute* stage? As a rule, no! I am opposed to it, and also to the abortive treatment by setting up a violent counter inflammation by *Argentum Nitrate*. Condemn this by all means. It is better to leave the case entirely alone than to adopt such measures. Yet I would not advise that absolutely nothing be done locally until the patient is well along in the stage of decline. Full *hot baths*, or sitz-baths, or bathing the penis alone in hot water,—hot as he can stand it—two or three times a day, will materially decrease the pain and swelling, and lessen the tendency to *chordee*. If the chordee has already made its appearance, an application of cold is equally effective, in relieving the painful erections.

If you *must use* something in the early stages, *hot retrojections*, non-medicated or otherwise, may be employed. They may be used as follows: Have the hot water in a tin vessel with a lamp underneath; this reservoir being placed at some height above the patient. A tube extends from this, to which is attached a flexible catheter—No. 16 or 18 French, and one with two eyes is better; or Ultzmann's catheter (35) is preferable. The catheter is carried about five inches into the urethra, so that the injection is carried just within the bulb. Lubricate the instrument with vaseline or glycerine, and let about two quarts of the water run through. It doesn't go into the bladder, as the sphincter vesicæ prevents, but it runs through the double eye and comes out at the meatus alongside the catheter, which must not be too large. This may be repeated two or three times in twenty-four hours. Wonderful results were at first claimed for this treatment; we can say that it pro-

duces some comfort and shortens some cases, while in others *the irritation from the catheter* may more than offset the favorable effect of the douche. If something stronger than water is needed, a bichloride solution may be used very weak; this mild sublimate injection, from 1–30,000 to 1–100,000, as may be tolerated, can be used three to six times a day—as a *douche* rather than an injection. So if any injections are used in the acute stage, confine them to one of these hot retrojections, either the non-medicated or weak bichloride solution as mentioned; or an injection of warm water, *Glycerine* and a little extract of *Opium*,—gr. j to iij to the oz.—very rarely might be admissible. *Ordinarily, I prefer to leave the canal entirely alone during the acute stage.*

After the discharge has lasted *a week or ten days*, then you have the chordee and the acme of the trouble; from that time on the discomfort and the discharge gradually change in character and diminish. If the pain upon urination is very severe, matters may be helped by urinating *with the penis in hot water;* or in extreme cases, a four per cent. solution of *Cocaine* may be injected into the urethra just before micturating. At this later stage, we may now use injections with advantage, *with the view of stopping the discharge.*

USE OF URETHRAL INJECTIONS.—The manner of using injections is very important. The first essential is *a good syringe;* two or three drams is all that it should hold. The royal pea (piston, rubber) syringe (13), which has a *cone-shaped blunt point* that will fit any meatus, is one of the best forms. One having a rounded end and nipple-like nozzle is not quite as good; and you don't want a long nozzle. Also, there is one

made of hard rubber, with a soft rubber tip; and there is a form made abroad which can be loaded and carried in the pocket. A good *glass syringe* will answer very nicely, only glass is likely to be uneven, preventing the piston from working smoothly.

Never make an injection until the patient has first urinated, to wash out any discharge from the canal. Make *lateral compression*, at the meatus, with the left thumb and finger, so that the injection will not leak out at the side of the syringe; experiment and have the patient see how he can best get the fluid in. The axis of the syringe must be identical with that of the canal, and when properly given not a drop of the fluid should escape at the meatus, while it is being driven in by *slowly depressing the piston.* After the first portion of the solution is injected, then let it run out. After injecting the *second half*, lay the penis upon the belly, stroking the urethra backwards toward the bulb, and after holding it awhile—about two minutes—let the injection come forward; the first half of the injection washes out the canal, the second "takes hold:" or hold the meatus closed a moment, "ballooning" the canal somewhat, and thus opening its folds and bringing the solution in contact with all of the mucous surface.

See that the injection never produces actual pain, although a tingling, burning, or slight sense of discomfort is usual. One patient will stand gr. j to the oz. of an injection, the next, gr. x; and *by the feeling* is the only way you can graduate the strength of the solution to the case in hand. The slight sense of discomfort after receiving the injection, should pass off within a few minutes. As to *frequency and number* of injections,

give two "pistons" (syringefuls), as directed, from two to four times a day; or you can give more at a time and less often, or *vice versa.* By using a syringe at the meatus ten to twelve times a day, you may simulate the *retrojections*, thus really giving the canal a bath instead of an injection. *But the oftener an injection is used, the weaker it must be.*

During the *stage of decline*, then, in a *strength not painful*, I think injections are very beneficial, yet there are those who are bitterly opposed to any local treatment whatsoever, claiming the danger of producing *stricture.* I admit that if used during the acute stage, or in too great strength, they may do harm, and yet I think the amount of harm that they do then has been very much exaggerated. Used after the fashion and at the time directed, with the proper precautions, as mentioned, I do not believe they will produce trouble deeper in the canal, and you will not regret having employed them. Continue the injections so long as they seem to do good; when the discharge has stopped and there is no sticking together of the lips of the meatus in the morning, then continue for a week or ten days more, gradually diminishing in frequency. If an injection seems to be accomplishing no good, or the condition is worse after it, *stop all injections.* If after forty-eight hours' rest the discharge is still increased, you are then convinced that the disease is keeping up the discharge, not the injection, and you may now substitute another.

INJECTIONS.—Those which seem to give the best results in the long run, are selected from the mineral astringents. Generally, better results follow their use than from the vegetable astringents. Pre-eminent

among these is *Sulphate* or *Acetate of Zinc*, used in gr. ½ to x to the oz. solutions. You will rarely have occasion to go over gr. v. The following is a very good combination:

℞.	*Zinc Sulphate,*		
	Alum, crude,		
	Acid, Carbolic,	āā	gr. viij
	Aqua,	q. s.	℥viij

This makes one grain of *Zinc Sulphate* to the ounce, but you can use a little less of the *Carbolic Acid;* I would not exceed one per cent. of *Carbolic* to the ounce of solution. If a stronger solution of the *Zinc* is made, use less of the *Carbolic.* You may use the *Zinc Sulphate* or *Acetate* separately or together.

If the disease be due to a coccus, you may want to give a germicide to inhibit the growth of the germs or kill them, and this view of the case leads to the use of *Hydrogen Dioxide* and *Bichloride of Mercury.* So every injection should contain some germicide. *Kali Permanganate* is very useful, but don't begin with it stronger than gr. ¼ to the oz., perhaps running up to gr. j to vj to the oz. There is as great discrepancy in the doses recommended to be given in the beginning, as there is in the treatment advised, so *be careful always in using unknown remedies, and by no means give the maximum amount.* Start with a gr. ij powder of the *Permanganate of Potash*, to ℥iv of water. If that hurts, add some water; if he doesn't feel it, add another powder. Experimenting in this way, you will find a proper strength, the idea being to commence with a mild solution, and *feeling your way*, double, treble, or further increase the amount until it "takes hold." But "*I*

find that my patients don't tolerate the strength of these injections that the books talk about." Therefore, I repeat, *always* begin with the *minimum strength.*

Cupric Sulphate, gr. j to v to the oz., may be useful. The fl. ext. of *Hydrastis*, gtt. x to xv (or gr. v to x of *Submuriate of Hydrastin*) to the oz., often works well. I often combine this with the *Zincs.* The solution of *Bismuth Subnitrate* suspended in water, by *Glycerine*, is another. It should contain at least gr. v to the oz.:

℞.	*Bismuth Subnitrate*,	gr. xl
	Glycerine,	℥j
	Aqua,	℥viij

In making up your prescription for an injection, determine how much you want to use altogether, then decide upon the amount of the ingredients, figuring out the strength per ounce.

Acetate of Lead is good, and may be combined with the *Zinc.* There are any number of these injections, and even these few "reliables" may not touch the case, and yet the vegetable astringents will. Or, according to the idiosyncrasy of your patients, you may find one where the injection of pure *Claret Wine*, or of equal parts of *Claret* and water, may just strike the case; or *Tannin* do the same. You can never tell beforehand, in any case, whether or not any given injection will hit the mark.

POSTERIOR URETHRITIS.

A posterior urethritis is most commonly caused by the inflammation travelling back from the anterior canal. Some writers claim that this occurs in sixteen per cent. of all cases, others placing the number at ten

per cent. After a case of urethritis is two or three weeks old, the trouble has a tendency to extend backwards, and it is a question why it should not do so always; starting at or about the meatus, why does not an inflammation of the urethra always pass the triangular ligament with facility? There are several explanations offered: The membranous urethra is surrounded by a muscle which keeps that part of the canal closed, and a tonic contraction of that, is, I think, a minor factor. But a more important reason, perhaps, is that *the membranous urethra has but a very small supply of follicles, crypts, and glands*, and being less vascular, there is not the tendency for the gonococci to locate here that there is anteriorly, where the canal is rich in follicles and crypts. Also, the parts seem to offer a certain resistance to the inflammation travelling backwards, and in this respect there is great difference in individuals. Yet *we have seen that in a large proportion of cases the inflammation does extend backwards and involve the neck of the bladder*, "neck" being used to indicate more than the vesical orifice—including all that deep portion of the urethral canal.

Symptoms and Course.

The symptoms, more or less pronounced, may be few, or even absent. Often there is a sense of burning, heat or discomfort in the perineum, or the lower part of rectum. Perhaps the sensation is like that of a "hot coal just within the anus"; or the finger introduced *per rectum* may encounter a tender prostate; or the membranous urethra may be very tender. Again, you may find that there is neither tenderness, redness, nor heat.

The pain upon micturition varies greatly; also the frequency of the act itself. The pain may be situated anteriorly, posteriorly, or occur after the flow, with tenesmus. Or the pain may be insignificant, or there be none whatsoever. We are not prepared to say upon just what factors the pain depends, as in one case, where the pain is extreme, there are but slight evidences of inflammation, and *vice versa;* the general nervous condition of the patient has much to do with it.

Treatment.

The most approved way is by the *deep injection.* Except in rare instances, *you cannot inject the bladder, or even the posterior urethra, from the meatus.* The instrument must reach within the membranous urethra. In lieu of the special deep injection syringe (36), take an ordinary rubber catheter having two eyes; lubricate it with glycerine or the glycerite of starch, in preference to oil of vaseline. *The bladder is first emptied,* which washes the canal and decreases the danger of carrying the infection from the anterior into the deep canal; and, also, the undiluted injection thus comes into contact with the bladder. Or, in addition to the preliminary micturition, you can *first wash out the anterior canal.* One of the best solutions, and that generally used for anterior inflammation, is Ultzmann's, as follows:

℞.	*Zinc Sulphate,*		
	Alum, crude,		
	Carbolic Acid,	āā	gr.ij
	Aqua,	q. s.	℥j

First, dilute this with three or four times its volume

of water; in using it the next day, dilute it three times; the next, twice; then once; and then give the solution in full strength, if not attended by any aggravation.

Inject slowly from ℥iij to iv. If none of the fluid appears at the meatus, you then know that the point of the syringe or catheter is in the membranous urethra, and that the injection goes into the bladder. The patient then empties the bladder voluntarily. Perhaps, from irritability, he is unable to do this at once, but there need be no alarm, as he will be able to accomplish the act soon after getting out of your office.

Repeat this deep injection every day,—or second day if too much irritation be caused—continuing for a week or ten days. Then change to the the *Permanganate of Potash* solution, beginning with it very dilute. Make a gr.$^{1}/_{10}$ to the oz. solution; take 10 parts of this to 200 of water for the first injection, 15 parts for the second injection, then 20, and then 25 parts. Some physicians claim that you can use at the beginning a solution as strong as 1–2000, which equals gr.¼ to the oz.; but I believe this altogether too strong. Many people cannot stand solutions of this strength, even in the anterior urethra, and much less in the bladder. *Commence with a very dilute solution, then increasing the strength as the patient can stand it.*

After a few weeks' improvement, if there is an aggravation, then stop the irrigation, and you may with advantage use an "*etching*," as follows: Carry the deep syringe (36) to the *membranous urethra*, and inject gtt.v to x, of a gr.j to the oz. *Silver Nitrate* solution; increasing to a strength of gr.iij to v. Some even go

as high as gr.xx to the oz. In the majority of cases this treatment produces a very marked aggravation for a few hours, and the pain may be so great as to call for an anodyne in the shape of an *Opium* suppository, or a hypodermic injection, the pain lasting from an hour to twenty-four hours, and gradually subsiding; but *the reaction, after the immediate effect, is good;* there is often very much improvement. *But do not repeat this until the irritation and good effects of the first treatment have gone*, which may be in two or three days. You may give three or four of these treatments. But *in the majority of cases it is too "expensive" a process, the beneficial effects being produced at too great cost.* In some persons the canal is very irritable, and although you use *Cocaine* the effects of that soon pass off; and the patient may be thrown into a terribly nervous condition, often requiring to be held, and the exhaustion following this is so great that it more than overcomes any good done: *the patient's vitality is depressed and the general condition made much worse.*

"*Do not try to drive the canal.*" If there is some temporary aggravation, passing off in from eight to twenty-four hours, it is all right; but if it continues for three to four days, requiring the liberal use of anodynes or chloroform at every urination, you had better give up all thought of local treatment; but such cases are happily rare. The Germans go to a great extreme in this etching process, using as high as gr.lx of *Silver Nitrate* in a suppository of cocoa butter, which is placed by an instrument into the prostatic sinus and melts there; or pure *Silver Nitrate* is carried there; and such cicatricial contraction may follow this violent treatment as to

obliterate the orifices of the ejaculatory ducts, rendering the patient sterile.

Remedies are to be chosen from the class acting particularly upon the mucous membrane of the canal and bladder. Of these, *Cannabis Sativa*, *Cantharis*, *Apis*, *Arsenicum*, *Mercurius Corrosivus* may be mentioned. If the bladder is much affected also, then note such remedies as particularly affect that viscus, as *Stigmata Maidis*, fl. ext., gtt. viij, t. i. d.; *Oil of Eucalyptus*, gtt. v, on a piece of sugar, t. i. d.; *Buchu*, *Pareira Brava*, *Uva Ursi*, *Triticum Repens*. It is hard to distinguish the pathogenesis of any one of these remedies from another, all being very similar in action. The *Populus* I am very partial to. If the patient is very rheumatic, *Chimaphila* may be given in several drops of the tinct. or fl. ext., three to four times a day. *Pulsatilla* often renders very efficient service; also *Mercurius Solubilis* at times. These are backed by clinical observation, as well as by the pathogenesis. *Sandal Oil*, *Balsam of Copaiba*, and the fluid extract of *Cupebs*, are very valuable—of about equal value, I should think; but they are used very indiscriminately.

PERIURETHRITIS.

(PERINEAL ABSCESS.)

In cases of acute urethral inflammation, you not uncommonly find present a *swelling in the perineum*. It may start upon one side, but is more commonly central when you see it, and extending a little anterior to where the scrotum joins the perineum, and backwards to the anus. This condition is generally *periurethritis*, the connective tissue outside the urethra being in-

volved. *It may originate in an inflammation of Cowper's gland.*

Symptoms and Course.

The swelling, tenderness, pain and redness increase until the swelling may be as large as a turkey's egg cut longitudinally, or even attain to a mass as large as a hand, if it goes on.

Treatment.

But don't allow it to get to any such point. When there is throbbing and darting pain, very great tenderness and redness, you have an abscess that threatens to break into the urethra if you delay, allowing the urine to enter, causing further irritation, and setting up a perineal fistula. Therefore *incise it.* An acute prostatitis may simulate this condition, but only the rarest cases point in the perineum : they usually point towards the rectum or urethra.

You must be prepared to carry the knife very deep in opening these abscesses, as you will be surprised at the depth you must go to reach the pus. From neglect, pus may burrow way up into the groin and thigh, burrowing around the spongy body and resulting in a fistulous tract which may take a long time to heal. (See "Case No. 14," page 206.)

CHRONIC URETHRITIS.

(GLEET.)

Gleet is a chronic urethral discharge. The inflammation causing the catarrhal condition, may involve the anterior or posterior parts of the canal—be situated either behind or in front of the triangular ligament.

Symptoms and Course.

If the patient experiences discomfort from riding upon a hard seat, etc., this suggests that the trouble is *posterior*. But if he has repeated attacks of clap, and the previous history presents no involvement of the posterior urethra, probably the trouble has extended backwards into the deep canal. Cases of a simple urethral discharge, aggravated or not by beer, coition, etc., we may say are anterior; but a *fullness and burning in the anus* indicate that the trouble is deeply situated.

Diagnosis.

Wash the urethra in two portions; *first the anterior*. If you get in the return fluid, *uniform shreds,—tripper fäden*—they come from the anterior urethra; but the "*tack-head*" *threads come from the back part of the urethra.* The presence of these latter has been accounted for in various ways. You can make a diagnosis of anterior or posterior urethritis largely from these little threads. (See page 57, and "Case No. 17.")

Treatment.

If only the anterior portion of the canal is affected, you need to medicate only that part. You can inject a *Bichloride of Mercury* solution 1–20 or 40,000; or use a *Zinc Sulphate* and *Alum* solution, even weaker than already mentioned. For the *anterior canal* you can use an ordinary syringe; or introduce a catheter to the point,—about four inches, say—and make it a retrojection; spasm shuts up the urethra at the triangular ligament, and sends the fluid forward. In-

ject once every day. But the inflammation is not all upon the surface, and the injected fluid does not go into the follicles; to overcome this, you can do something by "ballooning" the canal; and also by passing a solid steel sound as large as the meatus will admit, (and be sure that the meatus is of normal size—a No. 17 English, or 28 French sound, the ordinary meatus should take) thus "ironing" it out and emptying out the follicles. Lubricate the sound with glycerine. *Often these discharges are kept up by the constriction of an abnormally small meatus.* Giving such an injection once a day, using *Zinc Sulphate*, *Kali Permanganate*, or *Cupric Sulphate*, preceded by the sound treatment, will generally result in a cure shortly, or in several weeks.

If the *posterior part of canal* is involved, it is benefitted only by deep urethral injections. You might use sounds here also, but the indications for them in this case are not quite so clear. Use the deep urethral syringe (36), with point reaching just within the triangular ligament, and discharge the fluid into the membranous urethra; or you may attach a ℥iv syringe to this, and inject a gr. ⅓ to the oz. *Zinc* solution, etc., the patient "urinating the injection." *Argentum Nitrate*, gr. j to xv to the oz. is very efficient here, but use it at very rare intervals; and I think you will oftener get better results from the milder solutions.

CASE NO. 15.

GONORRHEA AND PHIMOSIS.—Young man, 18 years. Sometimes there is more or less edema, causing a grotesque appearance of the organ. In this case it

is impossible to retract the prepuce, which condition of *phimosis is often found with soft chancre.* If the prepuce is retracted and you cannot bring it forward, you have *paraphimosis*, which condition may cause strangulation; and in which latter case the swollen glans has become blue-black, cold and devoid of sensibility.

Treatment.

We will give him *sub-preputial oil injections* every two to three hours—gently, so as not to tear the tissues. The urethral inflammation extends to the bladder, and so I will put him on *Cannabis Sativa*, gtt. v, t. i. d.

CASE NO. 16.

He has the characteristic purulent discharge of urethritis. Has had it for eighteen months. The discharge must come from anterior to the triangular ligament, as we can "milk" it out the meatus; but it does not show any upon urination.

Treatment.

Would cleanse his anterior urethra, and then let him pass his water, to examine and see if the *posterior* canal is affected. We should also examine him for *stricture*, to see if that is keeping up the discharge. It gets better at times, and then comes on again. This may be a *fresh attack*, yet the *non-inflammation of the glans* does not so indicate. Yet a second attack would be less severe than the first.

CASE NO. 17.

POSTERIOR URETHRITIS.—He has to urinate about

every hour or hour and a half, with some "unfinished" feeling after the act, and straining. He passed his water an hour ago. It is very important to determine if a chronic discharge is *anterior or posterior*—that is, originates from in front or behind the triangular ligament or constrictor urethræ muscle. You may have a chronic discharge (gleet), originating anteriorly or posteriorly alone, or it may be a combination of these two—antero-posterior.

Symptoms and Course.

There are generally no subjective symptoms beyond the discharge. Indeed there may be no discharge. Micturition is normal and he reports his urine clear. There is no pain, no burning, no agglutination of meatus—absolutely nothing: but he will probably give a history of clap, and say that he finds he gets into trouble easily—that is, on staying with a woman apparently clean, or upon sexual excitement with or without gratification, or upon being out with the boys, or after much exercise, he gets a discharge. Such a case is *a pure and simple non-specific urethritis*, or due to the presence of unsuspected gonococci; and if you question the patient closely, you will probably find that his first clap was attended with swelled testicle. Also, as is the case with this man, there is *lack of satisfaction* upon emptying the bladder, which shows that there is trouble back near the neck.

Until recently, these cases of *frequent micturition*, tenderness, etc., were regarded as gonorrheal cystitis. They are now called *posterior urethritis*, plus a little extension of the inflammation to the mucous mem-

brane in the immediate neighborhood of the vesical orifice. *It is really a prostatitis, and takes in the membranous urethra and the vesical neck.* How may we determine the extent of involvement? There is only one satisfactory way, and this is *the urinary test known as the "two- or three-glass test;" and in all genito-urinary diseases in the male, this test should be made.*

Diagnosis.

Have him try to hold his water as long as he can; and the milder the discharge the longer he can do it. Have him hold it all night if possible, and then have him void it in two parts in the morning. *The first gush of an ounce represents the washings of the canal,* and tells if the trouble be in the bladder or canal. *If there are threads or flocculi in the first sample, and the second is clear, the trouble is somewhere in the urethra beyond a doubt.* If the first be cloudy and the second looks exactly like it, the débris may be from the bladder or the canal. *If the trouble is anterior, the discharge will probably come to the meatus, causing agglutination; it can also be squeezed out, and there will be shreds in it.* These shreds, which the Germans call *tripper fäden*, are of two kinds: some of them being slender rods and others with heads on them like little tacks. *If these shreds are in the first gush, and the second class is clear, it means trouble in the canal.* If the first is shreddy and the second is cloudy, it means either suppuration in the kidney,—which you must exclude—or there is bladder trouble, with the canal also involved.

THREE-GLASS TEST.—To decide if the difficulty is

located within the bladder, or in what part of the canal, you must make a "*three-glass test.*" The first ounce represents the washings of the canal. Then put the finger in the rectum, and press upon the prostate and the *vesiculæ seminales;* then pass the second specimen; and then the third. If the first and second are shreddy, and the third is clear, then the trouble is in the *prostatic sinus or in the seminal vesicles: the second specimen represents the washings of the prostatic sinus*, and if cloudy, it means trouble in the seminal vesicals or in the prostate, if the third is clear. Have the patient hold his urine as long as he can before making the tests, for if he urinates frequently—say every half hour or so—he would *clear the canal, not giving the discharge time to accumulate.*

If the bladder seems to be the point at which the urine is clouded, the discharge may *have backed up from the prostate, or it may come from the bladder itself;* which latter is more likely to be the case, if the urine had remained within the viscus for *a long time:* if there is *not much discharge*, and the urine was held but a short time, it is from the prostate.

Alkaline urine points to cystitis, and the microscope shows the bladder epithelium. These threads—"*clap shreds*"—mentioned have been the subject of considerable discussion. Some say those with the heads—the "tacks"—are diagnostic of posterior urethritis, and those without heads, of anterior. *I question if this is worth very much as to the location of the trouble.* There are different theories of the origin of the threads, that most generally accepted being that there is a patch denuded of epithelium from which there comes not pus

enough to be discharged, but *the urine washes over the sore and the pus cells, etc., rolling them over and over and making them into these little cylinders, by the pressure of the current.* If these threads tend to float, and settle themselves slowly, *this is favorable;* as when they include more pus cells there is more tendency for them to fall to the bottom quickly. Of course, the more pus cells, the more serious the condition and the less favorable the prognosis.

This man, having urinated only a short time ago, therefore has very little in his bladder; so we cannot afford to waste his urine. The first gush would represent, then, the washings of the canal; and the second, the contents of the bladder. But we want to interrogate the *prostatic sinus.* There would not be increased micturition, and tenesmus, *if the anterior canal alone were involved.* I want a washing of the posterior parts, so I will *first wash the anterior part clean, and then his urine will represent the washing of the part behind the triangular ligament.* After this washing, we may use a *Boracic Acid* solution as follows: Dissolve gr.v of the *Boracic Acid* in a little water first; then add more water until you have a ℥j solution. We can use an ordinary catheter, or better, the catheter of Ultzmann (35), which is intended to reach only to the membranous urethra. With this you give a retrojection, and you can use a four ounce syringe (1) or a Davidson's (40), to inject with. The Ultzmann instrument consists of a short glass or metal tube, to which is attached a rubber tubing; which latter may be attached to either a Davidson syringe or the bulb syringe, as stated. [The regulation "Ultzmann's irrigating apparatus," for irri-

gating the anterior urethra, consists of his catheter, as described, attached to a large piston syringe.]

Treatment.

It is impossible to cure with simple anterior injections, as the posterior membrane does not come in contact with your injection. The astringent effect may be carried back on the membrane but it doesn't cure; although most injections are given for their astringent effect, and thus an anterior injection may benefit a posterior urethritis somewhat.

The proper way is to use a deep urethral syringe (36) *after the patient has urinated.* The ℥iv medicated solution selected is then injected, and flows on into the bladder, *washing the posterior urethra as it* goes in. The patient then urinates, which washes the posterior part of the canal a second time. This is done every day. A very weak solution of *Bichloride of Mercury* might be used—perhaps 1–100,000; or *Zinc Sulphate*, *Alum* and *Carbolic Acid*, gr. j to the oz. Dilute three times for the first ℥iv injection; next day, dilute twice; next, once, or use the solution pure, according to how the patient takes it. *Permanganate of Potash* must be used very dilute, say gr. $^1/_{10}$ to the oz., and use one part of this solution to five to ten of water. Gradually add less water until you have increased the strength to the point of tolerance. *Zinc*, *Alum* and the *Carbolic*, is about the best solution, and the *Permanganate* next. Or you can use one for two or three days, and then the other—alternatingly.

If there has been a very acute attack, which has travelled backwards, with violent *tenesmus* and pain,

and urination every few minutes, here you *cannot wash the bladder*, as it won't hold more then a dram. In such cases comes in the *instillation* method of treatment. The deep urethral syringe (36) is filled with an *Argentum Nitrate* solution, beginning with gr.j to the oz. *Always start with the minimum quantity.* Carry the syringe to the prostatic sinus, and slowly inject gtt.xv to xx. It goes into the bladder, but the bladder is *contracted*, and the injection can disseminate around the vesical orifice.

There is pain for some time, but the patients are much better after awhile. Indeed it may be so painful as to make it necessary to help over a few hours by a hypodermic injection of *Morphine*, given a few minutes before the instillation. *Cocaine* and *Silver Nitrate* are antidotal, therefore don't use *Cocaine* there. The dose of the *Morphine* must be guaged by your patient. *Don't repeat this Silver Nitrate instillation until all the irritation from the preceding one is gone.* You can increase the strength of the solution with subsequent applications. Use gr.ij to ijss. to the oz., for the second application; gr.iij to v to the oz., for the third. It is rarely necessary to go above gr.v.

CASE NO. 18.

FOLLICULITIS.—*Follicular inflammation* in the course of the canal, which is one of the complications of gonorrhea. Man about 30. Has had clap about two months. Little pain and very little discharge. (In examining for discharge, see patient before he passes his water.) You can squeeze a yellow drop out of the meatus before urination. Has had chordee—painful

erections at night; not so bad now. There is a *period of incubation of a week after coitus.* Now in the stage of decline. Underpart of prepuce is thickened, and it rolls back in a peculiar way, due to the induration—instead of being thin—in the neighborhood of the bridle. It is distinctly hard, with little elevations around there, where rupture has occurred. Little abscesses, forming little pus pockets in the sheath, and distinct from the organ itself, have broken there. It is a case of *folliculitis.* These follicles are found all through the canal, and particularly near the bulb and near the frenum. They are compound racemose glands, and an inflammation of the mucous membrane travels down the orifice of these follicles, giving folliculitis.

If the attack is mild, you may notice only a little redness and tenderness at some point in the canal. If more intense, and the swelling so great that the orifices are occluded, the secretion backs up and forms a tumor, like a sebaceous cyst on the head. They are very likely to occur on one or both sides of the frenum,—in the latter case being two-lobed—or down *in the bulb*, forming a little round tumor; from the size of a small pea to as large as a cherry, in the bulb, perhaps. They are tender and hot. The membrane over them at the frenum, is shining, or red in the bulb. They suppurate gradually, and break either externally or into the canal. The latter is a bad complication, as the urine gets in, and not getting readily out, causes an increase in the inflammation, and an urethral fistula.

This one is not quite typical. More often you find a round, distinct body, apparently unconnected with

the canal, swelling in the direction of the least resistance—that is outward. But there is a little delicate neck or pedicle connecting them with the urethral membrane.

Treatment.

Open them as soon as you can detect fluctuation, or they open internally and cause a fistula. There is more edema here than typical, and the swelling is not so circumscribed as is general, but shades off. We want to *get rid of the cavity*, and inject gt.j of pure deliquescent *Carbolic Acid*, with a *hypodermic needle ground to a blunt point*—which is equivalent to a fine probe; or a strong solution of *Silver Nitrate*. Or we can coat a fine eye-probe with the *Silver Nitrate*, and carry that in. Wait a little for the edema to subside and the sac to contract, and then put in the *Carbolic* as noted.

CASE NO. 19.

GLEET.—Man about 35. Had gonorrhea six years ago. Another attack six months ago. Enuresis and some discharge at present. Has to get up five or six times at night. Discharge is milky, but no pain on micturition. Fan-like stream. No tenesmus after urination. Burning during the act, through the whole canal. For five or six months has been making his water so frequently at night.

Often in gleet you notice the discharge *only in the morning;* upon first rising there is a drop that may be squeezed out, or it comes to the orifice, dries and glues the lips together, having had a chance to accumulate during the night when no urine had been passing.

Ricord said that if he went to perdition, he knew what his punishment would be: to have a "lot of men around me importuning me to cure their gleet." This illustrates how difficult even a man of his eminence considered it to cure this minimum discharge. You can cure it in the majority of cases, but in some, with the most approved treatment, the case will go month after month, year in and out, without any improvement, and then finally stop itself, as though it had run out. You may, then, *term the case "gleet," when a clap has run months without being cured.* The indications are that there is no pain, the only symptom being the discharge, which is clear like water, or milky or creamy; and varies in amount from a discharge at each micturition, to no real "discharge" at all, but only little threads—"clap threads"—in the urine.

Etiology and Pathology.

The gonococci may get into the follicles and deep in the tissues, being ready to light up an acute condition upon any aggravation. But when the discharge gets to the minimum, you may say the pathological condition consists of a *stricture, or granular patch*, in addition to the specific infection. Otis says that a chronic discharge invariably means a *contracted canal*; and he has many followers. I think that many gleets are due to organic deposits that constitute a departure from the normal caliber of the canal, but *I don't believe that every gleet is due to stricture.* A stricture may be one of "large caliber," as being No. 28 in size, when the canal normally takes a No. 30 sound. This is enough contraction to cause a discharge,

and irritability of the canal, and retention of urine even, by reflex action.

If you look into the canal by means of the endoscope (45–46), (an instrument similar to the Ferguson vaginal speculum, in the simple form of which, the rays of light are reflected through it from a head mirror) you will see the membrane shining and intensely red at points which may bleed readily. These are *granular spots*, but those who follow Otis say that these "spots" are virtually *strictures;* the gonococci having penetrated deeply, set up an inflammation, with the tendency to plastic exudation, which organizes, giving a contraction. So they look upon the granular spots as having the same pathology as stricture. The epithelia do not form on these spots, the circulation at the base being interfered with by the deposit there. Others claim that there are no gonococci there, but that the epithelium is gone, and the urine infiltrates, and nature throws out an exudation to close the weak spot.

These *granular spots are generally in the neighborhood of the bulb*, and are very frequently causes of the perpetuation of the discharge; these and strictures are prominent *causes*. But there is another cause, when there is no lesion whatever: simply debility of the patient; the system cannot quite come up to the production of healthy epithelia. This may be a local, but is generally a systemic condition; so you must look to it that the patient is not run down, as his friends will generally advise abstemiousness. In such a condition, neglect the local treatment and address your attention to the system at large. To recapitulate. We find *the three great causes of gleet to be: most fre-*

quently, a contracted canal; second, granular condition; third, general anemia or debility.

Another *cause* of gleet, which might be mentioned, is the *small meatus;* and not infrequently the discharge continues months and months, the only cause being this. The membrane forms a sort of hymen, making a little fossa or pocket, and the urine impinging there, keeps up the irritation at that point, or the irritation is reflected back into the canal.

Diagnosis.

Upon making a *two-glass* test of this patient's urine, I would say, off-hand, that there is not much, if any, posterior urethritis; the first portion being cloudy and shreddy, and the second clear. By examining the second glass, we can tell if the cloudiness of the first is due to trouble posterior to the triangular ligament or not. We must exclude bladder or kidney difficulty; and also may fail in this test if the patient urinates frequently, and there is but a moderate inflammation in the prostatic sinus; in such a case the canal will be kept pretty well washed out, and you will get clear urine after the first gush, and yet there be posterior urethritis. But here he had not urinated for three hours when we made the test; and the second specimen being clear, I would say he has not a posterior urethritis but an anterior. Yet he has symptoms pointing backwards: his *irritable bladder and frequent urination.* But this is offset by the fact that he has no trouble *during the day.* If he had posterior urethritis, he would urinate frequently both day and night, so irritability of the bladder is neg-

atived by his passing water frequently only at night. Then how may we account for the nocturnal irritability? by *stricture*, or something in the anterior part of the canal, if ever so slight,—even a neurosis—which may give rise to irritability of the neck of the bladder by reflex spasm at the vesical neck. If such condition is capable of producing such a spasm that you cannot get an instrument in, then why is there not enough irritability to cause frequent urination?

Note, as the patient urinates, how *large the stream is*. If it is a large, full stream, you know there must be a stricture of "large caliber" at least. A weak stream would suggest a considerable stricture. If he strains, and the urine comes drop by drop, or with a spurt and then suddenly stopping, etc., you would know there was a tight stricture; and such observation gives you a *hint as to what instrument to select* in examining him. The sound (4), being wedge-shaped, is no good for diagnosing stricture. If you happen to select one, the end of which is just the size of the stricture, it passes in so nicely that you won't detect its presence; yet if you should take one twice the size of the stricture, you might detect it. *So don't use the sound in examination for stricture.* The only proper instrument is the bougie à boule (14), with the exception of the urethometer (42), which latter you can use with contracted meatus. The closed urethrometer is introduced, the blades opened to what should be the normal size of the canal, and then it is gradually withdrawn: if it catches, then it is screwed down until the blades are approximated sufficiently to pass, meanwhile noting on the dial how much it is reduced in size;

and now try the same maneuver for a second time, or a third time—until the diagnosis is confirmed.

Upon examination of this patient's canal, we find a No. 30 bougie is arrested just within the meatus; No. 28 is arrested at the scroto-penal junction, though with some pressure it goes down to the bulb, or the triangular ligament. On withdrawing, it reaches a *sore spot*, causing him to flinch. This might be a granular patch or a stricture. No. 29 goes just as far as did the No. 28, but catches on withdrawing; so he has a stricture of large caliber, and a very slight one at that. Now a No. 30 goes, and catches at the same point. The diagnosis, then, is a stricture of large caliber about three inches from the meatus.

Treatment.

He was using a No. 25 sound, which could not possibly do any good to a No. 30 stricture. *The object of the sound is two-fold: stretching of the stricture and the production of absorption.* If the stricture were more pronounced, or nearer to the meatus, it would be less amenable to dilatation. *The deeper you go, the more amenable strictures are to dilatation.* This one is just upon the border line, it being my wont to say: "*Within three inches of the meatus, strictures must be cut.*"

Even a No. 32 sound goes right through, so you can see the truth of what I said about the incompetency of the sound in diagnosing. I pass this sound into his bladder to be sure there is *nothing behind this stricture.* So we have passed a sound four sizes larger than the bulb of the bougie by which we detected the stricture.

We will instruct him to have a No. 32 sound passed twice a week, which I think, without any remedy or injection, will cure his bladder irritability and gleet.

This case demonstrates the truth of what I said about the large proportion of gleet being due to a contracted canal. *So always examine for stricture, and especially those of large caliber.* The time here—six months—is not sufficient to allow of contraction enough to cause a small stream; or a stream may by slow degrees get very small, being *so gradually diminished that the patient does not realize it.*

Often the sound alone will cure granular spots also, but here we need *more pressure*, and it should be left in longer: in treating stricture, the sound is withdrawn at once, and with particular care that it is not left in too long or the séance repeated too often. We will lay it down as a rule, *not to repeat instrumentation until the effects of the preceding have passed off.* Inflammation causes plastic deposits, and an aggravation of the trouble.

Having then diagnosed stricture as the cause of the discharge, the cure will be by *gradual dilatation or urethrotomy.* If there is a *granular* condition present, and you have no endoscope (45), you may diagnose it by failing to detect a stricture with the bougie, yet noting *sensitive points.*

Granular patches call for medication by injection, that is a *combination treatment of the sound and injection.* The endoscopic tube is handy in many cases. Wipe off the spot with cotton twisted on a splinter of wood, and you can then apply at the point to be treated, *providing that the rest of the canal is not touched,*

a gr.x to xxv to the oz. solution of *Silver Nitrate.* A solution of this strength can be applied with impunity to one or two particular spots in the canal, on account of the limited area of the medication. If you have no endoscope, you can give an injection or use the sound, or preferably use a combination of the two. In time, this treatment will generally cure most cases. If there is really a posterior urethritis present, you must use deep injections or etchings, depositing a few drops, preferably of *Nitrate of Silver*, in the prostatic sinus.

As to remedies, there are as many used as in clap. I have heard of a homeopathic cure with *Sulphur* 200th, and *Sepia* low and high. That is, I have seen the records of others doing it; but I cannot. I have heard men get up in the Society meetings and say they do accomplish this, but my experience has not been along that line, as *some of the cases I get I cannot cure at all.* What cures one man, won't another, and what cures one man one time won't cure him another time. You will sometimes get most discouraging cases, but if you will go about it systematically and bring intelligence to bear, the outlook is much more encouraging. In some cases you can detect no stricture, no patches, and yet the miserable discharge is kept up. Then there may come a time when the patient breaks through your directions, goes to see a woman, has a champagne supper and a roustering time in general, and finds he is cured.

Of remedies, we may remember *Sulphur*, *Sepia*, *Thuja*, and *Ferrum* especially when tendency to anemia. *Cantharides*, gtt.iij to iv, in half a glass of water, has been found to work when it apparently was

not indicated—no throbbing, no itching, no burning, etc. I suppose it worked by stimulating the canal, and it is eliminated as such, or passes over as cantharidin. Then we have the *Balsam of Copaiba*, *Cubeb*, (which is more stimulating) *Sandal Oil*, and occasionally *Terebinth.* Just the indications for these remedies I cannot give. I have spent hours endeavoring to sum up clear indications for their use, but have not succeeded, as you generally get no symptoms but just this drop of mucosity; and you can find no end of remedies for that, in the present faulty condition of our materia medica.

Alcohol is contraindicated as much as in acute clap, though you don't need to maintain such a strict diet. Especially bad are beer, ale, porter; and those wines having much sugar, as champagne. If he *must* drink, brandy, sherry, whiskey or gin are preferable. *It is a dangerous thing for a man with a discharge to marry.* The line should be drawn here very strongly, and permission given only when shreds have been examined again and again and no gonococci found. The discharge may have become translucent with no signs of pus, yet pus makes its appearance twenty-four hours after marriage, and the woman be inoculated. And yet marriage often is just the thing the patient needs; it will stop the discharge but the woman may be sacrificed.

ORGANIC URETHRAL STRICTURE.

This is an organic contraction of some part of the urethral canal

Etiology and Pathology.

All inflammatory conditions, notably gonorrhea (or urethritis however produced), traumatism, as from instruments, masturbation, and an uric acid diathesis are recognized as *causes* of the trouble. Traumatism may also occur from blows or falls upon the penis, or on the perineum, and such may be severe enough to rupture the canal of the urethra and lead to production of scar tissue. *Very rarely is stricture of the canal congenital*, but you often find a small meatus. *The meatus is always the smallest part of the urethral canal, and is no guide to the size of the canal*—often it is contracted. Persistency of a chronic urethral discharge may be due to this, as in the gleety stage after clap. Slit the meatus with a bistoury (22) in such cases. It is not necessary to cut every contracted meatus—only if genito-urinary symptoms present; then look for their origin in this contracted meatus and slit it. You do no harm, if no good, if you don't slit it too much. From extreme section, incontinence of urine may follow. Prof. Otis and his disciples are extremists here.

As stated, urethritis, masturbation, and a gouty or rheumatic condition, are *causes* of stricture. In the latter case there is an excess of uric acid salts within

the urine; there is a kink in the urethral tube when the penis hangs in a flaccid state, making a transverse fold in the membrane. Crystals of uric acid in the urine irritate the membrane here as they pass over it, and thus set up an inflammation, causing a stricture at this point.

We may note several varieties of stricture: (*a*) *Linear* makes such contraction as would a thread tied around the canal—makes a mere diaphragm, with an antero-posterior diameter of $^1/_{32}$ of an inch or less. (*b*) *Annular*, occupies still more space in the canal. (*c*) *Indurated*, when there is considerable plastic exudation. (*d*) *Irregular*, when a chain of strictures exists. (*e*) *Irritable*, when there is great irritation; they bleed readily and handling is likely to produce urethral fever. (*f*) *Resilient*, stretches readily but as readily contracts to the original size. (*g*) An *indurated*, *annular* stricture would involve the canal for about the distance of half an inch or more, and be hour-glass in shape.

Inflammation is the cause of stricture, produced in different ways as noted. A gonorrhea, commencing in the end of the penis, travels backwards and locates within the bulb; the rest, or anterior part, of the canal recovering, this *chronic* condition of the bulb causes stricture; and so, *many strictures are there located, as gonorrhea is the commonest cause:* again, the *acutest* inflammation in clap is during the first two to three weeks, and the anterior part is then involved. So *stricture is found most commonly in the anterior part of the canal—two and a half to three inches from the meatus;* next, in the bulb; much less frequently in the

membranous portion; and *organic stricture is never found in the prostatic urethra*, though you may have a spasmodic stricture in this locality. In the membranous part of the canal you here have the worst forms—often from traumatism, a kick or blow rupturing the canal and producing a condition often calling for an external urethrotomy.

Symptoms and Course.

Gleet is a signal of an obstructed canal. This sign is a hobby with Otis, who says every gleety discharge is due to stricture, though possibly one of "large caliber." I cannot agree with this. He says gleet is cured by the cure of the stricture, but I have seen many of his cases where the gleet was not so cured. Yet gleet does point to stricture, and in perhaps nineteen out of twenty cases means stricture; but not always. With gleet there is no pain, micturition is normal and there is no increased frequency. The only symptom at first is *agglutination of the meatus in the morning*. When you crack the crust, you can milk nothing out of the canal—there is the very slightest discharge. Later, there comes a drop of clear, viscid mucus; or opaque, like milk; or creamy, green, etc,—this still only seen in the morning. Further on, and the drop appears every time he is ready to urinate; still later, and you get the drop again within an hour after urinating.

Some persons can carouse, fornicate, drink beer, etc., and get no worse; let others indulge in any sexual excitement, beer drinking, etc., and the discharge is quadrupled in amount and urination causes a little burning. As distinguishing between "chronic gonor-

rhea" and "gleet,"—a differentiation which we cannot clearly make—*the first is made worse by sexual excitement;* and even though the man's own symptoms are not aggravated, yet he might give a woman gonorrhea. You may have a spasmodic stricture with a gleet, both due to a stricture of large caliber; this you must look for. The stricture might be large enough to admit a No. 35 sound, and then a lower number would not detect it. Anybody can tell if a patient has a small stricture.

The stream is twisted or divided. An unimpeded stream opens wide the slit of the meatus, but when the stream is too small to do this, the meatus opens at the easiest points—above and below—and the lips adhere in the middle, giving a forked stream; or there is a dripping of urine while the stream is flowing. Frequent urination is now an added factor, the bladder having become irritable. The bladder must contract more vigorously to force the stream past the obstruction; this causes hyperemia, and *cystitis is developed just in proportion as the stream is impeded.* There are the ammoniacal changes, etc., some straining, altered urine—containing epithelium, pus and evidence of decomposition. There is a damming, caused by an organic deposit in the mucous membrane or submucous tissue; a loss of pliability, and the canal at that point won't stretch; so the tissues are dragged upon, and the canal is irritated in proportion to the frequency of micturition and degree of tenesmus, setting up an irritation and congestion. And if there be crystals, as of uric acid, in the stream, such further tend to scratch and the more irritate the urethra. This causes erosion

and there is a discharge from the raw surface. *The less stricture there is, the less is the discharge generally;* or there may be a very tight stricture and but little discharge—little appreciable, at any rate, because the water is passed so often that the canal is kept washed. But under the microscope you may find evidence of discharge.

Treatment.

Gradual dilatation, promoting absorption, is best adapted for the deep strictures, and not being applicable for stricture within three inches of the meatus; these you must cut, as they won't stay stretched and are not absorbed. As you go deeper into the canal, the chances increase in favor of dilatation, unless the stricture be from traumatism; and *the deeper in the canal, the more dangerous becomes internal urethrotomy*, which is an operation of very great danger performed deep in. If resilient, the stricture must be *cut.* The great danger is hemorrhage, which is hard to control in the bulb, and *is likely to be worse two days after the operation*,—the secondary hemorrhage—when you pass a sound, than at the time of operating. Death from this operation is not wonderfully rare, and the fact that there has been invented a perineal crutch and tourniquet is evidence enough that some have had trouble. *So it is wrong to perform an internal urethrotomy deep in the canal.* To control the hemorrhage, leave a catheter *in situ*, to draw the water, and bind the penis down to it. If posterior to bulb in external urethrotomy, use a "shirted canula" (*canula à chemise*) (41). (See "Cases No. 20 and 21.")

If the stricture is of small size, you may have to dilate first before you can introduce Otis's cutting and dilatating instrument (37), which is a No. 15 size when closed. [There are simpler and cheaper urethrotomes than this with which you can get along.] Most strictures are linear, and one incision is all that is required. *You must cut through all the fibers;* any that are left will contract, and so the stricture will return. I have cut them to the full size of the instrument—No. 45—and could still feel the thickening with a bougie à boule. You should cut large enough so that the shoulder of a full-sized bougie will not bind; and *the cutting must be followed up by dilatation with sounds to keep the cut open.*

Remember the possibility of making false passages, and don't use force; treat the urethral canal gently—*coaxingly*. And in any case, don't use instruments unless they are absolutely necessary; also don't jump from one instrument rapidly to another. Select each instrument carefully, give the one chosen a fair trial, and then put it aside—stick to it until you feel sure it fails to accomplish its purpose. In other words, "*don't have a fussy method.*"

ELECTROLYSIS.—*Electricity* is another method of treatment. Thus we have *for deep strictures, external urethrotomy, dilatation, or electricity; for anterior, internal urethrotomy.*

[The objections raised to electrical treatment have been the futility of attempts by the novice, the claim that it must be continued about as long as in the old way of dilatation with graduated sounds, and, lastly, the unsatisfactory result—the strictures returning.

Upon the subject of this mode of treatment of urethral stricture, Professor William H. King says:

"Electricity is most beneficial when used in the *deep strictures* of the urethra, and least successful in the anterior inch. It is a longer and more tedious process than cutting, but *the results are permanent.* Treat the case until you get the canal up to the full size—size of normal meatus.

"*First*, diagnose the locality, character and *size* of the stricture. Then select a *bulb electrode* of from one to two sizes, of the French scale, larger than the caliber of the stricture, but of not more than *one size larger* by the American or English scale.

"Put the hand, well moistened, upon the bulb of the electrode before beginning, so as to lose no time, and have patient take hold of the sponge electrode so his resistance is overcome before the bulb electrode is placed in position. You are not trying to dilate the stricture, so *use no force*, but gentle and steady pressure; the electrode is intended to cause the tissue to be absorbed, not to press through the contraction. The electrode is connected with the *negative pole;* never treat with the positive pole, or the bulb will become oxidized and stick to the membrane. *Do not throw on the current nntil the electrode is firmly locked within the stricture*, then let it make its way through mainly by its own weight.

"*Never crowd the treatment;* in this be more careful here than even in treating stricture of the esophagus. Use a very mild current, not over six to ten milliamperes. Too strong a current will set up an irritation causing a spasmodic condition. *Don't hold*

the electrode in situ over half a minute, or you may cauterize the membrane. When it slips through, immediately *withdraw it gently.*

"There may be another stricture deeper than the one first treated. *Diagnose the caliber of each successive stricture, as you reach it, and fit an appropriate bulb for each;* don't force the larger bulb through the smaller caliber of a lower stricture. *Treat all the strictures at the same sitting.*

"*Don't treat oftener than once a week*, and once in two weeks is better. If a spasmodic action has been set up by previous sound treatment, wait until the irritation has subsided before applying electricity.

"To recapitulate. *First*, diagnose the *size* of the stricture; *second*, use electrode *one size larger; third*, no *undue pressure; fourth, negative pole; fifth*, electrode *in situ* before *current on; sixth*, not *too strong a current nor too frequent treatment; seventh*, treat each stricture *individually.*

"I think that failure in the electrical treatment of urethral stricture is largely due to *rough handling and lack of knowledge.* And now to call attention to additional particular points which I believe are the causes of many failures.

"According to Sir Henry Thompson, and all recent authors, with one or two exceptions,—notably Otis, who has a theory to substantiate—most of the strictures of the urethra are located within a space in the immediate *vicinity of the bulbo-membranous junction* of the urethra. I find, in looking over my own cases, that this has not only been the most common location, but also the *per cent. of failure* has been greater in stric-

tures occurring at this point. This is not only true of my own experience, but of others as well. A distinguished surgeon of New York once said to me that he had seen wonderful success in the treatment of stricture of the spongy portions of the urethra, but that it was a total failure when the stricture was located at the bulbo-membranous junction.

"It is my purpose now to consider the cause of these failures. I believe the causes are two in number: first, a *lack of proper knowledge of the anatomy and physiology* of the structure immediately concerned, and the effect the current has upon a portion of this structure; and, secondly, *improperly constructed instruments.*

"If we take a survey of the anatomy of the urethra, we find the size of its caliber is not uniform—that there are parts which are contracted and others dilated. One of the most noticeable points of contraction is the membranous portion, and just in front of this normal contraction is an enlargement, made manifest by a *bag-like projection* of the under surface. We find that the spongy portion of the urethra is very pliable and dilatable, while the membranous portion is more rigid and fixed. Not only this, but the membranous portion is surrounded by the group known as the transverso-urethra muscle (transverse "ligament"), the so-called "cut-off" muscle, which is *one of the most spasmodic and irritable* muscles in the body and often causes obstruction of the urethra by its spasmodic contraction—a condition known as spasmodic stricture. So irritable is this muscle that the mere presence of a bougie in the bulbous portion of the urethra, will at times cause spasmodic contractions. When we have added to this

the *irritation of an electric current*, which seems to have a particularly irritable effect on this muscle, it is easily understood how a stricture in this locality is so complicated by spasm, that it is impossible to pass the electrode through it. In ten cases of stricture, occupying a space of about one inch, lying about equal distance on either side of the bulbo-membranous junction, in which I was able to introduce a steel sound of a certain size readily, it was utterly impossible to introduce an electrode of equal diameter, when the current was turned on ever so slightly, excepting in only three; making seven cases or seventy per cent. that would not admit the electrode. Now, when we come to take into consideration the anatomy of the parts, and our instruments, which have a very small shaft with a bulb affixed to the end, it is plain, unless the instrument is skillfully handled, the bulb will slip in the bulbous portion of the urethra, and consequently strike below the opening into the membranous portion. The manipulation to find this opening causes more or less irritation and consequent spasm of the cut-off muscle. An instrument in which the shaft is as large or larger than the end of a steel sound, is more or less supported by the surrounding urethral walls, while the very small shaft of the ordinary urethral electrode is not. We, as electricians, have discussed every part of the electrode, the tips, etc., but we have not insisted upon the *proper curve* as much as we should. Here is where we have shown our lack of surgical detail. The *curve of the urethra* is, according to Sir Charles Bell, Sir Henry Thompson, and Dr. Van Buren, the same as that of a circle three and a quarter inches in diameter, and the

proper length of the arc of such a circle is two and three-fourths inches. The fixed curve of the urethra proper begins three-quarters of an inch in front of the bulbo-membranous junction. Now, I have tested eleven urethral electrodes constructed for this purpose, and which represent as many different instrument makers,—some electrical and some surgical—and not one of these represented the proper curve, as they were too straight. This falling off from the correct curve was particularly noticeable in the last inch of the electrode. The bulb did not, therefore, enter the rigid portion of the membranous urethra at the proper angle, but *tended to strike below it, and consequently produced irritation and spasmodic contraction of the "cut-off" muscle.* Another fault, to my mind, of most of the instruments is that, while the curve is not acute enough, *it is too long*, making it more difficult to manipulate—the bulbous end having a tendency to wobble. It is not necessary for the arc of the curve to be as long with an electrode as with a steel sound, as we are never called upon to use them in the plastic portion of the urethra; therefore, a short curve, yet of the proper acuteness, is best, as it is easier handled; but no matter how correctly such an instrument is constructed, or how skillfully handled, when it is introduced into the bulbous urethra and the current turned on, it will in the majority of cases set up a spasm of the cut-off muscle.

"I wish to call your attention to an instrument by which it is possible to obviate this spasm and successfully treat a case of stricture at this point with electricty. This is simply a steel sound with the proper curve, so far as the point is concerned, and which has,

three-eighths of an inch from the end, a properly insulated bulb, which is two sizes larger—American scale—than the rest of the instrument. The size of the stricture having been first diagnosed, the electrode is selected in which the size of the projecting point corresponds to the caliber, thus allowing the instrument to pass until the bulb is brought firmly against the stricture. *After it is in position*, the current is turned on and not before. If a spasm of the cut-off muscle takes place, it contracts on the projecting steel point, which it firmly grasps for a moment or two and then relaxes. This may occur two or three times, but not as a rule. All that is necessary is to hold the instrument in position, with slight pressure against the stricture. The spasm will soon cease and the full effects of the bulb in passing the stricture will be attained. This instrument is much easier introduced. We also get the quieting, soothing effect of the cold steel point, and it is just as certain in its curative effects. In this way I have cured cases which I have been unable to do anything with in using the ordinary urethral electrode."]

CASE NO. 20.

*URETHRAL INSTRUMENTATION.—Jan. 28.—Mr. W., 46 years, married. For seventeen years has had irregularity of stream, which is half the normal size. Some incontinence, with sudden stoppage of stream and desire to urinate again soon afterwards. Desire for urination upon any jarring. Discomfort. He succeeds in passing only a very small catheter. There was a swelling of the perineum, to size of a goose egg, at Christ-

*See pages 75, 182, 279, 289, 304, 305, 316 and 317.

mas, with relief. He thinks his stricture due to traumatism from passage of instruments for his incontinence, and attributes his incontinence to not having emptied his bladder on one occasion when he had great desire to urinate. Had clap thirty years ago—ran five to six weeks, but no trouble until seventeen years ago. There may have been a very slight contraction of the canal at time of the attack, and this later intensified by free use of beer, etc., and overdistension and atony following. Urine is thick; the damming of the canal has caused cystitis.

Diagnosis.

I first introduce a bulbous bougie (14) of as large size as the meatus will take, to see if there exists any contraction in front of the bulb of urethra. I can pass in, about four inches, a No. 20. No. 9 goes into the bulb, but there is a little binding—there is a stricture in the bulb. The bougie comes free, binds, and then jumps.

In order to further explore, we can incise at once, or first measure the diameters of the canal with an instrument having separating blades and a dial (42). Introduce it, spread the blades, and withdraw it as far as you can, and when you meet with resistance approach the blades till you can withdraw, etc.

This man has a series of strictures, making a very bad canal. His tightest stricture admits a No. 9, and a No. 12 catches decidedly. This stricture is down in the bulb or just in front of it. Is there another stricture behind this? *There are no organic strictures of the prostatic canal*, and, except from traumatism of the perineum, those occurring within the

membranous portion of the canal are rare. To investigate behind,—within the bulb and posterior to it—we will use a flexible bougie (12), and in the bulb pass it along the roof of the canal, else you are liable to *push the floor of the dilatable canal down and below the opening of the triangular ligament.* The instrument is arrested by spasm at the bladder neck, or caught in the pocket formed by an enlarged follicle, from the damming back and consequent hydrostatic pressure of the urine. We must go very carefully now, so we will *make no false passage.* Now we will try a little larger catheter; when arrested, draw it back a little, rotate and try to coax ahead again; but it is "no go." Now we'll try this fine whalebone instrument, a filiform (15). *Gentleness and patience are the only skill—you must find, not force a way.* See that your filiform is not brittle and that it has no "hairs" on it. Try to avoid the *lacuna magna* in the roof of the canal, keeping the instrument along the floor. First I will inject oil into the canal for lubrication, and it may dilate the stricture a bit. I try to coax the oil up behind the triangular ligament by finger manipulation, *rubbing down, the canal being between the fingers and pubes* as the organ lies upon the abdomen. We will deflect the point of our filiform a little to one side, so that turning changes the direction of the point and enables us to push it on in different directions. It is very painful now, and so I will inject *Cocaine.*

We must determine what we can do with him—make use of the cutting operation or a combination of cutting and dilatation? I will introduce another filiform alongside the first. A grasping of the instrument

is a symptom of stricture. Not much has been accomplished today; we will let him rest and recover from today's examination before doing anything further.

Feb. 4.—Patient much better—stream increased in size. In gradual dilatation, you should each time start with an instrument one size smaller than largest used at the previous séance, and let patient rest two to three days between the attempts at passing. I did nothing since last Saturday, until Tuesday, when I got into his bladder.

Small steel instruments with a fixed curve, as sounds, are very dangerous, false passages being easily made therewith; and when once made, instruments seem determined to follow the wrong course, hampering the treatment and injuring the patient. This is especially true when the stricture is deep down in the canal. *Use a soft instrument* (5) *till you get up to a good size;* and you can use more pressure with these, as the point can follow irregularities in the course of the canal. Also, if a finger of the left hand be placed within the rectum, the tip can feel the end of the instrument and appreciate if it has left the canal. *A soft instrument, which is quite rigid when cold, will become more flexible when warmed in the canal.* Always look out for urethral fever, and refrain from doing anything when the man is weakened morally or physically.

Treatment.

Stricture in the anterior two to three inches of the canal is not amenable to cure by dilatation; it must be cut. The lower they are situated the better the chance

of cure by dilating. This mechanical stretching also excites the absorbents, and gradually the hard plastic material softens and is taken up. So go slow; too much fussing causes urethritis and consequent plastic exudation, and chordee perhaps. Or the plastic exudation may organize, increasing the stricture. *Don't repeat operations too often; nor make sittings too long; nor do too much at one time.*

Some claim (Dr. Newman, New York) that *electricity* is very good to promote absorption, used very gingerly and slowly. Prof. Keyes says it is no good. The controversy is not yet settled. Prof. Butler had little success with it in strictures of the anterior part of the canal. The electric current seems particularly applicable in dense, indurated strictures, especially those deep in the urethra.

Divulsion is a process which used to be in vogue, but is not done now. An instrument was inserted, and the blades forcibly separated.

Continuous dilatation aims to get rid of the stricture by causing suppuration of the contraction tissue, by allowing the sound to remain *in situ* two to three days at a time, with a rest in between.

Other methods of treatment are *gradual dilatation;* and *internal urethrotomy*, by means of Prof. Otis's instrument (37). The blades separate and stretch the stricture, and then you slide a little knife and cut it.

The more rigid (larger) flexible instruments (5) are more likely to pocket below the opening in the triangular; *you can warm them in water, bend as desired, and then stiffen in cold water, and thus get the benefit of any curve, and especially of turning up the tip.*

When you fail to introduce this, it is then time to use a sound (4), which has a fixed curve. When a stricture is very tight, as a rule it is almost easier to get a filiform (15) to engage in it than if it be of large size. A very efficient instrument often is one that has a filiform threaded in (16). *You must be positive that your filiform is in the bladder, with this device, before you can use force with a steel instrument;* and even when it must follow the filiform, which you are sure is in the right canal, you are not absolutely at liberty to crowd right ahead; *the filiform may loop in front of the sound. To prevent this, pull on the filiform as you push ahead the sound;* you know then it is not looping up in front. If you have pulled the whalebone out so far that you are afraid it has disengaged from the stricture, take off the steel instrument, push your filiform in further, thread on the sound, and proceed again.

Inquire of the patient the kind of stream passed—have him urinate in your presence. *From the size of the stream, and amount of straining you can estimate the size of the opening.* In introducing instruments, it is better to *begin with the largest you think will pass, working down in size* till one enters, rather than to begin with a small one and work up to larger sizes. You may fail with a smaller, not because the stricture won't take it, but because you have *failed to address the point to the opening, and it is always advisable to pass as large an instrument as possible.*

Feb. 11.—I think the *Cocaine* used last Saturday caused the contractions which interfered with further

operation then. Today we will put him under ether and see if we can get into his bladder.

EXTERNAL URETHROTOMY (PERINEAL SECTION).—If not successful, we will then make an *external urethrotomy* without a guide. Put a sound into the urethra, the point of stricture being indicated where the sound stops. Make an incision in the perineum two to two and a half inches long, cutting through layer after layer until you reach the point of the instrument. *You need plenty of light.* Catch the tissues, including the mucous membrane, with a suture on either side, by means of which assistants hold the edges of the wound wide apart. If you can't get in even a filiform (15), then cut along the median line *from before backwards* till you strike the healthy canal (the membranous urethra). Introduce a grooved director (27), upon which the sound is passed into the bladder. Even under anesthesia you may have a spasm at the vesical neck which will not relax, and you cannot introduce a sound although it be in the right canal. *One is very liable to look too far up or too far down for the opening; it is about a finger's breadth—three-fourths of an inch—below the pubic arch.* Carry the dissection back, a finger being within the rectum, working along the median line, to the membranous urethra. You may not be in the stricture—then make a new canal.

The *after treatment* is important: Formerly a (rubber) catheter was tied in, the end being just within the bladder, to prevent the urine passing over the wound, and urethral fever; it was left *in situ* from three to four days. But this has been demonstrated unnecessary. *I let the urine come through the perineal opening, and in*

from three to four days after the operation begin passing sounds. If the bleeding is so extensive that it is hard to control, *use a "shirted canula"* (41), made by putting a gum catheter through a piece of muslin, which you tie tightly on, stuffing cotton inside of this shirt, and fasten with a T-bandage.

I have now passed a filiform (15), and threading on a tunneled sound we pass that. Now I have worked him up to a No. 28 sound. I think the stricture at the membranous urethra was membranous (linear), and that when the first sound jumped—the sound threaded on the filiform—it ruptured the stricture. The patient was previously prepared for this afternoon's sitting, by cutting the anterior strictures.

Feb. 18.—Patient doing well. I pass a No. 28 French sound without difficulty, after Saturday's successful attempt. He has been sent home and the local physician will pass an instrument every five or six days now, to promote further absorption of connective tissue.

CASE NO. 21.

Man about 50, with history of frequent and painful micturition. Has had a number of such attacks. No trouble until within the last five or six years, and six or seven attacks during that time. Pain just after the act of micturition at the neck of the bladder and some pain at the base of the penis. May be taken with the sudden desire to urinate at any time or anywhere; urine scalding when voided, and may have to urinate again in five minutes—perhaps four or five times an

hour. Such attacks as this last two or three days. Intervals of micturition gradually get longer, and finally he will get around to a normal state. Stream somewhat diminished during attacks, but as large as usual between them; also urine then clear—no sediment. But during the attacks, the urine gets colored a little darker than vaseline. When he was 20 to 24 years old had a milky discharge, lasting a couple of years not attended with pain. Sometimes the discharge was a little reddish. There was not enough to require the wearing of a rag, but it would leave a yellowish stain on the shirt. Up to 24 years he had "red sand" in his urine. Just had rheumatism and has a previous history which is rheumatic. Had hip disease and several abscesses. Jarring sometimes hurts him, as riding this morning pained him a little, but ordinarily he has been able to ride horseback without discomfort.

Diagnosis.

The history would seem to exclude stricture. He is too young for prostatic trouble and has no symptoms of it. Also the history excludes bladder difficulty, as cystitis. However, the urine is deeply colored at times in these acute attacks of cystitis with the uric acid diathesis. The acid crystals irritating the canal would produce a discharge and a low grade of urethritis, and so *when the patient will not own up to clap*, look for a rheumatic or gouty diathesis. The kink in the urethral canal at the bend of the penis is recognized as a favorite point, in every urethritis, for stricture arising from irritation and plastic exudation. Yet as his

stream is large and the attacks occur only at long intervals, it would seem to exclude stricture. But it would not be right to let him go without an examination.

In examining for stricture we first try a bougie à boule; this knob instrument (14). *Select one with a bulb to fit the meatus;* you may first enlarge the meatus if it is very small. If the instrument meets with an obstruction which a slight pressure will not overcome, try a smaller one; and so on, until finally with gentle pressure it goes through. If a stricture is present it catches on withdrawing; there is pain, and a little firm traction will cause it to free itself with a jump. *Approximately, a penis three and a quarter inches in circumference, should take a No. 34 instrument of the French scale;* one of three inches, a No. 30. In other words, every $\frac{1}{8}$ inch of increased circumference, over three inches, meaning two sizes larger in the instrument; or $\frac{1}{16}$ *inch increase in circumference calls for a size larger instrument.* This is the general rule and holds good up to a certain point.

No. 32 won't go in, and so with it we cannot detect a "stricture of large caliber." No. 23 won't go in either, and if the canal will normally take a No. 34, you couldn't detect a stricture with this instrument. So I must either enlarge the meatus or use a bulb instrument which I can increase in size after it is in the canal (42). I find that even this small bulb does not pass. A still smaller one goes through readily enough; No. 22 won't go; No. 19 does; No. 20 goes, and upon withdrawing it I detect an anterior stricture. On the No. 20 the shoulder catches just within the meatus. It

is no use going further now until we get rid of this contraction, as it is one itself of sufficient degree to produce spasm of the bladder. The urethrotome (37) is now introduced, and the meatus slit nearer to a normal size. I discover another contraction below. We measure the depth of this second stricture by the finger on the handle of the bougie at the meatus when the bulb is engaged. We introduce our urethrotome again and the canal is now enlarged a little bit more. Now a No. 29 bulb comes out readily. I will carry him at least to a No. 30. Now, gentlemen, the practical point of this case is that from his subjective symptoms we had no cause to suspect stricture. No. 32 goes in now and reaches to the bulb of the urethra.

A stricture in the prostate is unknown—that is a stricture proper. And it is very rare that one exists behind the bulb. In the membranous urethra it is also very rare, except from trauma, as a fall astride a spar, fence, or buggy wheel; and then there is a laceration of the canal at that point. *In introducing instruments into the canal, hold the penis, with the left hand, between the ring and middle fingers below, leaving the thumb and index finger to grasp it near the meatus.* Now we want to prove that there is no stricture deeper in. We could use a straight bulb instrument, but it is easier to bend it first; but we will try the sound (4). We will select a No. 32, as we have demonstrated that the meatus will take that. *The sound causes more discomfort than the bulb bougie*, as the former presses against more urethral surface; as the bulb of the bougie passes, the urethral walls don't come into contact with the narrow shank of the handle. If I were

to use a sound on him every day, or have him sound himself, we would enlarge the meatus still more, as it will contract a little after the cutting.

INTRODUCING SOUND OR CATHETER.—In *introducing a sound* you often push the point *below* the opening of the triangular ligament because of the downward enlargement of the bulbous portion of the urethra. *So make traction on the penis to obliterate this pocket, and don't depress the handle too soon. Introduce first in the line of the groin, then slowly turn up over the pubes.* Obstruction in *this pocket, will often cause the inexpert to diagnose a deep stricture; or sometimes even a small instrument won't pass, due to a spasm of the sphincter urethræ muscle. When obstruction is met, hold the instrument quietly at the triangular ligament, and you will feel a little quiver as the muscle relaxes, when you can now easily coax the point of the instrument in. If it still resists, withdraw a little, and try again. Upon depressing the handle, the instrument should go ahead without using any force.* Failing here, I will try a smaller instrument and a different manipulation, which consists in introducing the sound *with the point turned down, and the handle directed towards the patient's feet, and sweeping it around away from him—tour de maître,* (or feat of a master.) *It is often more difficult to find the opening in stout persons than it is in thin ones.* This No. 30 goes in now, and so we exclude any contraction lower down.

Treatment

I will prescribe a No. 31 anterior sound (43), and have him pass it in a little way himself, to keep the

cut open and cause the wound to heal by granulation To make the case complete, I will examine his urine and put him on *Lycopodium* if it shows an uric acid diathesis. This specimen of his urine is pretty clear, showing only a faint floating cloud of mucus.

Anterior strictures which were cut at last clinic. He has been keeping the canal stretched; has occasional little darts of pain, but no attack as he experienced before operation. I will have him introduce a sound once every three days for two weeks, and then about once a week.

CASE NO. 22.

This man came to the hospital to be treated for retention of urine. The house surgeon passed a catheter. He was subsequently before the class, but has had no regular treatment. His stream is now very small—his water passes only in drops—and so he comes back to us.

First using the bulb bougie (14), we find that he has a stricture about three and a half inches down in the canal; he has two, close together. A No. 12 French bougie catches the anterior one emphatically, and as this is too small to put the *urethrotome* (37) *through*, we must first *dilate* it before we can go at the second. I will use a gum elastic instrument (5) for dilatation here.

This contraction, which will admit a No. 12 bulb, is not enough to account for his urinating "*only a few drops*," so evidently he has a deeper stricture. We can cut the *anterior* and dilate the deeper ones.

First we carefully *measure the depth* of the stricture by noting the position of the meatus on the shank, when the bulb of the bougie is engaged within the contraction. Now we measure a corresponding distance upon the urethrotome (37), which guides us in inserting it to the *same depth.* I now dilate the blades to a No. 30 size, and then cut, sliding the knife *twice* to be sure that no *uncut fibers* remain. Now a No. 30 bougie goes to the urethral bulb, and there detects another stricture. We will leave the deeper ones for dilatation later.

This is the man of the last time, with stricture. His stream is improved.

I have not seen any success in treating by *electricity* strictures in the *anterior* part of the canal. Keyes says that tough and callous strictures of the *deep urethra* will yield very nicely to the *galvanic* current; even here my experience has not been very satisfactory. Perhaps my technique was faulty, as Dr. Newman certainly has cured cases of my own that I couldn't do anything with.

Sometimes you can gain from four to six sizes in instruments at a single sitting. Again, you must be contented with an advance of one size. We have already gained about two sizes here over last Saturday, and this little stretching will result in some absorption. Grasping the penis tightly, prevents the bougie from bending; I am now using an amount of force not justifiable did I not know that the point is *engaged* within the stricture.

His urethra, at the meatus—which was cut last

time—now measures No. 30 French. It is also 30 at two and a half inches from the meatus; 20 at two and three-quarter inches; 24 at three and three-quarters; from three and a half inches down in the canal to the bulb, there is a free passage. Near the bulbo-membranous junction the canal will admit a very small gum catheter; a larger size goes with very gentle pressure, but is followed by bleeding.

I will now try to find the opening with a filiform (15), and threading on it (16) graduated catheters; you see we have no embarrassment nor bleeding if we go to a good size and follow the guide. But even a considerably smaller gum instrument (5) would not go, even one with the tip deflected (10) and kept pointed up against the roof. Also a small sound (4) of the same curve and size as the catheter (2) would not go.

We have here a *resilient* stricture plus a hemorrhagic tendency, or a stricture complicated by *spasm*. The hemorrhage is evidently not due to pressure in the opening—as there was none when the guide was used—but seems to occur when an instrument impinges anywhere on the *face* of the stricture. A stricture of large caliber may produce spasm of the canal lower down. My idea was to start with the smaller, catch the others, and then cut the front ones. But on account of this spasmodic element, we will cut the anterior ones at the start and stretch the deeper ones later.

INTERNAL URETHROTOMY.—The canal measures the size of a No. 20 bougie (14), three and three-fourth inches from the meatus. Upon the urethrotome (37) I measure off this distance *plus a half inch*. Now I introduce the instrument, dilate to No. 24, and cut,

dilate to 28—cut, dilate to 30 and cut. I will cut him to No. 32. In *cutting*, you saw that I first withdrew the knife and then pushed it home, and I pulled the blade at least a half inch anterior to the anterior stricture, as you want to *cut a little more than the stricture itself*—the penis comes and goes a little, that is stretches upon pulling the knife handle, and goes back as it is pushed in, and you cannot guage so accurately as to cut only the stricture. The knife begins to cut only when the lumen of the canal is sufficiently encroached upon, even the edge of the knife dilating the canal before cutting, where there is no plastic exudation. As a rule it is better to both *draw out the knife and then shove it back*, while *in situ*, to be sure that you have *cut all the fibers.*

[Walker's modification* of Otis's urethrotome, made by Tiemann, is designed to obviate the uncertainty mentioned above, regarding whether or not the division of fibers has been made at exactly the located contraction. The tip of the instrument is threaded, and thereon may be screwed various-sized bulbs, thus combining two instruments in one. Also tunnelled tips, through which a filiform may be threaded, are supplied with the instrument.]

* In selecting cuts of instruments for the "Armamentarium," the aim has been to picture such simple ones as may best serve as types. Numerous modifications of those noted are to be had at the shops, and of course the list is receiving constant additions. But, regarding the "weapons" used throughout the whole realm of surgery, it may be said—various "improvements" notwithstanding—that as a general rule, the simplest instruments that will do the required work, are the best; and complicated single instruments devised for a multiplicity of uses, are to be particularly avoided.

We will *keep him here for a few days* and then try dilatation, and see what comes of it. I did not dare do this cutting in my office; wrap the penis in cotton and allow him to go about, on account of his *hemorrhagic tendency.* He might have, in a single hour or so, enough bleeding to make it very uncomfortable for him in the car or street. But we notice little disturbance here so far.

If we should have some considerable bleeding here, or in a similar case, then we would have to consider means for *controlling hemorrhage:*

First, *expose to the air;* lay penis upon the belly and make *ice applications* or use cold water coil. Introduce *Persulphate of Iron*, or *Tannin. Tanno-glycerine paste* may be used, by putting it around the neck of an olive-pointed flexible bougie (11) and carrying it down to the bleeding point; this is a thick, hard substance when cold, but may be moulded under the warmth of the fingers. Failing in these measures, *draw the penis out* far as possible, and having *padded two little pieces of wood*, place one across the dorsum of the penis, the other below the organ, and springing the ends together, hold them by *adhesive plaster.* This tourniquet must be removed as often as it is necessary to urinate. If upon urinating, no bleeding follows, then leave it off; if bleeding starts again, replace it.

Any *cicatrization from cutting* makes an antero-posterior contraction rather than circular, so no new stricture follows from this. The canal must be kept open and made to heal by *granulation;* at the end of the first forty-eight, second forty-eight, and third forty-

eight hours, and then at intervals of three days, until well, *pass a full-sized sound.*

The young man of the last clinic whose several strictures were cut. After a few hours he had a secondary hemorrhage and it was necessary to *clamp* him —as described last week—all Saturday and Sunday. In view of this bleeding, I did not stretch him with a sound until Wednesday, when I passed a No. 30; otherwise I would have sounded him Monday.

I shall pass now a No. 30 and follow it by No. 32. Often these cases *do not bleed much at the time of cutting*, but hyperemia follows the operation, and when the sound is used later, it stretches the capillaries and ruptures them. *Always prepare the patient for this after hemorrhage*, at least so he will save his clothing from being soiled.

Always test a filiform before introduction—as you oil it; also see that there are no little "*hairs*" chipped up on it. Deflect the point a little (15) so that the *tip will describe a circle* as you turn the instrument on its axis between your fingers. The better way to *lubricate* is to first inject the canal with oil. Introduce with the point directed against the floor until the bulb is reached, to avoid the *lacuna magna* in the urethral roof. When you meet with obstruction, withdraw and rotate a little, advance, withdraw again, advance once more, etc., thus patiently making successive trials until you get in. With a larger and blunter instrument, as a gum one (5–12), you can exert more force and with safety.

Sometimes, when a patient catches cold, it will pro-

duce increased congestion and aggravate the spasmodic condition, *i. e.*, the contraction.

CASE NO. 23.

This patient tells us he has a stricture fifteen years old. He has now had clap for three months, the last time previous being five or six years ago. He has had to urinate every three hours. His testicles are quite atrophied and there is a *varicocele* upon the left side. The meatus is red and there is a thinnish discharge; it is unnaturally moist. He says he urinated just before he came in.

A doctor *sounded* him, since when he has urinated only every six or seven hours. The doctor is also washing his bladder. I think his physician is doing splendidly for him. He has no pain; he doesn't have to get up at night.

Diagnosis.

No pain, no frequent micturition, and urine cloudy—these exclude acute catarrhal bladder trouble. He now has *chronic cystitis* and is in the gleety stage.

A No. 25 French *bulb bougie* (14) doesn't enter the meatus, though a *sound*—having a tapering point—might go. A No. 23 bougie goes slowly and is arrested at the peno-scrotal junction; but it catches decidedly at the *meatus*. No. 21 goes to the bulb of the urethra, but it catches in another *stricture two and a half inches down.*

Treatment.

The only thing do here for permanent relief, is to *cut* them. *Stretching* will only temporarily relieve,

and upon the slightest provocation an urethral discharge will be again set up.

For the discharge, we might try the diluted *Claret* injection, working up to pure claret. Inject, lay the penis against the abdomen, and with the fingers work the injection back into the bulb, and thus "ballooning" the canal. Hold a moment and then let it come forward. But while the strictures are present, *they will keep up the discharge.*

CASE NO. 24.

Bartender, 46 years old. He comes from Dr. G——, and suffers from retention of urine and chronic cystitis. Over ten years ago he had a stricture cut in St. Louis. Dr. G—— says he passed two strictures by the galvanic sound. Stream is feeble and he urinates every hour or two, and has to get up from two to four times at night.

Diagnosis.

A No. 30 bougie à boule (14) does not pass the meatus. No. 29, under pressure, passes the meatus, but is arrested at the peno-scrotal junction, and fails to pass on upon exerting a little steady pressure. A No. 27 detects a stricture about two and a half to three inches from the meatus. Now it goes, *jumping* this, and half inch below is another that will not admit this bulb. No. 24 won't go—is arrested about three and a half inches down. Even a 20 won't go more than about four inches. No. 15 won't; No. 12 goes further, but not on five and a half or six inches, as it should go—being in the bulbous urethra—before striking the triangular ligament.

Treatment.

Deep strictures are amenable to gradual dilatation, and I always recommend this treatment when they occur behind four inches from the meatus. *Within the first three inches from the meatus they will not stay dilated*, but as you pass back further, gradually dilatation is more effective. So the rule is: *a stricture located within three to three and a half inches from the meatus must be cut;* posterior to that they *may* be absorbed—probably will be. *Exceptions* are:

The (*a*) *resilient* stricture, which differs pathologically from others, and is elastic like India rubber. Or you may have to deal with an (*b*) *irritable* stricture; whether it be linear,—merely diaphragmatic—annular, or still more considerable, yet if it be of the irritable variety it does not bear any manipulation. It *bleeds* readily upon touch, or an attack of *urethral fever* follows every time an instrument is put in. Also (*c*) *traumatic* strictures, which are deep strictures, occurring within the bulb or membranous urethra, are *not amenable to gradual dilatation.* Again, (*d*) the stricture may be so tight that you can't get any instrument through it, and thus you are debarred. Also (*e*) an *indurated* stricture—where there is a mass of induration encroaching upon the lumen of the canal—may not be absorbed by sounding, unless perhaps by *electrical* treatment, which is particularly advised in these cases.

Therefore we have for the ordinary *deep stricture*, *gradual dilatation;* for these latter *exceptional cases of deep contraction*, *external urethrotomy;* and for the *anterior strictures*, *internal urethrotomy.* The internal division is done down within the bulb, but you

have to *be very cautious in operating deeply from within*, as there is very great danger of serious *hemorrhage*, and I think that many such cases have helped to fill the graveyards. I repeat. *If the stricture be deep in the bulb* and not amenable to dilatation, give preference to *external* urethrotomy.

To return to our patient. A little larger gum catheter (5) than the 12 bulb that we last used, goes, and now we have already entered upon the treatment as well as having completed the diagnosis. Make *traction* upon the penis to *obliterate the folds* in the mucous membrane lining the urethra, and for *lubrication* place some *oil in the canal.* These gum instruments become so soft, as soon as they get warm in the canal, that they cannot injure the patient. If the instrument *binds* as you attempt to withdraw, you know then that you have entered the orifice of the stricture; as it is released it *jumps*, and if this *binding and jumping* is not experienced, we know that you are not within the opening. When it begins to bind, make a little *steady pressure* in order to dilate the opening; then a little *sudden*, *firm pressure*, and in it goes with a jump. Now we try a still larger instrument, *twisting* it now and then, hoping by thus changing the direction of the point to get it to finally address itself to the orifice. *Hurrying* is of no avail: pressure, when the instrument is not pointing in the right direction, simply bends it. If none of these had gone we would then have tried a filiform (15), and then we could put in a solid instrument which would follow the guide (16). We couldn't use a solid instrument (4) as small as this gum catheter (5) because of the danger of making a *false passage*.

In a few hours this man's stream will be larger, then smaller from reaction; in from twelve to twenty-four hours larger again; and later, still larger, as with the disappearance of the *congestion*, *absorption* has been going on and some of the strictural elements are gone. But *don't continue manipulation long enough to excite inflammation;* you will then get a *plastic deposit*, when at most you want only a little congestion. The séances are repeated, only each time going to a larger size. *Each case is a law unto itself as to the frequency of repeating the operation* of dilating. I would say have him come back in four days, if he has no pain; and should then *start with one size below* the largest instrument that I got in before; then see him again in another four days. We will give him a gtt.ij dose of *Aconite* tincture on sugar, and if he experiences any particular irritation, we will not have him back here *until it is all over*, even if that be a week or ten days. You may expect him back here next Saturday, so we will try to keep him before you. Nothing will be lost but time.

If there be present *chronic* urethritis, or gleet, you can dilate, but if the discharge be *subacute or acute*,—the decline of a gonorrhea—*wait until it becomes chronic, before dilating*, as the use of instruments might light up an acute attack.

You see that *you cannot tell by the discharge how much contraction is present;* there may be a very tight stricture—and several of them—and yet with a perfectly clean organ. Again, with only a slight encroachment upon the lumen of the urethra, there may be so much discharge that the owner is compelled to wear a rag all the time.

Chancroid,
Bubo
and
Syphilis.

CHANCROID.

(SOFT CHANCRE—VENEREAL ULCER.)

Chancroid is more frequent than *chancre*—than the local sore alone of syphilis—and is especially so in the poorer classes. But if we take *syphilis* in its entirety, including subsequent manifestations as well as the primary lesion, syphilis is the more common. There are several reasons for the particular prevalence of chancroid among the poorer classes: *One generally has chancroid several times.* Then it is the young and pretty women of the prostitutes who generally have syphilis; along in life they have gotten over the syphilis, which can be contracted only once, and have *chancroids*, which are extremely common among the lowest prostitutes. Though very sore, painful and large, yet you will find women with several upon the external genitals, plying their trade instead of laying up.

Etiology and Pathology.

Ideas upon chancroid have changed considerably, as is the case with most other venereal diseases, since the period of bacteriology. Views have been unsettled that it was supposed were fixed. It was claimed that chancroid is not due to a specific virus, and I used to so teach. It was said that any sore under unfavorable conditions, as irritation in vitiated constitutions, would develop the chancroidal aspect—that filth would produce in any traumatic sore a poison, which inoculated

upon the bearer of the sore, or upon another, would produce the lesion characteristic of chancroid. But *it is now generally believed that the disease is due to a specific virus*, although there are yet two sides of medical opinion. Some think that owing to certain anatomical or physiological conditions existing around the genitalia, the ordinary pus microbe produces a sore there which it would not upon another portion of the body—a very questionable claim. Again, it is stated that the ordinary pus germ having undergone certain changes, is the cause, and the claim is made that furuncle pus germs, etc., will produce typical chancroid. But there are many things which go to prove the existence of a specific chancroid germ, several forms having been "discovered;" but there is such a lack of harmony in the views advanced that the consensus of opinion to-day is that "*chancroid is due to a specific germ not yet accurately described.*" Enough difference between the ordinary pus germ and the microbe of chancroidal pus has been noted in the culture, to settle the specific claim.

One of the prominent features of the poison is its anto-inoculability—the patient may be inoculated and re-inoculated almost *ad infinitum*. In the old days of "syphilization"—before the distinction between hard (true) and soft chancre had been made—it was customary to vaccinate the patient over and over again, until after a long time the system was saturated and the vaccination wouldn't "take"; but after this point of not taking was reached, yet the poison would take if it was the poison from a fresh chancroid upon another individual. Such experiments were made for

study and diagnosis, and the secret of the *hard* chancre finally found to be that *it is not auto-inoculable.* This is the case if a sore be due to ordinary pus inoculation, but if it comes from an inflamed and irritated chancre, though you get ordinary pus microbes—the staphylococci and streptococci—they will now produce the typical chancroid in the bearer. *Thus auto-inoculation does not prove the lesion not a chancre, unless we are certain that the multiplicity of lesions is due to the direct extension of the original and typical sore.*

Symptoms and Course.

Chancroid generally manifests itself within one week after exposure in the great majority of cases, yet it may be two to three days or even two to three weeks. But the fact remains that the occurrence within the week is a marked diagnostic point. Thus at once we endeavor to establish a clear history of a single coitus, or of coitus with only one individual. One of the first questions following inspection should be, "When was the last coitus?" Also inquire, "When was the coitus preceding?" and "Was it with the same woman?" There is really *no period of incubation*, as proved by inoculation, experiments being made for study and diagnosis by inoculating under the arm, below the nipple line, covering the spot by a watch crystal. Yet anywhere *from two to ten days generally elapse before sufficient development is reached to attract the attention of the patient.* Therefore, clinically there is a period due to the primary slightness of the sore.

If the individual be conscious-stricken and exam-

ines his penis hourly after the connection, his attention may be attracted to a little blister; he probably has not observed a minute, elevated, red spot preceding, which is the initial manifestation. After this spot comes the vesicle—watery blister—followed by the pustule. The epidermis is then shed, the pustule opens, presenting the typical sore.

If a follicle be inoculated you have a follicular chancroid, when the first thing noticed is a little papule, dark-red, hard and elevated, following which comes the vesicle, pustule, and finally the characteristic sore, as in the first instance.

Exceptions to the round or oval outline are due to *inoculations of abrasions, as cracks, the sore at first then having the outline of the original abrasion*, but it observes the other characteristic features of the *punched-out edges*, etc. Or, the individual may be subject to *herpes progenitalis*, a very common affection, and owing to the heat and moisture under the foreskin, a sore fails to scab over as it would on the face. In case of inoculation, each sore will form a chancroidal ulcer, and the individual sores running together may make one big chancroid of irregular outline.

There may be other modifications of the typical lesion, as seen when the induration, generally slight, is a marked feature; it may amount to a real "button," making it an elevated ulcer. *The chancroid is a real molecular death of tissue—an ulcer.* If this molecular death is very rapid, and the sore becomes inflamed, the result is a condition of *phagedena.* If the destructive action is still more rapid, and the tissue

dies in mass, we get a *gangrenous* condition. Again, there are chronic cases, lasting years, where the sore steadily crawls in one direction while healing at the other end, so travelling over a long area; this is the *serpiginous* form.

A leading feature of chancroid, and one that favors the idea of a specific poison, is its decidedly destructive action. The condition untreated, destruction of tissue goes on, variable in time, being aggravated in the summer, and by intemperance, debauchery, bad hygiene, filth, etc., which all favor extensive and prolonged ulceration.

With improved hygiene, general health conditions, etc., the shorter will be the course, bad as it is, the trouble tending to self-limitation. The behavior of the sore also favors the idea of a specific virus. If an ordinary pus infection, why does it pursue a destructive course up to a certain point and then clear off and repair untreated? In the reparative stage, pus cells may yet be found under the microscope, the sore having lost its specific character.

Chancroid is generally multiple,—from the start or subsequently—which is but natural, owing to the auto-inoculable feature, causing any surface in contact with a sore, or in the immediate vicinity, to take on the same action. It is a process of successive inoculation. Suppose a case starts with one sore, and the man, who has not been near a woman again, notices a second in a few days; later, a third, then a fourth, etc. Here we would have strong presumptive evidence of chancroid and not syphilis. Chancroid, as has been said, may be multiple from the start; *you may also see hard*

chancre multiple from the start, but the latter, when multiple at all, is invariably multiple from the beginning, as where a man with chancre is exposed to a secondary inoculation shortly after the first, the secondary is negative.

Chancroid is, then, self-limited, exhibiting a sore of considerable magnitude, which lasts about six weeks, untreated. The time is much abridged by treatment, and the patient easily recognizes that he is diseased.

Diagnosis.

A round or oval ulcer with *straight or undermined edges*, extending through the whole thickness of the membrane or integument. The *floor is rough and uneven, covered with a gray or yellowish-gray diphtheroid secretion* or membrane, composed of necrotic tissue and pus cells. There is a *purulent, possibly sanious, secretion* from the sore, and an area of redness about it more or less hard—sometimes very hard and extensive, but it *shades off into the surrounding tissue, and is not sharply defined.*

If squeezed when well developed, the circular *button of induration will change shape on steady, firm pressure* as serum is pressed out, and *leaving an indentation;* this dent is soon effaced as the serum works back, and the normal outline is regained. *You cannot indent a hard chancre*, nor does the induration shade off gradually—it is *sharply circumscribed.*

Treatment.

The effort is made to destroy the virus at its inception, by *cauterization.* If you see the case early and the sore is not acutely inflamed, first apply some *Hydro-*

gen Dioxide, followed by a little *Cocaine*, and then use *Nitric Acid*, C. P., freely on the end of a match, watching the effect.

First clean the spot thoroughly and dry it. Touch over the whole ulcerous surface and work in under the overhanging edges. *If the least part does not turn white under the acid touch it again. Nitrate of Silver does harm rather than good*, inflaming the part and not being strong enough to kill the virus. It is most important to see that the caustic touches *every part, including an area outside the sore*, so that when the eschar comes off no little spot of undestroyed virus remains to re-inoculate the big sore and cause further destruction of tissue.

Dress with *Carbolic* solution 1–60, until the eschar comes away, when there should be a nice red, granulating surface, instead of the *rough "worm-eaten"* aspect with its pseudo-membrane. A little *Iodoform*, *Aristol* or *Europhen*, or weak solutions of *Bichloride* or *Carbolic* may now be used, the main thing being to *keep the part clean.*

[A very efficient mode of treatment is said to be that by the radiant heat of the thermo-cautery (33). After thoroughly cleansing and drying the sore, the glowing point is brought close to but not into actual contact with the tissue, and there held for a few seconds. This thoroughly dries the ulcer, upon the edges of which appear sanguinolent striæ. Too long application causes a blistering effect. A single séance transforms the chancroid into a simple ulcer, which soon cicatrizes under the application of any antiseptic powder.

The rapid healing is due to the absence of the scab following the direct application of the actual cautery.]

If there is too much inflammation, or from some other reason you do not cauterize, *keep the part clean;* impress upon the patient to "*make it his business to look after that sore,*" especially if located in a sulcus, as *about the frenum, where they so commonly appear.* It is most unfortunate if the patient has a long foreskin or is phimotic, the sore being underneath. Such require most persistent cleansing, as the less accessible is the sore the more assiduous should be the efforts to keep it clean.

(*a*) *Avoid anything that tears the sore,* as tearing the dressing off, and thus favoring re-inoculation.

(*b*) *Use cleansing solution* or spray, as *Dioxide of Hydrogen,* or inject it sub-preputially.

(*c*) *Bichloride* wash 1–3 or 4,000.

(*d*) Treat by either dry or moist method, *preferably dry.* The objection to *Iodoform* being the odor, substitutes almost as efficacious may be used, as *Aristol;* or *Europhen,* which I think a little more active. The only part of these powders active is that coming in contact with the sore, so there is *no use in piling it up. Subnitrate of Bismuth* is good for small abrasions.

For crevices, a solution of *Iodoform* in *Glycerine* or ether, and sprayed on, is useful. It is preferable to put but a little powder on, blowing off the excess; place cotton over that. Dress at least three times in twenty-four hours. Soak off the dressing—*don't pull; syringe off the old powder or the new does no good. Don't touch* with fingers or instruments. If sore is much inflamed and dressings have a great tendency to stick, place over

it a little pledget of cotton wet in *Carbolic* 1–60, to be changed every time he urinates. The cotton and *Carbolic* may be carried in the pocket, and this done, even at business, morning, noon and night.

If the lesion is sub-preputial, and the patient is in addition phimotic, the case is very aggravated. Injections must then be made through a syringe with a long, thin nozzle (as dental syringe with tip straightened). Carry point back to corona, on dorsum; then each side of frenum, using greatest caution in order not to irritate the sore. *Every tear is equal to a new chancroid*, so handle the parts most gently.

So treated, the trouble generally heals in from two to three weeks, cicatrizing from the circumference towards the centre. If the condition is one of an inflamed sore, or phagedena, you must subdue the inflammation. *Hot baths* offer the best method. If he can, have him immerse the part in a cup of hot water, for an hour, three to four times a day. Or instruct him to take *sitz-baths*, two hours at a time, adding hot water from time to time. Then treat as already described. If the phagedenic condition continues in spite of all this, having first cleansed the sore, touch it all over with *Permanganate of Potash* solution, gr. l to lx to the oz. Then apply to the surface cotton or lint, saturated with a weak solution—gr.j to ij to the oz.—and keep it there continually, touching the sore once in twenty-four hours with the stronger solution. The hot baths may be kept up at the same time. Put the patient to bed, and watch hygiene carefully in order to build him up.

If the condition of gangrene is to be dealt with, as soon as you see great inflammation, with the prepuce

bluish, slit it up; and put to bed also. Or, if the whole thing spreads in spite of your best efforts, slit the prepuce upon the dorsum. *But do not do a circumcision.* The slit will became inoculated ninety-nine times out of a hundred; even if you cauterize as soon as you operate, inoculation will occur when the slough comes off. Slit up the foreskin, get at the sore and heal it, and leave the "beautifying" process for a later period.

Chancroid is purely a local affection, but at times we may consider a scrofulous tendency in the subject, or the relation of alcoholic excesses or indulgence in rich food, as in these patients the disease may take on an untoward action. Without so much regard to the character of the sore, *Mercurius* is beneficial in such cases. If excessive granulation, tending to fungate, and bleeding easily, give *Nitric Acid.* Where there is ichorous discharge and burning, *Arsenicum.* If approaching a gangrenous condition, *Arsenicum*, *Mercurius Corrosivus*, *Solubilis*, or the *Biniodide.* If you can trace the condition to a distinct dyscrasia, *Sulphur*, *Thuja*, *Iodine*, or *Silica* might be the constitutional remedy, which, with *corrected diet*, *etc.*, would do the work.

BUBO.

In a minority of cases of chancroid, *bubo*—vulgarly termed "blue balls"—is a complication. It consists in the *swelling of one or more of the inguinal glands.*

Etiology and Pathology.

The occurrence of this feature is not to be determined by the nature of the sore; there may be present several very bad chancroidal ulcers, going on to gangrene, and yet unaccompanied by enlarged glands. Again, with a very simple sore, you may witness double adenopathy. The occurrence of bubo may also be noted after the sore has healed. *A sore at or involving the frenum is more likely to have this complication.*

What produces buboes? Until recently they were divided into two classes: (*a*) *simple adenoma*, when the pus was innocuous, and as illustrated by swelling in the groin which might attend any wound on the foot, for instance; (*b*) *virulent bubo*, which when opened did not act like an ordinary abscess, the edges of the wound taking on same action as the chan croid itself, from inoculation of the raw surface. This theory is now exploded, the present claim being that the incision is not inoculated by the pus in the abscess, but, through lack of cleanliness, from the sore upon the penis. The old theory presupposed that the germs passed along the lymphatics, from the sore, and becoming arrested in the gland, set up inflammation at that

point. This is not true, because none of the bacilli are found in the pus in the groin. Also it has been claimed that the ptomaine and not the germ itself, is what travels along the lymphatics and sets up an irritation in the groin.

Symptoms and Course.

Usually but one gland is involved, or if more than one gland, but one side of the body. The affected glands become enlarged, tender and painful, the covering skin being red and shiny, the condition proceeding to resolution or suppuration. *In chancroid, the tendency of accompanying bubo to suppurate is quite marked*, so that *a history of a sore upon the penis in connection with a sore upon the groin, is strong presumptive evidence that that sore was a chancroid. In syphilis, the enlarged glands rarely suppurate.*

The majority of buboes terminate in resolution. When they suppurate, they may take on chancroidal action as the result of a lack of cleanliness. One or more glands become involved, the capsule is stretched, there is an inflammatory exudation into the surrounding tissues, binding the glands together, and finally the capsule bursts.

Treatment.

As soon as there appears an uncomfortable feeling in the groin, and swelling is detected, the patient should be *kept quiet.* If he cannot remain at home he should walk as little as possible.

One or two applications of tincture of *Iodine* may have some effect as a counter-irritant, but serves chiefly to amuse the patient. The first application, in any

event, tans the skin, so that subsequent ones are surely of no effect. If using the *Iodine*, do not paint over the tumor, but in a large circle outside the swelling.

An ointment composed of *Iodine* and *Iodide of Potash* rubbed well over the swelling, and especially around it, does not blister or tan the skin. I am very partial to the 15 per cent. preparation of the *Oleate of Mercury;* the 10 per cent. will destroy the epidermis. One application a day, just before going to bed, may be made, and a protective cloth laid over the swelling during the day, allowing the patient to go about. Good results are sometimes seen from pressure, as applied by a sandbag resting upon the groin while the patient is upon his back. The heroic method of *hypodermic injections* seems to answer very well in hospital practice, but I have had no experience with it.

Internally, *Mercury* is our chief reliance; the *Biniodide*, unless you find a strumous taint,—which always look for in these individuals—when the *Cinnabaris* is better indicated. *Carbo Animalis* or *Vegetabilis* is prescribed, but I have no respect for it. The fresh water sponge, *Badiaga*, has yielded no results in my hands. After suppuration is inevitable, give your *Hepar Sulphur. This remedy seems to act in two ways in the treatment of abscess: being the pre-eminent remedy to help along the process, and at the same time, in the higher potencies, is one of the best remedies to prevent suppuration.*

If you fail to prevent suppuration, do not wait for the abscess to break, which it will not do until it has burrowed around, forming a large cavity. *Let out the pus as soon as you are sure of the fluctuation*, using

a hypodermic injection of *Cocaine*, not into the abscess but into the integument over it, if necessary. And *open it well;* it is often desirable to slit up the entire roof. The pus will not be absorbed. Having opened it well, clean it thoroughly and pack with iodoform gauze, and let granulate. If of chancroidal character, and with portions of neighboring glands projecting into it, curette it well, then thoroughly cleanse with *Permanganate of Potash*, and dress. Often sinuses, running out in various directions, remain, which nothing less than a thorough slitting up, curettage, and packing from the bottom, will cure.

CASE NO. 25.

Bubo may be simple or virulent. In the first, pus is healthy, in the other it is like pus from soft chancre, and auto-inoculable. Vaccination from hard chancre is negative. Fresh chancroids may be started from any sore irritated by filth or otherwise, although they have a specific virus. He has a spot on penis, and you cannot pinch the mucous membrane together between thumb and finger because of induration which is well defined. It is like a button; in simple inflammation, the hardness shades off into normal tissue. Yet this sore *was cauterized and is in the repairing stage, which might account for the leaving simply of a dense portion*, the rest having been absorbed.

Period of incubation of syphilis is two to four weeks; first comes a small abrasion. As a rule, no enlargement of glands with soft chancre. *With hard chancre, usually have bubo, but no suppuration.* In true syphilis

there is enlargement of the glands, and always interrogate those nearest sore. Hard chancre is usually single; soft, usually multiple.

SYPHILIS.

(POX.)

[We cannot pretend to here deal exhaustively with a subject upon the many individual divisions of which whole libraries have been written: the origin, antiquity, history, character, duration, treatment, and curability of the disease, have each and all served as matter for most obstinate and lengthy controversy, by no means yet ended, for authors innumerable. But we will endeavor to draw a somewhat comprehensive sketch, emphasizing the more important details.

Synonyms of the above name of this disease, at various times current, are well-nigh legion: pox, great-pox (as distinguishing it from small-pox), venereal disease, lues venera, morbus Gallicus, or the French disease, Neapolitan disease (etc., etc.), universal evil, cosmopolitan evil, bad itch, sacred fire, inguinal plague, St. Anthony's fire (although this title more commonly referred to erysipelas), great disease, morbus indecens, universal ulcer, the latter being particularly appropriate, etc. As to the word "syphilis" itself, this name was given in 1530 by Jerome Fracastor, an Italian physician of Verona. He wrote a poem, in which he presents to the reader the various pagan divinities, and tells how a shepherd of the name of "Syphilus," had addressed offensive words to Apollo and deserted his altars. To punish him, the god sent him a disease of the genitals,

"which the inhabitants of the country called the 'disease of Syphilus.'"

The poet-physician most likely derived the name of his hero from the Greek words signifying "with love," plainly meaning that the disease to which he had reference, is the companion of love, *i. e.*, a contagious disease transmitted by intimate relations. Fracastor's poem was for a long time forgotten, and the affection known under many differing appellations, until the writers of the nineteenth century revived the name of syphilis, and gave it permanently the sanction of science.

Many suppose the disease very likely to have been confounded with *leprosy;* and one of the many fanciful explanations of its origin is that it arose from the connection of a leper with his partner who had syphilitic buboes. Ricord's famous claim is that "in the beginning God created heaven and earth, light, man, and venereal disease."

I will not, then, detain you with the detailed history of this disease, nor discuss whether or not it dates from prehistoric times. Those interested in the subject will tell of prehistoric bones found in mounds, proving the antiquity of the affection [by characteristic exostoses on the tibia, skull, clavicle, ulna, lower end of radius and extremities of fibula, or on the sternum]; they interpret the bible to prove their claims, etc. Bones may have been buried in mounds years after the time of the mound builders. The ancient records of the Chinese show a great familiarity with and recognition of the uses of mercury, and descriptions very parallel to the disease as we know it to-day.

About the time of the discovery of America, syphilis first attracted the general attention of the medical world by an outbreak in Europe—the great epidemic of the fifteenth century. It was spoken of as a new disease, and claimed that it made its way from the Indians of America, by Columbus' men, who took it first to Italy, and thence to France and Spain. [This "American origin theory" has many opponents.] It made frightful ravages at the time and was very deforming. But it is not so to-day. It seems as though it were losing its grip; and the majority of cases are mild, and so slight are its marks that the friends of those affected are not aware of it, and even a wife may not know that her husband has the disease. Yet, exceptionally, its ravages are so marked that its victims cannot go out in public without giving themselves away.

Etiology.

The consensus of opinion to-day is that syphilis is due to a germ yet unidentified—a specific micro-organism that has not yet been isolated and described. There is no doubt that it exists, but as with the germ of *chancroid*, nobody knows just what it is. The disease, syphilis, comes always from this germ, and nothing else produces it: "*where there is syphilis there has been syphilis*"—it cannot start *de novo*. The germ seems to lie in the secretion, perhaps in the pus corpuscles. If you filter out the pus corpuscles from chancroidal secretion, it is rendered non-inoculable; but in syphilis, the secretion without the corpuscles may yet contain the poison.

Actual contact is required for the spreading of the

disease—and we may almost say, as well, contact with an abraded surface; though it does seem as though the virus could make its own abrasion upon a very delicate surface. From whatever source the disease may come, *it always goes back in the new subject, to the original form: the primary lesion of the chancre.* Yet congenital forms of syphilis are not preceded by the chancre. And it is a question if a woman can be contaminated by a man without the intervention of the primary lesion of chancre. But whether a person be infected by syphilitic blood, syphilitic secretions or discharges from mucous patches, etc., a secondary lesion similar to the one causing the infection is not produced, but *the chancre is the first sign of having acquired the disease.*

Syphilis may be introduced into the system immediately, mediately, and congenitally: it is *acquired* and *inherited.* It may be *acquired* by such (*a*) *immediate contact* as coitus, kissing, through long nails in making examinations upon the syphilitic subject. Or, the contact may be (*b*) *mediate:* through some indifferent intervening vehicle, as the glass-blower's tube—from secretions on it; or through the indiscreet use of pipes; or household utensils, as cups, forks, children's toy trumpets, etc. Thus there are a great many ways of acquiring syphilis through *innocent mediate contact.*

So remember that it does not do to call one unchaste because of the presence of syphilis. An innocent nurse-girl with a pin scratch upon the arm, and carrying a syphilitic child, may readily acquire syphilis from a baby with mucous patches or condylomata around the anus. Or, a syphilitic child may inoculate a wet-nurse through a crack in the nipple; or the nurse inoculate

the child through a patch upon the nipple. It is not often conveyed through the dental chair, but if you find traces in the patient's mouth, advise him not to go near a dentist.

With regard to *congenital syphilis*, many investigations are yet to be made; many problems yet remain to be solved and the profession is by no means united in opinion. There are many diametrically opposing views which have not yet been decided. You can easily see how this can be: Say a man admitting he has had the disease, marries. His wife does not contract it, but ten years later she develops the disease after having been all this time apparently well. Yet it is not a logical deduction that her husband infected her. What has *she* been doing these ten years? It is very hard to eliminate such irregularities. Some claim that a syphilitic father cannot produce a syphilitic child without contaminating the mother. This is a dangerous doctrine, although all admit *the father's influence is not nearly so great as that of the mother.*

If the man be syphilitic but have no contagious lesion, he may cohabit for years with a woman without conveying to her the disease; which would seem to prove that the germ did not exist in his semen. Some claim that all purely physiological secretions as milk, tears, etc., do not contain the germ unless brought into contact with some syphilitic lesion. And yet in some instances, it nevertheless seems that semen is contagious, and that we may believe that the woman may be contaminated by semen in the uterus, thus introducing the disease into the system at large without producing a chancre. However, this begs the question, as admit-

ting the possibility of infection thus gaining entrance to the uterus, we cannot see into the uterus to find if there be a chancre there. Inoculation made with semen of persons in the active stage of the disease, has proved negative; nevertheless the poison might be present though not in a condition to produce chancre. In fact, in some way, we know that it *is there.* Why? Fournier, in his work on "Syphilis and Marriage," shows that he is a firm believer in syphilis by conception, and there seems to be no getting away from his arguments. He cites case after case in proof of his ground. A man is syphilitic and cohabits with his wife for a long time without any sign of the disease in her, yet one day she suddenly develops the rash, has *syphilitic fever*, the *alopecia*, *mucous patches*—this *polymorphous* form presenting a perfect picture of the *secondary stage*, with no history of a lesion. Either she has been contaminated by her husband, or was infected by some other man and the vaginal lesion was undiscovered.

But this thing occurs where there is strong proof that the wife has not been unfaithful, the question being, "Why did the disease not make its appearance before?" *It will almost invariably be found that the woman is pregnant, coincident with these manifestations.* Perhaps she was not diseased directly by the semen of her syphilitic husband, yet that semen did contain a germ that, coming into contact with her ovum, developed a syphilitic fetus, and the woman was infected by the fetus. This has been proven over and over again, with the key of the problem always present in the fact that *when long continued intercourse with a*

syphilitic man with impunity, is followed by a sudden outbreak of the disease, the woman is always pregnant. And if the child is not aborted, it is born syphilitic. True, the woman does not necessarily become syphilitic by conception, but she *is* syphilitic, although without any outward evidences—no rash, feeling of pain, or anything apparent in parts accessible for examination. But some change has taken place in her, and there is but one antenatal manifestation of it: *the fact that she aborts two or three times in succession, is strong presumptive evidence* of her syphilitic condition, but only presumptive, until delivery makes visible the child. And that child, though syphilitic it be, *its mother can nurse with impunity.* But give it to a wet-nurse and she will contract syphilis. Thus we have "Colles' law," that "*a syphilitic child born of a mother non-syphilitic, will not convey the disease to its mother.*" The exceptions to this are so few that they may be assumed to be those that prove the rule.

Symptoms and Course.

To-day the authorities recognize a division of the affection into *three stages;* and although the desirability of such arrangement is questionable, yet it is so universally accepted that we should so consider it. But nevertheless I would have you regard the late manifestations of which you read as comprising a tertiary stage, as *accidents*, because in the great majority of cases the disease does not necessarily pass through these three divisions of the primary, secondary, and tertiary stages. *The late manifestations—tertiary stage—occur*

in the exceptional cases, and such phenomena are therefore better regarded as accidents.

The disease runs a certain course in pure and typical cases, but not all cases are such; and *one of the first things that the young doctor finds out in his practice is the irregular course of diseases.* He is right up in a disease and has it down just as the books give it, but the case does not correspond. So it is with syphilis. You expect to find the period of incubation and primary sore, followed by a secondary period of incubation and then cutaneous manifestations, and then a period of quiescence of uncertain duration followed by tertiary manifestations even after ten, fifteen, or twenty years. But where there is one such typical case there are a great number that pursue a totally different course; and a great many escape the third stage altogether, and the second stage shows many peculiarities.

But this we can accept as a broad rule: *the earlier the manifestations the more superficial are they;* the later, the deeper. First we have simply a red spot—a *macula;* second, a *papule;* third, a *vesicle;* then a *pustule;* then the *crustaceous form* and *tubercle;* and finally the *gumma* and affections of various tissues and organs, the lesions of syphilis finding their home in every department of the human anatomy. So, in general, the older the trouble the deeper the lesion. Yet there are exceptions to this; and though I tell you that the deep lesions are far away from the primary sore, still there occur "*precocious manifestations,*" when there may appear right after the primary sore—nay, before the chancre has healed—those manifestations which ordinarily should not occur for three

or four years. You will remember that Dr. ——— had here at our last clinic what he thought to be just such a case. The man, at an early period in his disease, had a swelling near the anus. It had something of the feel of a gumma, but because of its early appearance, and other considerations also, we decided to throw out that diagnosis.

The modern and better way considers *different classes* of the disease; and this is in accord with what has been noted regarding all infectious troubles. In the preparation of vaccine it is found that some calves will not take the vaccine disease. Certain individuals may expose themselves to a pre-eminently contagious disease with impunity, not only once, but many times. So a certain proportion of men in the community—what that proportion is we know not—may be actually inoculated with the syphilitic poison, have the chancre, and possibly a little secondary fever, experience the development of maculæ, and nothing more. You may say that in such a case the diagnosis was incorrect; that the man had a soft sore and not a chancre. But it is not so. These observations have been made by the most astute, by specialists in this branch, and the constitutional symptoms, mild as they are, confirm the diagnosis. It is also found in such cases that you may inoculate the patients or expose them again to the poison, and they won't take it; or if they do, at best it runs but a very mild course.

This type, then, represents what we will term our *first class;* they show *a marked indisposition to take the disease*,—indeed, perhaps, you cannot give it to them—have some slight constitutional disturbance, and that is

the end of it. Some would say, "Oh, but if you could follow them up for ten, fifteen, or twenty years, you would find the disease making awful ravages then, and all the more horrible because of its slight effects at first." But cases have been observed for that length of time, and the man seen to marry and have children, and neither he nor they show evidence of constitutional contamination.

A *second class* is represented by the type where there is the period of incubation followed by the sore, the secondary period of incubation, and after that such superficial lesions as mucous patches, enlarged cervical glands, papules, etc., with some slight syphilitic fever. The manifestations clear up in a little while, but the patient relapses; again they clear up, only to be followed by another relapse, and again and again this is repeated; but in two or three years perhaps, he succeeds in getting rid of his trouble. This is *the relapsing form, and is confined to superficial manifestations.* It is clearly not typical, as here the late manifestations are not deep. The manifestations always remain of the superficial variety; there is the same form of papule at the end of the third year as he had at first, instead of deep pustules and ulcers. *And this type, thus presenting the superficial variety of lesion throughout the whole course of the disease, represents the great majority of the cases you see.* There is a perpetual tendency to relapse for two or three years, the manifestations being always superficial; but all evidences of affection finally disappear, and that ends the whole story.

A *third class* of cases are those in which the disease

exhibits *a tendency to the malignant form.* Deeper structures are involved, and the gummy deposits may show early instead of in three to six years. The skin and subcutaneous tissue are involved, but instead of breaking down, the lesions resolve and go for good, and such pathological changes as follow their absorption are the result of mere pressure. Yet mechanical pressure may occlude a duct or involve an important vessel, thus leaving behind serious consequences. Again, in other cases, these deposits not only leave bad effects, but come again and again, thus increasing the danger of leaving pathological changes which may be severe, the gummata seeming to absorb into themselves immediate neighboring tissue. This latter we may term the "*mild malignant form.*"

In the *fourth type* of the disease there is *a tendency to breaking down and to rapid destruction of all kinds of tissue. It is the most malignant form*, and bone seems to melt away almost as fast as the soft parts. The gummy tumors, instead of being absorbed, leaving behind them such changes as they may, degenerate and destroy skin, cellular tissue, muscles, nerves, cartilage, periosteum, and bone. And sometimes this occurs most rapidly, and *not necessarily dependent upon sex, hygiene, or debauchery.* The patient may be of the utmost refinement and have these deposits in the very beginning of the secondary stage. They come, say, *in the roof of his mouth*, and in the course of even a few days the palate may be perforated and palate and bones destroyed. Of course this is a very extreme case.

PRIMARY STAGE — HARD CHANCRE. — We will

now consider the various manifestations of the disease in a more detailed manner, and I will begin by talking about *the sore. The primary lesion of syphilis is called the hard chancre.* It appears after a period of incubation of *never less than than two weeks* from the time of exposure, the average time being three weeks, although it may run to from six to eight weeks. There has been some question as to whether or not the disease is constitutional at this time, before the development of the sore. But we know this, and it points to its being constitutional even thus early: if at the end of ten days or two weeks, before the primary sore is manifested, you inoculate the subject of the experiment *de novo*, it doesn't take—he is immune as to secondary inoculation; and the longer the time between the first and second inoculations, the less liable is the second to cause a chancre.

If there are several points of inoculation, there will be just as many sores as there are points, but *as a rule, chancre is unique—there is one sore.* But if more than one, they are numerous from the beginning; there is not one to-day, three to-morrow, etc. If there are many, there are many all at once. *They are not auto-inoculable* as is the soft chancre; the man does not keep on inoculating himself from contact of parts. *The hard chancre is, then, multiple from the beginning if multiple at all.*

The *chancroid, we said, was deep, with edges punched out and sharply cut, and with a rough, "worm-eaten" surface covered by a yellowish or grayish diphtheroid membrane, and exuding a purulent or sanious discharge.* On the other hand, *the most common form of*

chancre is an erosion [a common explanation vouchsafed by the public woman being that she has "scratched herself" with her finger-nail]. There is a little round or oval spot—unless it takes the shape of some previous lesion, as a tear—which is a mere separation of the epithelium. It is nothing like an ulcer. It is so insignificant that the patient is perhaps not aware of it. *Erosion* is the proper name for it. If there is any depression it is toward the center, the sore being *saucer-like*, *the edges flush with the bordering tissue. Its surface or floor is smooth or shining*, *and if dotted with a little gray pellicle*, *that is very slight and toward the center*, *and the exudation is serous.*

A simple erosion may arise non-specifically, as from the night-shirt being caught upon the glans and tearing away the epithelium upon pulling loose. Thus from trauma or filth—as where there is a long foreskin and a devotion to the manufacture of smegma—a simple erosion may be converted into a sore that could not be told from a venereal sore. *So an erosion marking the beginning of the hard chancre may be converted into an ulcer.*

In *about a week* or ten days the sore presents the hard character which has given it its name of the hard chancre. The degree of *hardness*, or perception of it, varies greatly, *depending upon location.* In such hard tissue as that of the glans, the contrast is not marked, and the hardness appears slight; in the soft tissues it is very perceptible. It may be that as you test the glans at this point, *pinching it between the thumb and finger*, the fingers do not quite approximate as they did elsewhere; there is here just a little resistance, as though

a little piece of parchment were set in the tissues. Again, the hardness may be more distinct—a regular "button" of induration; there is no edema or surrounding redness, but *the lump stands out clear, the surrounding tissues right up to the sides and base being soft and natural.* As you squeeze this lump it pales, and if situated under the prepuce it pales upon rolling that back, and resembles tarsal cartilage. So it is called the *hard chancre.*

But the soft chancre may be hard and yet be "soft;" but such hardness is the *hardness of inflammatory action*, like that around a boil; you then have an *inflamed* chancroid. The other sore—the true syphilitic or hard chancre—whether of the "parchment" or "button" type, is a *distinct, sharply circumscribed, uninflamed hard mass, not fading off into the surrounding parts.*

On top of this mass is the sore, giving off a thin, scanty serous discharge. If deep, this sore is not punched out, but is saucer-like, as stated, sloping to the center. It is *indurated*, and may be granular, velvety, easily bleeding, and *elevated;* this is the *Hunterian chancre. But the "parchment" spot, with slight erosion, is the common form.* A patient will frequently come to you with a rash. You ask him if he has had a chancre, and he says, "No." He does not know that he has one, but upon examination you find it.

From irritation,—mechanical, chemical, or otherwise —*ulcerative action may commence in the hard chancre;* but when the induration has gone and the sore heals, you will be surprised to see what a little cicatrix is left; it has *ulcerated at the expense of the cell infiltration*,—a

new thing—while in the soft chancre the ulceration is at *the expense of normal tissue.*

There is also what is known as the *dry chancre.* There is not necessarily an open lesion. It is all cell proliferation, but the distinction is made that *the cells infiltrate the adventitia and lumen of the blood vessels in hard chancre, but not in chancroid.* If there is only a slight accumulation of embryonal cells, the circulation is not materially disturbed, and the epithelia over the spot are still developed, but imperfectly. The scaly and perfectly dry patch is such on account of the imperfect elaboration of epithelia due to cell infiltration; but though never becoming an open lesion, yet the system is just as thoroughly contaminated as though there were a sore as big as your thumb and ulcerating. If the cell infiltration is more extensive, there is more than a scaling—the epithelia are thrown off and are not reproduced; they don't come up and cover the raw spot, and being thus aborted the result is the erosion. If still more marked cell infiltration, there is a loss of substance causing an excavated sore or excessive granulation. So the *different varieties of chancre are due to varying degrees of cell infiltration. But the character of the sore has nothing to do with the severity of the subsequent course of the disease.*

The original lesion of syphilis includes the inguinal adenopathy—single, or generally double—as well as the primary sore.

About a *week after the appearance of the sore*, there are *enlarged glands in the groin. Never dismiss a sore without interrogating the groin.* And don't take the patient's word for it. There is not the tender,

inflammatory, boggy condition that we find in chancroid, but the finger detects little masses, in size from that of a pea to a bean. They are absolutely cold, *there is no pain, no tenderness, there are generally two, three, or four of them*, and they are movable. Generally this adenopathy or adenitis is present in *both groins. But the system is involved from the very beginning*, though this is the outward evidence of it. You may cut the sore out before the glands have enlarged, yet the syphilis goes on just the same. *Buboes tend to suppurate in chancroid*, but they don't *tend* to in syphilis, though you *can* have an inflammatory condition in connection with the enlarged glands. Because they are syphilitic, that doesn't exclude the possibility of their becoming inflammatory buboes upon irritation—mechanical, chemical, or otherwise. But *left to themselves they manifest little or no tendency to suppurate.* When there is a sore accompanied by enlarged glands, you may look for the latter at the end of the first week—one to three of them, as described, in the groin, more commonly in both groins. *Generally the glands are enlarged when you see the case, the sore being so insignificant as to have been unnoticed.* The patient has had no intercourse for some time, and thinks himself safe. By accident he discovers the erosion and then comes to you.

So much for the phenomena of the *primary stage* of the disease; although the adenopathy may belong also to the early secondary stage.

SECONDARY AND TERTIARY STAGES.—Now ensues a *period of quiescence*, the sore healing perhaps in four weeks if not contaminated, and you can help this

materially by *Aristol*, *Europhen*, *Iodoform*, or dusting with *Calomel*, or by a *Carbolic Acid* dressing. *Simply protect it and keep it clean.* In about *eight to ten weeks from the time of exposure, or six to eight weeks from the time the sore appeared*, you may look for constitutional or *secondary symptoms*, typical of the *secondary stage.* However, their advent may be postponed to six months, *especially if the chancre itself* has been subjected to specific treatment.

Secondary manifestations may be announced by *syphilitic fever*, but here my experience differs from what you read in the books. The picture there presented is that towards the limit of this time—forty-two days from the development of the chancre—there appear frontal headaches, backaches, pain in the bones, etc., and the thermometer will indicate that the patient is running a little fever, his temperature 101–2°, with his appetite a little off, and the general consciousness that he is not just up to par; or there may be present intense frontal or occipital syphilalgia (*syphilitic nocturnal cephalalgia*) and anorexia, with considerable fever, say 104°. And such a condition may simulate remittent fever, the temperature falling off a little in the morning and going up at night; or oftener it is like intermittent fever. Finally, in a few days more, the patient is covered with a rash, which is generally macular, and rigors may precede the fever, making the picture to closely resemble malaria. *My experience is that you find nothing of these acute symptoms in the majority of cases*—that the patients are not sick at all during this period, not even experiencing malaise. You ask them how they have been feeling during this sec-

ondary period, and they will tell you they have been "pretty well." The characteristic *iritis* may be encountered in this stage of the disease.

Syphiloderma.—This brings us to the consideration of the *syphilides*, the cutaneous affections associated with the disease, and caused by hyperemia of the skin. These occur in the early, middle, and late secondary stages. Beyond that we get the deeper lesions belonging to the third, or *teritary stage.*

There are a great variety of syphilides, and the classification is complicated. *There is generally no fever accompanying them*, unless it be the syphilitic fever mentioned, which subsides upon the appearance of the eruption. Another characteristic is the *polymorphism —many varieties of eruption being present at the same time*, each of which reaches maturity, the papule remaining a papule, while here is a pustule and there a macula. This is a very different state of affairs from that seen with the eruption of small-pox, for instance, where the crusty stage is the height of it, the others being only preparatory stages. Thus if there be present the differing forms of macula, papule, pustule, etc., and after a few days we find the macula still remains a macula, the papule a papule, and these respective lesions have not been a stage leading to something else—then this offers a strong suspicion that we are dealing with *syphiloderma.*

The *syphilides* include, then, the various skin manifestations due to specific inoculation. They are due either to hyperemia or cell infiltration. In the latter case the cells resemble white blood cells, being granu-

lar, round, and nucleated. They are seen in the induration characteristic of the original lesion, and in the gumma of the late stage.

The Macula.—As a rule, the deeper the lesion, the farther off is it from the chancre. In about forty-two days we would expect something very superficial, and so we have a mere roseola or erythema; you cannot *feel* this maculate rash—it is simply *spots. It is likely that this occurs in the great majority of cases*, if not indeed in all, but it may have been so slight that the patient denies the occurrence. If it happens to be a cold day, or cold air strikes him, or the skin is made cold by alcohol rubbing—any of these will bring the rash out. But he might easily fail to recognize it in undressing at night, by candle or gas light.

But when we do see it, what we first see is a *pale, pinkish-red, then dusky, spot* varying from $^1/_{16}$ to $^1/_4$ of an inch in diameter; it may even be $^1/_2$ inch, and is generally *round or oval. It disappears on pressure*, to immediately return. Later it has changed color,—as do most all syphilitic rashes—becoming *brownish-red*, "*raw-ham*," *or coppery color*, and now not disappearing on pressure. *Ordinarily there is no itching nor pain.* This rash persists for a longer or shorter time, and *may appear any time in the course of the disease*, though usually coming early.

The Papule.—Another form of rash, generally associated with the macula, and coming early,—although it *may* come at any time—is the papule. There are differing varieties of these. They may be very small,—about the size of the head of a pin—round, or *conical*, commencing as little red spots, but there is superficial

cell infiltration which raises them above the surface and making them "shot-like"—like shot under the skin—and they are *dusky-red.* Here and there you may notice little white scales loosely attached: these do not give the silvery-white or shining appearance of psoriasis. This is characteristic: a *white collarette* with a red, shining center, and particularly is it observed upon the hands. This *conical or miliary lesion generally appears first upon the face or back.*

The *lenticular* variety of the papule is a red, flat elevation, being smooth on top or with a little white scaling, and having more or less of the *collarette.*

A *circular arrangement*, or in the form of derivatives of a circle, as the letter S or figure 8, is a peculiarity of the syphilitic rash. It is particularly seen in the relapsing variety of the papular form. The papules may be ⅛ to 2 inches in diameter. Several may fuse, giving a large, slightly elevated, circumscribed reddish-brown or coppery mass. When rash is in the palms it feels like shot in the skin, and the collarette is here particularly marked. May have with them also erythematous patches, or in the cracks or furrows of the hand the same condition of papules or maculæ may give rise to bleeding fissures. The rash also occurs upon the soles of the feet and palmar surface of the wrists. [Upon the palms of hands and soles of feet you are more likely to encounter a squamous form, which may be confounded with *palmar psoriasis.* Also, *interdigital patches* are a common lesion.]

Thus we have seen that we may have in a

Syphilitic, papular rash
- conical { small / or / large } lesions.
- lenticular { small / or / large } lesions.

In general, the larger the rash lesions, the fewer are they—the conical forms being likely to appear all over the body. The lenticular form, although it may appear anywhere, comes particularly around the face and back.

The Condyloma.—Sometimes on moist surfaces, as about the anus, on the genitals, under the breast, etc., due to both *moisture and heat*, the papules may become raw on top. This is a condition of hyperplasia of the papillæ, and there is developed an elevated patch of reddish or grayish color, and giving off a secretion. This is the *condyloma*—a wart,—not venereal but syphilitic.

The same little red spots, upon the face, about the mouth, may give off a little secretion and form thin, yellowish-white crusts, but in a great many cases, the rash does not occur on the face at all; or, when in this vicinity, it is more likely to appear at the border of the hair, forming one variety of "*corona veneris.*" Thus, although the papule remains the *papule all through* the period of its existence, yet *its appearance may be changed by circumstances.*

The syphilitic *rash usually occurs first upon the belly about the navel, next being seen upon the chest;* then it spreads to the arms and legs. It might be mistaken for the rash of scarlet fever, measles, or from the

use of mercury, copaiba, or sandal oil. If *appearing with fever*, measles or scarlet fever would be all the more likely thought of. *Suspect sandal oil or copaiba if itching accompanies the rash.*

The Pustule—The *pustulous* form may be the top of a papule, or be a pustule from the beginning—red spot in starting, but soon changing to a pustule and remaining. The *acne form* is seen particularly around the sebaceous follicles and glands; little crusts are formed, which in falling leave but little redness. The older the crusts the darker are they, being greenish-brown earlier and greenish-black later. The *greenish crust* is significant of syphilis. This form is likely to occur around the mouth, nose, forehead, and shoulders particularly.

Crustaceous Forms.—If the same pustules get larger and go deeper, they go from the acne form to the *ecthymatous;* with this there is a large crust, and under that an ulcer with a worm-eaten, rough base, and steep or undermined edges. A still deeper lesion consists of deeper ulcers, secreting freely, and building up a stratified crust, the "*oyster-shell crust.*" This is the *rupia eruption* and comes at the latter part of the secondary, or in the tertiary stage. There are also serpiginous and other forms of eruption, with which I will not burden you.

But all these lesions are chronic; and those belonging to the early stages live long enough so that we later see several kinds of lesion exhibited at the same time, which *polymorphism is characteristic of syphilis.*

The Tubercle.—A still deeper form of syphilitic lesion is the *tubercle*, which is a thickening of the

derma itself. It is a distinct oval or round body, painless, with a red, hard surface. It gradually softens and disappears, leaving a pigmented spot, which disappears in turn. Or you may have a tubercle of a much larger size, from 1 to 2 inches in diameter, irregular or circumscribed, and raised and flat, like a lenticular papule but not so superficial. The surface is shining, like mucous membrane. *The face is a favorite site for such.* It is covered with little, fine, white scales, and may have a depression near the center, which center may look like a healthy cicatrix.

The *tendency is for tubercles to resolve, although ulcers* are a possible termination. They belong late in the secondary, or in the tertiary stage.

The Gumma.—A step farther and we find a still deeper lesion, the *gumma.* It starts in the subcutaneous tissue as a little spot, but growing till it has attained the size of a pea or bean. The skin covering it is elevated and red, but manipulation tells us that it involves the subcutaneous tissue. *Favorite sites are the arms, face, back and buttocks.* These gummata *may come very early—precocious form*—but are generally referred to the *late tertiary* period. The early ones are *generalized*—small and scattered over the whole body, and tending to disappear. There is also a precocious form, occurring in larger tumors than those just mentioned, and the larger they are, the fewer are they. *These latter are prone to occur about the head—in mouth, pharynx, etc. They also tend to resolve.*

With these precocious gummata, the patient sometimes suffers much pain in the lesion and in the joints

and muscles. This is the *neurotic variety* and is not common.

The tendency of all these *precòcious gummata* is to disappear, but they may ulcerate; the circulation of the skin is interfered with and the ulcerative process may eat down from the top, or suppuration begin in the gumma itself and result in an open lesion—a syphilitic ulcer, ending in the destruction of the gummy mass.

These same gummatous growths, coming in later years, are likely to be deeper *and larger*, *appearing in the brain*, *liver*, *spleen*, *etc. The roof of the mouth is a common location.* They come on very insidiously, the first indication of their presence being an altered tone of voice and regurgitation of liquids through the nose. An examination reveals perforation through the soft palate. They are quite prone to ulcerate in these later stages, and periosteum, bone, and cartilage all go—there is ulceration of all tissue in the vicinity of the deposit.

Affections of the Mucous Membrane.—This may be affected with the same erythema noted with regard to the skin—just a little redness with some accompanying edema. Or there may be little patches at the sides of the mouth or in the cheek, consisting of a shiny or white spot, a little elevated—like the little canker sores resulting from indigestion, but unlike the latter, lasting for weeks or months. These *mucous patches* are found in the mouth, pharynx, anus, or vulva. *Their secretions are highly contagious, and it is through this particular lesion that most of the contagion is carried*, as by means of a pipe, speaking tube, cup, eating utensils, etc. Anywhere upon the mucous membrane

of the pharynx, or mouth, an *irregular border, if white*, is quite characteristic. Otis says these patches are papules altered in form by occurring upon the mucous membrane. Occurring at the anus, etc., they may fungate, giving the condylomata. They grow enormously when thus favored by heat and moisture. So mucous patches and condylomata, we will say, are papules changed by heat, moisture and irritation, and giving off a fetid discharge.

Alopecia is one of the early manifestations of constitutional affection, generally accompanying the development of erythema or the papular eruption. It is confined to the scalp in the majority of cases, but may involve the brow, beard, and other parts. It usually consists of a thinning, the patient noticing more hair in the comb and brush than usual. It is often not marked enough to attract attention, unless watched for. Again it may consist in the hair coming out in patches, leaving bald spots. This hair falling is not primarily due to the rash, but, as in any case, as fevers, where the vitality of the body as a whole is weakened, there is a corresponding weakness of the hair follicle. It is a syphilitic anemia. The hair is reproduced as the patient gets better, and *it is never necessary to shave the head* in order to regain the hair. You may have falling hair due to a lesion upon the scalp if it particularly attacks the follicles and sebaceous glands. But *even actual baldness is usually recovered from.* And yet, very exceptionally, there is a late form where the tendency is to permanent baldness. But I have yet to see a case of this kind in private practice.

There are also other affections, characteristic of syph-

ilis: of the nails (*syphilitic onychia*), teeth (*Hutchinson's teeth*—notched; sign of inherited), bones (periostitis, exostoses), etc., but it is hardly desirable to follow these more closely. *Bone pains occurring particularly at night* are a very characteristic feature. I have given you outline enough to enable you to make a diagnosis in any case, and as it is not an acute disease, there is always plenty of time to study it up. And whole volumes have been written upon the subject.

Diagnosis.

We have found that both the hard and soft chancres are due to micro-organisms yet unidentified; yet that a simple sore, as an abrasion, by lack of cleanliness may be converted into a sore clearly resembling chancroid—one that will even yield auto-inoculable pus. If this be true of a simple sore, then it is also true that a simple hard chancre, inflamed and irritated, as through a long foreskin, may secrete pus and become auto-inoculable, instead of being smooth and shining. *We now have a simple chancre that has lost its typical character for a time, having been converted into an inflamed sore.* The physician himself may do this by the application of a mild caustic, such as nitrate of silver or carbolic acid, which doesn't kill the germ but simply inflames and makes formidable a sore originally innocent, as far as the local condition is concerned.

So if a sore comes to you looking chancroidal, inquire if anything has been done to it, also noting if the patient's appearance is such as to indicate that he has kept it clean. Don't pronounce upon a "chancroid" until by soothing means you have reduced the inflam-

mation allowing the sore to assert its true character. Then you can establish a differential diagnosis.

A syphilitic person is not immune to soft chancre. Thus a woman may have a chancre still upon the genitals,—indeed rarely it may be cervical, or hidden in the labia and its presence not known—or be in the secondary period, with mucous patches upon the genitals, and on top of this contract chancroid. The stranger staying with her gets the secretion from the chancre or mucous patches, and also from the chancroid, developing then first the chancroid,—which has no period of incubation—and comes to you for treatment; but ten days or two weeks later another sore appearing leads you to think he has inoculated himself. Pretty soon you see both groins involved, and note that the base of the sore is indurated. You now change your diagnosis to "hard chancre." What you really have there is a *mixed chancre. So do not forget the possibility of any given sore being of dual variety;* be very careful of the diagnosis of any sore, and wait a little while. Certain forms of *herpes* may deceive you. Some sores will deceive the most elect. Wait until the average period—three to four weeks—of incubation of a chancre has passed; then, if no glands are involved nor other suggestive conditions present, you may tell the patient the thing is purely local. *But absolutely, you can't express an opinion before waiting the maximum time of incubation of a hard chancre*—say nine weeks; in fact, at times it is altogether impossible for the most expert to say then and there, absolutely, that the sore is one thing or the other, or a mixed lesion. It was Bassereau who worked so hard to differentiate the hard and the soft chancre.

Young prostitutes, having been less time at it, are more likely to have syphilis. They become inoculated very soon upon entering the ranks, and in two or three years go through the primary and secondary stages, and then cannot communicate the disease. *Syphilis can be acquired but once, but they can have chancroid any number of times.*

As to the *relative frequency of chancre and chancroid*, chancroid being auto-inoculable, and capable of transmission any number of times, one would think to see this more frequently. And such is the case among the poorer classes, as with dispensary cases. But it is not so in private practice. You see more cases of syphilis in some stage, though not necessarily of hard chancre, than of chancroid. *Of all venereal diseases, clap stands at the head of the list for frequency;* second, comes some form of syphilis; and third, chancroid. Among dispensary cases the order is nearer: chancroid, clap, and syphilis third.

The secretion of any syphilitic sore is contagious, and if a healthy individual be inoculated the lesion reverts to the original form; he does not have reproduced in him the form from which he got it. Thus a person has a mucous patch upon the buccal membrane, and has had no chancre for months, that having been "cured." He kisses some one who has a cracked lip, or loans his pipe to such an one; the second individual gets—what? mucous patches? No! He gets a chancre upon the lip. Or if one be inoculated with syphilitic blood, he does not contract the constitutional symptoms as the first evidence, but a chancre.

In all cases of doubt as to the nature of the primary lesion, you should *abstain from all specific treatment* in order that secondary manifestations may be developed early as possible, to confirm or refute the suspicions.

Look for your concomitant symptoms; as it is quite wrong to make a positive diagnosis upon the rash alone, unless it be very typical. Examine genitals for the induration remaining weeks after the sore has healed; also look for enlarged glands, as the occipital, which you may expect to find size of pea or up to size of finger tips. This is very strong and frequent evidence. On the mastoid processes you will frequently find one gland on either side enlarged. Also examine along the posterior border of the sterno-mastoid muscle.

Also ask patient if his *hair is falling out?* Has he a *sore throat?*—persisting unlike that of an ordinary cold. Has he little *sores in his mouth?*

It is then the *grouping* of these significant symptoms —not any one—that becomes reliable evidence of specific infection. Any rash may closely resemble the syphilitic and yet be non-specific. So you must not diagnose upon that alone, especially where the presence of the wife, for instance, prevents you talking freely with your patient. You must always inquire about the chancre, etc.

Treatment.

Upon the subject of treatment we at once encounter a great diversity of opinion. The question of the disease being due to a micro-organism—which I believe—enters in here. There are those who believe that *Mercury* is not only not an antidote, but that it is injurious;

claiming that vegetable substances are the proper ones with which to treat the malady. But the great majority of syphilographers believe *Mercury* to be the antidote for the poison. In our own school there are those who say you must prescribe upon the manifestations only, and not for a disease called syphilis.

I do believe that in *Mercury* we have the best *antidote* to the poison, irrespective of manifestations, up to a certain point. Two remedies will carry you through the whole course of the average case.

No constitutional treatment is needed for the chancre, if no complications—that is in the typical case. *Cleanliness* sums up all that is necessary. *Syphilinum* may shorten its course a little. But not infrequently you are in doubt as to the real nature of the sore presented, as hard chancre may upon occasion simulate the "soft" variety, and *vice versa. Herpes may also simulate chancre.* An abrasion may simulate either chancre or chancroid, or you may have a mixed chancre, as described; and though as a rule the groins are not involved in the chancroid, yet exceptionally this may be the case. You do not want to load the patient more or less with *Mercury* for a disease that does not exist. Thus if you give *Mercury* right at the beginning, you remain in a state of suspense as to the true nature of things just so much longer, as it postpones the development of constitutional symptoms and modifies them. But it doesn't prevent them; it only prolongs the period of uncertainty. *As a rule, it is therefore much better, unless the diagnosis be positive, to withhold constitutional medication until constitutional manifestations confirm the diagnosis.*

I would not decry the efficacy of strictly homeopathic prescribing upon the manifested symptoms; give these remedies by all means, not to cure the trouble—for you cannot do it—but to relieve the most troublesome symptoms. For instance, give them for the fever, whether remittent or intermittent, for the burning pains accompanying the rash, etc. Your homeopathic prescribing can modify these symptoms, but *cannot affect or eradicate the syphilitic virus.* So while relieving thus such individual symptoms as cry aloud for relief, you must still pursue your course with *Mercury;* not at all because *Mercury* is capable of producing a similar rash, etc., but as experience has demonstrated it modifies the virulence of the poison—is *antidotal to the syphilitic virus.*

The question now naturally arises as to when and how long should we make use of *Mercury?* It is not applicable to the disease in its entirety, but is *efficacious in the early part of the disease*, when the manifestations and lesions are still superficial—when the cutaneous expanse and derivatives, the nails, hair, etc., are the scene of the manifestations. *But as soon as you get the deeper lesions of cell infiltration into the cutis vera, the bones, etc., Iodide of Potassium* is now your remedy. *Mercury will now have no effect.*

In a given, case where the diagnosis may lie between two or three things, as in a case of swollen testicle with symptoms not clear cut, the *Kali Iodatum* is of service in another way: Suppose we wish to differentiate between simple orchitis, sarcoma, and syphilitic testicle. We incline towards the last view, but the patient denies having contracted the disease. You can

most emphatically clear the matter up by putting the patient upon the *Iodide of Potash. If the swelling clears up under it, although you have no other confirmatory manifestations, you can be assured that the trouble is due to syphilitic intoxication.* So the remedy can thus be used as a touchstone. A case in point is the one we had Saturday. The patient, with tumor of the tongue, was questioned with all strategy, but we failed at every point to trip him up: yet I knew that nothing but a gumma could produce the condition. Under *Kali* the lump melted right away. Were it a malignant growth it would have gone right ahead despite the medicine.

To repeat. The *deeper* the manifestations the more the *Iodide of Potash* is indicated; the *earlier* and more *superficial* manifestations calling for the administration of *Mercury*. With those cases that are upon the border-land between both the superficial and deep, combine the two, giving the *mixed treatment.*

If you desire to bring the patient very quickly under the influence of *Mercury*, this can be done by means of *hypodermatic injections;* but this course is never popular in private practice, as it gives rise to boils and abscesses, and I only speak of it that you may be acquainted with the practice. [Other prominent ways in which the drug has been used, are by inunction, and fumigation (vapor baths). *Inunction* has been popular because of less disturbance of digestion than when exhibited by the mouth. Applications are made daily, or every other day, and half a dram to a dram of *Mercurial Ointment*, or *Oleate of Mercury*, is well rubbed in at each treatment. Different parts of the body—pref-

erably *hairless* (because of mercurial irritation of the hair follicle) are chosen in sequence, say as follows: first day, inner side of arms; second day, inner side of thighs; then inner side of legs; the groins; the back. The skin is first cleansed and made receptive by warm bathing, and after six such consecutive inunctions, a hot bath is taken, followed by wrapping in blankets to produce sweating, and by a few days of omission of the treatment. Then recommence the series. The operator's hands—if other than those of the patient himself (and preferably a professional "rubber" is employed)—are protected by gloves or vaseline.

Fumigation, used principally to *bleach* the patient free of the skin eruptions of the secondary stage, may be accomplished by seating the patient in a chair, underneath which is a spirit lamp heating a metal plate containing *Calomel* or the *Black Oxide of Mercury*, a large blanket, or rubber cloth enclosing the chair, and the subject to his neck. Within a half hour profuse sweating will have been induced and the patient is wrapped in blankets with the mercurial deposit still adhering to the skin.]

As to the form of *Mercury* used, some people prefer the *Bichloride*, in physiological doses; others use the *Biniodide* or *Protiodide*, yet others preferring *Calomel* or *Cinnabaris*. *Van Swieten's liquor* once enjoyed high popularity. It is a 1–1000 solution of *Bichloride of Mercury*. The dose is a tablespoonful daily, after a meal; or, better, perhaps, two tablespoonfuls of a half-strength solution.] I am very partial to the *Protiodide* at the very beginning, using tablets of the 1st, and

giving three to five, or more, of them, t. i. d. If the disease shows great activity, secondary manifestations coming out shortly and prominently, I use *Mercurius Corrosivus.* If there is a decided scrofulous diathesis shown in the history—eczema, enlarged lymph nodes in the neck, joint trouble in childhood, etc.—I then give the *Cinnabar* preferably. But the choice falls to *Protiodide* in the great majority of cases.

In giving *Mercury* you must *carefully avoid salivation.* The mouth is often involved, and a saturated solution of five cents' worth of *Chlorate of Potash*, used to cleanse the mouth with, I consider a great preventive of buccal manifestations of *Mercury* and also curative to lesions. Have the patient cleanse the mouth from two to three times daily, brushing the teeth thoroughly, afterwards rinsing with this solution. Add a few drops of the fluid extract of *Hydrastis* if aphthæ be present.

Have the patient watch himself carefully, and if he gets the belly-ache, with diarrhea, or teeth or gums feel sore, have him reduce the dose of *Mercury* or report to you. *Be very careful not to push the Mercury to the production of evidences in the mouth.* You can increase the dose to four to six tablets, t. i. d., until either the disease shows some diminution, or you begin to get the constitutional effects of the drug. By a *gradual increase* you will avoid overdosing, and get all the good effects that it is possible to obtain from the remedy. I don't think you thus "drive in," but rather you "put out" just so much of the poison.

The same care should mark your administration of the *Potash.* One drop of a saturated solution is equal to one grain. Give gtt.iij in water, t. i. d., increasing

to gtt.xx. *The stomach may rebel against small doses*, where the patient can take gr.xx to lx with impunity. Occasionally, but exceptionally, you may get the *nasal symptoms* of the remedy.

If you are sure of your diagnosis, and have determined upon this treatment, getting no results from mild dosage *don't balk, but follow the case right up.* Often a case won't respond to xxx, but will to gr.xc of *Potash* per day, although it is not often necessary to go to any such extreme. [The author recently heard of a case of tertiary brain lesion where the patient was taking the astounding amount of from 400 to 600 grains of *Iodide of Potash* daily.] Don't discontinue until you have given the case a thorough test. *These two drugs I think the natural antidotes to the syphilitic poison. Other drugs come in as incidental remedies, but I cannot find that they have any antidotal effects.* There is literature filled with indications never found in syphilis, for remedies, *Antimonium Crudum*, *Arsenicum*, *Kali Bichromicum*, *Nitric Acid*, *Lycopodium*, I think apply chiefly to secondary manifestations. When you come to the *bone pains*,—periostitis—*Kali Iodatum* will relieve in the majority of cases; but very valuable strictly homeopathic remedies, used low, are *Fluoric Acid* and *Nitric Acid.* The latter, next to *Mercury*, I think perhaps is the nearest antidote to syphilis.

Phytolacca is useful especially in mouth and throat manifestations; *Aurum* in affections of the nasal structure, as ozena; yet I have seen ozena treated homeopathically without the least effect. *Such remedies will modify symptoms but none of them affect the poison behind those symptoms.*

There is good ground for discussion and much difference of opinion upon the treatment of syphilis, by syphilographers. Dr. St. Clair Smith, at the Five Points House of Industry, has seen scrofulous troubles, as enlarged glands, etc., clear up under *Syphilinum*, but has not seen it cure syphilis, which is a very different thing. [*Syphilization* we do not hear much of now-a-days.]

In conclusion, what can we say then as to the curability of the disease. *I believe, generally speaking, that it is curable.* True there are sometimes exceptions, where you have an apparent cure, and tertiary manifestations appear after a few years. But in the *majority of cases this is not so*, and the ex-patient may become the father of healthy offspring. But *at least two and a half years of the treatment described must be persevered in*, whether there be any thing objective or subjective present or not. When the disease is more active, with more manifestations, more vigorous must then be the treatment, running down to the minimum when things are quiescent. During this time the patient must be *temperate, paying the strictest attention to hygiene and diet*, the latter not scanty, but consisting of plain and wholesome food. [Alcohol and tobacco will greatly aggravate buccal mucous patches.] This with plenty of fresh air and exercise. But *set your face decidedly against permission to marry under four years.* As you ordinarily see the disease, that is unless it be unusually virulent, if he goes through the last year or year and a half of these four years, without exhibiting any manifestations whatsoever of the disease, I think he can

now marry with impunity regarding communicating the disease either to his wife or offspring.

CASE NO. 26.

This is a man who has a chancre, and in whose case we are waiting until he develops secondary symptoms before commencing specific treatment. He has now some *rash*, and a swelling of the edge of the anus. *Gummata* are a very *late* manifestation of syphilis, and this probably does not belong in that class; it is probably some traumatic or non-specific inflammation. And yet we must remember that there are some *precocious* cases.

CASE NO. 27.

CHANCRE AND GONORRHEA.—Urethral discharge, and small sore behind corona—circumscribed, indurated lump. No coition in six weeks; sore noticed about week ago and must have been there some days before. Groin glands greatly enlarged, but not tender. *Sore, then, came about five weeks after connection;* it has a grayish-yellow base. We have a hard chancre here, and the whole manifestation is that of a clear and typical case of syphilis.

(*Soft Chancre:* Generally more than one sore; punched out appearance—well defined edges and a fading inflammatory base. No enlarged glands in groin usually, or only one, and on one side, and tender, red and inflamed—may be either sympathetic or virulent bubo.)

Within six to eight weeks this man will develop a fine secondary rash with characteristic manifestations.

Treatment.

Mercury is the specific antidote for syphilis; and for the individual symptoms, give indicated remedy. Medical profession divided as to the antidotal properties of *Mercury*, but all prominent syphilographers use it in some form. I generally use *Mercurius Protiodide* 1st. This will postpone development of secondary symptoms six months or longer; it will be good for the gonorrhea and cause the chancre to disappear. Will give four tablets, t. i. d., after meals, till finally roseola comes, etc., then increase dose till secondary symptoms diminish, and decrease dose then as symptoms fade. After this, give medicine every day right along; liable to have another outbreak—'tis the nature of the disease to recur. *Must keep using specific medicine for two to three years*, with intercurrent drugs for other symptoms.

CASE NO. 28.

CHANCRE, ETC.—Little abrasion one side of meatus and indurated. Last connection six weeks previous, and also one eight weeks before.

Soft chancre (chancroid) has no period of incubation—develops within a few days.

Hard chancre (true syphilitic chancre) generally appears in from two to three weeks; possibly six to eight weeks may elapse.

Ordinarily there is no groin, glandular disturbance in *soft chancre;* if there is, it may be a simple sympathetic bubo. Generally but one gland involved, and tends to suppurate.

In *hard*, several glands involved, if on one side, and

generally it occurs on both sides, and there is induration. This case will probably develop erythema, with patches on head, in throat, etc. He is entering upon *secondary* stage.

Treatment.

Don't be in a hurry to begin your specific treatment till diagnosis is cleared up, or you may suppress symptoms, and go on treating for syphilis that which is not syphilis. He has the symptoms of *syphilitic fever* at beginning of *second* stage: *headache* and pains in head; *sore throat* with erosion on anterior pillar of fauces; evening chill, and sweat about hips. We will wait, however, till we get something so characteristic that there is no doubt of the diagnosis of true syphilis, and then begin the specific treatment, which must be continued. So it would be unjust to prescribe *Mercury* if he really had not the disease, so we will give a placebo and await developments.

This is the man whose case was not definitely decided as syphilis, and we waited before giving *Mercury*. Now he has papules and *roseolar rash on abdomen*, with *enlarged inguinal glands* and lump upon penis that *resists pinching*. Slight *sore throat*. Syphilitic rash as a rule does not itch. Always examine *sub-occipital glands;* and the mouth for mucous patches. At first there is merely erythema, then a sore simulating chancre. *Hair* begins to fall out.

Treatment.

Without special symptoms, give 1st of *Mercurius Protiodide*, three to five tablets, t. i. d. Mouth kept

clean and rinsed with *Kali Chloratum. If patient salivates and has diarrhea*, tell him to come to you, and lighten up on the medicine. After a week, if no change, increase the dose. Then come down; but keep him always under the influence of the drug. Strict attention to *hygiene—diet nourishing and no alcohol.*

CASE NO. 29.

INHERITED SYPHILIS.—Little boy, about 2 years. Red rash around anus and scrotum, and spots on body—appeared recently, and apparently healthy at birth. Also phimosis. Valvular insufficiency of heart, so did not etherize and circumcize, but slit up prepuce a little on top. Piece of iodoform gauze under prepuce and brought out through incision to prevent surfaces coming together.

Syphilis may be contracted or inherited—*congenital*, either one or both parents being syphilitic. Some high authorities doubt the extent of the influence of syphilitic father upon his offspring; some say it is *nil*, others that he can influence when in second stage. Syphilis, by conception, may be acquired by a woman from a man in second stage, when constitutional symptoms are manifested. They may cohabit for years and she escape until a certain time, and then suddenly develop secondary syphilis. *But as surely as she shows signs of the disease, she is pregnant.* The semen of a syphilitic individual is not contagious and cannot convey the disease, yet the disease will be communicated to the fecundated ovum and the mother gets her syphilis from

her baby; so, in one way, the semen must contain the contagious element.

A syphilitic woman has much more to do with transmitting it to her child. It is claimed that a woman contracting syphilis after impregnation, cannot contaminate child, the contagious element lying in a cell, and no cells passing placental circulation, etc. Others say directly the contrary (Fournier *vs.* Bumstead and Taylor).

Symptoms and Course.

A child gets syphilis from its father, mother, or both. About one-third of pregnant syphilitic women abort, and so *repeated abortion suggests the presence of the disease.* Of the remaining two-thirds, 25 per cent. of their children die; and many, not presenting evidence of syphilis, "die in the night like the puffing out of a candle." As Fournier says, they have an "inaptitude for life." Generally, though, they will go into marasmus and have gastro-intestinal catarrh.

Or, about three weeks after birth, they have snuffles, and putrid, excoriating, watery discharge from the nose. Respiration is obstructed and the child may smother. May present various rashes, not characteristic enough of syphilis without other symptoms. But children profoundly affected, develop early, first, superficial red spots, disappearing at first on pressure of finger, then becoming copper-colored. Or, they are more likely to show large, flat papules. On dry surfaces, and exposed to the air, spots are as stated and are surrounded by a *white collarette.* But in positions on body where there are heat and moisture, spots

grow and become raw and have a granular surface. They develop into *warty elevations* of flat, granulating discs, giving off a thin, stinking discharge. These are *condylomata, which must not be confounded with venereal warts—which latter have nothing to do with syphilis.* They are not a distinct lesion, but papules which have undergone transformation by heat and moisture. Thus there are often seen these condylomata around the anus in babies, and as the secretion is contagious, an innocent nurse-girl handling the child may be contaminated and develop a chancre. Whether contracted from primary or secondary stage, the manifestation at the point of entrance always goes back to the chancre.

In a general way, the earlier the papules are developed, the more symmetrical and distributed they are; the farther from birth, the less they are distributed; and the fewer, the more severe (deeper) they are. Also, as well as cutaneous lesions in children, lesions of liver, lungs, brain, kidneys, spleen, and gastro-intestinal tract are developed, *the visceral lesions being more common in inherited syphilis.*

If baby goes six months and no syphilis is developed, prognosis is good—may have later, but in mild form. If appears during first weeks, will probably die. If reaches puberty, the disease will probably die out if left to itself.

CASE NO. 30.

SUSPECTED SYPHILIS.—Man 25. Had two spots on penis, size of pin head; came about six months ago and lasted week or two. Groin and suboccipital glands

a little enlarged. Well distributed rash almost faded out. Swelling below testicle—epididymitis associated with gonorrhea. Nothing but the "buttons" on scrotum to indicate specific trouble. Hair came out a little. Says rash came simultaneously with chancre. History very uncertain, but suspect syphilis.

CASE NO. 31.

TYPICAL SYPHILITIC CHANCRE.—Button of induration, and rash consisting of *little red spots with a white collarette*—this is not absolutely diagnostic of syphilitic rash, but a very marked feature. Also, flat (lenticular) papules. Don't go by rash alone, but search for corroborative evidences. Scabs in his hair. *Palms and wrists are a favorite locality for papules.* Enlarged glands in both groins.

CASE NO. 32.

SECONDARY SYPHILIS.—Man about 50, had syphilis in '76; now has secondary manifestations on head, which are very rank. Right shin bone very sore—*periostitis.* Pain greatly *aggravated at night* when warm in bed, which is a very marked feature in specific trouble, but not necessarily diagnostic.

His general trouble is early tertiary bone manifestation, for which *Phytolacca*, *Mezereum*, and *Sarsaparilla* are notably good; but *Kali Iodatum* in full doses will stop the pain. If he has not already had them, I will try, first the *Phytolacca*, then the *Mezereum* and *Sarsaparilla.* You can use the *Kali Iodatum* also for diagnostic purposes, if you cannot otherwise account for periostitis and suspect it is the result of an old syphilis; *they*

get well under Kali Iodatum if it is specific. If not specific they may not. This patient presents very strongly the *characteristic mental phase* of this disease, being very *despondent* and despairing of the treatment being of any effect.

The *Kali Iodatum* may be given gr.xx, t. i. d., after each meal. You may give it in compound *Spirits of Sarsaparilla* so that in a teaspoonful he gets his gr.xx. Sometimes when the stomach rebels agains gr.v or x, it will succumb and give up the fight if you will administer gr.xx to xl. He says he was "cured," and that his wife bore him healthy children since his first attack. Anyway, the case illustrates that after treatment, the disease is not transmitted, if only suppressed and not cured. Indeed some say the father is a negative quantity in transmitting syphilis to his children. I don't subscribe to that.

CASE NO. 33.

Man, 40 years old. He had a big hard lump in his *tongue;* there was a large lump on one side and two smaller ones on the other. The swelling is now *painless, indolent, and not red,* therefore we have not an acute affection.

He denies a *syphilitic history,* but by exclusion we will nevertheless make the diagnosis of *syphilitic gumma.* I saw this man some time ago, and have had him on *Kali Iodatum* for five weeks, and now the induration is almost gone. I think the trouble is one of gummous deposit, and that *the improvement under Potash indicates its specific nature.*

Phimosis, etc.,
Balanitis,
Venereal Warts,
Hypospadia,
and
Epispadia.

PHIMOSIS.

The term phimosis is used to indicate a stenosis, more or less marked, of the preputial orifice. Accompanying this there is often an irritating deposit of cheesy matter, termed *smegma*, under the foreskin, and lodged particularly in the groove just behind the corona, wherein are located the orifices of numerous glands secreting an oily matter. Also, the inner or membranous portion of the prepuce is likely to be more or less adherent to the glans penis, the smallness of the opening together with this latter feature, preventing the retraction of the foreskin over the glans. There is a consequent lack of cleanliness, and the manufacture of smegma continuing, it becomes a constant source of irritation, inflammation, erosions, with further adhesion of the prepuce.

Phimosis is of special importance, because it is the origin of all sorts of *nervous* conditions, as chorea, etc. [An eminent lecturer on nervous diseases, of this city, states that he has known even *epileptic spasms* to be *suppressed* for a year, following *circumcision.*] I remember one case of a boy of 13 years, who had always suffered much from tenesmus, etc.; I could not find that anything was the matter with his organ except that he was hyperesthetic. Circumcising him, and passing a sound in order to toughen up the canal, made a complete cure. [When a child is unaccountably nervous,

waking and crying at night, the irritability perhaps being relieved after the little fellow has soaked his diapers, the condition of the prepuce is one of the first things to be interrogated. In any case the removal thereof cannot accomplish aught but good, and as a sanitary and also morally-hygienic measure, many physicians recommend the circumcision of every male child. But this cannot be considered a *necessary* measure in all cases. However, congenital phimosis is common, every physician should be capable of properly treating the condition, and surgical interference is generally called for.

Absolute cleanliness of the genitals, especially for boys, should be instituted from the beginning, and there is much neglect here by those having charge of young children. Even in many educated and refined families, where, indeed, cleanliness may be a hobby, yet the genitals are considered "sacred," it being regarded as grossly indelicate, or even immoral to touch them except for a call of nature. (See "Paraphimosis and Strangulation," pages 244, 248, and 267.)

CASE NO. 34.

CONGENITAL PHIMOSIS—This little boy had been already circumcised, but not enough of the foreskin had been removed; the forceps were probably held *too obliquely*. Don't be afraid of cutting the artery of the frenum; it can be easily ligated.

Treatment.

CIRCUMCISION.—The treatment is surgical and consists in the operation of *circumcision*. (See front plate.)

When done soon after birth, when there is no thickening of the mucous membrane, there is no occasion to trim it off. Simply split or tear it back in the dorsal median line, and it will unite with the under raw surface of the skin. [The inadvisability of simply sliting up the dorsal *skin* and mucous membrane, in lieu of doing the complete operation, was demonstrated forcibly in a case seen recently. The attending physician, for an apparently perfectly good reason at the time, decided in favor of the former course. The foreskin was very long, and the subsequent extremely swollen and edematous condition of the superabundent tissue left laterally and posteriorly, exerted so much tension by means of the band of tissue just behind the corona, as to produce a condition simulating paraphimosis with actual strangulation.] Also, there is generally no need of sutures then, nor of an anesthetic either. A favorite resort of the Jewish rabbi is to simply give the youngster a sugar-teat to keep him contented. Some local measure may be adopted, as the ether or ethyl-chloride spray, or simply benumbing the part by the application of a piece of ice. But very often any of this is unnecessary. If a general anesthetic is used, *chloroform* is generally preferable with children [and in the use of this be careful to smear the patient's face well, particularly the lips and nostrils, with vaseline, and be careful not to allow any chloroform to come into contact with the skin—this to *avoid "burning" the cutaneous surface.* Or, after the forceps have clamped the foreskin, and perhaps in addition, the penis is ligated at about its middle, *Cocaine* may be injected into the *fold of the prepuce itself*, and particularly into the *layers of*

skin and mucous membrane themselves, composing the fold. As the cocaine-injected area is cut away, the drug is not absorbed. Many differing ways of circumcising have been devised, some most ingenious, as putting all the sutures in before any cutting is done, etc., but the following simple method is applicable to any case and will regularly give the best results:]

First having thoroughly cleansed the parts, introduce a blunt probe, *avoiding the meatus*, and sweep it around under the foreskin, between that and the glans surface—this *to break up any adhesions.* In the adult you may require a knife to do this work, where the adhesions are quite fibrous and very strong. [Be sure that the prepuce is freed well back of the corona, thoroughly opening up the sulcus behind the same, in which may be lodged the irritating smegma mentioned, and of almost a stony consistency at times. If the membrane is loosened only *to*, and not beyond, the coronal ridge, these are left untouched. We recall a case where there was found a regular horseshoe formation of a roll of smegma quite three-sixteenths of an inch thick.]

Let the organ assume a natural position, and by snipping with the points of your scissors, or with your knife, make a nick upon the dorsal surface of the foreskin to *mark just in front of the corona. You will cut right* at this point. The cut *edge of the retracted skin will then lie in the groove just behind the corona.* The idea is to cut off enough to wholly uncover the glans; but *don't denude the whole organ.* [Make your nick, and cut, at about a quarter to three-quarters of an inch in front of the coronal ridge, depending upon

whether you wish to secure a completely denuded glans, or to leave the corona well covered with foreskin: each "style" has its advocates. But when operating in cases of inflamed or swollen prepuce, as where there has been a chancre upon the inside of the foreskin, the swelling and induration may have drawn the skin of the whole penis *forward*, and then you would cut an increased distance in front of the coronal point.]

Now, having freed the prepuce all around, draw it well forward, holding it either by the fingers, or by tenacula or artery forceps (38) at upper and lower edges. *Grasp the foreskin* in the left hand, and *just behind your "nick," firmly between the blades of tissue or any ordinary forceps* that will serve the purpose; and which are applied *obliquely* to correspond to the direction of the upper surface of the glans, and because by means of the frenum the foreskin is attached well forward underneath.

Be sure that the glans is behind the forceps and *not within their grasp; then with scissors cut off the prepuce parallel to and just in front of the forceps blades.*

Upon removing the forceps apply torsion to any prominent bleeding points, or if necessary ligate the frenal artery, or others. Although hardly ever necessary, in adults particularly, it might be well to tie with fine catgut all vessels whether actually spurting or not. This will effectually *guard against any secondary hemorrhage.* You may have no vessels to ligate or half a dozen.

You will notice, while the cut skin has retracted well back of the glans, that *the mucous membrane still extends well forward towards the meatus.* This is be-

cause the skin stretches more when pulled forward, and retracts more, after cutting, than does the mucous membrane. Being sure that the under blade of the scissors is in the preputial cavity, *and not in the meatus*, split membrane upon the dorsum well back of the corona—even further back than the cut skin edge, to prevent constriction when the swelling comes. Now, catching the anterior points of the two mucous flaps by a tenaculum or artery forceps, *put the tissue upon the stretch and cut off the "dog-ears"* with scissors, by a circular cut following around the side of the glans from the top of the corona to the frenum. [Don't cut the "ears" off too close to the corona, but about an eighth to quarter of an inch from the line of reflection of the mucous membrane at the base of ridge.]

You can use either catgut or silk *sutures* taken with an ordinary fine needle. Gut sutures do not require removal, and *silk ones taken superficially and pulled very tightly will later cut themselves loose;* but be careful you do not tear the tissue in putting them in. Now *sew the cut skin and mucous membrane edges together*, just back of the corona. *Put the first stitch at the point of the frenum, getting the raphé in the median line.* This will often serve also as a ligature for the artery there. Now a second stitch opposite this, *at the middle of the dorsum.* Then one half way between, on either side. Putting these four in after this order, you are sure that you get the skin sewed in a *normal position and not twisted upon the penis.* These four stitches, preferably of silk, will be often all that are necessary, but if you want to make very nice approxi-

mation you can place interrupted catgut sutures between them. If *too many stitches* are put in, the swelling is likely to be greater, and the integument will bulge out between the stitches.

For a *dressing:* Powder with *Boric Acid* or *Iodoform* powder; interpose between the raw skin edge and the corona, the thinnest film of cotton, twisted and rubbed with vaseline and *Iodoform*—it lies in the coronal groove; apply a little piece of several thicknesses of iodoform or sterilized gauze—*smeared with vaseline* into which has been mixed a little tincture of *Hypericum* and *Calendula*, to keep the organ moist—and which is cut in the form of a Maltese cross with a hole in the center big enough to slip back half over the glans; this latter held in place by being loosely tied with a little strip of gauze. [Or if the organ is very small and the baby very fat, hold the dressing in place by means of a strip of adhesive plaster about two inches wide by fifteen long, and split for three-quarters of its length; the wide end is secured in the vertical line of the abdomen with the angle just against the root of the penis, while each of the tails is carried down past the side of the penis, under it, and under and up over the thigh of the opposite side. After two or three days put the little fellow in the bath and allow the dressing to soak off. It is important not to gain the ill-will of your little patients.

Occasionally there will be considerable *swelling* for some days following the operation—*don't neglect to tell mother* of this, and that if very marked, frequent soaking of the end of the penis in *hot water* is an efficient measure. Another condition that will sometimes startle

the tyro, is extravasation of blood into the cellular tissue, forming a little hematoma, immediately after cutting off the foreskin. It may be emptied by pricking; or if it does not resolve in a few days if left to itself, an opening may be made and the clot turned out.

Rabbinical or Ritualistic Method.—Someone, whose eye this meets, may have succeeded in so ingratiating himself into the good-will of some of the chosen race, during his course at the "Broome Street Midwifery," as to have secured an invitation to witness a Jewish circumcision. For the benefit of those who have never enjoyed the privilege, we append this description of the *rabbinical method.* The affair occurs when the child is eight days old, and is made quite a ceremony. But what particularly interests us is the technique. This is subject to some individual variation, but is substantially as follows:

A seated assistant holds the baby in front of him, the child's face looking forward, and placing a hand upon either knee, flexes the legs. The operator sits facing the patient, and having worked the prepuce free from the glans, it is drawn forward and amputated generally with a sharp knife; sometimes by means of a sharp stone, or pinched off by the long thumb-nail of the venerable surgeon. Also the foreskin may be wedged in a narrow Y-shaped notch cut in a flat piece of German silver, to hold it, the frenum being held in the angle. The membrane is simply torn up the dorsum by the fingers, turned back, and so left without a stitch. The bleeding is controlled by means of vinegar or some astringent wine, the hemostatic being held in the mouth; and frequently the operator does not hesitate to staunch the

blood by taking the glans between his lips. The light dressing applied may be held in place by rubber bands around the little penis.

During this time the object of all this attention is busying himself with a sugar-teat consisting of a piece of bread moistened in sweetened milk or water, placed within a napkin, and scarcely a "peep" escapes the little man. In an emergency, the author has found his finger placed between the infant's lips, to do splendid service, the quieting effect thus secured being particularly grateful when only a thin partition separated him from the perturbed mother.

And right here we may mention that when a circumcision is done in a small house,—flat for instance—a by no means unimportant detail is to maintain the mother at the extremest remove from the patient that the area will permit, and most firmly denying her a glimpse of her darling until the muss is cleaned up and the patient fairly presentable. Even with an operation of this inferior magnitude, it is most advisable to adhere, whenever possible, to the general surgical dictum of "relatives excluded" while the work is being done. A blood-bespattered, particularly if squalling, youngster is surely not a soothing sight for an anxious, doting mother.]

CASE NO. 35.

Man, 22 years old. Prepuce grasped with forceps and cut off with scissors. The mucous membrane slit up; "ears" trimmed off on either side, from frenum to corona. One vessel ligated. Sutured and dressed.

CASE NO. 36.

Baby, about 1 year old. The meatus is larger than the preputial orifice, causing the foreskin to balloon out on urination. Also irritation from deposited salts has caused inflammation, adhesions, and reflex symptoms.

When you draw the prepuce forward and cut it off, you know you mainly cut only the integument, the mucous membrane remaining around the glans; then slit up the mucous membrane and cut off the "dog-ears." If patient is very young, it is best to nick the mucous membrane and tear it, turning it back; and that is all that is necessary to do. Forceps placed at an angle corresponding to the head of the penis.

Chloroform used here. May have no vessels to ligate or three or four. Be careful to stop all bleeding before leaving the patient, as secondary hemorrhage is very annoying. Adhesions (from balanitis) broken up by director; the younger the child the easier broken. Later they become organized, and very tedious dissection with the knife may be necessary. Lumps of smegm aretained here are sufficient to cause considerable irritation, and give rise to all sorts of reflexes from retaining of the mass and its undergoing decomposition.

Mucous membrane slit with scissors well beyond corona, so it can't roll forward again, bringing the integument with it. Use very fine silk sutures, draw them tight and leave them to cut themselves out.

This interesting case is that of a baby that we *circumcised* early in the session. Afterwards it was *vaccinated*, and later developed an *eczematous rash*, thicken-

ing of the glans penis and of what was left of the prepuce, and also two large *suppurating buboes*, one on each side. The mother says that she never had any rash, and that her husband is the father of five healthy children.

This certainly is not a case of *inherited syphilis*, or it would have developed *within six months.* But evidently the child has been poisoned in some way—how, we don't know. The *vaccination* may offer a clue, but we cannot say positively that this had anything to do with it. And yet, had it? The mother says that a little blood passes from the urethra, and that the stools are blood-streaked.

I will slit up the buboes with a bistoury (22), and having syringed the wound clean with 1 part of *Peroxide of Hydrogen* to 3 or 4 of water, followed by *bichloride* irrigation, will pack *iodoform gauze* lightly into it. This case should be cleaned and dressed every day. We will also put the child on *Sulphur.*

VENEREAL WARTS—BALANITIS AND POSTHITIS.

CASE NO. 37.

This man had his last connection with a woman, four months ago, he says. He has never had the clap. About three months ago—or two and a half, to be more accurate—he first noticed these growths upon the glans penis.

Etiology and Course.

"Warts" generally come as the result of a discharge. There is no particular virus, but they generally occur in individuals who have had the clap. They may affect people who have had connection, but have contracted no discharge—that, is *by contact.* For *it is a contagious disease;* a woman with warts being quite likely to give them to her partner. This man says he has had no connection for months, and that these appeared but a few weeks ago. They are of very rapid growth, like mushrooms. Possibly he came into contact with a similar condition, or some form of leucorrhea; or *he could give them to himself by lack of cleanliness*, irritating smegma setting up a simple balano-posthitis, as the beginning of the trouble. *Balanitis* is an inflammation of the mucous membrane covering the glans penis, while *posthitis* is an inflammation of the lining of the prepuce.

Diagnosis.

They are cockscomb-like or cauliflower-like vegetations, and we have to distinguish only between two conditions: simple warty growths or hypertrophy of the papillæ, *not necessarily venereal*, and condyloma. *True condylomata are a manifestation of syphilis.* They are the dry, papular form of lesion, with the white collarette, transformed by occurring in a moist and warm locality. Under these circumstances, the ordinary dry form of lesion has taken on an excessive action, which results in a fungus growth, becoming elevated, irregular and looking something like a wart. The papules of syphilis, then, are changed into condylomata by warmth and moisture. But this case is not syphilitic; it is distinctly *warty*, some of the growths being pedunculated. We will call them *venereal warts* or vegetations, as they seem to have a venereal origin.

Treatment.

The best way to treat them is cutting off with the Paquelin cautery (33); or they can be snipped off with scissors, or simply ligated. The operation of *ligating* is painful, and the ligature must be drawn just tight enough; if too tight it will cut them off. In any event, *remove them to the base.* One or two applications of *Nitric Acid* may be made, this being perfectly safe and preferable to *Chromic Acid*, which is a very deeply acting caustic. Apply on a splinter of wood, as the end of a match. This is preferable to using a glass rod, as you may get too much of the acid on the end of the latter. You are likely to have considerable oozing, difficult to stop, when scissors are used.

But they will grow again, unless you do something beyond this. Give them *Thuja*, continued for weeks perhaps, both internally and as a local wash: soak a piece of linen in a solution of dr.j of the tincture to ℥j of water, and place this over the glans, thus keeping that from contact with the prepuce. This is the great treatment for balano-posthitis. Ordinarily, these warty cases are very satisfactory to treat—there is so much to see that can be so easily gotten rid of, and *Thuja* is so effective internally. But *the parts must always be kept clean.* The end of the penis may look like a tomato; in such cases use the ecraseur (34). If you cut them off, use *Cocaine.*

Having applied the *Nitric Acid*, upon a match, in this case, I wash off the excess with water, and now dress the parts with some gauze around the glans to separate it from the prepuce. This large one that is left, I snip off with the scissors, and apply a little *Persulphate of Iron* to stop the oozing of blood.

This eroded condition upon the scrotum, under his penis, will heal up if we simply keep the two skin surfaces apart with cotton sprinkled with *Boric Acid.*

[The following peculiar case may perhaps be more appropriately noted here than elsewhere.]

CASE NO. 38

TUMOR OF THE PREPUCE.—April.—In the latter part of November or December, this man first noticed a *swelling underneath the foreskin.* It quite rapidly increased in size, and later there appeared *swellings in*

the groin. Soreness of the penis first attracted his attention to the matter. He is *phimotic.*

There is a *distinct hard mass*, quite as large as the glans, within the prepuce, and wholly *anterior* to the glans, and attached to the mucous lining of the prepuce. The probe seems to demonstrate that it involves the glans penis itself.

There is a large swelling in the left groin, which is neither red nor edematous, and the skin over which is freely movable; it is distinctly circumscribed and very hard. There is no evidence of inflammation. Also there is general enlargement of the lymphatics in the right groin: here it feels like a varicocele, but the condition is not so bad as in the left side.

Treatment.

Slitting up the prepuce, upon the dorsum, with a bistoury (22), we find a *pedunculated tumor*, as large as a good-sized chestnut, attached to the *inner surface of the prepuce and upper edge of the corona glandis*, its origin being from the preputial lining, just behind the corona. The corona itself is not free, but from inflammation, *adhesions* have bound it to the foreskin. These I will break up at a future time, as I do not care to make so much *raw surface* at one operation. Having simply loosened the foreskin sufficiently to retract it, and made sure that our tumor is free, we pass a ligature around the small pedicle, and cut it loose. After this is healed, we can free the corona all around, and do a regular *circumcision.*

This may have been simply a *venereal wart*, taking on this *peculiar form and hardness* from beng closely

imprisoned within the foreskin. It is very important that we have this queer growth microscopically examined, in order to ascertain its histological structure. [Such growths, from the mucous lining of the prepuce, are generally of a *fatty* or *lipomatous* nature.]

I will not sew up the wound made where the prepuce was slit, but will simply catch together with catgut the *mucous and cutaneous edges of either side.* We can now apply some *Aristol*, *Europhen*, or *Iodoform*, and a light dressing. The two former give excellent results, and don't have the objectionable *odor of Iodoform.*

HYPOSPADIA, AND EPISPADIA.

Hypospadia is the congenital opening of the urethra, generally fissured, upon the *under* surface of the penis. It may vary from a mild degree of deformity, with but little inconvenience and impairment of function, to a condition almost approaching that of hermaphroditism; and many of the cases of so-called hermaphrodites, are persons with an aggravated type of this condition. (See "Hermaphroditism") It is generally accompanied by an arrested development of the penis, and the testicles may be absent from the scrotum. A man with *both* testicles retained within the abdomen, can have erections and an orgasm, but there are no spermatozoa present—he is potent but sterile.

[VARIETIES.—When the deficiency of the lower wall is situated just below the glans, it is called *balanitic hypospadia;* some little distance posterior to this, constitutes *penile hypospadia;* when the urethra ends in the perineum, and there is a cleft scrotum, the condition is termed *perineal* or *peno-scrotal hypospadia.* It is an extreme type of this latter variety that is often erroneously termed *hermaphroditism.*

Treatment.

The treatment consists of a plastic operation intended to restore, in a measure, the deficient urethra, and bring the meatus as near the normal position as possible. A perfect functional restoration of the part, is not to be

hoped for; and even the establishment of the new urinary canal, generally proves a patience-provoking feat, particularly because the sutures so often do not hold: and, in addition, there is the presence of urine. In short, it may be said that here are intensified the ordinary disappointments to be expected after any *plastic* operation. The ultimate success of such an operation must invariably depend upon the character and amount of the tissue present, and the ingenuity and skill of the individual surgeon; and the surgeon of experience in this direction, will never be too sanguine as to the final outcome: least of all, will he expect to accomplish a great deal by a single operation, as, with all cases of *plastic surgery*, a second or even a third operation may be necessary to complete the job.

Duplay's operation, or a modification thereof, is perhaps the measure oftenest adopted:

First, incisions are made across the ridge *binding the glans down* to the abnormal opening, and time must be allowed—months, perhaps—sufficient for the tissues to have fully recovered from this preliminary treatment, before anything further is done.

Next, we proceed to *restore the urethral canal, back to the point of the abnormal opening;* and this requires several attempts, maybe extending through a number of months. To begin with, we are doing well, if we have succeeded in well establishing a *new meatus*, by denuding the edges of the cleft in the glans, or making a slit in the bottom of the same, and bringing the edges together, over a soft rubber catheter (6), which is left *in situ*—except for occasional *shifting*, to keep it free—until the wound has firmly healed.

The remainder of the *new urethra*, extending nearly to the old opening, is now constructed:

A longitudinal incision is made through the skin, on either side of the groove, about a quarter of an inch from, and parallel with, the sides thereof. The outer edges of these *strips* are dissected up, and, with gut, brought together in the median line, over the soft catheter (6); the *skin* surface is thus turned *in* to form part of the wall of the canal. Now, to reinforce this externally, the *lateral skin* of the penis is dissected up at the outer borders of the two parallel, longitudinal incisions, sufficient distance to admit of its being stretched towards the median line, and there united, over both the catheter, and the strips already covering it in. These *external flaps* are held by a quilled, or other suitable *tension suture*, the material being either silver wire, or silk.

When, finally, this has healed, we complete the job by freshening the edges of the old "meatus", out of which the urine has flowed up to this time, and unite them over the catheter. Now the urine flows out of the new meatus, the catheter being finally removed when the old, abnormal opening has healed: this is the point where we are liable to have a stubborn fistula.]

CASE NO. 39.

Here we have a little boy with non-union of the lateral bases of the scrotum, and no testicles therein.

Treatment.

All we can do for the little chap is to correct the curving down of the organ when it is erected, by the

removal of a V-shaped section of the dorsum, thus overcoming the relative shortness of the corpus spongiosum, which exists in his case. We can thus make him capable of copulation, but not of fecundation, as the meatus is not in the proper place.

CASE NO. 40.

This little chap also has hypospadia, which presents the appearance of a badly performed circumcision. We would not advise any operative measures in this case, as *integument under the penis is so thin* as to make a plastic operation almost impossible. He will be able to impregnate when matured, unless the organ *curves too much downward in erection*, in which case we might then *operate to straighten it.*

CASE NO. 41.

I would not advise to do anything with this little boy until he is, say, 15 or 16 years of age, as there is so *little tissue* to work with.

CASE NO. 42.

Little boy, with arrested development of penis, in which the prepuce is affected; the glans is uncovered, and there is a redundancy of foreskin upon the top. The urethral opening is very small, and hypospadia is but slight.

Meatus enlarged; no dressing.

EPISPADIA.

[*Epispadia* is a condition similar to hypospadia, but existing upon the *upper* surface of the penis. It is much rarer than hypospadia, and being often associated

with *exstrophy of the bladder*, is liable to be a more serious affair. (Exstrophy of the bladder is congenital deficiency of the anterior abdominal and vesical walls, the posterior wall of the bladder protruding through the opening. It is also called *extroverted* bladder, or, sometimes, quite ambiguously, *everted* bladder.) When this latter condition is present, and perhaps also congenital absence of the symphysis, there is no possibility of forming a serviceable urethra. When only the penile urethra is to be dealt with, the same operation as for hypospadia, serves; but the deformity is often so great that the attempt is useless.

In addition to the lack of bony union of the symphysis, there may also be associated with exstrophy, double inguinal hernia, on account of the weak abdominal wall.

Concerning *treatment of exstrophy*, an attempt to establish communication between the ureters and rectum, will not prove a successful operation. So it remains to dissect up a flap of skin from the abdomen, between the umbilicus and the upper margin of the opening: this is turned down, bringing the *skin* surface opposite to the mucous membrane of the bladder. Then two inguinal flaps are dissected up, and twisted in such fashion as to cover the raw, under surface of the first flap. During the process of healing, relaxation of the abdomen is secured by appropriately applied adhesive straps.]

Notable Cases of Hermaphroditism, and of Elephantiasis of Scrotum and Penis.

HERMAPHRODITISM.*

On November 3, the amphitheater of Flower Hospital was crowded to overflowing with students and physicians, who came together to see a case of *hermaphroditism*, to be presented to the class, and to hear the remarks of Professor Helmuth, who said:

Gentlemen: You would scarcely credit the fact that in certain rare cases it is difficult to determine whether an individual is a man or a woman. Yet such has been the case, and medical testimony has been necessary to decide the sex of a person in the allotment of estates and the settlement of wills.

To consider the matter intelligently, it is necessary that you should understand the meaning of the term *malformation:* it is a deviation from the normal standard in size, formation, number, and situation of any organ in the body. We can divide malformations into two great classes: first, those which are *acquired*, and second, those which are *congenital.*

The acquired result from disease, and should be strictly called *deformities.* Examples of this class are numerous, as deformed extremities after rickets, contractions after burns and scalds, imperfectly united bones, etc.

Again habits, customs, and occupation may give rise to deformities.

*From The Chrionian, December 1, 1894.

In the congenital variety, the real malformations are of three clases:

(*a*) *Supernumerary*, where the deformity may range from a single extra digit to a double monster.

(*b*) From the *want* of a finger down to almost any shapeless mass.

(*c*) From the *transposition* of certain organs.

As a rule, those malformations are the most pronounced that are caused by a want of proper development, and are generally found in the median line of the body.

The patient whom I am about to bring before you, I was called to see in Denver at the last meeting of the American Institute of Homœopathy, and I succeeded in persuading him (?) her (?), or it (?) to visit this city, that I might exhibit *it* before the classes of this college.

Before the person is produced, I will say a few words on hermaphroditism. *An hermaphrodite is an individual who has the sexual organs of both sexes developed to a greater or less degree:* whether testicles, vesiculæ seminales, ovaries, tubes, penis, vagina, and uterus have ever been developed in one individual is questioned by most surgeons, although we have that most extraordinary case as recorded by Dupuytren. The specimen is in Paris, and here I show you an exact imitation thereof which I had made from it. (Here were shown two wax models, life size.)

The most ordinary forms of hermaphroditism are:

(*a*) Those which being—as to the essential organs of generation (testicles and ovaries)—distinctly male or female, exhibit, nevertheless, some anomaly of de-

velopment—be it arrest, overgrowth, or disproportion of some kind more or less typical of the opposite sex.

(*b*) *Hypospadias* in its highest grades, viz., on the one side a cleft scrotum and the formation of a vagina-like sinus; on the other, as its analogue, diminutive vagina, closure thereof into a raphé or suture, partial or entire absence of this organ, with a clitoris developed into the semblance of a penis, or one completed or channeled with a urethra.

(*c*) *Cryptorchism:* concealed testicles in one case; in the other, its parallel condition, the descent of the ovaries into the labia majora, now and then associated with the foregoing form. High grades of these anomalies constitute the so-called *transverse hermaphroditism*, implying external organs of the one and internal organs of the other sex. The case of externally female, and internally male organs, is by far the more common, because due to an arrest in the development of the male organs, while the opposite case depends upon the ulterior development of the female organs into the male type.

(*d*) The occurrence in the male sex of a womb-like organ.

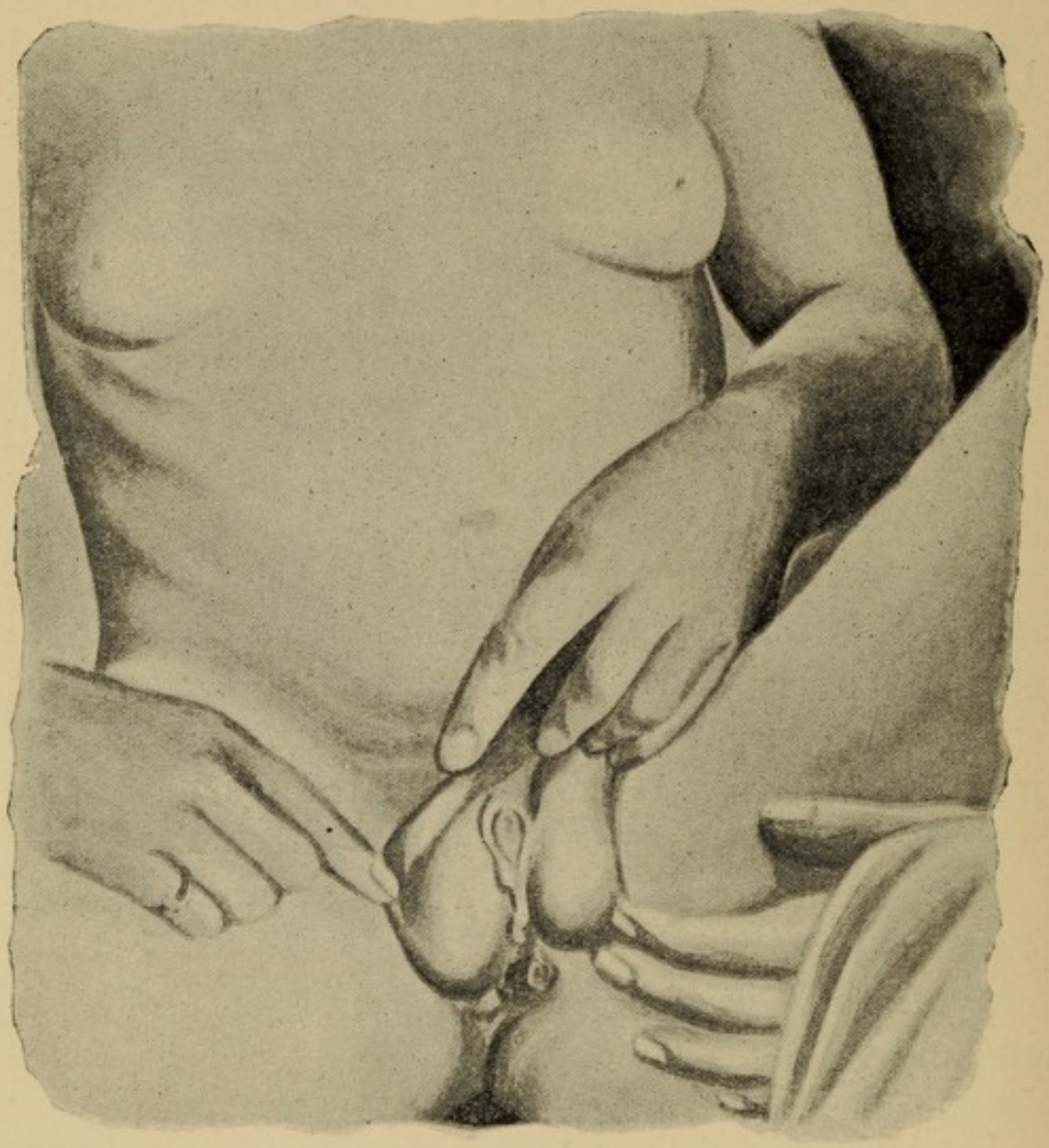
(*e*) *Lateral hermaphroditism:* the presence of testicles and vas deferens, with or without seminal vesicles on one side, and of ovaries and tubes on the other.

(*f*) *True hermaphroditism:* the coexistence of male and female sexual organs on the same side.

A curious and perhaps reasonable thing about these persons, is their great sensitiveness. This patient (who was then brought in) is 24 years old, and was born in

Vienna. He always wears a mask when being examined before strangers.

This person has a perfectly smooth face and a high-pitched voice, like a woman's. As you see, his breasts



are well developed and pendulous, the nipples quite the size of a woman's, the areola around them perfect and well-marked. At intervals there is a watery discharge from the breasts which lasts, for a day or two.

We will now look at the genital organs, and the first

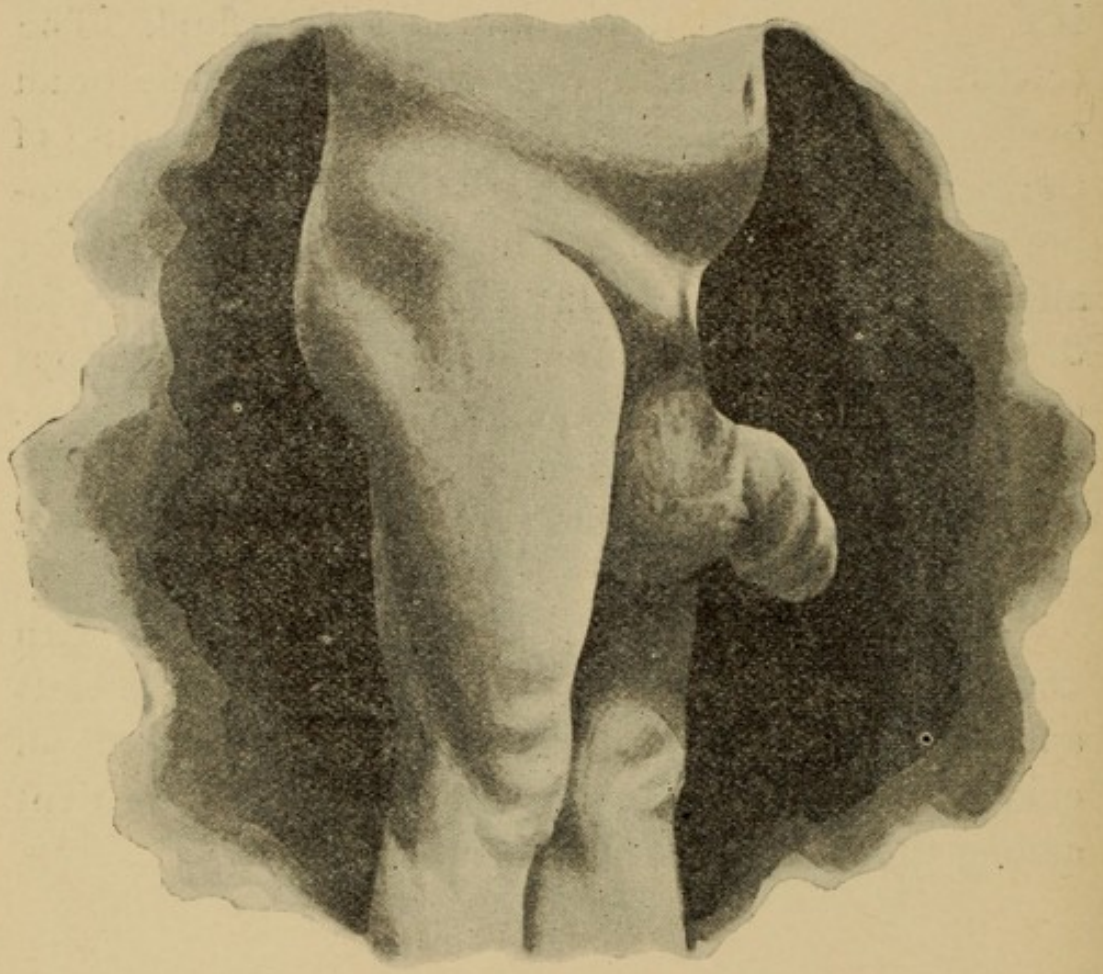
thing you notice is the hair on the mons Veneris, which, in the female, has a curved boundary, and in the male extends in a point upward on the abdomen. Here the line forms an arc across the lower part of the hypogastric region. You will observe that the penis, which is about an inch and a half long, has a perfect glans penis and prepuce, and is capable of erection.

The urethral opening lies below, at the top of the rudimentary labia minora, and from time to time there is discharged a small amount of sticky fluid. The scrotum is split, and in each side is a testicle or an ovary. At the bottom of this cleft is the opening of the vagina, covered with a very thin, distensible membrane, which can be pushed into the vaginal canal for almost two inches. About every four to six weeks there is a flow of blood from the nose, and a few drops exude over the membrane at the vaginal orifice. Sexual desire is felt, but most pronounced when the membrane—which might represent the hymen—is pressed into the vagina.

Two years ago I had a somewhat similar case with Dr. Wetmore, where the man had a beard, small breasts and a harsh voice. In this case the preponderance of evidence seems to be in favor of placing the patient among the female rather than the male sex.

ELEPHANTIASIS OF SCROTUM AND PENIS.*

The patient was a man aged 38, German by birth. He had always been well up to the time this growth



started, which was in his 25th year. There was no history of injury to the parts. The growth started simultaneously in both penis and scrotum. It gave him no trouble, but continued to enlarge for twelve

* From The Chironian, April 14, 1894.

years. During the last year he has noticed no further enlargement. It was never painful. He had no difficulty in micturition, and at times had erections. The glans and corpus were of a normal size, and the former could be seen by raising the large hypertrophied foreskin. On palpitation, the right testicle could be defined, but on the left side none could be found. The dimensions of the parts were as follows: circumference of penis, 10½ inches; length of penis, 7½ inches; circumference of scrotum, 18¼ inches. The man was presented to the class at Professor Doughty's clinic on Saturday, December 9, 1893, and admitted to the hospital. He was operated upon on December 30th.

Professor Doughty, assisted by Professors Helmuth and Wilcox, after aseptic treatment of the parts, made a longitudinal incision on the anterior surface of the scrotum on the left side, beginning just below the external abdominal ring and extending downward for three inches, following the direction of the cord but keeping within normal tissues. Great difficulty was experienced in finding the testicle, as it was imbedded in and firmly adherent to the diseased mass. By dissection, it and its cord were liberated and laid upon the abdomen. A similar incision was then made upon the right side of the scrotum, and again, with difficulty, the cord and testicle of that side were removed from the mass and laid upon the abdomen.

An incision was then made from the pubes to the prepuce on the dorsum of the penis, through the hypertrophied tissues, down to the corpus of the organ, and gradually the penis was shelled out of its bed thoroughly,

back to the pubes, and laid also upon the abdomen, which permitted the upper extremities of the two original incisions to be united by a transverse one which passed below the penis. This transverse incision was continued downward, amputating the entire scrotum.

The testes and cords were then laid down upon the perineum, and three sutures were introduced at the lower extremity of the perineal wound, to diminish the expanse of raw surface. The parts were then irrigated, dressed, and left to granulate.

The case progressed smoothly and was again presented to the class in about two weeks. The testes were held firmly in place by the free granulations that had taken place, and all other exposed surfaces were clean and healthy. The penis and granulations about the testes were now covered with a skin graft from the thigh, according to Thiersch's method. This united perfectly to the tissues beneath, and he made a rapid recovery.

Sexual Neuroses.

SPERMATORRHEA.

[In a work of this compass, in treating of a matter so large as "Sexual Neuroses," we can but outline the subject in such a way as to convey a general idea of its nature, and the proper line of treatment. Much space might be devoted to most peculiar and interesting phases of these diseased conditions. We will at once emphasize the great importance of *mental impression*, and *thorough hygiene*, in treatment.]

Certain remote conditions may affect either the genital or urinary functions of the genito-urinary tract, and they may restrict themselves to one of these divisions. Thus a person may suffer from *polyuria*, or discomfort during micturition, the genital function remaining intact. Or the genital function may be affected without involving the urinary. Or, frequently, both are affected at one time. Without any local lesion, you may have an expression in this locality of chronic organic disease, disease of the brain or spine, or disturbances of nutrition. Also there may exist either *inherent* or *acquired* disturbances of the nervous system; such troubles, relating to the sexual apparatus, more especially occurring in those "naturally nervous."

Manifestations of the breaking down of the nervous system are most varied, but the genito-urinary phase is a common one. A patient of this class may even have sugar in his urine, which is pale, straw-colored

and neutral, or even alkaline; but here the alkalescence is not due to carbonate of ammonia, but to fixed alkali from bone earth—the carbonate or phosphate of lime, or both together. The presence of this is readily detected by the appropriate tests, as seeing if there is effervescence upon bringing the urine in contact with acid, etc.

Spermatorrhea is a form in which a certain neurosis manifests itself, and one to which I particularly call your attention.

Symptoms and Course.

Some physicians use this term to imply all involuntary losses of semen. Others restrict its use to those cases where the seminal fluid passes without erection, ejaculation, or pleasure. Now the first definition is too comprehensive, and the second is a too limited one. *In short, "spermatorrhea" should designate involuntary seminal losses that are beyond the physiological.* And here we at once note a great difference, not only in individual temperament, but in circumstances, etc. To be sure, the normal testicle is at work all the time storing up semen, but one man may be of a cold, phlegmatic temperament, and not easily excited; his semen is stored up slowly and he has, say, once in from four to six weeks, a nocturnal emission. Another man likes to read spicy novels, lives well, is very fond of girls' society and is around them a great deal, and his testicles fill up in a few days. *So the frequency of the emissions has little to do with the question of disease; we are to judge of that by their effect and not mere presence.* And, within a certain indi-

vidual limit, nocturnal "pollutions" are physiological.

But, occasionally, the attention of the physician is called to extreme cases, (*a*) one form of which is that whenever the individual urinates or defecates, whether constipated or not, there is a dropping of semen, or semen-like fluid, from the meatus. (*b*) Again, he may notice nothing escaping him in this way, but yet he is very prone to have erections and frequent losses of fluid, with little or no accompanying spasm. This also is a rare condition. (*c*) Thirdly, there is what are commonly termed "nocturnal pollutions" or "wet dreams:" these are involuntary losses of semen during sleep, and are generally accompanied by erections and erotic dreams. They awake the patient, in one form; in the other, the losses occur without dreams and do not awaken the individual. This latter is the highest expression of the difficulty—one in which there is faint muscular action. (*d*) The diurnal form, with semi-erections and but little pleasure being experienced during the emission, is very rare.

Treatment.

To repeat. Whether the condition be pathological or physiological,—one requiring treatment or not—*depends wholly upon the effects.* You must be guided by other symptoms than this local expression of the *neurotic condition behind it.* If the discharge is followed by a feeling of *buoyancy and relief*, and the person does not feel tired, weak or heavy,—in other words, if there is no perceptible effect to be observed beyond the mere evidence—*it does not require treatment no matter how frequently occurring:* but we add

the comment that perhaps they should not occur oftener than twice within the week. On the other hand, if occurring only once in one, two or three weeks, and yet causing bad after-effects, the individual is then a subject for treatment. The passage of sounds and other applications of cold in the urethra, may decrease the irritability. Or, the deep instillation of gr.j to x of *Argentum Nitrate* is also resorted to at times.

The general *nutrition* and *hygiene* of the body should be carefully directed. In short, the treatment indicated is more constitutional, hygienic and moral, than local or specific; yet *electricity* may be of great value, and the properly selected homeopathic remedy will often be of service.

IMPOTENCE.

This is another trouble belonging in the same category with the foregoing. The term *impotency* is used to designate both the inability to have coition, and inability to fecundate; in its latter use being synonymous with sterility.

Symptoms and Course.

Comparatively young men will often come to you complaining of their inability to have erections, of imperfect erections, or too short erections. The first thing to do is to inquire if they experience this difficulty *under all circumstances.* If they do not, they have only a *relative impotency. What brings them to you?* It may be that the patient has been perfectly potent with his wife, but upon attempting to enjoy some entertainment outside, owing to the unusual anxiety and excitement, he is chagrined to find that he cannot do anything: he is so anxious to give a good account of himself that he makes a flat failure of it. This condition might have proven but temporary had he not become frightened, and then his subsequent mental state of worriment about the matter perpetuated the difficulty. Or, a young man, who has masturbated, is about to get married, and fearing he has injured himself, he tries to ascertain if he is all right sexually, and his mental state prevents him from accomplishing the act. "*These people are impotent because they im-*

agine they are impotent. The *psychic* element is the all-important factor here. A man may be rendered temporarily impotent by the simple fact of his partner being distasteful, because of soiled clothing, general lack of neatness, complexion, etc., etc. Or, if there be nothing actually present, that is distasteful, the fact that a woman is not of a certain complexion, or the absence of some peculiar attire, may be the cause of his failure to effect coitus. The novelty, fear of failure, a disagreeable odor, etc., etc.—these impressions all cause inhibitory impulses to be sent to the brain, causing relaxation of muscle fibers, or the squeezing down of the accelerator urinæ muscle, and the blood flows back out of the penis.

Treatment.

We have seen that in some cases it is the "other person" who needs treating. True impotence, other than the physiological condition due to declining years, is an extremely rare thing. Similarly as in the case of spermatorrhea, attention must be directed to the underlying cause. For the almost unique cases of sterility due to lack of spermatozoa, there is no cure. And, in almost any case, you will find impotence difficult to handle.

"THE EPILOGUE."*

"What I undertook is now brought to a Conclusion, where I must beg leave to give the candid Reader one serious Admonition, that he should consider these little Commentaries as originally wrote for private Use and help of Memory, therefore not over correct, regular and skilful. Very few Gentlemen, I am apt to think, conversant with the Practice of Physick, are destitute of better Supplies from their own Observations and Collections. But since things of this nature have often different Aspects, and eclipsed rather than enlightened; and the Sentiments of Men are not altogether the same, it may be no way unreasonable to conclude, that others may reap some Advantage from my Labours, as I (to speak the Truth) have a plentiful Harvest from the Lucubrations of Others."

* From "The Epilogue" of Synopsis Medicinæ, by John Allen, M. D., London, 1749.

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