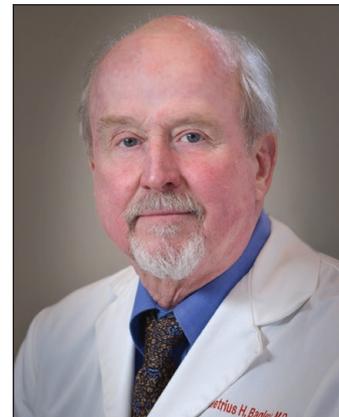

LEGENDS IN UROLOGY

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Gabriel Haas invited me to compose a “Legends in Urology” a few years ago. This is a great honor but also very intimidating. My approach was to delay and hope that it would go away. However, he was persistent and was kind enough to spend some time with me at a meeting to discuss the philosophy and approach to “legends”. As I began working on it, I remembered a comment from Harry Newman, a former clinical professor at Yale and chairman of urology at Einstein. After reviewing his CV, he said that it was “like reading his own obituary”.

I was born in Whitefield, New Hampshire and lived there for 6 years. In that short time, I had contact with the town doctor whom I liked despite his arsenal of needles and developed my first interest in medicine. My family then moved to Washington, DC where my father worked for the federal government and my mother was a teacher. I attended public schools.

Georgetown University had a summer program to introduce high school students to medical research. I applied and was accepted after my sophomore year. I was assigned to the laboratory of Joseph Princiotta, Martin Rubin and Edward J. Zapolski studying iron metabolism where I worked for the next 10 years. My project was the placental transfer of chelated iron which culminated in my first publication in the American Journal of OB and GYN in 1968. More importantly, when I went to the delivery room to get a placenta for an *in vitro* study, I met my future wife, Jacqueline, a nurse in L & D.

For college, I was fortunate to go to Johns Hopkins. The location in Baltimore was not too far to Washington. The population there was heavily weighted toward graduate students. The courses, particularly the laboratories, emphasized research and that inquisitive thought process. The decision to go to medical school was easy but the decision of where to apply was more difficult. I ultimately made the decision to remain at Hopkins where research was prominent both in practice and in theory. As I considered my future specialty, I became interested in plastic surgery on a rotation with Thomas Krizek and Martin Robson. They did some cosmetic but mainly large head and neck cancer surgeries and burns. I still think that the terrible, large, life threatening burn can be the most interesting and challenging problem encountered. The decision to do an internship at Yale was easier. Both of the plastic surgeons from Hopkins had moved there. My first rotation during internship was urology. It presented a wide range of clinical problems, ages and options, which I found interesting and challenging.

After 2 years of surgery residency, I became a clinical associate in the Surgery Branch of the National Cancer Institute where Alfred Ketcham was the Chief. One clinical year offered exposure to extremely demanding surgical problems. I spent 2 research years with Robert Beazley, an outstanding general and endocrine surgeon. It was also a great opportunity to collaborate with other surgeons and their clinical associates. We worked with cryosurgery, doing partial nephrectomies in dogs, facial nerve freezing in monkeys and attempted control of metastatic neoplasms in many patients. Collaboration also produced studies in cytotoxicity and the preoperative staging of many soft tissue tumors. Another project was the concentration of antibiotics in tissue fluid from drainage tubes under flaps. It was a productive and enjoyable time near Washington, DC where we could visit my parents when my son, Jacques, was 1-3 years old.

As the time for a decision on residency arrived, urology offered the most opportunities for the clinical and research practice that I preferred. I was offered a position in the urology program at Yale and immediately accepted it. Those were the days of every other night call (in house) and no cell phones. Electrohydraulic lithotripsy had just been introduced for use in the bladder. There were two residents each year and Rodney Appell was my co-resident. We had a wonderful relationship, balancing call and socializing during the rare opportunities. The faculty at Yale included the Chief, Bernard Lytton, Robert Weiss, Martin Schiff and Ed McGuire and a large group of active volunteer faculty at two different hospitals. It was a strong and balanced group.

When it came time to look for a 'real' job, I learned of a faculty opening at the University of Chicago. My former mentor, Martin Robson, had recently been appointed Chief of Plastic Surgery where they shared a floor with urology. I went for an interview and when I met the faculty, I asked Ed Lyon his research interest. He said ureteroscopy and I replied, "what's that?" He told me of his use of pediatric cystoscopes in females to look into the lower ureter and then longer juvenile cystoscopies in males. He had been able to see and mechanically remove small tumors in the distal ureter and to basket distal stones under vision. The latter raised my interest because I could not remember ever actually removing a stone with blind basketing. Infections remained a major interest and I could collaborate with the plastic surgeons. My wife visited and approved of Chicago and we found an interesting 19th century house located essentially at the campus. Thus, I began my experience of walking to work which has continued for 36 years.

My first case in Chicago was an open pyelolithotomy which had serious intraoperative hemorrhage. That was a significant stimulus for my interest in minimally invasive surgery. Jeffry Huffman also joined the department as a urology resident. The service was not overwhelmingly busy so he, Ed Lyon and I could be in most cases and add suggestions of "try this or try that". It was an enjoyable and exhilarating period. With this cooperative effort, we magnified our learning experiences. During this same period, a rigid metal ultrasonic lithotripter became available. Initially, the smallest was 2 mm in diameter which could pass through the rigid sheath of the ureteroscope. We developed a technique to visualize the stone ureteroscopically and trap it within a basket. The telescope was removed and replaced with the ultrasound probe. It was possible to feel, but not see the probe touch the stone. The operator, with probe in one hand and the basket in the other, felt the loss of resistance as the lithotripter fragmented through the stone. The probe was replaced with the telescope and the stone and basket repositioned for another episode. Although it was a visually blind procedure, we more graciously called it "tactile". Jeff Huffman commented after the first case, "Do you know what this means? We can treat any stone that we can see endoscopically". Although we ran into the expected problems of access, size and incomplete fragmentation, it was basically true. It was obvious that we needed smaller diameter endoscopes, flexible scopes with a deflectable tip and a channel to accept working instruments and a better, more effective, flexible lithotrite.

In the 1980's at the University of Minnesota, Art Smith, Ralph Clayman and their associates explored percutaneous access and endoscopy of the kidneys. They presented hands-on courses on the techniques and invited us to add a segment on ureteroscopy in some sessions. Later, the AUA developed courses for the combined techniques. From the first, it was evident that percutaneous nephroscopy and ureteroscopy were complementary.

In Chicago, we were documenting the endoscopic findings and procedures photographically using a 35 mm camera with a specific endoscopic lens coupled to the telescope. It was difficult and awkward but there were no digital recordings. We used high speed Ektachrome developed in the pathology department daily. The three of us (EL, JH, DB) sat in the conference room and looked at the slides each day, selecting some for a book we were working on keeping others in reserve and rejecting most. The book, *Urologic Endoscopy: A Manual and Atlas*, was released in 1985; 3 years later, our second book, *Ureteroscopy*, followed.

As we lived in Chicago through a record cold winter (-83 wind chill one day), we decided it would be better to live on the East coast where my son could have contact with his grandparents. There was an opportunity at Thomas Jefferson University in Philadelphia, ideally located centrally between both families. Grant Mulholland was the chairman. Each time I visited the area to interview, I gained a greater appreciation of the city. I could live within a 15 minute walk of the University in an 18th century townhouse two blocks from Independence Hall in the epicenter of American history which was my wife's major interest. I had just been promoted to Associate

Professor in Chicago and had the same rank in Philadelphia, and had an appointment in radiology. There were good residents, some of whom were interested in writing. Others responded to encouragement. There were just two full time academic faculty and two other private urologists in the hospital with whom we cross covered. Many visiting urologists came to see me perform ureteroscopy.

I had a particular interest in flexible ureteroscopes and used various versions. Most did not have a channel or deflection. We tried unsuccessfully to compensate by using catheters or a sheath for irrigation. Olympus had a deflectable ureteroscope with a channel (actually a pediatric gastroscope). There was only one available and Rob Kahn in San Francisco and I shared it, using Federal Express to take it cross country in the same week doing cases on each coast. Yoshio Aso had been working with flexible ureteroscopes in Japan. I learned from his publications and met him at international sites. In 1990, Hiromi Kumon and I independently and simultaneously published papers in *Journal of Urology* on ureteroscopic diagnosis and treatment of gross unilateral hematuria. This is a rare problem that could plague the patient and urologists with poorly accepted treatments and results. Previously, the best diagnostic and therapeutic procedure used operative nephroscopy and partial nephrectomy. The ureteroscopic procedure often diagnosed and treated the patient in a single episode. It was exciting and satisfying to reach that point and doubly so because two independent studies had similar findings. I did not meet Professor Kumon for several years until we crossed paths at a World Congress of Endourology. He later came to Philadelphia to spend 6 months in our institution. I spoke at the Japanese Endourology Society meeting at his invitation. The exchange continues as one of his faculty members, Ryuta Tanimoto, is an endoscopic/laparoscopic fellow in our department.

Two major collaborations over the decades at Jefferson have been with Barry Goldberg and Jimmy Liu in ultrasound and Marluce Bibbo in cytology. These continued over 3 decades and have produced some of our most important studies.

I was very active on the international lecture circuit as urologists had a need for knowledge of ureteroscopy and lasers. I met Magdy El-Akkad from Egypt, who asked me to come to the Egyptian Urology Society meeting to present lectures and hands-on courses. I agreed to go with my family on the first of many trips to Egypt. We did two collaborative studies on the endoscopic treatment of stones. The first with a pulsed dye laser found what seemed to be an endless supply of patients with ureteral stones. I took a support group of two nurses and one medical student (Mike Grasso, who continued into urology). On a more recent trip, there were fewer ideal patients but 20 urologists involved in hands-on training. I have traveled to over 30 different countries. One of the highlights was a meeting in Germany where I could travel to see the Storz plant and meet Mr. Karl Storz. It was overwhelming to meet a true “legend”. In order to operate in other countries, it is important to have all of the necessary instruments. For one trip, I needed ureteroscopes and called Storz in Germany. It was 6:30 pm-7 pm, but Mrs. S. Storz herself answered the phone, without any intermediary. I explained what, when and where I needed and she said that it would be there. It was. Endourology depends totally on the instruments available and on new designs. The best result from collaboration between the urologist and the manufacturer, preferably entrepreneurial companies unencumbered by numerous committees. In the 1980's, Jim Vance developed many of the early working devices. I also worked with Richard Auhll who owned ACMI, a manufacturer of endoscopes. It has truly been a privilege and pleasure to work with these entrepreneurial and dedicated people who could make things happen.

Perhaps, the best compliment I have ever received was on the shuttle bus at an AUA meeting. A urologist sat with me and thanked me for my lectures over the years. He stated that he had learned ureteroscopy from our books and videotapes.

In 2005, Allyson Berent walked into our endoscopy suite and said that she wanted to be an endourologist for animals. It was a fortuitous match because I had been interested in endoscopes for animals for years. She joined us as a special fellow in urology and we collaborated on many veterinary cases. The first were flexible cystolithotripsy in male dogs which was difficult because of the long, relatively fixed urethra. Cats have even more renal problems with stones that can obstruct their tiny ureters. We worked out the parameters for cat double pigtail stents. We also endoscoped many other less common animals: a lioness with unilateral hematuria, a horse standing under sedation, a male dolphin and a snow leopard. I was honored to give a State of the Art address at the 2011 meeting of the

American College of Veterinary Internal Medicine. As I described in that lecture, I had found that cats are not just furry little people, but there are unique problems and anatomy in each species. This collaboration continues with Allyson and her husband, Chick Weisse, in their specialized practice at the Animal Medical Center in New York.

In 2012, I learned that I had established a program for Interprofessional Education (IPE) even before that term was coined. I was given a Jefferson Award in Interprofessional Education based on a three part program. As noted, I took nurses and/or medical students on trips when there was an operative program planned. In 1998, we started a 1 day meeting off site in Avalon, New Jersey. It was designed to present lectures to the residents, community urologists, nurses, other clinical personnel and students. Speakers have included Jefferson faculty members, fellows and outside speakers who donated their time without honoraria. It has continued for 16 years. I also established a non-physician Journal Club as nurses were not allowed in the residents' meeting.

My life and role changed in early 2011. During a period of night sweats and abdominal discomfort, I palpated a node that was enlarged. Even I, as a champion denier, decided it needed to be biopsied. The diagnosis was mantle cell lymphoma. I was treated by the excellent Jefferson oncology group on a protocol of chemotherapy and half matched bone marrow transplant from my son, Jacques. Although I stopped active clinical practice, I continued writing during my first courses of chemotherapy stopping only during the later more aggressive courses prior to bone marrow transplant. Fortunately, I had a great response to treatment. There was a period of graft versus host disease for a few months, treated with photophoresis. I gained a new appreciation for the patient's role. One of the major factors is the time involved. It is almost impossible to do anything else during treatment. Another is the truly atrocious food on the patient floors.

My health has generally been good but is too unpredictable to allow return to a clinical schedule. I do continue to write and lecture. Air travel has been restricted because of the risk of respiratory infection. I have managed to stay busy with IPE programs, veterinary liaison, cross country drives and organization of the endourologic academic efforts. We have even started one study with my oncologist, J. Filicko-O'Hara, as a coauthor on lymphoma presenting as urologic problems or incidentally found in urology patients.

I have had the honor to receive two life time achievement awards. The first from the Endourology Society in 2010 and the second from the AUA in 2014. In 2012, I also received the Valentine award from the New York Academy of Medicine.

No one works alone. Throughout my career, I have worked with many students, lab personnel, residents and fellows, associates, family and friends. Without them, and especially my assistant of over 3 decades, Barbara Devine, I could not achieve what I did. They are also a part of the legend.

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