CHAPTER XIV.

MEMOIR TO THE FRENCH ACADEMY.

IN July 1877, through the courtesy of M. Verneuil, of Paris, a Memoir was sent by me to the National Academy of France, embodying, in a form as brief as was consistent with fairness, the views, experience and discussions which are given at length in the foregoing pages. The results of the further study and experience in the nature and treatment of urethral Strictures, from the date of my address to the New York State Medical Society, in February, 1865, up to May, 1877, were also added.

In order to place fully upon record in this country the views and statements contained in this Memoir, I have thought it best to reproduce them in this place, making such alterations and additions as are necessary to bring the subject in full up to this date, July, 1878.

My experience in the division of Strictures by the methods described, cover at this date (July, 1878), a period of nearly seven years, during which time I have operated by internal urethrotomy over six hundred times. In ninety-six cases at my clinique at the College of Physicians and Surgeons; fifty in my service at the Strangers, Charity and St. Elizabeth Hospitals, and the remainder in my private practice. One hundred of these cases comprising 203 operations, carefully tabulated from my private records by my then assistant, Dr. J. Fuhs, were reported to the New York State Medical Society in 1875, and appear on page 106, *et seq.*, of this volume. One hundred and thirty-six additional cases recently tabulated from the same source and in the same manner will be found at the close of this volume, making a

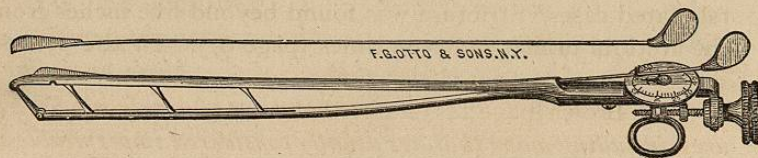
total of 236 tabulated cases which include the results of 373 operations on urethral Strictures. The total number which I have performed and recorded up to June 20, 1878, is 635.*

Thus far in operating with the dilating urethrotome (which was the instrument employed in every case, except when the Stricture was at the meatus), *I have not met with a single death resulting from, or attributable in any way to, the operation.* This statement will, I presume, be received with surprise by surgeons who are practically unfamiliar with the operation by means of the dilating urethrotome. It must, however, be borne in mind; 1. That, in the greater proportion of cases, the Stricture did not encroach upon the urethral calibre sufficiently to interfere markedly with the flow of urine, and hence were not complicated to any great extent by disease of the bladder or kidney; 2. That vastly the greater number were anterior to the bulbo-membranous junction; 3. *That the incisions were never made with a blade exceeding 2 mm. in breadth.*

Dilating urethrotomy in France is necessarily associated with the name of M. Reybard, who first recognized the necessity of complete division of Stricture as essential to radical cure. By M. Reybard's plan *deep* and *long* incisions were deemed essential, and the knife of his instrument measured nearly two *centimetres* on its cutting edge. Serious results after operation with this instrument were said to have been frequent. My dilating urethrotome, *the blade of which should never exceed 2 mm. in width*, was invented by me to meet special cases occurring in my practice. It was made and had been in use for nearly two years before I knew of the invention of M. Reybard. My first idea, and which has not yet been materially departed from up to the present time, was, by means of a dilating apparatus, to *fix* and *thin* the Stricture, so that a *slight* incision would suffice to sunder it. My plan has been *always to avoid deep incisions, and as far as practicable to avoid dividing healthy tis-*

* I have also operated upon quite a number of cases in the practice of other surgeons, the records of which are not included in this number.

sues. To these facts and to the peculiar character of my operations I attribute my great immunity from surgical accidents. Between the years 1874 and 1876 I made various changes in minor points about my dilating urethrotome, with a view to increasing its ease of application, and the safety of its use. The chief alteration from the original was the attachment of a guard to the summit of the blade, in order, after the plan of M. Maisonneuve, to divide only stricture-tissue. After a time, however, it was found that slight and resilient Strictures often escaped complete division, and *always* unless the over-distension was very great. I therefore removed the guard and concealed the blade in a slit at the end of the shaft. I likewise had the instrument made straight and short, for more convenient use in the straight portion of the canal



THE AUTHOR'S STRAIGHT DILATING URETHROTOME.

where, fortunately, according to my observations, much the greater proportion of Strictures are to be found.

Heretofore all operations by internal urethrotomy have been performed as a last resort, after failure to obtain relief by other methods. It thus happens that a very large proportion of such cases have been the subject of advanced disease of the bladder and kidneys. The simple introduction of a sound or catheter where such organic disease is present has not unfrequently caused urethral fever, suppression of urine and death. It has therefore come to pass that the operation of internal urethrotomy, necessitated in these desperate cases, has been held responsible for fatal issues which were likely to result from any mode of interference. I am able to state with confidence, that complete division of all Strictures anterior to the bulbous urethra, (*i. e.* from five to six inches) by dilating urethrotomy properly performed, is one of the simplest and safest of all surgical operations ; that in the very largest pro-

portion of cases it is uncomplicated by a simple accompaniment which can be termed an accident, and that the recovery is, as a rule, practically complete in from three days to a fortnight after the operation—the variation depending upon the number, depth and calibre of the Strictures.

Even in cases of organic disease of the bladder and kidneys, division of Stricture in the ante-bulbous urethra, (strictly avoiding the passage of any instrument into the bladder) is less perilous than the passage of a catheter or sound through the deep urethra either for relieving a retention, or for purposes of dilatation.

I am able to state, still farther, that *the very great majority* of all supposed deep Strictures presenting for treatment *are anterior to the bulbous urethra.* In the 1st series, (one hundred tabulated cases,) Stricture was found beyond five inches from the urethral orifice, fourteen times (page 97). In the second series, 137 cases, only eleven times.

Prof. Brown (page 243) states that " *out of nearly* 100 *Strictures, including many that are usually considered impermeable at least* 75 *per cent. were found within the anterior* $4\frac{1}{2}$ *inches.*"

Prof. Pease (page 262) shows that " *out of* 129 *Strictures but* 7 *were at or posterior to the bulbo-membranous junction.*"

It is greatly due to an appreciation of this fact, that operation in the deep urethra is so rarely necessary ; this renders the risk of operation for by far the greatest number of urethral Strictures, comparatively insignificant.

This statement is eminently proved by my own experience

with not a death in over	635	consecutive	operations.
Dr. Mastin's experience p. 248 in	296	"	"
Prof. Brown's, page 237, over	300	"	"
Prof. Pease, p. 262 over	100	"	"

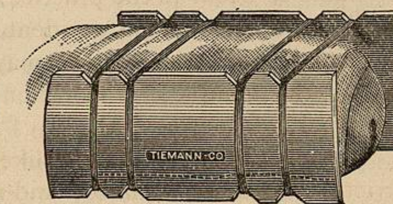
Thus making a grand total of 1331 operations, consecutively, without a single death or permanent disability of any sort.

While, however, it is true that very much the largest proportion of cases in which Strictures are divided by dilating urethrotomy are quite free from complications, yet from the

very nature of the structures involved it will be seen that care, judgment, and experience, are necessary in the procedure, to anticipate possible accidents. A certain amount of hæmorrhage of necessity occurs where vascular tissues are incised. This is so certain and so readily controlled, and so often ceasing spontaneously in a few moments, that it cannot be looked upon as an *accident*, unless in spite of the ordinary measures used to control it, an excessive quantity of blood is lost. In the summary of the 236 tabulated cases at pp. 106 and 324, it will be seen that this accident occurred only four times, and that in each instance the operation was in the deep urethra, always posterior to five inches. Inasmuch, however, as such cases are liable to occur in the practice of others, I shall present my entire experience in this accident, and also in the other accidents or complications which may be met in operations looking to the complete restoration of contracted urethræ in every part of their course.

1st. *Hæmorrhage.* This is likely to be most free where the Strictures divided are narrow and resilient. In these over distension to an unusual extent is occasionally required in order to divide the Stricture completely. The wound may thus extend well into the trabecular structure of the corpus spongiosum. In such cases, the hæmorrhage does not usually occur at once, but during a subsequent engorgement or partial erection of the penis, hence most commonly at night. To guard against this accident all patients should be required to remain in bed or on a lounge for a day or two subsequent to operations on the anterior portion of the urethra, say as far back as three inches from the meatus. In all cases where the operation is in the near vicinity of the bulb, or in the curved portion of the canal, the recumbent position should be insisted on for three or four days and a strict surveillance until all danger of hæmorrhage has passed, which I do not consider to be less than one week. When an attendant is not available a soft rubber tube one or two sizes smaller than the normal calibre of the canal, may be inserted and retained by a light bandage for one, two or three days, according to the necessities

in any given case. If the tube is not worn from the first it may be introduced to protect the surface of the wound during urination, for a day or two. In very sensitive persons, I have had the bladder habitually emptied by means of a small soft-rubber catheter. Contact of the urine with the fresh incisions, often painful, may be thus avoided, with the additional benefit of preventing the liability to urethral fever. The occurrence of urethral fever, however, rarely follows operations in the penile urethra. An admirable method of arresting hæmorrhage in the pendulous urethra and especially at or near the meatus urinarius has been devised by Dr. George K. Smith, Prof. of Genito-urinary diseases in the Long Island Hospital Medical College. This consists of pressure applied to the sides of the penis by two thin paste-board splints, an inch or so in width, padded with cotton, and encircled, when in position, by half-a-dozen narrow India-rubber bands. Small notches in the splints keep the bands from slipping and the amount of pressure may be easily regulated by the number or size of the bands. I have never found it necessary to make enough pressure to give the patient any discomfort. Simple separation of the splints is sufficient to permit urination without removing them.



PROF. SMITH'S COMPRESSOR.

Hæmorrhage from division of Stricture in the deeper portions of the canal, from the difficulty in retaining a tube, or in making efficient external pressure, is sometimes embarrassing, especially so as the efforts to arrest it may cause the blood to be forced backward into the bladder. I have never failed to appreciate the liability to this complication whenever operating near the bulb or in the curved portion of the urethra, and have been so fortunate as to have met with but four cases in my own experience: three from internal urethrotomy, and one from combined internal urethrotomy and

external perineal section. The first case was in 1874, in a patient, at the Roosevelt Hospital, who had a close Stricture extending quite to the prostatic urethra. A heavily guarded Maisonneuve blade 6 mm. in breadth was adapted to my first urethrotome and used in the expectation that nothing but Stricture tissue would be divided. The operation was followed by hæmorrhage into the surrounding urethral tissue and into the bladder, and was soon complicated with retention of urine. To relieve this, and to afford exit to the extravasated blood, and also to effectually command the point of hæmorrhage, I made the perineal section. The patient made a slow but complete recovery, and wrote me a year after that he had no return of his Stricture. This was the first and last use of so broad a blade. Two to three millimetres breadth have since been found sufficient for a guarded blade and two for a blade unguarded.

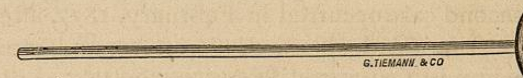
The second case occurred in February, 1877, after external perineal section for deep-seated Stricture, and internal dilating urethrotomy for several Strictures in the penile urethra. On the 12th day, the external wound having nearly healed, copious hæmorrhage from the deep urethra occurred several times, but was readily controlled by a few moments' pressure against the perineum, and by means of a finger in the rectum. Recurrence took place, however, frequently, and on the third day (*i. e.* the 15th after the operation) I was called in consultation, and found the bladder distended with blood nearly up to the umbilicus.

Introducing a No. 34 F. silver catheter, I emptied the bladder of nearly three pints of clotted blood and urine, and left the catheter in. No further hæmorrhage occurred, the catheter was retained, without great discomfort, for nearly three days, and beyond setting up profuse urethral discharge produced apparently no bad effects.

The third case occurred in June, 1877, where two very resilient Strictures of large calibre (defined by a 34 F. bulb in a urethra of 40 F.) were divided, at five and six inches from the meatus. The hæmorrhage came on about an hour after

the operation, during an attempt at urination. The patient was absolutely intolerant of a sound in his urethra, and resisted the introduction of ice into the rectum.

No external application of ice, nor any pressure with the finger or by compresses retained by bandages passing around the hips, nor the free internal use of matico could effect more than a temporary arrest of the hæmorrhage. This was quite free, alarmingly so at times, issuing externally with a gush, at intervals of several hours, and also oozing more or less steadily into the bladder. During the two days of its continuance the bladder was thrice emptied of clots which caused severe and persistent vesical tenesmus. By this time the patient was considerably exsanguinated, and it became evident that a fatal issue threatened unless the hæmorrhage was soon arrested. Preparations were then made for an external



PERINEAL CRUTCH.

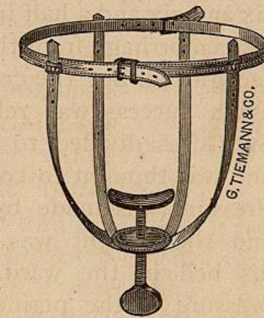
perineal section, in order to gain direct access to the bleeding point, when the sight of an old crutch in the adjoining bathroom suggested a mode of relief which proved efficient. A folded towel was placed in the perineum, and to it the curved shoulder piece of the crutch was applied, bringing its other end down against the foot-board of the bed. The weight of the patient's body gave the desired counter pressure which he could regulate at will. Not the slightest oozing of blood occurred after this, and the patient made a prompt recovery. A board of proper length and width sufficiently padded would answer the same purpose in a similar case.

The fourth instance was in a man who had been operated on in Syracuse, by Prof. Pease, for close and dense Strictures at various points in the canal, from the meatus to the prostate. Re-contraction had occurred, and a second operation was done in one of the principal New York hospitals with like result. Through the invitation of the visiting surgeon in

charge of the case, I was invited to do the third operation, in March, 1877. All the anterior Strictures were divided, raising the urethral calibre from a filiform size, to which the urethra had re-contracted, up to 36 F. The operation was commenced with the urethrotome of M. Maisonneuve and completed as far as the bulb with my straight dilating urethrotome. Two Strictures were ascertained to be present, at six and six and a half inches, of a calibre of 30 F. The danger of hæmorrhage from the division of these Strictures was fully recognized, but the crutch used in the previous case with so much success was relied upon to arrest it, and the deep Strictures divided to 36 F. Quite free bleeding followed and was thought to come chiefly from the anterior incisions. Pressure was made by a broad bandage around the penis, and the patient was taken from the operating room to his bed in the ward. An attempt was made to apply pressure in the perineum by means of the crutch but instead of a foot-board there was only an iron rod at the foot of the bed and so much delay ensued in arranging a resting place for the lower end of the crutch that the bladder became distended with blood nearly to the umbilicus, and solidly coagulated. Perineal section was considered but the man's pulse was good, and it was thought that the pressure of the distended bladder might act as a preventive of farther serious loss. An hour later my large 34 F. silver catheter was introduced and retained without trouble, for twenty-four hours, when a sharp urethral chill set in; this passed off, however, and the catheter was retained for 24 hours longer; when removed, some twenty ounces of clots were discharged from the bladder. The patient did perfectly well, and when re-examined by me about a month after, presented no trace of Stricture.

In order to prevent as far as possible the recurrence of embarrassment and trouble from lack of suitable appliances and their ready adaptation in cases of deep hæmorrhage, I contrived an apparatus which I have termed the *perineal tourniquet*. By reference to the accompanying cut it will be

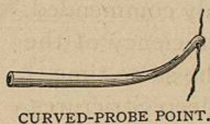
seen that any desired amount of pressure may be brought to bear upon the perineal urethra by means of the thumb screw attached to the hard rubber perineal pad, counter-pressure being secured through the attachment of the perineal straps to a band around the body just above the hips. I have already had occasion to test the efficiency of this apparatus in a case, (the only one of the kind in my experience,) where a hæmorrhage came on ten days after the operation. It occurred in the daytime and immediately following urination, and about four ounces of blood were lost. The introduction of a rubber-tube stopped the hæmorrhage at once and completely, but as the deepest Stricture operated on was at about four inches, in order to leave the patient in security in charge of an attendant I applied the perineal tourniquet. Its action was simply perfect. Placing a folded napkin on the perineum, the apparatus was adjusted and pressure by means of the rubber pad was brought to bear upon the urethra at this point. A pressure, more than sufficient to cut off all possible communication between the bladder and the urethra as far as the membranous portion, was borne with comfort, and the degree of pressure was fully under the control of the patient by means of the thumb-screw which was within his easy reach. The security against danger from hæmorrhage which this apparatus is capable of affording, is apparently complete in all cases where the division of urethral tissues is not beyond the membranous urethra. It also prevents any hæmorrhage into the bladder from division of tissues anterior to this point, as might occur through pressure from any cause, anterior to the bleeding point. The tendency to hæmorrhage in all cases is greatly lessened by an application of cold water by means of cloths or, what is better, through the cold water coil.*



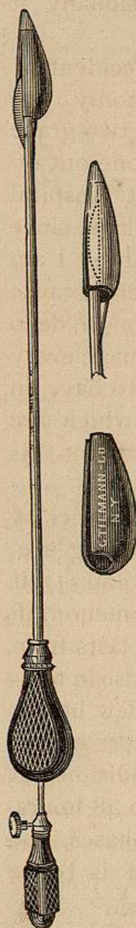
THE AUTHOR'S PERINEAL TOURNIQUET.

* Note.—Cold water coil, p. 104.

In the two cases of severe hæmorrhage, following internal division of Stricture in the deep urethra, the operation was done with my small straight urethrotome, with the curved probe-point attached to facilitate its passage beyond the triangular ligament.


CURVED-PROBE POINT.

While this urethrotome, according to my experience, is the most efficient for complete division of Strictures in all parts of the urethra, I have sometimes used the bulbous urethrotome first used in 1874, and presented to the profession in my pamphlet on "Instruments and Apparatus," May, 1875.


AUTHOR'S BULBOUS URETHROTOME.

This in shape is like the bulbous sound, so constructed that, after passage through a Stricture, a broad blade two to three mm. in breadth concealed in the bulb is drawn forward through the contracted point, by means of a handle which traverses the hollow shaft of the instrument. The blade is then pushed back through the Stricture into its place of concealment, and the instrument withdrawn. If the bulb has been of sufficient size to make firm resistance on attempted withdrawal *before*, and meets with none *after* incision, it is probable that the test by a bulbous sound of the size of the normal canal will show that the division has been complete. The bulbs of this urethrotome are readily changed, and range in size from 20 F. to 40 F.

For the division of narrow and dense Strictures in the deep urethra, this instrument is often efficient, but it lacks the certainty of action which characterizes the dilating urethrotome. Where, however, it is employed, the incisions are confined more completely to the cicatricial tissue, and, consequently, are less often followed by troublesome hæmorrhage.

A somewhat similar instrument, devised by Prof. S. W. Gross, of Philadelphia, and described in the second edition of "Gross on the Urinary Organs," 1875, is highly commended. My own experience is against the complete efficiency of the instrument in any but exceptional cases; at the same time, I would endorse it as safest in the division of deep Strictures, since it does less violence to the parts, and even is less likely to cause constitutional disturbance, while occasionally it effects a complete sundering of the Stricture.

I have been thus particular in considering the accident of hæmorrhage in connection with dilating urethrotomy, not because it is frequent, for it will be seen that only two grave cases have occurred from internal urethrotomy alone out of more than 600 operations (I exclude the Roosevelt Hospital case, as this was due to the error of too wide a blade, since corrected), and that in none was the hæmorrhage fatal. I am thus strenuous in calling attention to this matter because such an accident may occur in any case of division of deep Strictures and it therefore becomes important to manage every such case as if hæmorrhage were expected, and to have in readiness and be familiar with all the measures which are found efficacious in relieving anxiety and danger from this cause.

URETHRAL FEVER perhaps stands second in the order of accidents or annoyances occasionally following dilating urethrotomy. In 375 operations, tabulated on pages 98 and 317, it was noted in 18 cases. This condition, or epi-phenomenon, if it may be so called, is ushered in with a chill which lasts from a few minutes to an hour, and is followed by a rapid rise in temperature, sometimes to 105°. This continues for a few hours, when it declines rapidly, and is succeeded by a more or less copious perspiration. The return to a normal condition and temperature ensues in different cases in from 12 to 48 hours. In a word urethral fever is, in its symptoms and phases, the perfect analogue of periodic malarial fever, and is to be treated in the same manner.

I quite agree with Prof. Thomas R. Brown, in the state-

ment in his interesting paper on Urethral Fever published in the N. Y. Med. Journal for Feb. 1878, that it is purely of reflex origin, and depends upon local irritation, and that when following upon a urethral operation is usually caused by the contact of the urine with the wounded surfaces. This is evident from the fact that the chill rarely comes on until after urination, although this may be delayed for 10 or 12 hours after the operation, and moreover, it may frequently be prevented entirely by drawing off the urine with a small soft rubber catheter, for two or three days. The fact, however, that the simple, easy and bloodless passage of a catheter may be, and not infrequently is, followed by an access of urethral fever, shows that any sort of irritation may induce it. I do not coincide in the opinion that "no condition of health appears to exempt from, or predispose to the attack." I should say that in persons of highly nervous temperament the predisposition to urethral fever is the rule, and any slight mechanical interference may give rise to it. Malarious antecedents increase in a marked degree the probability of its occurrence. The presence, likewise, of any disease, acute or chronic, of the deep urethra, prostate gland, bladder or kidneys, is a very great and unmistakable predisposing cause. I, therefore, hold that the previous recognition of any of these conditions is of the highest importance in the treatment of urethral Stricture by any method, and, further that, *in cases of long standing urethral trouble, and in all elderly persons, the passage of any instrument through the urethra into the bladder should never be attempted without a preliminary examination of the patient's urine to determine the state of the bladder and kidneys.*

The predisposition to urethral fever in persons as above described, suggests that all possible precautionary methods should be used to prevent this accident whenever, as is sometimes the case, surgical interference becomes imperative. To this end *rest* in the recumbent position for a day or two is of value. Hot sitz baths, temp., 110 for 3 or 4 minutes morning and night. Muriated tincture of iron and tonic doses of qui-

nine in persons of debilitated habits. Immediately previous to the proposed operative procedure I am in the habit of administering five to ten grains of quinine (preferably 10) in pill or capsule, or instead of this, a suppository composed of ten grains of the bisulphate of quinine and a quarter of a grain of the acetate of morphine.* It is not from the fact that urethral fever in such cases is more likely to occur, and with possibly greater severity, than in healthy persons that this predisposition is important, but because when it does occur, the danger of the reflex irritation extending to the ureters and kidneys, and inducing a suppression of urine, is greatly increased, and that suppression so induced is frequently and rapidly fatal.

SUPPRESSION OF URINE is recorded in one case, as resulting from the combined operation of dilating urethrotomy and perineal section. Here it may be interesting to note that the operation was done in the face of the fact (ascertained by repeated examination of the urine) that the patient was suffering from Bright's disease of the kidney, as shown by the presence of hyaline and granular casts with albumen

* Opinions of authors, in regard to the value of quinine in averting urethral fever, are greatly at variance, some placing great reliance upon it, others again denying it the least possible influence. My own opinion is, that while this as well as any other known agent occasionally fails to prevent its accession, in the great majority of cases its favorable influence is demonstrable. I will cite a single instance. Mr. Y. was a sufferer from traumatic Stricture at six inches from the meatus. He had been under treatment by dilatation for several years, and stated to me that in every instance when dilatation was made by solid sounds or soft bougies, unless he took five grains of quinine at the same time, it was followed, within a few hours, by a severe chill sometimes lasting an hour or more, and succeeded by fever and sweating. That whenever he took quinine he invariably escaped. From that time until the present, some six years, he has been subjected by me to the periodical introduction of instruments, usually soft bougies. On about a dozen different occasions during this period he has forgotten to take the quinine, and each time, the dilatation has been followed by an attack of urethral fever. The dilatation in this case has usually been carried from 20 F. to 30 F. (in a penis of 3 in. circum.) during a period of ten days, instrumentation every other day. Then a period of about three months would be allowed to elapse, by which time recontraction to about 20 F. would take place and the same round of dilatation would require to be repeated. The nature of this patient's business, necessitating daily attendance, has, for this long period, prevented resort to the operation of dilating urethrotomy.