was by injecting into the aorta a 2 per cent. solution of nitrate of silver and a 5 per cent. solution of formaldehyde in distilled water. Immediately following this mixture, a 2 per cent. solution of ammonia in distilled water was injected and the deposit of silver could be seen increasing in the papillary layer of the skin, giving the subject a mottled appearance.

Dr. Hewson reported that at a subsequent meeting he would show specimens of this work with the various tissues, but desired to give formal notice of the fact that he had succeeded in making a deposit of metallic silver in the tissues.

MEETING HELD ON FEBRUARY 2, IN CONJUNCTION WITH THE GENITO-URINARY SOCIETY

DR. JOHN H. GIBBON, President, in the Chair

OBSERVATIONS ON THE PATHOLOGY, DIAGNOSIS AND TREATMENT OF SEMINAL VESICULITIS

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THE motives responsible for the presentation of this contribution are two-fold. First, we desire to impress, as forcibly as may be, the medical profession at large with a fact—our solemn conviction—namely, that two small organs, the seminal vesicles, too often disregarded and neglected, if not forgotten, have not received the consideration which is their due as foci of infection, and in the near future will be their demand especially at the hands of neurologists, orthopædists and internists. We refer to a vast array of conditions with a symptom-complex too little understood, as acute and chronic synovitis and arthritis, of an infectious or toxic nature, so-called articular and even muscular rheumatism, rheumatoid arthritis, arthritis deformans, gout, hypertrophic arthritis, chronic bladder disturbances, recurrent epididymitis, impotency, renal and cardiac complications, digestive disturbances and an ensemble of mental and nervous manifestations almost incredible of belief. Obviously, it is not inferred that in the above-mentioned diseases, the vesiculæ seminales are always concerned, but we believe that the medical profession in general would be amazed if not embarrassed to learn how frequently in certain infective, cryptogenic, nervous and arthritic conditions, the depot of infection will be found to be a chronic seminal vesiculitis. Fuller[1] states that "tuberculous joint, arthritis deformans, gout, chronic inflammatory rheumatism, progressive mus-

[1] Fuller: "Seminal vesiculotomy," *Jour. A. M. A.*, November 30, 1912, p. 1961.

cular atrophy and myelitis of some form are among the diagnoses previously made in cases cured through the performance of seminal vesiculotomy. Of eighty-nine rheumatic patients there was not one who was not relieved in a most radical manner and who was not satisfied with the operative result." Second, we wish to make an announcement of work undertaken in a comparative study of various methods of treatment for this common disease, also at this time to submit a number of collargol radiograms illustrative of the normal and diseased seminal vesicle in a study of the living pathology of these organs.

It is remarkably strange, but nevertheless true, that with two structures as intimately associated as are the prostate and seminal vesicles, that the former should have been so thoroughly studied years ago, while the pathology and diseases of the latter, in text-books universally, have been alluded to casually or definitely neglected. The profession owes a debt of gratitude to Fuller[2] and Lloyd, pioneers in this line of work, for their untiring efforts in directing attention to the importance, constitutionally, of seminal vesiculitis and for suggestions as to treatment.

It must be apparent to all that by virtue of the relatively larger lumina of the ejaculatory ducts as compared with the prostatic ducts, that infection in the posterior urethra can and does reach the seminal vesicles more readily than the prostate. Indeed, it has been our experience that over 90 per cent. of gonorrhœal patients exhibit posterior urethritis and that 90 per cent. of posterior urethritides are complicated by prostatites. Thus the percentage of seminal vesiculitis in the male population is very high.

For a thorough comprehension of the importance and magnitude of this disease in its correlation with various other systemic disorders, certain facts relative to the anatomy, bacteriology and histo-pathology of these organs must be understood. In 1911 Picker,[3] before the III Congress of German Urologic Society, presented a classic study, in which he examined about 150 seminal vesicles, dissecting out the tube systems after injecting the vasa deferentia with bismuth paste. From material comprising 56 normal and 16 pathological specimens, he makes the following anatomical classification: (1) Simple straight tubes; (2) thick twisted tubes with or without diverticula; (3) thin twisted tubes with or without diverticula; (4) main tube straight or twisted with

[2] Fuller: The *Jour. A. M. A.*, May 4, 1901, p. 1228; *Med. Rec.*, New York, October 30, 1909; *Jour. A. M. A.*, November 30, 1912, p. 1959.

[3] Picker: "The Anatomical Configuration of the Human Vesicula Seminalis in Relation to the Clinical Features of Spermacystitis." Paper read before the XIV International Medical Congress, London, 1913.

larger grape-like arranged diverticula; (5) short main tube with large irregular ramified branches; (6) miscellaneous, comprising (*a*) embryological abnormalities and (*b*) pathological conditions. Of the normal specimens about one-third belonged to types (1), (2) and (3) and two-thirds to (4) and (5). The lengths of the various vesicles measured from 6 to 23 cm.; the capacities varied from 3 to 11.5 c.c. Thus it is seen that the seminal vesicles, of all the associated glandular structures of the male urethra, possess the most extensive secretory surface with the worst drainage.

In the majority of the types found, short spontaneous healing is anatomically and mechanically impossible, practically always so without massage, sometimes requiring months, and consequently latent foci of infection result.

Just as a pure gonorrhœal cystitis is a condition that probably never exists, so too are most, if not all, infections of the seminal vesicles and prostate mixed. This supposition is confirmed by bacteriological examination of the inflammatory products obtained after massage of these organs. Among the bacteria harbored in chronic seminal vesiculitis, that have been repeatedly demonstrated, may be named the gonococcus, various strains of streptococci, pneumococci, staphylococci, colon bacilli, corynebacteria and tubercle bacilli. It is highly probable that in many cases diagnosed as "gonorrhœal rheumatism," the gonococcus has ceased to play a rôle and that the offending bacterium can be traced to a mixed infection located in a chronic seminal vesiculitis. The clinician should readily appreciate the significance of such bacterial foci so far as systemic affections are concerned, and in comparison with the tonsil, it would seem to us that the greater evil rests with the seminal vesicle in the light of clinical experience and specific treatment. Yet how many male patients in our hospital wards and private practice, exhibiting certain rheumatic and nervous manifestations, are submitted to any examination per rectum, not to mention a proper investigation of their seminal vesicles?

Again extensive tissue changes supervene in severe grades of infection. In addition to intravesicular inflammation and loculated accumulations of exudate composed of pus, various bacteria, etc., an interstitial spermacystitis occurs in many cases, resulting in thickening of the vesicle wall. Indeed, commonly it is the case that perivesicular infiltrates form about the base of the bladder and prostate and extend through the perirectal tissues, occasionally pointing in the perineum or rupturing into the rectum or bladder.

Convinced, therefore, of the prevalence of this disease and the often

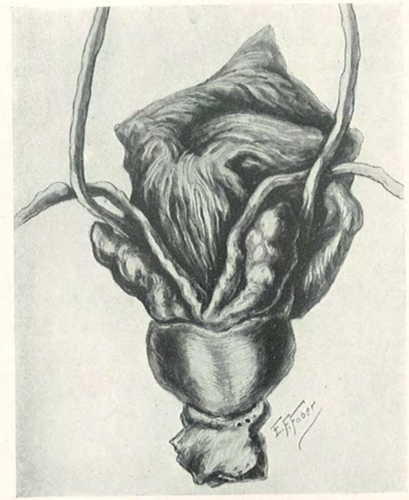
remote effects produced by its existence, necessitating greater consideration on the part of all physicians as to precision of diagnosis and the adoption of the best form of treatment, we have been engaged recently in a partial study of this problem. The treatment of seminal vesiculitis comprises a number of methods. Appropriate, intelligent and efficient *massage* is unquestionably the best procedure primarily in the average case and will suffice to effect cure in the majority. In not a few cases the accessory value of *autogenous bacterins* may be utilized with gratifying success. Occasionally, spontaneous cures, after a long time, will occur. In each patient the proposition should be viewed from the anatomico-pathological stand-point. Thus, the following considerations arise: (1) Is the ejaculatory duct strictured or obstructed? (2) Is the vas deferens strictured? (3) Is the inflammatory collection in the seminal vesicle loculated? Belfield, in the consecutive examination of 25 cadavers, found the ejaculatory ducts strictured on both sides in 1 case and unilaterally in 2 cases. Aschoff found the deferentia strictured bilaterally in 6 and unilaterally in 17 cases, in an examination of 1000 subjects. Assuredly, if the ejaculatory duct is completely stenosed, massage will be futile as a form of treatment. On the other hand, if the vas is occluded near the seminal vesicle, *vasopuncture* or *vasostomy* and direct medication will accomplish nothing. *Seminal vesiculotomy* ardently advocated by Fuller, and performed by him with wonderful success in about 300 cases, has a definite indication in a certain percentage of cases. We prefer, however, the method of Voelcker, permitting as it does a better exposure of the vesicles and allowing freer and more definite incisions for drainage of the infected organs. *Vesiculectomy,* the most radical procedure, should be reserved for the grave, chronic cases, and, if the process is tuberculous, should be chosen in preference to vesiculotomy.

Since, therefore, operation should be considered only after massage has failed or availed naught, and since the particular operative procedure to be adopted depends upon the pathological condition present in the vesicle, ejaculatory duct or vas, it behooves the surgeon to familiarize himself with the morbid process. This knowledge may be acquired through rectal palpation and by needle puncture of the vas in an attempt to inject a normal amount of solution, as boric acid, into the seminal vesicle. In place of boric, collargol in ten per cent. solution, as suggested by Picker [4] and Belfield,[5] may be utilized and has the additional

[4] Picker: *Loc. cit.* (Collargol preparation No. 57).

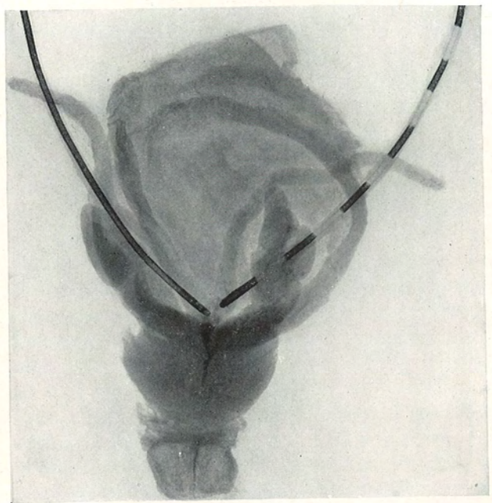
[5] Belfield: *J. A. M. A.*, p., 800, March 15, 1913; p. 1867, November 22, 1913; *Surg., Gyn. and Obst.*, p. 569, May, 1913; November, 1906.

FIG. 1.



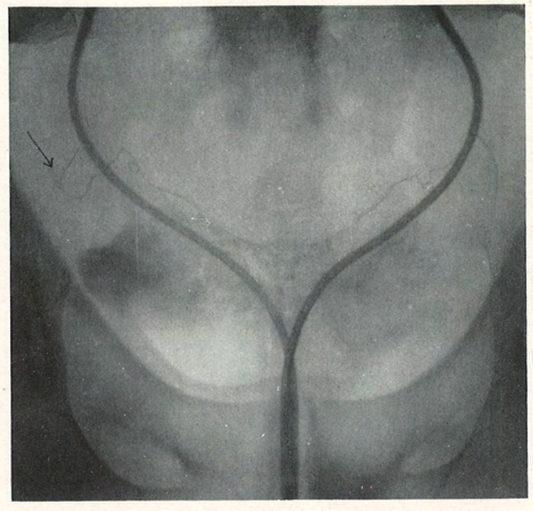
Drawing of dissection by Dr. Addinell Hewson of normal seminal vesicles, showing their relationship to the ampullæ of the vasa deferentia, the ureters, the bladder and the prostate.

FIG. 2.



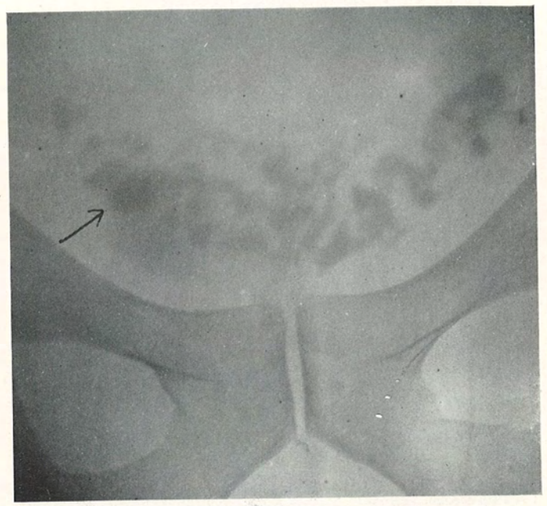
Collargol radiogram of anatomical specimen shown in Fig. 1. The right seminal vesicle has been injected through the vas with three cubic centimetres of collargol; the left vesicle has been slightly injected. Observe the leakage of collargol through the right ejaculatory duct into the urethra. Both ureters have been catheterized with radiographic catheters, defining their relationship to the vesicles and vasa deferentia.

FIG. 3.



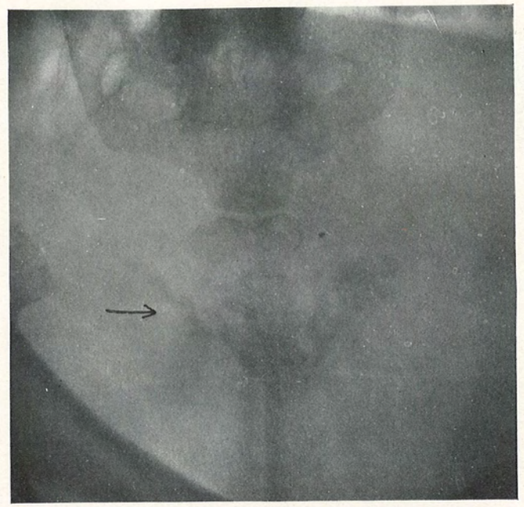
Patient never had venereal disease; seminal vesicles normal; had seminal colliculectomy for fibroma one month prior to collargogram. Note tortuosities of vasa deferentia. Observe radiographic catheters in ureters and relationship of same to vesiculæ seminales.

FIG. 4.



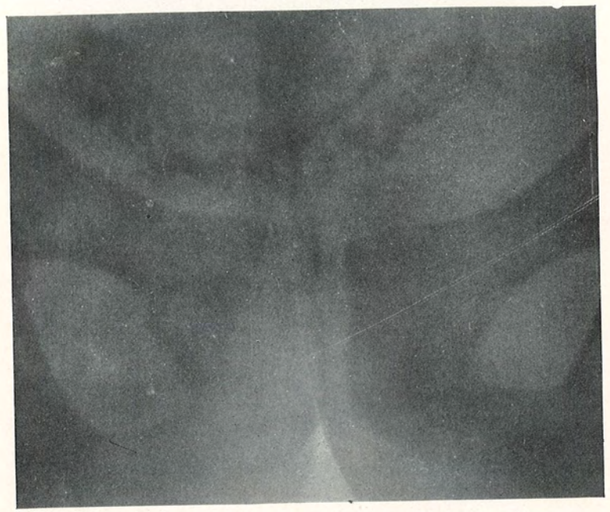
Chronic seminal vesiculitis. Each side injected with fifty minims of collargol. Clinically by palpation there existed a nodule on the right side, evidencing a loculated collection of pus or seminal pyovesiculosis. This is confirmed by the shadow in the skiagram.

FIG. 5.



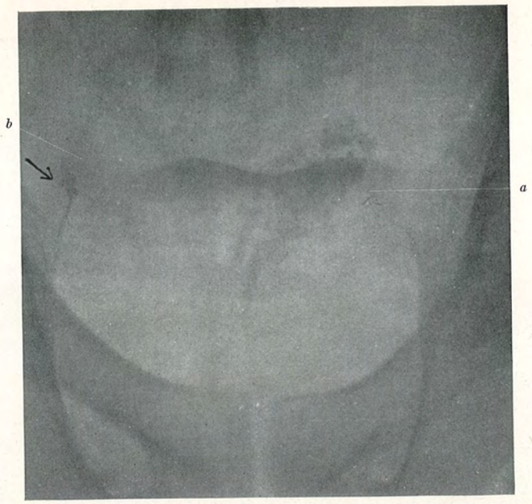
Chronic seminal vesiculitis. Sixty minims of collargol injected in each side. Clinically the right vesicle is nodular on palpation and radiographically seems to demonstrate partial obliteration of its lumen.

FIG. 6.



Chronic spermocystitis. Sixty minims of collargol injected on each side. Clinically cured.

FIG. 7.

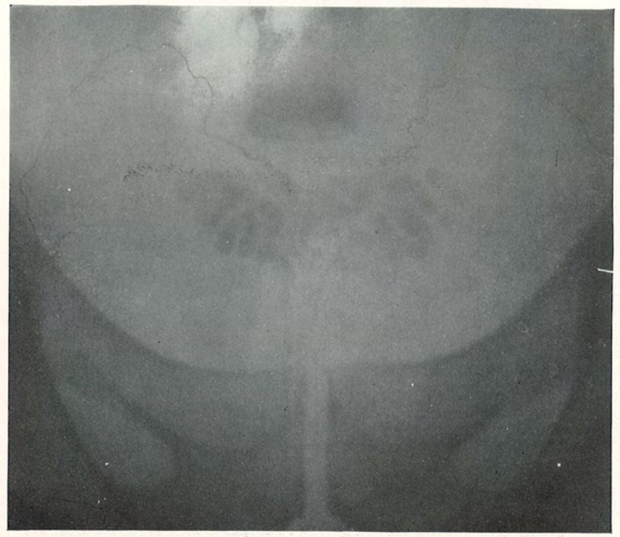


a, chronic seminal vesiculitis (left); *b*, stricture and complete occlusion of right vas deferens. A small shadow shows the extent of collargol injection on the right side; only twenty minims were injected. The left vesicle, injected with sixty minims, was clinically enlarged and tender.

FIG. 8.

Chronic seminal pyovesiculosis. Fifty minims of collargol injected into each side.

FIG. 9.

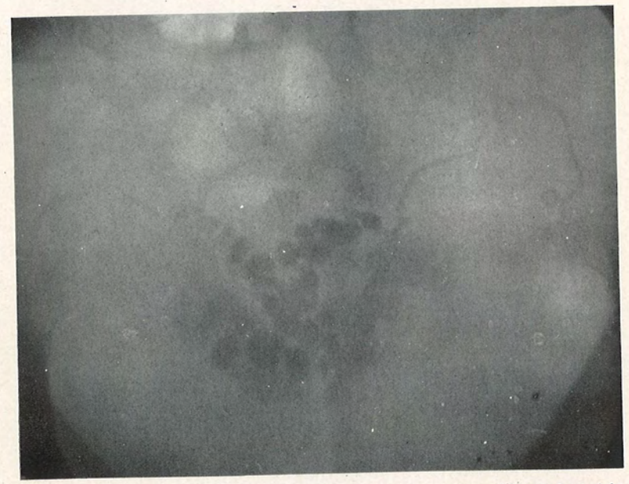


Subacute seminal vesiculitis. Each side injected with 70 minims of collargol. Observe the courses of the vasa deferentia.

FIG. 10.

Chronic seminal vesiculitis (right). Observe normal vesicle and injected vas throughout its course on the left side. Seventy minims of collargol injected on each side.

FIG. 11.



Chronic seminal vesiculitis (bilateral). Eighty minims of collargol injected on right side and seventy on left. Note very large ampullæ of vasa deferentia and courses of the latter on both sides.

advantage of permitting radiographic studies of the living pathology. In addition to its diagnostic value, collargol possesses also a definite therapeutic effect. It has occurred repeatedly during the past few months that after these collargol injections there has followed a reduction to the normal in the number of pus cells expressible from the seminal vesicles; the thought has occurred that this procedure may be the means of aborting an acute seminal vesiculitis. Moreover, in a number of cases this operation has been followed by the disappearance of reflex perineal, pubic, urethral, vesical and neurasthenic pains. Sufficient time has not yet elapsed to judge of the permanency of these results or possible cures. In the near future, a study of the comparative effects, therapeutically, of various other medicaments, as emulsion of the iodide of silver, silver nitrate, protargol, hegonon, etc., will be reported.

The technic of this collargol or other drug injection of the seminal vesicle or operation of *vasopuncture* is very simple. With a good assistant holding and fixing properly the vas in the neck of the scrotum, the duct can be exposed after cutaneous infiltration anæsthesia in a very few minutes. If care is taken to strip it of its most intimate sheath and a proper sized needle is selected for the puncture, little difficulty should be experienced in injecting the medicament, using from four to five cubic centimetres. A Crile clamp is placed on the vas distal to the puncture, while injecting the collargol. A suture of catgut in the fascial sheaths and one in the skin completes the procedure. The patients invariably experience more or less pain in the perineum and not a few develop a chemical funiculitis of two or three days' duration. Indicative of therapeutic effect, the urine appears dark brown or black for a couple of days and shows macroscopically the presence of collargol for about a week; microscopically, brown crystals of collargol, particularly after massage, are seen for a much longer time. There is some evidence to show in a few cases that simple puncture and injection, as described, will render vasostomy, as described by Belfield,[5] unnecessary; moreover, the puncture method or operation of vasotomy may be repeated from time to time if desirable.

We have selected from our series of cases a few collargol radiograms typifying a number of conditions encountered. First, in studying the anatomy and relations of the normal seminal vesicles (Fig. 1), for the preparation and dissection of which we wish to thank Dr. Addinell Hewson, it will be observed in comparing the collargol injected anatomical specimen (Fig. 2) with the clinical cases following, that we have apparently graphic evidence of the presence of a sphincter of the ejaculatory duct, since only in the anatomical specimen is the collargol

visible in the duct. Observance should also be made of the relationship of the ureter to the seminal vesicle, since it will be appreciated how in the case of seminal pyovesiculosis or perivesiculitis, ureteral irritation or even urinary obstruction may supervene.

In summarizing our studies the following conclusions have been deduced:

1. Chronic seminal vesiculitis is a far more prevalent disease than the average physician surmises, and masquerades under a manifold symptomatology finding its expression ofttimes remote from the urinary tract; the inflammation is invariably due to a mixed infection, from which in its chronic state it is commonly impossible to isolate the gonococcus.

2. The disease, analogous to pus-tubes in the female in many respects, presents serious and similar problems from the stand-point of treatment, and is not accorded the consideration that its medical importance demands.

3. The particular treatment in any given case should depend upon the anatomico-pathological state of the vesicles, ejaculatory duct and vas deferens. This can be determined by proper vesicular palpation, massage and microscopical examination, supplemented when necessary by vasopuncture and collargol radiography.

4. Experienced massage will in the majority of patients suffice to effect cure in due time; in many, however, massage having proved ineffectual, convalescence may be accelerated by vasopuncture, vasostomy and direct medication of the seminal vesicles; in certain cases, not so few as may be imagined, seminal vesiculotomy or vesiculectomy should and must be performed if we are to cure or relieve these patients of their annoying symptoms.

5. Bilateral vasopuncture and collargol medication has resulted at least in the temporary cure of a number of cases of persistent chronic seminal vesiculitis.

6. Collargol radiograms in a series of normal and pathological cases have demonstrated, (*a*) by comparison *in vivo* and *in vitro,* the graphic portrayal of an ejaculatory duct sphincter; (*b*) the intimate relationship between the ureter and seminal vesicle, whereby ureteral irritation and urinary obstruction may occur in the event of an enlarged and inflamed vesicle; (*c*) the presence of stricture or obstruction of the vas; (*d*) congenital anomalies of the vesiculæ seminales; (*e*) inflammatory enlargements of the vesicles, especially loculated collections of pus or seminal pyovesiculosis.

THE TREATMENT OF BLADDER PAPILLOMA BY HIGH FREQUENCY DESTRUCTION

By Alexander A. Uhle, M.D.
of Philadelphia

The destruction of living tissue by the local application of the high frequency current has been used with success in the treatment of tumors of cutaneous surfaces, and accessible mucous membrane. Dr. Edwin Beer was the first to successfully employ this method in the treatment of bladder papilloma. The application of an electric current of high tension on living tissue, produces various changes from simple hyperæmia to carbonization; terms such as fulguration, desiccation, high frequency cauterization, and thermocoagulation, have been applied to these thermic effects. Fulguration, first described by Dr. de Keating-Hart, is merely the production of hyperæmia in an operative wound by a bombardment of electrical sparks, and is never used for the destruction of tissue. As this term is usually used, it is a misnomer, and destructive fulguration is used by some to differentiate it. Dr. William L. Clark, of Philadelphia, originated the method of treatment by desiccation, which can only be produced by static apparatus, and describes it as the thermic effect produced on living animal tissue, which is within the extremes of hyperæmia and carbonization. If the accurate caloric degree is produced, controlled and sustained, it causes "a rapid dehydration of the part desired to be devitalized, rupturing the cell capsule and transforming it into a dry mass." High frequency cauterization refers to the destruction of tissue by carbonization. Thermocoagulation is another term used to express the same process. These last two terms have been employed irrespective of their exact meaning.

The high frequency current for desiccation can only be generated by a static machine of high output fitted with the proper requisites, while the high frequency current which causes destructive fulguration, high frequency cauterization or thermocoagulation, is generated by a coil apparatus transformed by proper accessories. The monopolar Oudin current is the one preferred by most operators, but the bipolar Oudin current may be used. The D'Arsonval is usually employed as a bipolar current and produces the same effect, but is more penetrating. In the former the entire body acts as a capacity, while in the latter the current is concentrated by the application of another pole opposite the area treated. When these currents are generated by the static machine with Leyden jars of a certain capacity, the effect produced

upon the tumor seems to cause less blanching and carbonization, and the resulting necrosis is by a process of pulverization rather than sloughing.

It has been the observation of all surgeons that the operative treatment of bladder papilloma is unsatisfactory, on account of the frequency of recurrence. Since the high frequency treatment has been employed, recurrences have also been observed and the future may prove them to be as frequent as following operation, but the simplicity of application, the rapid destruction of small neoplasms with a few treatments, and the fact that the patient is not subjected to any of the inconveniences or dangers of an operation, recommend this method of treatment.

The technic is simple: A catheterizing cystoscope is introduced into the bladder, observing the usual precautions of asepsis. The bladder is washed clean and distended with one of the usual mediums, and a specially prepared and properly insulated steel or copper wire is introduced through the cystoscope in a manner similar to the introduction of an ureteral catheter. The electrode most commonly employed is made of a single steel wire or several strands of copper wire, properly insulated, of a size to fit the ordinary catheterizing cystoscope; about an eighth of an inch of insulation should be removed from the end of the electrode, which comes in contact with the tumor. Wappler has recently made a special electrode, which has the advantage of being more durable and less flexible, and the tip is protected by a special insulation to prevent fusing. It requires, however, a Garceau type of cystoscope for its use. The electrode is introduced through the cystoscope, and is brought into direct contact with the tumor tissue; the proximal end is attached to the terminal of the high frequency generator. The strength of the current is regulated according to the size of the tumor, the effect desired, and the proximity of the electrode to the bladder-wall. The application should not be painful. A number of applications at different points, of from ten to twenty seconds duration, have been recommended. It has been our practice to attempt the entire destruction of a small growth with one treatment, going over the entire tumor with one continuous application, interrupting the current only to change the direction of the electrode. In large growths, an effort is made to destroy at each treatment as much surface as possible, depending on the tolerability of the patient. The immediate effects observed are the production of small gas bubbles at the point of contact of the electrode with the tumor mass, and the blanching of the tissue. The tissue thus destroyed sloughs away in the course of

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

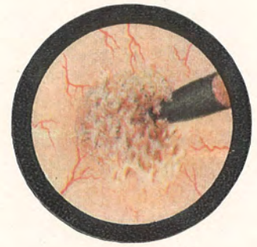


FIG. 6.

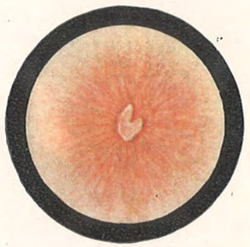


FIG. 7.

FIG. 8.

one or two weeks, and a cellular disintegration seems to continue for some time. In one patient we observed a rather rapid disappearance of a large papilloma in one month after one treatment, the actual sloughing having ceased in about ten days.

The frequency of treatment varies according to the size and density of the growth, and the local reaction. As a general rule, treatments should not be given more than once in a week or ten days. If marked vesical irritability follows treatment, it should not be repeated until the symptoms subside. Following the treatment of rather large tumors, the sloughing will continue for some time, and should be allowed to subside before another application is made.

The following is a brief report of the cases treated:

CASE I.—M. J. L., male, age thirty-four, referred by Dr. M. J. Leof.

In May, 1909, a suprapubic cystotomy was done for the removal of a large villous pedunculated papilloma, situated on the upper median portion of the bladder. The tumor, together with a portion of the bladder-wall, was removed. Recovery was uneventful. The patient returned for examination October 25, 1912, and stated that for two weeks he had frequent, urgent urination, with terminal hæmaturia. Cystoscopic examination showed a villous papilloma the size of a walnut, situated to the right of the median line, apparently in the line of incision, and a number of smaller papillomas on the right upper wall, and fundus of the bladder. Between October, 1912, and June, 1913, seven attempts were made to destroy the tumors, but only twice was it possible to bring the electrode in contact with the large tumor, because of its situation. Cystoscopic examination, October, 1913, showed a normal bladder. Cystoscopic examination, December 11, 1913, showed a recurrence of two small papillomas near the site of the former large growth (Fig. 1). One extensive application was applied to each of these tumors. Examination, January 27, 1914, showed the growths to have entirely disappeared, leaving at their former sites small hyperæmic areas (Fig. 2).

CASE II.—C. W. F., male, age thirty-eight, referred by Dr. John B. Deaver and Dr. W. F. West.

Date of first examination December 23, 1912. The patient complained of hæmaturia of two years' duration, following a fall from a horse. For several weeks following the accident, he suffered from a dull aching pain over the right kidney. Hæmaturia continued intermittently until September, 1912, when he had a severe chill, fever, and pain localized over the right kidney, accompanied by profuse hæmaturia, and was confined to bed nine days. Cystoscopic examination on the above date revealed four villous papillomas, the largest springing from the vesical mucosa, behind the orifice of the right ureter. Another on the left wall, a third on the base behind the interureteral ligament, and the fourth on the upper border of the internal vesical sphincter. A portion of the largest tumor was removed for miscroscopic examination, and found to be benign papilloma. High frequency current applied December 27, 1912, and January 23, 1913. Cystoscopic examination one month after the last treatment showed a normal bladder, both kidneys also normal. Examination January 6,

1914, one year after treatment: The bladder was found to be normal (Fig. 3), and showed a double opening of the left ureter, which was obscured by the papilloma.

Case III.—J. S., male, age fifty-eight, dye worker, referred by Dr. George Yeager.

Referred for examination June 23, 1913, because of intermittent hæmaturia of three months' duration. Cystoscopic examination showed a large villous, pedunculated papilloma of the left wall of the bladder behind the left ureter. A portion was removed for microscopic examination, and was found to be a benign papilloma. He received three treatments between June 23, 1913, and July 23, 1913, and was told to report for observation in a few weeks, but failed to do so. On December 2, 1913, in response to a letter, he returned for examination, and stated that he considered himself perfectly well. Cystoscopic examination showed the return of a small papilloma at the site of the former growth, which undoubtedly was not thoroughly destroyed by the previous treatments (Fig. 4). He received but one treatment, December 9, 1913. Fig. 5 shows the destructive effect of the high frequency current at the time of treatment; Fig. 6 shows a small denuded area of mucosa two weeks after treatment, and Fig. 7 shows the normal bladder seven weeks after treatment.

Case IV.—R. A., male, age forty-seven, referred by Dr. M. Abramovitz.

Referred August 22, 1913, for painless hæmaturia and frequent urination of six weeks' duration. Cystoscopic examination revealed a large villous papilloma occupying the entire right side and base of the bladder, extending forward beyond the internal sphincter into the deep urethra (Fig. 8), and a small papilloma on the left wall of the bladder. August 26, 1913, a portion of the tumor was removed and diagnosed benign papilloma, also received the first treatment on this date. He received two more treatments in the following six weeks. Cystoscopic examination, December 2, 1913, showed a normal bladder.

Case V.—J. J. S., male, age sixty, referred by and treated in conjunction with Dr. Wm. L. Clark.

Date of first examination, September 29, 1913. This patient suffered with frequent urination, and hæmaturia of a terminal type for six months. Cystoscopic examination showed a large sessile tumor on the left wall of the bladder, behind the left ureter, and surrounded by several small villous papillomas; this tumor had the appearance of a solid growth, and the pathological diagnosis was, that the tumor had the general appearance of benign papilloma, but in some places there was a tendency of the epithelium to invade the connective tissue, suggestive of malignancy. Seven treatments at weekly intervals were applied by a monopolar current from a static generator, devised by Dr. Clark. On November 26, 1913, about ten days after the last treatment, the tumor had entirely disappeared, but there was a roughening of the mucosa at the site of the large tumor. The patient has not been observed since.

Case VI.—J. M., male, aged fifty, referred by and treated in conjunction with Dr. Wm. L. Clark.

Date of first examination October 29, 1913. For several years the patient observed frequency of urination, and sensation of incomplete emptying of the bladder. In December, 1912, he noticed blood in the urine, since then he has had intermittent hæmaturia, usually lasting about a week, and never accompanied with pain. In October, 1912, a cystoscopic examination was made elsewhere,

Fig. 9.

Fig. 10.

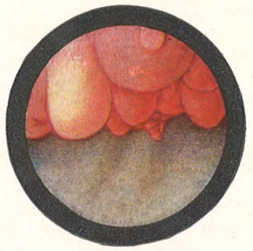


Fig. 11.

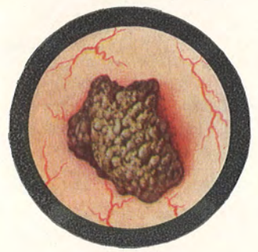


Fig. 12.

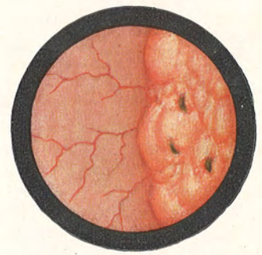
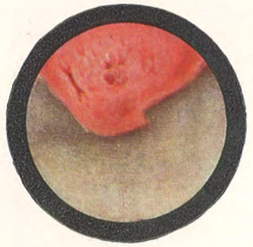


Fig. 13.



two papillomas were found and treated by high frequency destruction. Twenty-one applications were made at intervals of a few days. October 29, 1913, a cystoscopic examination revealed a villous papilloma the size of a hazel-nut on the upper left wall of the bladder, partly charred by the previous treatments, and a smaller sessile tumor, partly destroyed, on the base of the bladder, behind the right ureter. The bladder mucosa was congested. The prostate was not enlarged, and no strictures were found. There was considerable residual urine. October 30, 1913, complete desiccation of both tumors, with the assistance of Dr. Clark. Two weeks later, upon examination, found no evidence of the tumors. The mucosa was considerably injected. The patient is still under observation.

Case VII.—M. L., male, age fifty-eight, referred by Dr. T. LeBoutillier.

Hæmaturia observed for the first time one year ago, was intermittent for eight months, and constant for the past four months. Has constantly received medical attention. Two cystoscopic examinations were made by different observers, each of whom diagnosed a tumor. Since the last examination, four months ago, blood has been constantly present in the urine. Has slight loss of weight and marked anæmia. Cystoscopic examination, December 23, 1913, shows a large, sessile, non-villous tumor, occupying the entire left wall and fundus of the bladder (Fig. 9). The right wall is the seat of a peculiarly shaped tumor (Fig. 10). There is scarcely any part of the bladder larger than a silver quarter, which is normal. December 30, 1913, high frequency treatment, repeated January 15, 1914, and January 27, 1914. The patient is still under observation, the diagnosis is still in doubt.

Case VIII.—J. S., male, age fifty-one, moulder, referred by Dr. Harry Carmany.

Seven years ago the patient noticed frequent painful urination with hæmaturia and was examined for stone. This condition continued with periodic remissions to October, 1913. A cytoscopic examination by Dr. Carmany revealed tumor of bladder, and the patient was referred, October 15, 1913, for high frequency treatment. Examination on this date showed an extensive ulcerating tumor on the left wall of the bladder covered with blood clots. The base of the tumor was considerably infiltrated. A clinical diagnosis of carcinoma of bladder was made from the appearance of the growth, and was corroborated by microscopic examination of a portion passed. He received three treatments at weekly intervals, and two weeks later a cystoscopic examination showed a dense charred mass covered with phosphatic deposit lying free in the bladder (Fig. 11). The tumor was much reduced in size. Fig. 12 shows the condition of bladder-wall. Following this examination the patient suffered from marked hæmaturia and tenesmus, and was confined to bed for a week, during which time he passed a number of large clots. After this all symptoms disappeared and he considered himself cured. Cystoscopic examination, December 29, 1913, showed the tumor to have considerably increased in size, with all appearances of malignancy (Fig. 13). Patient has no symptoms, and has gained considerable in weight. He is still being treated.

In addition to the last case of carcinoma, three other patients with extensive malignant involvement of the bladder were treated, all were markedly cachectic. Two patients received two thorough treatments,

and one three. Bleeding was controlled for a few weeks, in each patient, but a fatal termination took place in all within a few months from the time of the first treatment.

A brief analysis of these cases shows that hæmaturia, intermittent or constant, is the most prominent, frequently the only symptom present. It is also interesting to note that it was of a terminal type in two cases. That hæmaturia, unfortunately, is still regarded as a disease, and not a symptom of some condition, usually a severe one, of some part of the genito-urinary tract, is evidenced by the fact that most of the patients were treated internally for some time, and no attempt was made to definitely locate the cause and site of the hemorrhage. The symptomatology is at times misleading, as symptoms may be referred to one organ, when the actual source of disease is another.

High frequency destruction of benign growths of the bladder is a very effective method of treatment, even when the bladder is extensively involved. Recurrences are frequent after any method of treatment, therefore cystoscopic examinations at stated intervals should be advised in every case of bladder papilloma. The immediate effects in malignant growths of the bladder are apparently good, as is shown by the diminution in the size of the growth, and cessation of hemorrhage, but a cure should not be expected; at least, this has been our observation with these few cases.

Dr. B. A. Thomas said that his experience had covered between twelve and fifteen cases and about 35 or 40 tumors; the reason for this excess of tumors over cases is because in one case in which the bladder was markedly trabeculated, there were no less than twenty tumors, from the size of a millet seed to that of a grape, scattered universally throughout the bladder. Even in that case it was possible to remove all of the tumors by this method. Perhaps a word should be said concerning the static machine *vs.* the coil in the generation of the high frequency current. In the first case treated by him the static machine was used, Dr. Wm. L. Clark supplying the electricity. That was in September, 1910, and was the first case in Philadelphia subjected to this form of treatment. The result in this case, together with the reports of a number of subsequent cases, was published in *Surgery, Gynecology and Obstetrics,* April, 1912.

Recently, in every case he had used the coil to generate the current, and so far as he could see, the effect is just as good as with the static machine, yet Dr. Clark claims the desiccating current can only be obtained with the static machine. With regard to recurrences, they have

not been as frequent as by incisional treatment, but in one case there have been two recurrences. By the high frequency current, when recurrences do occur, and he believed they were not prone to do so readily, the condition is amenable to a repetition of the same treatment, while there is a limit to the number of cutting operations which a patient can stand.

Dr. Hilary M. Christian called attention to the point brought out by Dr. Uhle regarding the importance of looking after cases of hæmaturia, and regarding it not as a disease but as a symptom of some underlying condition, almost always some condition in the bladder itself. It is most difficult to determine malignant from benign papillomata of the bladder. In his opinion two or three of these cases recorded by Dr. Uhle as malignant tumors had better have been left alone had they not been treated by the high frequency current. He would have liked to have heard more about the subsequent condition of these patients. Are they symptomatically cured, or are they really cured? His own operative work on papilloma of the bladder had been unsatisfactory, and if this method opens up any real field for radical work it is certainly promising.

Dr Thomas C. Stellwagen, Jr., said that in the clinic of the Jefferson Hospital Professor Hiram R. Loux and he had had several cases of papilloma of the bladder. The high frequency current used to treat these cases was generated by the coil type of apparatus. They had seen Dr. Clark demonstrate his static machine and they believe there is a difference in the mode of action of the current from the static machine and that from the coil machine. The current generated by the static machine will desiccate soap through a layer of delicate tissue paper without apparent injury to the paper. The current from the coil will not do this.

A completely practical electrode is necessary for intravesical work. This they have not as yet found. They have used the one made by Wappler, to which Dr. Uhle refers. Two of them have lasted but a short time. The mechanical principle of this instrument is practical, but the insulation has been unsatisfactory. The amount of current necessary to destroy an intravesical growth is apparently sufficient to puncture the insulation.

The treatment of papillomata of the bladder by fulguration is, in many cases, a radical and curative procedure. In the afore-mentioned series of cases there are four in which the growth has not returned after two years. Fulguration is particularly applicable to growths

adjacent to or involving the trigone. In this situation a resection involves very radical surgical procedures, such as transplantation of ureters, which are associated with a high mortality rate. Papilloma of the fundus, or dilating portion of the bladder, involving the deeper layers of the viscus and undergoing ulceration and necrosis, should, in our opinion, be removed by partial cystectomy. The involved wall and a portion of the apparently healthy surrounding tissue should always be resected with the growth. In such cases it does not seem possible to desiccate or fulgurate the affected area without danger of perforating the bladder and inducing peritonitis. To temporize with such a condition aggravates it and stimulates growth. These factors increase the danger of carcinomatosis. In Prof. Loux's Clinic such a case died of metastasis to the liver and kidneys. In this clinic he had recently assisted in the resection of two papillomas, both of which involved the deeper layers of the bladder. In neither of these does he believe that fulguration would have sufficed. In one of these cases, after six months, there was a small recurrence in the line of incision; this has been treated by the Oudin current with some success.

It is the practice of Prof. Loux to have every case of partial vesical resection carefully watched for any return of the growth. Upon the slightest intimation of any recurrence the area is fulgurated. This method they believe to be the most radical and the one that offers most for the subsequent cure of the case. It does not seem good surgery to allow a carcinomatous area to remain and expect no recurrence. Why could not the general surgeon expect a similar result in other regions such as the alimentary canal? He does not, and the man who cures cancer of the stomach is the radical surgeon; so the man who cures cancer involving the deeper structures of the bladder is the radical surgeon.

Dr. E. H. Siter said that he had had quite a little experience with fulguration and high frequency currents in papilloma of the bladder, and in answer to Dr. Christian's question, he did not think it would cure carcinoma of the bladder, but it reduces the hemorrhage and lengthens life. As to papilloma, it removes it. Perhaps Dr. Stellwagen has been in too much of a hurry, expecting to remove the papillomata in one application. One must have patience with the fulguration and the high frequency current must be applied a number of times. As a palliative measure, it has great advantages over cystectomy, in that the patient has not been subjected to the shock of an operation and the result is the same—that is, removal of the papilloma. Much cannot be expected of this treatment unless it is persisted in faithfully and patiently.

Dr. John L. Laird called attention to the fact that the apparently spontaneous disappearance of small papillomata on the treatment of adjacent growths is of frequent occurrence, and renders the direct treatment of such growths practically unnecessary. Whether this effect is due to transmission of the spark or its action through the intravesical medium or to trophic changes in the bladder wall, affecting the blood supply of the smaller growths, is not quite clear. He now had under treatment a case exemplifying this action. The patient was operated upon three years ago for a single large papilloma. There was a recurrence in the form of from thirty to forty smaller papillomata scattered over the entire bladder wall. At the first application of the high frequency current, all the larger growths on the left wall were treated. On examination two weeks later the larger growths had either disappeared or become much smaller and the smaller untreated tumors had entirely disappeared. Another illustrative case was that of a man with a diffuse papillary, villous growth extending over the anterior half of the trigone and into the deep urethra beyond the verumontanum. One treatment of a number of applications, certainly insufficient to reach directly all the tumors, produced a complete cure.

Dr. A. A. Uhle (in closing) agreed with Dr. Thomas that the results obtained with the coil apparatus are as satisfactory as with the static apparatus. There seems to be a difference in the immediate effects produced; with the static machine there is less sloughing and the detritus is more granular. Relative to the diagnosis one cannot state definitely whether the growth is malignant or benign. The appearance of the growth, the character of its base, and the condition of the surrounding mucous membrane are factors which must be taken into consideration. A portion of the growth can very readily be removed for microscopic examination. It should also be remembered that benign tumors frequently become malignant if not removed, and that malignant recurrences frequently follow the removal of a benign growth. Early treatment is therefore essential.

In reply to Dr. Christian relative to the condition of these patients after treatment he could state that the benign tumors were all cured with the exception of one who is still under treatment. The cystitis was aggravated in a few cases, particularly in one who had received 21 previous treatments elsewhere. Atony of the bladder was responsible for this condition. The cystitis was relieved in a short time by appropriate treatment.

CLINICAL MANIFESTATIONS OF POLYPS OF THE MALE URETHRA

By Alexander Randall, M.D.
of Philadelphia, Pa.

The question of the etiology of many of the chronic symptoms that a urologist is confronted with is often quite baffling. One continually finds one's self asking whether or not he understands exactly why he is persevering in a certain form of treatment and only too often the history gives telltale evidence that routine or surmise is the controlling factor. The day of treating in the dark, of feeling for a diagnosis, of deep instillations, and bulbous bougies, is fast fading before the light of visual endoscopic examination. The day of the "seeing eye" is superseding its less accurate, though valuable brother, the "feeling touch."

The subject herein treated is but another link forged to the chain of definite knowledge and pathology which may aid in the obtaining of an exact diagnosis in some of the apparently reasonless cases of chronic symptoms met with in urological work.

When one considers the frequency with which caruncle is found and diagnosed in gynæcological work, one cannot but wonder if a similar and analogous condition does not occur in the male. Yet a survey of the literature on the subject leads to the conclusion that though polypoid proliferation of the male urethra has been described, the frequency of the finding in no way keeps pace with the occurrence of caruncle in the female. While engaged in an active endoscopic clinic it was my opportunity to observe three cases of polyp of the male urethra in the short space of one month, and subsequent close observation soon raised this number, in the space of a little over a year, to nine cases, an analysis of which has appeared elsewhere[1] with especial attention given to their histological structure. I am now able to add five further cases to my experience. That these observations are not unique, I feel sure, for I find no less an authority than Oberlaender making the statement, twenty-five years ago, that he believed that urethral tumors in the male occurred as frequently as bladder tumors, or as caruncle in the female, and blames the apparent discrepancy on the lack of endoscopic study.

Etiology.—There is little to be said on the cause of such growths.

[1] *Surgery, Gynecology and Obstetrics,* November, 1913, p. 548.

Irritative conditions probably play an important part, as the tissue shows in some cases very active proliferation. The irritant undoubtedly may vary, for though the majority give a history of an antecedent gonorrhœa yet 4 patients denied the previous existence of any acute urethral discharge. That the histological structure varies suggests the possibility that the causes may likewise be of different natures.

Pathology.—Microscopic study of these polyps demonstrates that their structure varies markedly. Some are of loose fibrous tissue, with here and there a stray muscle bundle, and with blood-vessels coursing in the long axis of the growth. They are covered with an epithelium in no way differing from the normal mucosa of the urethra. In fact, the structure of this type of polyp is similar to that of the so-called mucous polyps as they occur elsewhere in the body. Others are definitely villous and active proliferation of papillary outgrowths is easily demonstrated. A third group presents the picture of enclosed glandular acini and deep infolding of the mucous membrane. In no case was malignancy suspected or demonstrated. With these findings at hand it was interesting to note that men studying the histology of caruncle in the female were also finding that they had to subdivide them into groups or types, whose histology varied (Williamson and Attlee).

Without troubling you with a close analysis of the pathology and histology of these specimens, nor the reasons why I have chosen so to subdivide them, I will present them classed into three groups, as follows: 1, Benign fibrous polyps, seven cases; 2, benign villous polyps, two cases; 3, benign glandular polyps, five cases.

Case I.—No. 1378. Age twenty-nine. Admitted April 7, 1912. Denies venereal infection. Complains of a slight discharge, a stinging pain during urination located at the penoscrotal junction, and also under the glans. He has pain at no other time and in no other place. These symptoms have existed for the last three or four years. Glass No. 1 and No. 2 clear. Bulbous bougie No. 27 F. detects an "infiltration" at about two and a half inches from the meatus.

July 3, 1912. Patient has been regularly treated, during the last three months with sounds, and has been twice cystoscoped, the bladder being pronounced negative. *Endoscopy:* Posterior urethra tender, colliculus is nodular and slightly irregular, walls of the urethra are injected and reddened. Utricle lies gaping in the midline. Silver nitrate application. Anterior urethra at about the suspensory ligament presents a polyp, hanging from the two o'clock aspect of its lumen; it is approximately one and a half centimetres long by one-half centimetre broad. Its walls are smooth. Removed with an endoscopic rongeur; 20 per cent. silver nitrate solution applied to its place of attachment.

July 11, 1912. *Endoscopy:* Site of tumor appears œdematous and slightly strictured, probably due to the caustic. No apparent growth.

July 25, 1912. *Endoscopy:* Posterior urethra normal. Area in anterior urethra that was cauterized is slightly strictured, due to œdematous mucous membrane.

August 30, 1912. Patient has been getting weekly dilatations with sounds and massage of the strictured area. *Endoscopy:* Posterior urethra normal. Site of polyp's growth much better and walls are but little thickened; central point is slit-shaped.

September 3, 1912. Glass No. 1 and No. 2 clear; no discharge; symptoms all gone.

Diagnosis.—Benign fibrous polyp.

Case II.—No. 58. Age ——. Admitted August 12, 1912. History of previous venereal infection not given. Trouble of five years' duration. Complains of pain at the onset of urination, some pain and discomfort in the perineum and suprapubic region. No other urinary symptoms. No discharge. Never masturbated or passed any blood; no sexual disturbance except nocturnal emissions at least once a week.

August 12, 1912. *Endoscopy:* Colliculus very tender and three times normal in size, back of the caput on the left superior wall of the urethra at about the two o'clock aspect of the lumen is a polypoid protuberance, white walled and distinct in color from the surrounding engorged urethral mucous membrane. It is about 6 mm. long and can be moved as if quite pedunculated, yet feels firm and stands outright from the wall. Seized with the rongeur and removed with some difficulty because of its toughness. Base cauterized with the silver nitrate stick. Anterior urethra normal. This patient has been lost to subsequent observation.

Diagnosis.—Benign fibrous polyp.

Case III.—No. 1144. Age forty-four. Admitted December 29, 1912. Has had gonorrhœa several times and now has a profuse discharge again. There is frequency and urgency of urination present, but no hæmaturia. Glass No. 1 and No. 2 cloudy. Received regular treatment for acute urethritis until the middle of May, at which time he had still a slight morning discharge, but no gonococci were present. Glass No. 1 slightly cloudy and glass No. 2 clear. The prostate was slightly indurated and fixed, with a few adhesions, not enlarged, not tender; prostatic secretion showed a few pus cells. No. 29 F. sound passes to the bladder with ease.

May 24, 1912. *Endoscopy:* Pendulous urethra normal, bulbus urethra shows marked infiltration and œdema, mucous membrane lustreless and quite thickened (beginning stricture). In the membranous urethra is a small polypoid growth arising from the eight o'clock aspect of the urethral lumen; same was successfully removed with a curette.

July 28, 1912. Patient has continued soundings and to-day his urine is quite clear.

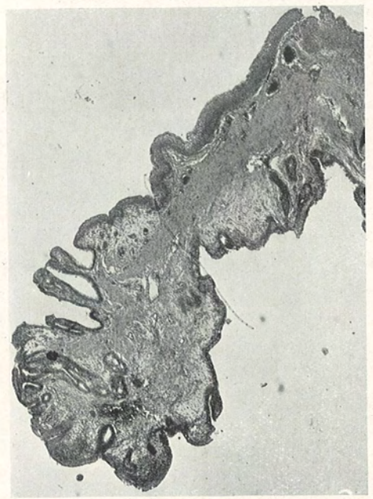
Diagnosis.—Benign fibrous polyp.

Case IV.—No. 564. Age thirty-one. Admitted February 19, 1913. Gonorrhœa five and seven years ago, no venereal sores. Complains that since "strain" two years ago he has a small swelling on the under side of the penis. This has not varied in size until three weeks ago, when it seemed to get larger and harder; and at the same time he first noticed a slight discharge. Urination was painful and it gave him a stinging sensation before its onset. Has seen

Fig. 1.

Specimen removed from Case II. It is a perfect example of benign fibrous polyp, showing the thin epithelial covering, the loose connective-tissue stroma and the blood-vessels. The constriction at the base is due to the bite of the rongeur. There is also a small area of round-cell infiltration significant of an infected gland follicle.

FIG. 2.



Example of benign villous polyp showing rather active papillomatous outgrowths. Specimen removed from Case V.

FIG. 3.

The proliferating villi in specimen removed from Case V under high magnification, showing delicate structure and definite papillomatous nature.

FIG. 4.

Specimen of benign glandular polyp removed from Case VII, showing a score or more of distended gland acini. The epithelium of the lumen of these glands shows no proliferative tendency. Some of the acini are markedly distended with a clear secretion.

FIG. 5.

Specimen removed from Case IX, showing active glandular hypertrophy with infolding of the walls of the acini. The picture closely simulates that of prostatic hypertrophy though of a much more delicate structure. The black area about the periphery shows the effect and penetration of 20 per cent. silver nitrate application.

no blood and has no chordee. There is no discharge visible. Glass No. 1 and No. 2 clear. Under the urethra is quite a hard nodule the size of a large pea and about one and a half inches from the meatus.

Endoscopy: In the region of the tumor a nodular swelling arises into the field from the floor of the urethra; the mucous membrane over it is pale and glassy, but not broken at any point. Just posterior to this area is a small pedunculated polyp standing upright from the floor of the urethra and about 8 mm. in length; it was seized with the rongeur and removed. The tumorous mass was twice deeply incised with an endoscopic knife from the urethral aspect, but no fluid was seen to exude.

February 28, 1913. *Endoscopy:* The nodule is possibly one-third smaller in size on external examination. From the urethral aspect the site of the polyp is covered with a lineal scar, while the point of incision into the mass is ragged and slightly ulcerated. This patient subsequently developed a para-urethral abscess, that was successfully opened and with its cure all symptoms abated.

Diagnosis.—Benign fibrous polyp.

Case V.—No. 1493. Age fifty. Admitted May 28, 1912. Has been treated elsewhere for a chronic urethral discharge and a "stricture," for the last two years. Complains of a "sensation" in the urethra, a mucoid discharge, and diminished sexual desire. *Endoscopy:* Posterior urethral walls are engorged. Colliculus is irregular and suggestive of some proliferative condition; it is hardly tender to the touch. Lightly curetted, and a protargol application. Anterior urethra shows signs of old sounding, being sclerosed in places and the lumen cavernous.

June 10, 1912. Says that he feels better and that he had an erection last night.

Endoscopy: Piece removed from the irregular area as it suggests a polypoid proliferation. Silver nitrate application to the remainder.

June 17, 1912. Since the last treatment the patient has had a most successful coitus, "as of old," he says, with a good strong erection and orgasm. *Endoscopy:* For the first time the place from which the growth was removed is definitely oriented and the ragged point proven to be about one-half of one cm. in front of (distalward to) the colliculus on the floor of the urethra, it was still slightly irregular and was touched with silver nitrate.

June 25, 1912. All symptoms gone and the patient reports himself as well. *Endoscopy:* Area again proven distalward to a slightly sclerosed colliculus and is still rough and crater-shaped, of about 5 x 5 mm. in extent. Cauterized.

Diagnosis.—Benign villous polyp.

Case VI.—No. 27. Age twenty-six. Admitted August 1, 1912. Gonorrhœa one year ago. Complains of pain suprapubically, slight frequency of urination and a slight glassy discharge from the urethra. Urination otherwise normal, sexual power and intercourse normal. Glass No. 1 and No. 2 slightly cloudy. Prostate is slightly indurated and very tender in the midline. Seminal vesicles negative. Prostatic secretion shows about 25 per cent. pus cells, also corpora amylacea and granule cells. *Endoscopy:* Colliculus enlarged, glary, sodden and lustreless; œdema is marked as is also tenderness. Silver nitrate applications. Anterior urethra normal.

September 10, 1912. *Endoscopy:* Still having pains. Colliculus smaller,

area about and above the utricular orifice is bilobular and pouting. Silver nitrate application.

October 1, 1912. *Endoscopy:* Posterior urethra about the same, colliculus a little smaller. Still having pains. Put on bi-weekly prostatic massage.

November 12, 1912. Discharge gone, but still having pains.

November 26, 1912. Colliculus still bilobular as above noted, appearing like two linked sausages above the utricular orifice. Iodine application.

January 29, 1913. Patient has been getting prostatic massage fairly regularly, with the subsidence of all symptoms except the pains. He states that the only relief that he has had from the pains has been after the urethroscopic application. *Endoscopy:* The apex of the colliculus appears as above noted; the protuberance completely removed with the endoscopic rongeur.

February 5, 1913. Has been free of pain for three days. *Endoscopy:* Caput is ragged and bleeds easily, but no protuberance visible. Silver nitrate application.

February 12, 1913. Has been perfectly well and free of all pain for the past week.

May 3, 1913. No symptoms present.

September 25, 1913. *Endoscopy:* Colliculus normal in outline and color. No sign of any proliferative growth. Patient is practically well though still under observation for chronic prostatitis.

Diagnosis.—Benign villous polyp.

Case VII.[2]—No. 1913. Age twenty-seven. Admitted April 30, 1912. Complains of "impotence" due to premature ejaculation, and poor erections. Sexual excitement without gratification during a number of previous years. Denies venereal disease. Urination is normal. Subject to pains across lower back. Prostate is quite indurated and adherent, its secretion contains a quantity of pus cells.

April 30, 1912. *Endoscopy:* On the apex of the colliculus is seen a prominently projecting polyp, standing upright and of fairly firm attachment and structure. It is situated a little to the right of the midline, about ½ cm. back of the mouth of the utricle, and is approximately 14 x 8 mm. in size. It was seized with an endoscopic rongeur and removed. Its point of attachment was cauterized with a silver nitrate stick. The remainder of the urethra is normal.

June, 1912 (from a letter). Following the removal of the polyp in this case the patient's pains disappeared entirely, though the sexual symptoms appear to have remained unimproved.

Diagnosis.—Benign glandular polyp.

Case VIII.—No. 542. Age thirty. Admitted February 10, 1913. Gonorrhœa five years ago with a gradual subsidence of the acute symptoms, but the continuation of a morning discharge to the present day. Has occasional frequency of urination, no pain, no blood. Nocturnal emissions always twice a week, often twice per night, and sometimes three or four nights in succession. Before he acquired gonorrhœa he would have a pollution once in three weeks, rarely oftener, and one year after the urethritis was contracted he began to have

[2] I am indebted to Dr. A. B. Cecil, now of Los Angeles, Cal., for this case, which he observed while in the service of Dr. H. H. Young, of Baltimore, Md.

them with increasing frequency until the present time. Glass No. 1 and No. 2 slightly cloudy (phosphates); prostate is small and not adherent, its secretion contains a few pus cells only. *Endoscopy:* Colliculus is normal in size and contour. Posterior urethral walls redden and bleed easily. One and a quarter centimetres in front of the colliculus and arising from the five o'clock aspect of the urethral lumen is a mushroom polypoid growth, low-lying and fairly well fixed. Excised with a curette and the base cauterized.

February 28, 1913. *Endoscopy:* Scar where growth was removed is one centimetre in front of the colliculus, the latter is in good condition. Anterior urethra is speckled with lenticular-shaped brown spots, especially along the roof of the urethra; they are undoubtedly infected glands, stained from the prolonged use of protargol. Some still exude a small droplet of purulent material.

March 6, 1913. *Endoscopy:* Has not had an emission during the last three weeks; has had no pain except a slight burning during urination. On examination, site of excision and the colliculus are normal, slight excretion of prostatic fluid (showing normal elements) into the tube. Treatment of chronic anterior urethritis to be continued.

Diagnosis.—Benign glandular polyp.

Case IX.—No. 166. Age thirty. Admitted September 18, 1912. Denies any venereal disease. Complains of a pale, glassy urethral discharge in the morning, of nine months' duration. Two months ago he passed some blood at the end of the act of urination. Has several preputial warts. Prostate is normal on rectal examination and its secretion is normal. Glass No. 1 contains a few mucoid shreds; No. 2 is clear. Bulbous bougie detects no stricture in the anterior urethra. Cystoscopy attempted but profuse bleeding renders observation impossible.

September 24, 1912. *Endoscopy:* Anterior urethra is normal. Posterior urethra is highly congested and the landmarks are difficult to observe. Colliculus does not appear to be enlarged, but everything is intensely engorged and bleeds on the slightest touch. Silver nitrate application.

September 30, 1912. *Endoscopy:* Condition about the same. Colliculus appears ragged. Silver nitrate application.

October 11, 1912. *Endoscopy:* After swabbing the posterior urethra with 20 per cent. silver nitrate the landmarks could be made out for the first time. What had been taken for the colliculus on previous occasions is a polyp situated about one centimetre distalward from the former, arising from the floor of the urethra in the midline; it is approximately 8 x 6 x 4 mm. in size; it was removed with the rongeur and the base not treated. External warts fulgurized.

October 15, 1912. *Endoscopy:* Area from which the growth was removed is slightly œdematous and about one centimetre distalward from the colliculus; it is healing nicely and nothing done to it. External warts have vanished.

Diagnosis.—Benign glandular polyp.

Case X.—No. 48. Age thirty-four. Admitted April 29, 1913. Contracted gonorrhœa ten years ago and has had recurrent attacks of a gleety discharge since. Notices shreds in his urine. Has recently recovered from an acute urethritis during which gonococci were demonstrated. (For certain reasons this man may be considered to be either auto-infectious or to receive reinfections from his consort.)

April 29, 1913. Smear from urethra shows many organisms, no gonococci.

Endoscopy: Tube passed after careful irrigation. Colliculus twice normal in size, appears sodden and firm, not tender. Painted with 20 per cent. silver nitrate. Anterior urethra show a follicular urethritis. Treated.

May 5, 1913. No discharge; urine clear except for one mucous shred. *Endoscopy:* Colliculus smaller and can now be entirely seen. It is paler and presents a most peculiar appearance. The apex is formed by a watery, jelly-like mass of clear translucent tissue, about this mass is a constricting ring of firm tissue, continuous with, and appearing the same as, the mucous membrane of the colliculus. This ring or edge can be raised on a probe's point and the whole resembles an acorn in its enclosing jacket. I should judge that it is a hypertrophic proliferation inside the utricular orifice and projecting from it.

May 12, 1913. *Endoscopy:* Same peculiar protuberance from the utricular orifice. Rongeur slipped under either lip and the mass removed with two bites. It was quite friable and caused but little pain. Amount removed measured approximately 10 x 7 x 5 mm. Colliculus cauterized.

June 2, 1913. Patient has no discharge, no subjective or objective symptoms. Urine clear. *Endoscopy:* Area about utricle still looks decidedly out of whack, yet I hesitate to do more than to give it a severe cauterization. Is to take one month's rest.

October 24, 1913. Has been perfectly well to date with the exception that for a few days he noticed a urethral discharge while he was also suffering from a severe cold. Urine clear. *Endoscopy:* Colliculus is pale, slightly sclerosed and no sign whatever of the old growth. Utricular orifice is slit-like, entered and washed out.

November 11, 1913. No signs or symptoms since last visit. No discharge, no abnormality of urination or sexuality. Prostate normal.

Diagnosis.—Benign glandular polyp, showing profuse proliferation.

CASE XI.—No. 81. Age twenty-one. Admitted November 12, 1913. Complains of pains in legs and arms, insomnia, nocturnal emissions. Has had gonorrhœa once, the discharge leaving him seven months ago; it was complicated with a right-sided epididymitis. For the past months has suffered from a marked feeling of lassitude, and difficulty to keep asleep, waking at about 2 A.M. and tossing about for the remainder of the night. Nocturnal pollutions became frequent three to four months ago. Now has three or four per week and as often as twice per night; no pain or blood associated with them. No discharge from the urethra.

November 17, 1913. Urine clear. One pollution three nights ago. *Endoscopy:* Urethra very sensitive and the passage of the instrument is arrested in the posterior urethra. The endoscope reveals a thick, dull, engorged and tense colliculus, about four times the normal size. Silver nitrate application.

November 24, 1913. *Endoscopy:* Colliculus less congested, and decreased in size. Suggests an intra-utricular growth, but this cannot be definitely made out because of the size. Cauterized.

December 8, 1913. One pollution in the last week; pains all gone; sleeping better. *Endoscopy:* Colliculus still larger than normal, dusky and thick looking. The intra-utricular growth again observed; it can be pushed back within the utricle, whereupon the lips close and appear as a normal orifice. Severely cauterized with the caustic stick.

December 17, 1913. Has been free of all pains, sleeping decidedly better, and only one pollution during the last week. *Endoscopy:* Colliculus still larger than normal and the growth protruding from the utricular orifice. Probe can be passed almost entirely around it. Alligator forceps carefully placed on either side of the mass, and the same removed in one piece. Base cauterized.

January 17, 1914. Sleeping practically normally. No pains and has had one pollution in the past month.

Diagnosis.—Benign glandular polyp, showing active proliferation.

CASE XII.—No. 1143. Age thirty. Admitted October 28, 1912. Has had gonorrhœa three times without any complications. Married. In 1910 gradual impairment of sexual power began and for the last nine months has been practically impotent; a slight erection is possible but introitus cannot be accomplished. There is a marked prostatitis present, and the prostatic secretion is loaded with pus cells. Patient put on a course of prostatic massage, which was persisted in for four months. During this time he had a few endoscopic applications of silver nitrate. His impotence has been but slightly benefited and on February 4, 1913, he stated that he thought that the urethroscopic cauterization did more good than anything else. No discharge from the urethra.

February 11, 1913. *Endoscopy:* Apex of the colliculus appears practically normal, but back of it and arising from the right side of the verumontanum is a small polyp, about 6 x 3 mm. in size. It was cauterized.

February 18, 1913. Feels better. *Endoscopy:* Polyp still present and not decreased in size. Polyp removed with endoscopic rongeur.

March 15, 1913. Urine clear. Feels much better. Has sexual desire and erections every night and often during the day. Better and stronger than in the last two years.

April 4, 1913. Sexual power remains good. Intercourse can be accomplished, and though somewhat weak, orgasm is present.

Diagnosis.—Benign fibrous polyp.

CASE XIII.—No. 323. Age sixty-nine. Admitted November 25, 1912. This patient entered the hospital at the above date and was found to be suffering with benign hypertrophy of the prostate for which he was operated upon in December, 1912, by suprapubic prostatectomy. Since the operation and his complete recovery, he has been complaining of an itching sensation in the perineum, associated with an urgency and slight frequency of urination, having to still get up once per night.

January 17, 1914. *Endoscopy:* Posterior urethra is quite roomy, its walls are slightly congested. Into the lumen of the tube hangs a long thin polyp of at least 1½ cm. in length. It is attached to the right lateral wall of the prostatic urethra. Removed with the rongeur.

Diagnosis.—Benign fibrous polyp.

CASE XIV.—No. 308. Age thirty-two. Admitted November 11, 1912. Complains of a delay at the onset of urination, which latter requires force to start, stream of poor size and dribbling at the end of the act. There is a slight discharge at times, though patient has never had an acute urethritis. No frequency, no blood. Glass No. 1 and No. 2 slightly cloudy. Treated for chronic urethritis during December, 1912, and again from July, 1912, until September 24, 1913. *Endoscopy:* Posterior urethra back of the colliculus presents a gen-

eralized bulbous swelling, this is especially marked about the vesical orifice; condition taken for cystitis colli proliferans œdematosa (Zechmeister and Matzenauer). Iodine application.

October 2, 1913. Urine clear. *Endoscopy:* Posterior urethra better; the swelling is glassy and the blebs rounded and tense. There is possibly a polyp on the floor of the urethra between the colliculus and the vesical orifice. Silver nitrate application.

October 15, 1913. Colliculus but slightly larger than normal; on the left of the urethra, back of the apex of the colliculus and arising from the sulcus between it and the urethral wall, is a pale polypoid growth of about 8 x 3 mm. in size; it is freely movable. Removed with the rongeur. Silver nitrate application.

November 3, 1913. *Cystoscopy:* The internal vesical orifice is encircled by polypoid proliferations lying within the sphincter. These were fulgurized with the high frequency current.

November 10, 1913. *Cystoscopy:* Remaining proliferations again treated with the high frequency current.

November 26, 1913. *Endoscopy:* Vesical neck appears perfectly clean of all proliferative growths. It is slightly irregular but no polypoid masses.

Diagnosis.—Benign fibrous polyp.

Symptomatology.—Although presenting these cases divided into three classes according to their pathological structure, it in no way signifies that such groups present differences in the symptoms that they give. There is no grouping of symptoms that may be called pathognomonic of urethral polyp.

Discharge: In this series seven patients gave a history of a previous gonorrhœa, four denied having had an acute urethritis; in three the history on this point is lacking. However, nine complained of a chronic discharge, generally of a mucoid nature, in none of which was the gonococcus found. Four were recovering from their first, or a recurrent acute attack, and four claimed that the acute urethritis had gradually subsided and for varying periods of time a gleety discharge had been present. In the patients who complained of no discharge the growth was in the posterior urethra.

Hemorrhage: Urethral bleeding was present in but one patient as a spontaneous occurrence, though several of the patients had had bleeding after instrumentation. This is a point that may be emphasized, that spontaneous bleeding is rare, judging from this series of cases.

Pain: Various pointed, reflex, and radiating pains, sometimes dull and at others sharp, some during and others only after urination, the majority presenting vagrancies too numerous to mention, were practically always present. This may be explained on various grounds, but

especially must be borne in mind the type of character and the duration of symptoms presented by these chronic invalids. It is significant that two complained of a sensation as though a foreign body were present and one graphically described a thrill which he felt in the anterior urethra during urination. Pain occurring at the onset or the end of urination speaks for a lesion in the posterior urethra, as does also frequency and urgency of urination. But the majority have vague pains, itching or sticking sensations, difficult to locate exactly, but situated at times in the region of the perineum, often suprapubically, rarely as though in the rectum. These rather definite pains are frequently associated with sacral aches, "tired backs," and radiating pains to the hips and thighs.

Sexual: Six of these patients complained of abnormalities in their sexual life. Polyps when occurring in the posterior urethra nearly always cause some disturbance in the sexual sphere. This is hardly to be wondered at when one considers the irritation such a condition would excite in the neighborhood of the sensitive verumontanum. This latter structure, supposed to be of erectile tissue, under such an abnormal stimulus would be the point of starting the sexual cycle, so that frequent pollutions, such as presented by one of these cases, where they occurred three or four nights in succession, often twice in one night, and always three times a week, are not strange. The symptom of premature ejaculation similarly may be due to an added irritant sending centripetal stimuli to the ejaculatory centres. Likewise, decreased sexual power, amounting at times to partial impotence, may be accounted for by the inertia following a long period of irritation to the point of exhaustion, not infrequently seen in the latter stages of long standing cases. Of the 6 patients who complained of various sexual symptoms, in every one the growth was in the post-urethra.

Technic.—The mode of cure used in these cases has been that of radical removal. In some I tried repeated cauterization with silver nitrate, but it proved inadequate. In others the high frequency current was tried and not only by this means were some beautiful specimens, for microscopic study, destroyed, but it was also found troublesome to control when working in such a small space and often quite painful to the patient.

I prefer to use the plain open (air) straight endoscope of 24 or 26 French calibre, whose sterilization can be simple, rapid and sure, as I hold that a perfect aseptic technic is very essential to good and prompt results. The removal of the polyp is accomplished by means of either a snare or a delicate alligator rongeur forceps. The snare is a simple

one, similar to Blake's nasal snare, I believe, with a shaft made the necessary length, and the instrument slightly more angulated. The alligator forceps is the better instrument to use if possible, and if made slender with biting rongeur blades accurate work, rapid removal, and splendid specimens may be obtained. In the posterior urethra following removal, I nearly always touch the point of attachment with either 20 per cent. silver nitrate, or the pure crystal fused on the point of a probe. It is always quite essential thoroughly to dry the area with cotton, after the use of strong caustics, thereby localizing their effect and saving the patient much discomfort. In the anterior urethra experience has taught me to leave the caustics alone, unless very limited effect is obtained by accurate application. In one patient I produced a temporary stricture of the anterior urethra by using a strong solution of silver nitrate too copiously and getting an annular swelling of the mucous membrane.

Conclusions.—Chronic symptoms arising from the urethra are practically always due to changes of a very local character in some part of the canal. The appropriate treatment of chronic urethritis depends entirely upon an accurate diagnosis. An accurate diagnosis depends upon a visual examination. The day when Guyon said that a urologist should have his eyes in his finger tips, or better yet at the end of his sound, is passed. The laryngologist no longer treats laryngeal inflammation by only prescribing a gargle. He examines visually, treats locally, and thereby diagnoses accurately. To-day one should no more attempt the treatment of chronic urethral discharge without the endoscope than he would an acute urethritis without a microscope. The subject of urethral polyp is but one of the things, one of the entities, that we have sifted out of a long line of symptoms, generally so vague, so obscure, scattered yet closely associated, individually often unimportant yet collectively ofttimes leading the patient to a very bitter existence, and the bright spot is, that it is easily and completely remedied by appropriate treatment.

Dr. Hilary M. Christian recalled three cases of chronic anterior urethritis treated by himself by the ordinary high dilatation method, where the underlying factor in each case was a urethral polyp found by the urethroscope after five or six weeks of treatment with dilatation. He was very much interested to hear Dr. Randall's points brought out associating the tumors in the posterior urethra with sexual neuroses. This is a very important matter and it is one that neurologists are inclined to overlook and to put the patients down as maniacs or neuro-

paths, while the probabilities are that underlying a large part of these men's troubles there is some condition of the posterior urethra which the urethroscope will divulge.

Dr. B. A. Thomas related the history of a patient who had never had a neisserian infection. He was markedly neurasthenic. He was in the habit of urinating every few minutes, twenty to thirty times a day. Endoscopy revealed a definite tumor which even with the urethroscope could be diagnosed as a solid tumor, a fibroma, situated on the posterior part of the verumontanum. After cocainizing it with 10 per cent. cocaine introduced through the sheath of Young's prostatic punch, he then readily and painlessly removed the growth by means of this instrument. The symptoms at the present time are *nil.*

HOW SHALL THE CLINICIAN INTERPRET THE WASSERMANN REACTION?

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At the present time it may be said that the attitude of clinicians toward a Wassermann reaction has divided them into three groups:

Those who depend absolutely upon a Wassermann for diagnosis.

Those who discard a Wassermann reaction as of no value.

The third group, who from their experience in syphilis, and a careful study of the Wassermann reaction in every case of syphilis, of many reactions made by different serologists, and by series of reactions made at frequent intervals upon patients under treatment, have learned what to expect in practically every phase of the disease.

Of the three groups of clinicians, the first are the most dangerous, as to interpret a positive Wassermann as a positive indication of syphilis is erroneous. The second group, while less dangerous, deprive their patients and themselves of a most valuable adjunct in diagnosis, prognosis and treatment. The third group are those who are prepared to give themselves and their patients the advantages of the numerous important data that may be obtained from a properly performed test, and at the same time safeguard him against the evils, which might result from an incorrect interpretation of the same. From a careful study of a great number of reactions made upon those suffering with syphilis, in all stages of the disease, and under nearly all types of treatment, a number of conclusions may be drawn, which will be of assistance to the clinician in checking up the accuracy of a Wassermann report.

In our observation, the Wassermann reaction in the initial stage of syphilis never became positive before the fifth day, and was always positive in cases seen after the fifteenth day. To wait for a positive Wassermann reaction to confirm the diagnosis of a clinically suspicious ulcer, deprives the patient of the one time in the whole course of his disease, that a rapid and almost certain cure can be expected. The same may be said of clinical diagnosis, that usually when the clinical diagnosis is without question, it is too late to expect a rapid and certain destruction of the spirochætal infection. The diagnosis should be made from the presence of the spirochæta which are most easily detected by dark field illumination, and the Wassermann test should

guide the prognosis. We have never observed syphilis to become a constitutional disease, either clinically or serologically, when energetic salvarsan or neosalvarsan treatment was instituted in a chancre with a negative Wassermann. From the above it may be deducted that the Wassermann as a diagnostic means in primary syphilis is of minor importance compared to its value in prognosis. Positive spirochæta pallida is diagnostic of the initial lesion, and should always check up a positive Wassermann or clinical judgment. A positive Wassermann in conjunction with a positive spirochæta pallida announces the onset of constitutional syphilis, and alters to a considerable degree the prognosis.

In secondary syphilis, untreated, the clinical judgment usually suffices for diagnosis, and the properly performed Wassermann test confirms it, but the clinician who neglects its performance, deprives both himself and the patient of valuable data that may be used in prognosis, and as a guide as to the efficiency of treatment. A properly performed test not only tells us that the patient has syphilis, but the degree of constitutional infection, or amount of natural resistance. It is, indeed, surprising how variable is the degree of positiveness of the serum reaction in patients with syphilis in similar stages of the disease; as a rule, the higher the degree of positiveness, the more energetic and prolonged must the treatment be to reduce it to negative, and so much more zealous the physician must be to guard against clinical relapses. When in clinically doubtful manifestations of secondary cutaneous syphilis the Wassermann is positive, the clinician has a perfect right to reject the Wassermann in favor of his clinical opinion, until by the subsequent course of the case, he proves to his satisfaction that syphilis does or does not exist. He should also in the best interest of the patient submit the blood to different serologists. The report that he obtains will give him valuable information as to the element of "personal equation," which always exists in the work of human hands; however, the possibility of a latent coexisting syphilis must always be thought of.

In active tertiary syphilis, again the Wassermann usually confirms the clinical picture, but, as in the secondary stage, is of value in prognosis, and as an index to treatment. Clinical experience and the Wassermann reaction teach us that tertiary syphilis is difficult to eradicate and relapses, both clinically and serologically, are frequent, and that a reasonable assurance of cure is but a remote possibility. To obtain a negative Wassermann with treatment of any kind, requires that the treatment be very energetic and prolonged.

The Wassermann reaction has confirmed the clinician in his views, that hereditary syphilis is least influenced by any form of treatment, and has thrown considerable light upon the etiology of many of the diseases of special organs, notably the eye, ear, brain and cord, which were formerly more or less obscured. In syphilis of special organs, the interpretation of the accuracy of a Wassermann reaction must be left to those familiar with the clinical manifestations of the disease, as it must be left to the syphilologist in the manifestations of general constitutional syphilis. In the presence of questionable lesions of syphilis, we regard the Wassermann reaction as of subsidiary importance to clinical experience, from the diagnostic standpoint, and no physician should accept a positive Wassermann as a positive indication that the patient has syphilis, but should regard it as but one of the symptoms or signs of the disease, which goes to build up the general clinical picture as ascertained from a careful history and physical examination of the patient. In the absence of clinical symptoms, the Wassermann reaction again should not be absolutely relied upon, for as in the present day many are pronounced syphilitic upon the strength of a positive Wassermann test, so in days gone by were they adjudged syphilitic upon insufficient clinical data, and it is here that the most careful history regarding the character of the lesions upon which the diagnosis was based, the time at which the treatment was begun, the method employed, the length of time continued, the occurrence of lesions which indicate relapses must be sought for, and the probabilities for or against infection established in the clinician's mind. When the probabilities of syphilis and the reaction agree, all well and good, when they disagree the blood should be sent to different serologists before judgment is pronounced.

The influence of treatment upon syphilis, from the standpoint of serum reaction, depends upon when treatment was instituted, how long it was continued, the drugs employed, and the method of their administration. One thing is certain, syphilis as treated in the past has not been efficient, its prevalence and the number of diseases caused by syphilis is proof of this assertion. A two or three years' course of mercury treatment is only followed by a negative Wassermann in fifty per cent. of cases. A negative Wassermann of a patient under treatment is not an indication of a cure, but is an index of the efficiency of the treatment, and our aim should be to reduce the Wassermann to negative in the shortest time by most energetic treatment, and so maintain it over an indefinite time, as evidenced by repeated negative reactions. In a patient so treated, a positive Wassermann reaction following one or a series of negatives is the earliest indication of the activity of a heretofore latent infection.

In conclusion, it may be stated that the serum reaction, properly performed, is such a valuable aid to the clinician, that it should be made only by those thoroughly trained in serology. The clinician should never rely upon the Wassermann reaction absolutely in diagnosis. As the serum reaction offers the possibility of so many errors in technic and reagents, it is essential that the closest relationship should exist between the clinician and the serologist, in order that accurate and reliable results may be obtained. As clinicians, we strongly urge that a uniformity in technic and a standardization of reagents be adopted by serologists. From our experience with the serodiagnosis, we have found the "single unit system," as introduced by Dr. John L. Laird, to furnish the clinician with the most accurate data, for by this method the exact quantitative results as expressed in units can be estimated.