

## TRANSURETHRAL PROSTATIC RESECTION

Technique of T. M. Davis

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Three thousand and more years before the birth of Christ the Egyptians circumvented urethral obstruction by means of catheters fashioned of tin and copper. Little progress was made in the ensuing centuries, although a variety of ingenious catheters and dilators were invented. In 1575, Ambroise Paré, the famous French military surgeon, devised a sound with a hemispheric button at the tip with a cutting edge and controlled by a mandrin inserted through a metal catheter to scrape the prostate.

### Early Surgical Instruments (Figs. 1-4)

The next major operative step began in 1786 with Astruc who devised a metal catheter with a sharp stylet similar to a trocar and cannula. The cannula was left in as a catheter for a couple of weeks after its introduction. This heralded the advent of tunneling which was practiced by Chopart, Home, Brodie, Stafford, Desault, Boyer and Mayor, and Fitch as late as 1887.

In 1806, Blizzard introduced the era of incision, or prostatotomy, with a double gorget through a perineal urethrotomy, making incisions on both sides of the prostate. Guthrie, Mercier, d'Étiolles, Civiale, Maisonneuve, Goulet, Harrison, Norton, and Tobin used this method with refinements of instrumentation.

Bottini started water-cooled galvanocautery, a blind procedure in 1876 and refined it in 1882. Freudenberg modified Bottini's instrument by adding a telescope. This method was used by Clark, von Frisch, Willie-Meyer, Desnos, Czerny, and continued on into the early part of the twentieth century in this country. Watson, Bangs, Bouffleur, and Murphy used the Bottini instrument through a suprapubic approach.

A group who used the perineal approach started in 1892 with Wishard of Indianapolis with his direct-vision instrument. Goldschmidt created a better instrument, and Chetwood in 1905 had his perineal cautery incisor.

The punch instruments used transurethrally were initiated by Hugh Young in 1909 but bleeding necessitated modification with a cauterizing blade in 1911.

In 1910 Edwin Beer treated bladder tumors with the Oudin current which necessitated working under oil. Keyes modified this procedure using the bipolar d'Arsonval current which could be used with water as a medium. Stevens, Bugbee, and Georges Luys, of Paris, used this current for electrocoagulation of the prostate; Luys made an actual channel.

Braasch in 1918 added direct vision to the Young punch; Caulk in 1920 had a cautery punch which had no visual system. This was added by Rose in 1925. In 1923 Collings used a high-frequency cutting current that worked in oil but changed in 1924 to the spark-gap current developed by Bovie and Leiber which required no special medium. Walker and London's use of a diathermy punch with a Bakelite sheath followed in 1925. Also, in 1925, Bumpus, at the Mayo Clinic, modified the Braasch punch with the use of coagulating needles.

In 1913, Day had desiccated tissue with the Young punch but with poor results. However, in 1930 this was modified to cut toward the surgeon with better results. In 1928, Foley tried an endothermal cystoscopic prostatic incisor which failed.

The use of these instruments set the stage for Maximilian Stern's presentation in 1926 of his remarkable resectoscope. The resectoscope involved a rack-and-pinion driven cutting loop inside a metal cystoscopic sheath with a fenestrum. Vision was direct; when the fenestrum engaged a protrusion of prostate, a high-frequency cutting current was activated through the loop as it was directed forward slicing off spaghetti-like sections. Stern said in his initial presentation that the operation was simple, safe, and bloodless and could be done in the office. This proved to be incorrect and from the outset created considerable resentment against the procedure. It did, however, excite the interest of Theodore McCann Davis, a young urologist from Greenville, South Carolina.

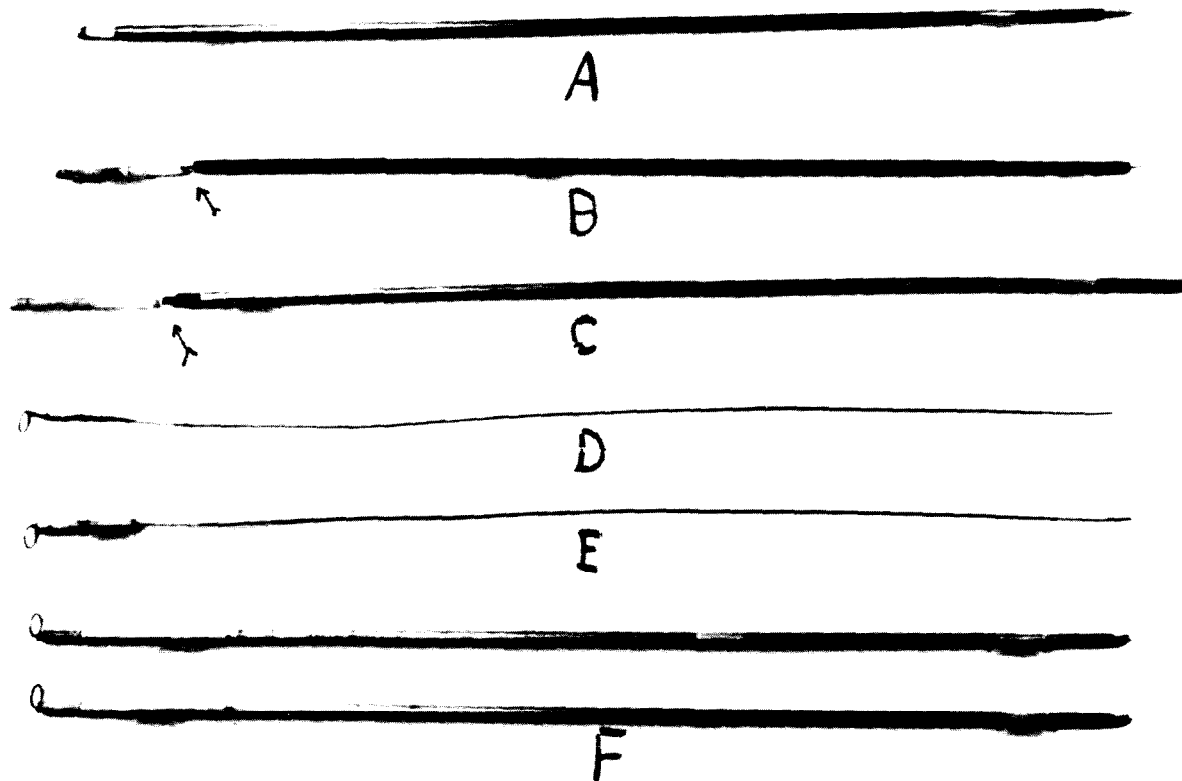


FIGURE 1. (A) Original Stern loop, and (B) defect (arrow) in loop. (C) Davis improved hard rubber (arrow) telescoped into quartz tubing. (D) Silver tubing used in loop construction, and (E) tubing pushed into quartz. (F) Davis loop.

#### T. M. Davis

Davis was born in Greenville, South Carolina, December 23, 1889. His father was one of the largest retail merchants in the state. His mother's great grandfather was closely related to Lord Darnley, who married Mary Queen of Scots.

Davis finished local schools in the ninth grade, the highest at that time, spending several summers with his first cousin who was chief electrical engineer for the middle district of the Southern Railway. Between 1905 and 1909 he served as assistant electrical engineer under his cousin's tutelage. The work involved changing the lighting in passenger cars from oil or gas to electric. This necessitated switching the lights from batteries to generators below five miles an hour and back. In addition, electrical control systems, electrical switches, and switch towers were a great part of the work.

Unfortunately, he joined a group of clerks in a joyride using the rail inspection car which was hit head-on by an engine and fractured his leg. While convalescing, he found the nurses were very pretty and that nurses and doctors seemed to enjoy their work very much. This gave him time to consider his future, and he decided to continue his education in the early part of 1909 at the Carlisle School for Boys. He matriculated at the University of Maryland Medical School in the fall of 1910 and was graduated in 1914 with an average of 98.87, being awarded the faculty gold medal for the best marks in the class. In 1914, he was resident surgeon at the University Hos-

pital under Page Edmunds who had trained in Vienna. Gideon Timberlake who also was on the staff almost sold him one of the few cystoscopes available locally, because so little endoscopic work was being done at that time. His work consisted of being first assistant to Frank Martin, and although reappointed, he chose the opportunity of working as assistant, and then associate, to the well-known Greenville surgeon, W. C. Black, from 1915 to 1918. He then went into practice for himself, and from 1920 on he limited his work to urology.

When Davis heard of Stern's work, he traveled to New York to watch him operate. A number of small sections of tissue were taken out over a long period of time with moderate hemorrhage. Certainly, the operation did not live up to its author's description.

He then tried to get an instrument but had great difficulty because Stern did not think it was perfected. On one of several trips to New York, he had the opportunity to visit with E. L. Outwin, president of the Bard Company, of New York, and asked if they could make a double-channel catheter with the bag at the tip, one channel opening into the bag to permit its dilatation with a measured quantity of water and the other for urine drainage. It was his impression that with this balloon filled, it could be drawn into the vesical orifice and act as a tourniquet to control any hemorrhage. This catheter was not made, and the Foley catheter subsequently came into being.

When he finally was able to get a resectoscope and rectotherm cutting generator on load, he worked



FIGURE 2. *Telescope with electrode in place used for control of fulgurating bleeders; before it was necessary to remove resectoscope sheath and insert a cystoscope for this purpose.*

diligently on beef hearts to fully familiarize himself with the instrument. This experience proved invaluable.

He worked on his first patient, removal of a median bar, in the Greenville office. Bleeding ensued that looked like a "perforated aorta." Although unprepared, he considered what he would do in case of a bladder tumor – fulguration – and touched the diatherm to the loop which immediately burned out. He then used a Bugbee electrode placed in a cystoscope which promptly controlled the hemorrhage. This taught him that this current would cut but would not coagulate.

He used this procedure for about three months until he was able to get the Wappler Electric Company to construct for him an instrument with a Bugbee electrode carrier that could be used through the resectoscope sheath (Fig. 2). This necessitated changing the working parts at frequent intervals, and the largest amount of tissue he was able to remove at one sitting was 12 Gm. He used this method through 1927.

#### Davis Modifications of Resectoscope

Early in 1928 he began to experiment in making loops (Fig. 1). Working in his own shop at night using a jeweler's lathe, he found a defect in the old loop where the hard rubber insulator and quartz tubing held the loop abutted and formed a noninsulated joint which shorted the diathermy current. By telescoping the hard rubber into the quartz, he corrected the defect (Fig. 1). The silver tubing joined the wire, which was bent for stability and was pushed into the quartz. These improved loops permitted the use of *both* cutting and coagulating current. This was the breakthrough necessary to make transurethral prostatic resection practical. The night before the operation, he would make the loops. As time went on, he increased the diameter of the tungsten loop as well as the size of the loop to fit into larger instruments to remove more tissue.

Because the wires had to be changed from the cutting generator to the coagulation generator, he designed a double-throw, triple pole switch permitting the interchange of currents by manipulating the switch by hand. In 1928 the hand switch was replaced by a foot switch, consisting of two buttons, permitting the instant interchange of the two currents (Fig. 4).

In 1928 he also experimented with sheath construction. The elongated beak of the original Stern sheath was removed, and a 28-F tube was found to be more suitable. A 7/8 inch fenestrum with a depth one-half the diameter of the sheath was adopted; the working parts were modified to permit longer excursions of the loop, and larger lamps were used for illumination. He noted that the more powerful currents tended to arc and cracked or discolored the optical glass lenses interfering with clear vision. The use of quartz lenses, made in Germany, solved this problem.

Having started with removal of small bars and contractures, he proceeded with work on lateral lobes. In November, 1928, at the annual meeting of the Section of Urology of the Southern Medical Association, he reported on his work. There were 8 cases involving contracture, 11 median lobes, 5 of one-lateral lobe, 21 bilateral lobes, 6 median and lateral lobes, and 7 carcinoma of the prostate. He stated, "I believe that with this armamentarium and technique discussed in this paper, a very large majority of all types of obstruction at the vesical neck can be successfully relieved." The derision with which the paper was received was demonstrated by the discussions in which he was called everything from "a plain fool to an outright liar." "If these discussions were reread before the same audiences, today, they would revive that lost art of blushing amongst many of the listeners," remarked Davis. Undissuaded, he continued his work. By September, 1929, at the meeting of the Third District of The South Carolina Medical Society, in Laurens, he was able to report on his electromagnetic foot switch.

During the next year Davis also was busy with other aspects of instrumentation. He suggested a retrograde scope with a fulgurating apparatus to which



FIGURE 3. (A) Office resection operating room in Greenville (about 1928): A resection endotherm for cutting was first generator obtained for resection, other generator is teletherm diathermy generator used for coagulation of bleeding. Note double-throw switch used to change from one current to other manually. (Triple pole electromagnetic switch is direct descendant of this switch.) (B) Davis examining room in Greenville about 1930.

Wappler, of Wappler Electric, in New York, replied, "The subject mentioned in your letter of retrograde vision-retrograde operation is exceedingly unsatisfactory." Yet, he sent some material, and Davis made it himself. He had a right-angle scope made up which has worked most satisfactorily.

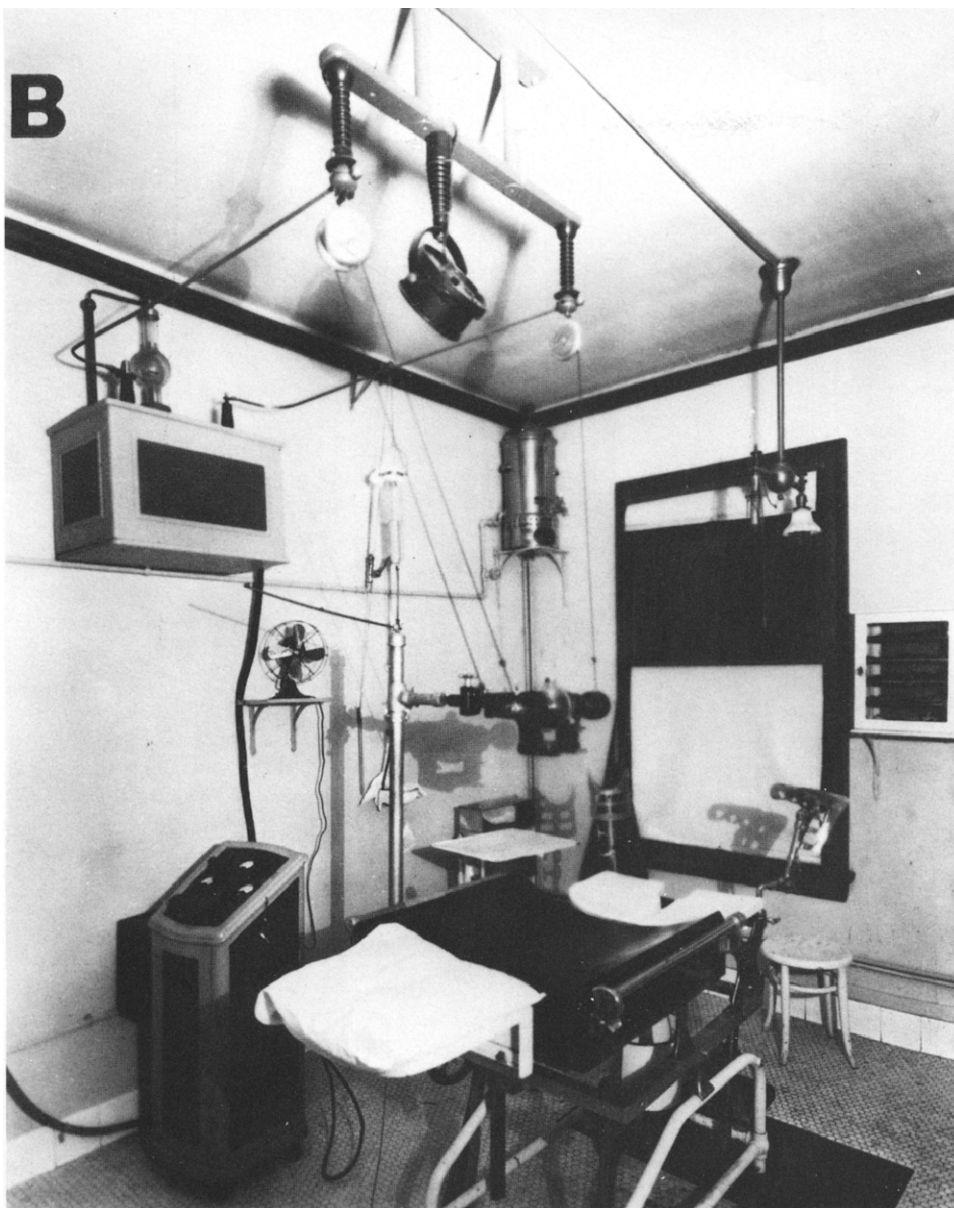
In a letter dated November 20, 1930, Wappler replied to Davis' suggestion for a Bakelite sheath: "My experience with Bakelite is very sad in connection with cutting currents; it will not last as well as hard rubber under the influence of high-frequency surgical currents, and my experience so far had resulted in discouragement."

When he asked for a place on the program of the Section on Urology of the American Medical Association meeting in 1930 to be held in Detroit, Davis received no answer from the president or the secretary of the Association. However, in late 1930, Andrew J. Crowell, a former resident of Hugh Young, after watching his (Davis) operations, invited him to join him in the Crowell Clinic, in Charlotte, North

Carolina. It was agreed that he would not give up his old office until he was doing so many operations at the Crowell Clinic that he would move to Charlotte. This never happened. He would work during the week and return to Greenville on weekends. With this subsequent exposure through Crowell, he was able to present his film and results at national meetings.

Reinhold H. Wappler, head of Wappler Electric, later to become American Cystoscope Makers, Inc., met Davis in the Knoxville office of Fred Garvey (later chief of urology at Bowman Gray), in April, 1931, and was able to see his films. He visited Davis in Greenville watching him work, then went on to Charlotte for three days, and on to Durham to attend a meeting of the North Carolina State Medical Society. At this meeting, they roomed together and discussed new types of resectoscopes. Davis made several sketches of his latest innovations on prescription pads for Wappler to take back to New York.

Reinhold Wappler's enthusiasm for Davis' work was manifested in a letter (April 27) to Crowell:



I hope to be permitted in a quiet way to carry out my commission of executing the mechanical details of Dr. Davis' epoch-making technique of prostatic resection. Perhaps it is the way of providence that I failed to recognize at an earlier date the advent of the genius. Perhaps it was my benumbed conception but to no small extent I must blame Dr. T. M. Davis' modesty for my failure to give him redoubled cooperation.

On the same day he wrote a letter to Davis saying,

I want to assure again that my visit was most helpful to me. You gave me many good and useful ideas for construction in instruments. As you know, standard types of instruments can never be produced with the aid of unhandy surgeons. From you I can obtain definite directions. . . . With reference to the resection of the prostate gland, you have really established the method so that we will have to advertise the T. M. Davis method of prostatic resection. Construction details of instruments are of minor

importance because after all, in the absence of skill and methodical procedure it is worthless; and worse than that, if we depart from the original Stern mechanism and go to a much simpler construction you would doubtless give it a trial and endorse it. In my estimation, the former is a long way from a final and perfect model.

#### *Complex generator*

Wappler's son, Fred, developer of the panendoscope, had a new, higher frequency generator for cutting current, called the Complex, which they wanted Davis to try prior to the American Urological Association meeting in Memphis, Tennessee, in May, 1931. They brought the Complex for trial to the Crowell Clinic but none of the resectoscopes discussed previously in Charlotte. The Complex was used, and the cutting current was excellent (Fig. 4). However, the coagulating element left much to be desired. Following this trial they entrained for Memphis where Davis for the first time showed his pictures of resections at a



FIGURE 4. Operating room in Crowell Clinic, Charlotte (1931). Machine on left is Complex tube type generating machine for cutting and control of hemorrhage but modified by Davis to permit use of cutting for sectioning tissue and diathermy machine for coagulation of bleeders. Center box is double-throw triple pole electromagnetic switch controlled by 2 foot switches permitting instantaneous interchange of 2 currents. (Later in year Davis-Bovie machine introduced.)

national meeting. It was received with much skepticism.

After Davis' presentation of his resection pictures, he was very surprised when Joseph F. McCarthy, of New York, showed the Complex generator as the McCarthy generator, making the claim that it had the best cutting and coagulating currents of any generator. In Davis' discussion, he found it necessary to disagree most emphatically with the claim that the generator had a satisfactory coagulating current. This was an important turning point because, from this time on, the Wappers had nothing more to do with Davis. It is also noteworthy that in those days the instruments were introduced under the names of prominent men whose endorsement would result in adoption by the profession.

In November, 1931, McCarthy in the *Journal of Urology*, introduced a new apparatus for endoscopic plastic surgery of the prostate with diathermy and excision of vesical growths. This new apparatus had a special electric arc cutting electrode, a Bakelite non-conducting sheath, and a panendoscopic visual sys-

tem. The diathermy to which he refers was the Complex oscillator. He notes, "No attempt will be made here to clutter this presentation with technical details which if they did not confuse the reader, certainly would the writer."

In the February, 1932, *Journal of Urology*, McCarthy elaborated on his original paper with an article entitled, "Suggestions as to Procedure in the Use of the McCarthy Visualized Prostatic Electrotome." He reiterated that the current from the Complex oscillator would cut and *would coagulate*.

In November, 1932, McCarthy in the *Journal of Urology*, stated that "canalization was the procedure of choice, making an adequate tunnel so that the patient could void." In this article he said,

It can be stated with finality that though the resources of this remarkable current are not as yet fully comprehended, continued experience with it serves to confirm our earlier beliefs that it adequately meets the most exacting demands for both cutting and coagulation. . . . On the other hand, while intensive, prolonged or indiscriminant coagulation will arrest hemorrhage, it may very well predispose to the formation of cicatricial tissue replacement. A bloodless operation, therefore, should not ipso facto be considered a good one.

#### *Davis-Bovie generator*

Shortly after the 1931 meeting of the American Medical Association, in Philadelphia, where Davis spoke, he joined G. H. Liebel of Liebel Flarsheim Co., Cincinnati, Ohio. Starting with the Bovie unit with an excellent spark gap, they designed and tested models which finally resulted in a unit known as a Davis-Bovie generator producing a high-frequency current to section tissue and a moderate frequency, highly damped current to control hemorrhage by coagulation and in which the currents were interchangeable by means of an electromagnetic switch. He was then able to remove 100 Gm of tissue. In one operation, a total of 155 Gm of tissue were removed in one hour and fifty-five minutes.

#### Davis Prostatic Resection

In October, 1931, he presented his technique of transurethral prostatectomy at a meeting of the Seventh District Medical Society held in Albemarle, North Carolina. The technique he described involved sectioning, usually beginning on the right lobe starting at the vesical orifice and making longitudinal incisions to the level of the verumontanum with maximal excursions of the loop. Sectioning is repeated in the same way until the capsule is reached, and the lateral lobe then can be peeled away and the entire lobe removed. The same procedure is employed on the left lobe, and the median lobe is removed; all hemorrhaging was controlled prior to inserting a ureteral catheter. He stressed here recognition of the capsule by

experience. This would seem to be the first accurate description of a transurethral prostatectomy.

It is interesting to note that all of the patients but one were in Greenville and the procedures were done in his office. He gave his own caudal anesthesia but never gave a blood transfusion to any patient. In the early cases, his patients were sent home wearing a catheter. In his later cases the patients were sent to the hospital. One patient sent to the hospital fainted while waiting to be admitted. Subsequently patients after office surgery were sent directly to the hospital by ambulance.

Unfortunately, Davis made the mistake of describing the operation as a simple one, as Stern had done. This resulted in chaos, as described by Robert McKay in *Southern Medicine and Surgery* in 1933:

Manufacturers of urologic instruments and electrical apparatus busied themselves, and every man who had a cystoscope was flooded with literature, primarily dealing with the case for operation and secondarily with arguments in favor of their particular electrical device. As a result of this eagerness to sell instruments, there was a rush into the field of untrained men who tried to do what they considered a minor operation and a number of fatalities occurred.

Adding to this commercial image for the companies promotion of the Davis-Bovie machine were accusations that Davis overcharged, i.e., \$500 and up. Few realized that he had to prepare all his own equipment.

The following period brought many prominent surgeons to Charlotte to watch Davis. Men from all over the country and the world came to see him, including Alcock from the University of Iowa, Bumpus and Crenshaw from the Mayo Clinic, Morrissey of New York, Ross of San Antonio, Sharp of St. Louis, Neff from the University of Virginia, Clark of Roanoke, Virginia, Maximilian Stern of New York, and Jose Iglesias of Cuba. He was invited to speak in many places. In September, 1931, he gave a clinic at the Brady Institute at the Johns Hopkins Hospital, Baltimore; in October he presented his work to the American College of Surgeons in New York. He subsequently spoke at Durham, Richmond, Birmingham, the American Urological Association in New York, St. Paul, San Antonio, Houston, Niagara Falls, Charlotte, and New Orleans.

When he went to these meetings he would go frequently with Liebel, who was a pilot, taking along their Davis-Bovie machine. Often they could not get enough current and would have to operate on Sundays because there was not sufficient power during the week.

It is interesting to note that Alcock's early work was most unsatisfactory because he apparently was not using coagulating current but depended on the Complex high-frequency cutting current for coagulation. He then changed his technique and presented the results of his work in a paper entitled, "Ten Months

Experience with Transurethral Prostatic Resection," in Toronto, in June of 1932. This was the first definitive evaluation of resection and indicated that it was a dangerous operation that should only be done in the best of urologic hands. He refuted the concept that this was a simple office procedure.

Criticism typically appeared in the *Journal of Urology* in November of 1931 by Alexander Randall who referred to Davis' presentation of instrumental prostatectomy. He said:

It's hardly proper for me to criticize; I have not even seen it, yet alone performed it, and yet with your men who advocate these methods for dealing with the obstructing prostate throwing our mortality at us — I would like to throw back at them the question of their recurrent morbidity if they are jealous of our mortality in prostatectomy, and I think they have a right to be. I think in perfect frankness as brilliant as this work is, as progressive as it is, curative as it possibly is, we are not going to fall head over heels in love with it; I would rather caution you to let Dr. Davis go it alone with the technical side which is so difficult, and let him go on with it until he can come back and give us a conclusive opinion of the ultimate results of the method.

Oswald Lowsley on the same issue said,

We have to take these pioneers with a grain of salt. Doctor Davis is an honest, upright fellow and he has my dear friend, Dr. Crowell, convinced, I must say, about this operation: the originator of the operation, Maximilian Stern, was attacked in a polite manner, I hope, by me in New York some years ago for doing the same whittling procedure which I object to seriously and last year he got up in a public meeting and said I was right. The originator of this operation has given up. Doctor Lewis two years ago in Seattle presented a paper in which he cited ten prostatectomy cases in which he had to go back and reoperate due to recurrence after operation. Done by this procedure it is technically impossible to remove the prostate adequately; the limited view and the whole combination does not permit it. I feel every one of these adenomatous cases that have been operated on will have to be reoperated on. There is danger. We do not hear from the pioneers about this danger, but Dr. Sam Raines of Memphis had me see in consultation yesterday a patient who had a punch operation done on him and nearly lost his life from postoperative hemorrhage.

Bumpus in the *Transactions of the American Association of Genitourinary Surgeons*, in 1932 said: "At the Mayo Clinic we have taken 20 Gm of tissue which is the extreme amount it is advisable to remove through the urethra. In a study of 250 cases the last seven years, no such great amount was removed but once. In 204 cases 81.6 per cent, 5 Gm or less was removed."

J. F. McCarthy in the *Transactions of the American Association of Genitourinary Surgeons* (May 1932), stated:

Case selections were mentioned. I think this is the crux of the whole question, proper case selection. I believe the large lateral lobes, the type that bleed easily when the instrument is introduced, is a pretty good case in which to avoid performing endoscopic revision. We have had cases where the simple passage of an endoscope has caused bleeding with pronounced temperature excursions that last for hours or days. Such cases should be sedulously avoided. . . . Doctor Cox's case presented by Dr. Bumpus proves conclusively to me at least one of the points made in my paper which is that lateral lobes play a very minor role in the mechanism of urinary retention as in this case is shown by you. You find well-developed lobes after seven years with the ability completely to empty the bladder.

John R. Caulk in the A.M.A. 1932 mentioned the tendency of the gland to resolve after partial prostatectomy. "For this reason extravagant resections seem not only unnecessary but unwarranted." Doctor Caulk in the *Urologic and Cutaneous Review* (1933), said, "rather extensive operations, removing as much as 25 to 30 pieces at a setting which amounts to 12 to 15 Gm."

Lewis and Carroll in, "Prostatic Resection Without Moonlight and Roses," (*Urologic and Cutaneous Review*, January, 1933), also had second thoughts on prostatic resection, and pointed to the dangers of transurethral approach to the prostate.

Caulk in the *Journal of Urology* (November, 1933) tabulated his complications from a questionnaire sent to urologists in this country and Canada, finding that patients with primary and secondary hemorrhage, which might have ended fatally, were being saved by cystotomy, transfusion, and so on. Rectourethral fistula, urinary incontinence, temporary and permanent sepsis, extravasation, stricture of the urethra, perivesical abscess, phlebitis, rupture of the bladder, peritonitis, gangrene of the bladder, perforation of the bladder, ruptured diverticulum, ischiorectal abscess, perineal abscess, torn bladder neck, periurethral abscess, electrocution, embolism, apoplexy, shock, septicemia, pneumonia, uremia, and deaths occurred.

However, that other urologists perceived this era more clearly is evidenced by McCarthy's statement, "Dr. Davis demonstrated a degree of skill and patience that none of us manifest, and proved the feasibility of removing the obstructing prostate by means of electrical instrumental cutting" (*Surgical Clinics of North America*, April, 1932).

Frederic E. B. Foley said, "The outstanding contribution to the successful clinical application of the punch type resectoscope was T. M. Davis. Despite the fact that its originator abandoned its use in the

face of hardships with the very inadequate cutting current generators, Davis by remarkable patience and persistence employed the Stern instrument in the treatment of all types of vesical neck obstruction" (*JAMA*, 1933).

Charles Mathe in "The Relief of Prostatic Hypertrophy by Present Day Transurethral Methods," in 1933, said: "It was Davis, with great knowledge of electricity, who worked with the Stern loop which had been introduced in 1926. He perfected the resectoscope and experimented with a type of cutting current that would remove tissue and seal blood vessels, assuring hemostasis with a minimal amount of post-operative sloughing. Much credit must be given to Dr. Davis for providing the efficacy and efficiency of the transurethral operation."

Bumpus, in "The Present State of Transurethral Resection of the Prostate," August, 1936, said: "The superior results following the resection might be attributed to the advantages of a cooperative endeavor in an institution such as the Mayo Clinic, had I not learned that T. M. Davis who first popularized the method had performed resections on 966 patients with the loss of but seven."

Clyde Collings in 1943 reported: "T. M. Davis of North Carolina startled the urologic world in 1931 by reporting incredible results with the modification of the Stern resectoscope, using a no. 27 sheath with a large window and wider loop to obtain greater bites of tissue with coagulating current applied to the loop when hemostasis was indicated, effectively stopped hemorrhage as he operated. Thus, he proved that two currents, one for cutting and the other for coagulating, gave him satisfactory results in endoscopic electrical resection of the prostate gland. This was a tremendous victory."

Interest in the economic side was shown in a report in the *Urologic and Cutaneous Review* by Sargent in 1934: "Of twenty-eight full pay resected cases in one private hospital in 1933, the stay was approximately sixteen days and the hospital bill was \$101, whereas of twenty-eight similar suprapubic prostatectomies the average stay was thirty days and the total hospital bill \$188."

Prostatic resection was well on its way, perhaps too well for some. Charles Chetwood, of New York, in the *Transactions of the American Association of Genitourinary Surgeons* (May, 1936), noted that Alcock had recently presented a paper to the New York Section, AUA, on "Fourteen-Hundred Operations by the Transurethral Method Over a Period of Four Years." In the discussion, Randall called attention to the fact that Freyer, of London, whose prostatic surgical cases were drawn from the whole British Empire as well as parts of the European continent, had reported, before his death, about 1,600 cases of prostatectomy after twenty years of practice. Hugh Young recently had attained 2,000 cases of prostatectomy after thirty-five years. The contrast could be interpreted according to one's own point of view. It is





FIGURE 5. Panel on Resection, Southeastern Section AUA Meeting, at Deauville Hotel (March, 1964). Top row: Edwin Alyea, Theodore Davis, Don Blain, Gershom Thompson. Bottom row: Rubin Flocks, Reed Nesbit, Oscar Carter, Roger Barnes.

evident who Davis thought was the best resectionist when he had his median bar removed in 1936 by Alcock.

#### Davis Retired

In 1937, at the age of forty-seven, Davis had two coronaries, and he retired from the practice of medicine and was almost forgotten. He resigned all his medical affiliations and followed a sedentary life. However, his interest in things electrical persisted, and he later studied color television repairing. He became one of the older consultants to the local TV repairmen in Greenville.

He spent his winters in Florida, and lived in the same house in Greenville the remainder of the year with his wife Sumie.

In March, 1964, the Southeastern Section of the American Urological Association devoted its meeting to Prostatic Resection with Davis guest of honor. The symposium was attended by Ambrose, Flocks, Nesbit, Barnes, Thompson, Creevy, Carter, McDonald, Alyea, and others (Fig. 5). Subsequently, Davis received the Gold Key Alumnus of the Year Award from the University of Maryland and the Valentine Award of the Urology Section of the New York Academy of Medicine. He received the Certificate of Merit from

the State Medical Society of South Carolina and was proposed for the Nobel prize. He died at age eighty-four in 1973.

#### Epilogue

Davis failed early to receive due credit for his prostatic resection because of being a brash young man from a small Southern town and was not even considered a urologist. He was cocky about a controversial method which gave poor results in hands untrained in the technique. He was without the research and teaching facilities of a large University to give him backing.

Forgotten until near the end of his life, he received his triumph when Grayson Carroll in "Contributions of Urologists to Medicine" in the *Journal of Urology* (October, 1963), said *the most outstanding accomplishment* had been "the resectoscope in the removal of the prostate."

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