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## Reflections: Historical Perspectives on Pathology in Houston and Galveston

Ellen B. Koch

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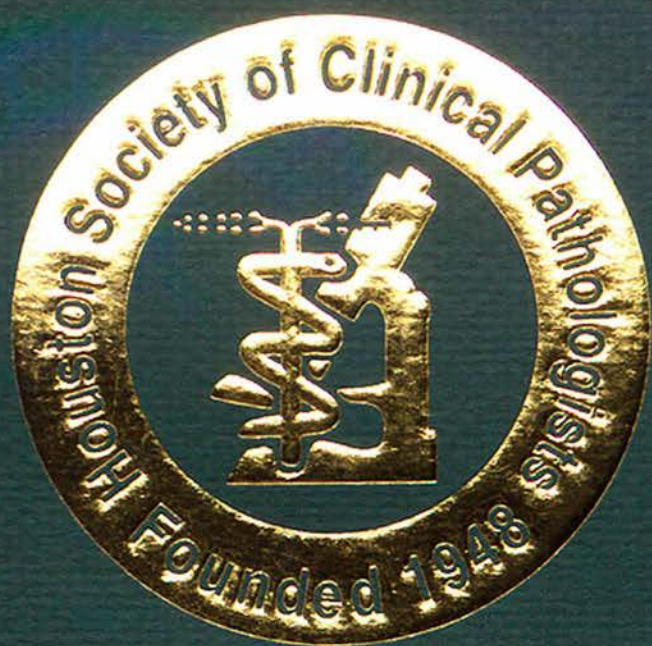
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# *Reflections*





# *Reflections:*

Historical Perspectives on Pathology  
in Houston and Galveston

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## Preface

When the Houston Society of Clinical Pathologists asked me to research and write a history of pathology in the Houston and Galveston area, I was delighted to have the opportunity to look closely at the emergence of this medical field in one location. The history of pathology at the medical institutions on the East Coast, where studies in pathology were made an integral part of the medical school curriculum between 1880 and 1910, has been amply studied. However, the circumstances here in Texas in the same period were considerably different. While some of the issues concerning pathologists here mirror those elsewhere, there were also developments here that were unique to this setting. Histories of particular medical disciplines have traditionally documented the important figures in the field, their great accomplishments, and the institutions where they worked. This account of pathology in the Houston and Galveston area instead examines important themes in the development of pathology in this area, using selected details from the careers of individuals and institutions to illustrate how pathologists, as practitioners, teachers, and researchers, dealt with the challenges they faced in finding and keeping a niche for pathology in the medical world. As a result, many familiar names and places will appear on these pages; but many pathologists equally worthy of recognition and praise are not discussed here. In no way does this history aspire to being a comprehensive accounting of all the people who contributed to the spectacular growth and reputation of pathology in this area. For a more comprehensive accounting of individual pathologists and their contributions to the field, I refer interested readers to the book by Marilyn Miller Baker, *The History of Pathology in Texas* (Austin, TX.: Texas Society of Pathologists, 1996).

A history is only as good as its sources, and I am indebted to quite a few people for providing access to materials. I would like to thank Elizabeth B. White, archivist, and Margaret Irwin of the McGovern Historical Collections at the Houston Academy of Medicine-Texas Medical Center Library (HAM-TMC); Sarita Oertling, archivist of the Blocker Collection at Moody Medical Library, University of Texas Medical Branch at Galveston; Dianne Ware, archivist, and Kimberly Weathers, at the Baylor College of Medicine Archives; Leslie Brunet, archivist of the Hermann Hospital Archives; Kashonna Shaw-Charles and Darlene Jeffcoat at the Harris Country Medical Society—Houston Society of Clinical Pathologists Archives; Melinda H. Freisleben in the Department of Pathology at Baylor College of Medicine; Dr. David Smith, emeritus professor at the University of Texas Medical Branch at Galveston; and Dr. Chester Burns, at the Institute for the Medical Humanities at The University of Texas Medical Branch, for rendering invaluable assistance while I was researching this project.

The members of the Houston Society of Clinical Pathologists were very helpful in providing information on questionnaires distributed last summer, and a number of physicians kindly granted me interviews. I would like to thank Dr. Alberto Ayala, Dr. S. Donald Greenberg, Dr. and Mrs. Melvin Haley, Dr. William Hill, Dr. Tomas Klima, Dr. Margo Restrepo, Dr. Harvey Rosenberg, Dr. David Smith, Dr. Harlan Spjut, and Dr. Jerome Wilkenfeld for providing valuable perspectives on the development of pathology in this area.

This project would not have been possible without the support and guidance of the Golden Anniversary Committee of the Houston Society of Clinical Pathologists—Drs. Rhonda Shannon (Chair), Linda Green, L. Maximilian Buja, and Jerome Wilkenfeld—and to them I give special thanks.

Ellen B. Koch, Ph.D.



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## Introduction



Allen J. Smith, M.D., 1891. Courtesy of Blocker Collection, UTMB Galveston.

Dr. George Dock and Dr. Allen J. Smith both arrived in Galveston within a three year period, to fill professorships in pathology in the only major medical school in Texas. Dr. Dock was hired as a full professor of pathology by the Texas Medical College in 1889. Just two years later, Dr. Smith was hired to fill a similar position in the University of Texas Medical Department, which acquired most of the faculty, students, and laboratory equipment of the Texas Medical College, as well as its dean. Both Dr. Dock and Dr. Smith were young men trained at the University of Pennsylvania Medical School, considered to be the center of American pathology before Johns Hopkins was founded. They had both recently returned from the exciting experience of studying in Germany under the skilled tutelage of some of the 19th century's most talented pathologists. Each brought with him his microscope, the instrument that epitomized the "new" scientific pathology being taught in Europe.

But Dr. Dock was trained as an internist, and he came imbued with excitement over the wonders of bacteriology, the specificity of diseases, and the value of laboratory tests that provided quantitative measures of disease states. In 1893, Dr. Dock was urging all physicians to perform differential blood cell counts on all their patients, as one of the best measures of health or disease. By contrast, Dr. Smith's orientation was more toward descriptive pathology, rendered into a newly scientific endeavor by the instrumental augmentation of the pathologist's senses by microscope. Dr. Smith brought with him preserved tissue blocks for his students to prepare their own tissue slides, and devoted much of his initial efforts at the medical school to building an expansive museum of gross and microscopic tissue specimens.

These two men, under the same title of professor of pathology, embodied a growing dichotomy in pathology that has persisted to this day. One tradition has emphasized the diagnostic value of quantitative measures of body components, however complicated and new those tests may be; while the other has focused on the visual skills of the pathologist in identifying and characterizing pathologic changes in tissues, assisted in increasing degrees by new instruments, new stains, and new understanding of the significance of particular patterns.

What Dr. Dock and Dr. Smith shared was a belief in a scientific empiricism in medical training, with the laboratory providing the best training ground. This included a new view of pathology as a dynamic science bridging the scientific and the clinical, tracking the processes of pathologic change and offering diagnosis, prognosis, and specificity of treatment unavailable with clinical examination alone.

The term *pathology* has served as a very flexible term since Drs. Dock and Smith first set out to teach pathology to medical students in Galveston. The diagnosis of disease and control of therapy with the assistance of laboratory methods, whether



based on visual examination or quantitative measurement, has variously been called *clinical pathology* (to distinguish it from morgue pathology and emphasize its clinical applications), *laboratory diagnosis* (to emphasize the combination of new tools and the diagnostic role of the pathologist), *pathologic anatomy* (to highlight the continuity with normal anatomy), *laboratory science* (as an emphasis on the scientific nature of the enterprise), or just plain *pathology*. Prior to WWI, *clinical pathology* usually referred to the application of pathology to clinical practice, whether that included the examination of tissue or the laboratory analysis of blood chemistry. It was after WWII that *clinical pathology* was increasingly used to describe only some aspects of applied pathology, while *anatomic pathology* was used to describe tissue analysis. Whatever name has been applied, pathology has encompassed a wide variety of professional activities, scientific foci, and modes of practice over the years. Functions that we now associate with pathology research and practice appeared previously under many different names, and areas of science and clinical practice that were once considered part of pathology have long since become specialties in their own rights.

As pathology has evolved over the past century, a number of issues have remained central concerns for pathologists in this area:

- 1) Education: What role does pathology play in education, and how should it be taught to best effect?
- 2) Research: How can the need for long-term contributions to the science of pathology be balanced with demands for immediate clinical applications?
- 3) Practice: Who should practice pathology, how should it be practiced, and where are pathology services best provided?
- 4) Professionalization: How can the standards of practice be improved and maintained? Who should determine what those standards are?

Although pathologists in this area have differed in their approaches to pathology, as Dr. Dock and Dr. Smith did, they have been united in their efforts to address these questions. Together, the pathologists of Houston and Galveston have fought to gain recognition for pathologists as consulting medical specialists who have much to contribute to the best care of patients, and as basic scientists who add constantly to the fundamental understanding of disease processes through scientific research. They have found common purpose in maintaining high standards in pathology practice, in fostering interest in pathology, in attracting young physicians to the field, and in protecting the profession against government regulation and encroachment by non-physicians.

Although these themes are common to the emergence of pathology as a specialty throughout the United States, the particular challenges faced by pathologists here, and the manner in which problems were resolved, were unique to this place with its own mix of individuals and institutions. The following pages explore some of those episodes.



## Theory

During the 19th century, European biomedical researchers produced a spectacular amount of new information about the pathologic processes of the human body and the causes of disease. The list is quite familiar—Xavier Bichat and Jacob Henle developed a new histologic approach to pathology. Theodor Schwann and Rudolf Virchow greatly advanced microscopy as a research technique and propounded the cell-theory of disease, with all pathologic reactions occurring at the level of the cell. Louis Pasteur and Robert Koch revolutionized scientific theory of disease by launching bacteriology and the idea of disease specificity and therapeutic (chemical) specificity. Elie Metchnikoff and Paul Ehrlich made great strides in serology and immunology and the instrumental techniques for studying blood. And Édouard Brown-Sequard opened up the field of endocrinology, while Emil Fischer did the same for biochemistry.

While it is easy now to pick out the elements of their work that guide the science and practice of pathology today, the transfer of their theories into clinical practice was not necessarily easy or quick. All of these men contributed substantially to the science of pathology, but their work often advanced in different directions, with at times conflicting results. For instance, Virchow's insistence that disease processes were alterations of normal cellular processes conflicted with Koch's findings that bacteria, as external agents, caused specific diseases. At various points, the rapid advances in one area pushed others to the background.

While the brilliant scientific advances in pathology were highly valued in Europe for their contribution to the fundamental understanding of disease, little of it appeared to have much application to medicine, as long as therapeutic options remained so limited. The one major exception was Koch's work on bacterial disease specificity and the potential for specific chemical therapy, although even this was resisted for several decades by some physicians.

There is often a large gap between the elaboration of important scientific ideas, and their useful application to medical practice. Most of the scientific theories elaborated by those European pathologists appeared to have very little practical application to the physician practicing in Texas for two reasons. First, physicians viewed disease as location specific, even if specific pathogens were implicated as a contributing factor. As a result, the scientific approach used by European pathologists was considered transferable, but the exact disease descriptions considered to be specific to Europe. This idea was reinforced by the great difficulty American researchers had in replicating European bacteriological results in American settings with inadequate laboratory supplies and chronic problems with highly specialized techniques. If research scientists had problems in replicating those results, then general practitioners in Texas were even less equipped to pursue research or incorporate the new techniques into their routine practices. Even microscopes, the hallmark instrument of a pathologist, were still in rare supply among Texas physicians in 1916.



It was not the scientific *theories* of European pathologists that captured the American mind so much as the *methodology* the European investigators used that was eagerly adopted by some Americans. Pathology came to Texas as an emblem of objective, efficient, scientific reform in the medical education of future physicians. Dr. Dock and Dr. Smith were infused with ambition for changing the way medicine was taught and practiced in the United States from a tradition-bound enterprise into a truly scientific pursuit.

The clarion call for scientific reform was hardly limited to medicine; from about 1880 to 1920 “scientific efficiency” was considered the progressive approach to any human undertaking, whether the construction and management of new industries, the running of a hospital, or the organization of the household. Laboratory training and experience with research were deemed essential for the proper training of young minds, in medicine as it was in other fields. And pathology, encompassing at the time histology, bacteriology, immunology, parasitology, and biochemistry, was considered to provide the quintessential laboratory science education. Unlike the Germans, who viewed laboratory experience as essential only for an elite group of people destined for positions in the civil service, Americans put a more democratic slant on the subject, as they began to view laboratory experience as essential training in deductive, rather than inductive, reasoning for all medical students.



## Education

### PATHOLOGY AS A VEHICLE FOR EDUCATIONAL REFORM

The choice of Galveston as the ideal location for the first state medical school was based upon several facts: Galveston was the most populous city in Texas at the time and it was considered to be the most healthy location in the state. For decades, Galveston Island had served as refuge for those seeking to restore their health, or to escape from the threat of yellow fever and cholera. People came from as far away as New Orleans and South America to recover their health. One person commented, "That Galveston Island is the most salubrious portion of the whole Texas seaboard, or low flat country, appears to be universally conceded. That is, it is more *healthy* than any other portion of the confessedly *unhealthy* coast ranging from seventy to one hundred miles inland from the borders of the Gulf of Mexico...."<sup>1</sup> Despite the healthful benefits offered by the climate of Galveston, the physicians then practicing were mostly considered to be a danger to the health of the population. One commentator on the Galveston medical scene likened physicians to tarantulas, whose poison can kill others but not themselves, while another warned newcomers to Galveston to avoid "lawyers, doctors, and quack medicines, and all other unseemly monsters."<sup>2</sup>

When Dr. Dock arrived in Galveston in 1889 to teach pathology at the Texas Medical College, he found a reform spirit already in place. The Texas Medical College had been re-established after a seven-year hiatus, during which the University of Texas Medical Department was to have been built. The Texas Medical College reopened its doors with a vastly expanded curriculum of three years, including courses in medical chemistry, general pathology, morbid anatomy, and bacteriology during the second year. Dr. Dock was the professor of pathology, and Dr. H.P. Cooke taught pathological anatomy and physiology. Local businessmen of Galveston contributed thousands of dollars to the school for the equipment of the laboratories, indicating the respect they held for pathology as an essential part of medical education. Clearly the Board of the Texas Medical College viewed pathology in the same light because, of all the eight faculty members hired, Dr. Dock was the only one to receive a salary. The entire income of the college, derived from students' fees, went to paying Dock's salary and for the equipment of the laboratory.

When Dr. J.E.Y. Paine became dean of the new University of Texas Medical Department in 1891, he explicitly noted that the regents "...have organized this school upon a plan that is in line with leading medical colleges in the United States, and we here register the solemn edict: Its standards shall never trail in the dust."<sup>3</sup> By mentioning the leading medical colleges in the United States, he was referring to Harvard, Columbia, and the University of Pennsylvania, which had already adopted a German model of laboratory instruction as the key to training



Architectural rendering of "Old Red," the original building for the University of Texas Medical Department, 1891. Courtesy of Blocker Collection, Moody Medical Library, UTMB.



good clinicians. Only in these schools had pathology taken on a new guise, encompassing microscopy, chemical analyses, blood testing, histology, bacteriology, and morbid anatomy. By declaring that UTMB was modeled on these schools and would not lag behind them in instilling higher standards of practice in future generations of physicians, the dean was promoting pathology to a new pre-eminent position in the medical curriculum.

The emphasis on pathology laboratory experience did create some complications for the school, since the procurement of bodies for medical students was somewhat tricky. As Dr. Paine explained, "...the rigid exaction of the law had to be complied with, and to evade its penalties the dead bodies generally underwent the formality of internment. These subjects were subsequently resurrected by the students. The ghoulish forays, being undertaken after midnight in the dark of the moon, and hair-raising experiences were sometimes associated with these gruesome[sic] missions."<sup>4</sup>



Architectural drawing for John Sealy Hospital in Galveston, 1888. Courtesy of Blocker Collection, Moody Medical Library, UTMB.

### John Sealy Hospital

When the University of Texas had determined to build the state medical school in Galveston, but was unable to for lack of funds, the city of Galveston offered to donate to the state a plot of land and a new building valued at \$50,000. Mr. George Sealy, on behalf of his deceased brother, John Sealy, and his widow, offered \$60,000 for the building of a new hospital on the same block of land. This hospital was to be for the exclusive use of UTMB, with faculty providing all medical and surgical services. The John Sealy Hospital, with 150 beds, was completed in 1889 and donated to the city of Galveston. Because of Galveston's location as both a seaport and terminus of several railroad systems, and the lack of the hospitals in the South, it drew patients from other states and countries, as well as from all parts of Texas.

By 1935, the hospital had expanded to 375 beds, 250 of which were designated as teaching beds; in that year more than 4000 inpatients and 72,000 outpatient visits were used as teaching cases, providing the medical students ample opportunity to practice clinical and laboratory skills. The hospital facilities, especially the pathological, anatomical, and surgical laboratories, elicited high praise from both the former president of the Southern Surgical Association, and the professor of surgery from Vanderbilt University, who had previously served as president of the AMA and the ACS.

When the UT Medical Department finally made its long-promised appearance in 1891, the school acquired the dean, five faculty members, and most of the chemical, anatomical, bacteriological, and other medical instruments of the Texas Medical College, but not Dr. George Dock as professor of pathology. In his stead, Dr. Allen J. Smith was hired as professor of pathology, after UT had advertised nationally and internationally for faculty members to fill the positions available in the new school. When the University of Texas Medical Department opened its doors in 1891, the school was most unusual in having a university affiliation, the new John Sealy Hospital as a dedicated teaching hospital, and fully salaried faculty. The UT Medical Department was renamed the University of Texas Medical Branch (UTMB) in 1919. From the outset, all of the faculty were salaried; but Dr. Smith, as a professor of pathology, encompassing pathological anatomy, histology, embryology, parasitology, microscopic pharmacognosy, tropical medicine, nervous and mental diseases, general biology, inorganic chemistry, and bacteriology, received an annual salary of \$2000, compared to the \$3000 received by the professors of surgery, physiology and hygiene, and chemistry and toxicology. This was an interesting reversal of Dr. Dock's salary situation in the previous year at Texas Medical College.

Dr. Smith made available to his students the large collection of pathological tissues he had brought with him, and his microtome for preparing slides. He put considerable effort into building a large collection of study slides and gross sections for the use of students in pathology lab by sending appeals out to physicians throughout Texas to send in interesting specimens for the pathology museum. Although Dr. Smith investigated bacteriology and parasitology himself, in concentrating on anatomical pathology and the study of many specimens in the medical curriculum, Dr. Smith was following the lead of Dr. William Osler, his previous colleague at the University of Pennsylvania Medical School. Dr. Osler emphasized that the correlation of anatomical pathology findings and clinical outcomes was the very essence of pathology.

Dr. Smith's first appeal for tissue contributions promised to put the donor's name on the slide, and keep a detailed record of the patient's clinical history. Subsequent appeals gave more explicit instructions for proper preservation of materials prior to mailing, because specimens were arriving in various states of putrefaction. The announcement promised that the pathology department would pay the postage. A few years later, the department promised to return a diagnosis to the physician, free of charge, effectively offering free diagnostic lab services by mail.





Pathology museum under the amphitheater in Old Red, UTMB, 1901. Courtesy of Blocker Collection, Moody Medical Library, UTMB.

The U.S. Postal Regulations, effective from 1892 through at least 1916, prohibited the mailing of pathologic specimens to individuals. The enforcement of this regulation became a particular concern when there was a marked increase in the 1910s in the numbers of pathologic specimens mailed routinely, and the breakage of culture tubes and inadequate packing exposed postal workers to potentially contagious disease. Each laboratory was responsible for demonstrating that the lab was equipped to deal safely with the specimens once they were delivered. The postal regulations, when they were enforced, ensured a certain minimum level of competence in laboratories, not in obtaining accurate results, but in the safe handling of hazardous materials, long before any other regulations were in effect for the standards in clinical pathology labs.

Under Dr. Smith's hand, the teaching laboratories were transformed from virtually bare rooms on the second floor of the medical school into a model of medical education between 1891 and 1905, when the pathology lab and the histology lab were each equipped with 30 microscopes, and the bacteriology lab on the next floor was equipped with microscopes with oil immersion lenses. Dr. Smith pushed for other improvements in the entire school as well.



Dr. Smith teaching pathology lab in 1902. Courtesy of Blocker Collections, UTMB.

The school introduced a four year curriculum in 1897, the same year that Dr. Smith became dean of UTMB. The UTMB outpaced most medical schools in the south and midwest in improving the caliber of graduating physicians by raising their educational requirements. Between 1906 and 1910, entrance requirements were raised at UTMB to include one year of college work in inorganic chemistry, biology, and physics; this was four years in advance of the American Medical Association's Council on Medical Education requirements that Class A schools raise their entrance standards. Only 41 out of 135 medical schools in the U.S. received such a ranking in 1904. The entrance requirement was raised again in 1936 to include three years of college, with some courses in the basic sciences.

The UTMB fared well even in the most stringent of assessments early in this century. When the American Medical Association (AMA) council invited the Carnegie Foundation to evaluate medical schools, the resulting report produced by Abraham Flexner in 1910 accelerated a reform movement in medical schools that was already well underway. Dr. Abraham Flexner was a scientist (Ph.D.), not a physician, and his assessment of medical schools was geared toward a model of medical education based more on research than on practice. He looked first at the level of entrance requirements, the size and training of faculty, and the economic viability of the institution; only those schools with endowment funds and adequate faculty could sustain the higher costs of longer training periods with more time in research. The quality of the laboratories was a primary consideration in the quality



of the medical education. Dr. Flexner made no evaluation of clinical training of medical students, but only inquired whether the school was affiliated with a general hospital.

The UTMB elicited praise from Dr. Flexner because in 1909 it had admirable teaching laboratory facilities and a pathology museum, adequate general operating funds for both the medical branch and the teaching hospital, and salaries for all faculty members.

After 1900, the pathology curriculum did not remain centralized in the pathology department. The departments of surgery and medicine soon began teaching their own courses in clinical pathology and surgical pathology; and bacteriology, initially taught under pathology, became a separate department in 1904. Dr. James W. McLaughlin, a professor in medicine, established a clinical laboratory at John Sealy Hospital before 1900. Dr. Marie Charlotte Schaefer graduated from UTMB in 1900 and, after further training at Johns Hopkins Medical School, she returned to Galveston to teach histology and embryology in the pathology department. She soon branched off in 1904 as the head of a new section of histology and embryology, recognized as an independent department in 1912. Later, in 1931, Dr. Meyer Bodansky became the one-man Department of Pathological Chemistry, and director of the laboratories for John Sealy Hospital.

## INTEGRATION OF PATHOLOGY INTO CLINICAL EDUCATION

This early decentralization of the pathology curriculum was applauded by some. Dr. John T. Moore, a prominent pathologist in Galveston and chairman of the Section on Pathology in the Texas Medical Association (TMA) in 1906, commented favorably on the fact that clinical pathology was no longer taught by the chair of pathology, but within the departments of medicine and surgery. He felt students were too isolated from patients, rarely seeing the person from whom specimens were taken. He commented that this taught medical students to view pathology as an esoteric, expensive enterprise remote from patients. When students were trained by the clinicians who managed the patients in the wards, they were more likely to see the importance of doing the laboratory work, in addition to learning the necessary techniques.

The decentralization of the pathology curriculum at UTMB reflected a changing view of the utility of pathology. By 1906 some physicians no longer viewed the primary utility of pathology as a basic science to be used in training medical



City of Houston, Health Department Pathology Laboratory, 1914. Some of the earliest professional positions for pathologists were in public health departments, testing for communicable diseases and providing vaccinations. Courtesy of HAM-TMC.



students to think critically, but increasingly viewed pathology as a useful practice for all physicians to apply, with practical clinical results that could guide the physician's diagnosis and treatment of patients. The pathology curriculum, as it was increasingly integrated into all of the clinical departments, was designed primarily to equip medical generalists with sufficient knowledge of pathology and technical skills for good practice, not only to train medical students in scientific thinking. The vast majority of UTMB graduates went into general practice in Texas, so the pathology curriculum was geared to train them accordingly.



Courtesy Blocker Collections, UTMB.

#### Paul Brindley, M.D.

Dr. Brindley, nicknamed "Uncle Paul" by his students, was an extraordinary teacher of pathology at the University of Texas Medical Branch at Galveston. He served as chairman of the department from 1929-1954, with education of medical students always his major concern. He helped design the teaching laboratories in the new Keiller building, with electronically controlled window shutters to darken the room for slide projections. He introduced the use of photographic slides as a substitute for wet specimens in most lectures, and photographed and processed most of the materials himself. Dr. Brindley was the first recipient of the Caldwell Memorial Award, presented posthumously in 1955. Dr. Brindley was himself a product of UTMB, and left Galveston only long enough to pursue graduate work at the Mayo Clinic and Boston City Hospital before becoming acting chair of the Department of Pathology in 1929. His many publications covered such topics as aneurysm, malignant disease, and tropical diseases.

The appropriation of pathology by other departments also reflected the success of pathology in depicting itself as the unifying science bridging the basic sciences and clinical practice. Other fields of medical endeavor, in their attempts to become more scientific, turned to pathology as a means to achieve that. Internists were the first to adopt laboratory testing as a scientific tool to aid in clinical diagnosis. Surgeons turned to pathology testing for corroboration of their diagnoses and treatments, since surgeons at the turn of the century were battling a reputation for reckless and excessive surgery. The adoption of aseptic techniques, antisepsis, and anesthesia at the end of the 19th century had made it possible for surgeons to undertake quite lengthy operations, and there were many who believed that surgeons then took the license to operate with very little cause. Surgeons increasingly used laboratory tests as objective, scientific data in their pre-operative evaluation and post-operative monitoring of patients, to lend scientific authority to their clinical practices. Iodine reactions and differential white blood cell counts were viewed as especially useful by surgeons as diagnostic of dangerous hidden infections such as appendicitis, and useful for monitoring the post-operative patient to see if the infection had been eradicated. Red blood cell counts and measurement of hemoglobin were valued for testing the patient's ability to withstand surgery.

The diffusion of pathology instruction to the various departments at UTMB was one of the reasons that the pathology department itself grew so slowly. The pathology department continued to provide instruction in general pathology, but the clinical applications of that pathology were taught as integral parts of the clinical sciences. During Dr. Smith's tenure from 1891 to 1903, he was solo for the first few years, and had the assistance of two demonstrators, one in normal histology, general biology, and embryology, and one in pathology for the remainder of the time. The department shrank again to two members when normal histology, biology and embryology branched off under Dr. Schaefer in 1903. From then until 1927, the pathology department had at most one full professor of pathology, one demonstrator or instructor with a medical degree, and one or two assistants, usually medical students or recently graduated physicians. Between 1928 and 1939, the number of physicians teaching in the pathology department hovered at around four.

It was not until after 1939, when clinical pathology, surgical pathology, general pathology, and experimental pathology were brought together again within one department of pathology, and the shortage of pathologists produced by WWII had eased, that the pathology faculty began to expand again. Dr. Paul Brindley remained the sole full professor in pathology until Dr. Raymond H. Rigdon joined the faculty as the second full professor in 1947. Over the next decade, the full-time faculty expanded to seven. The expansion kept a steady pace, with 12 full-time faculty, 5 part-time, 7 residents, 1 graduate student, and 49 technicians in 1965, growing to 55 full-time faculty, 18 adjunct faculty, and innumerable technicians by 1987.



## EXPANSION OF PATHOLOGY EDUCATION

The post-WWII expansion in the pathology faculty at UTMB was paralleled by a similar growth in the pathology department at Baylor College of Medicine, after the institution moved to Houston in 1943. Dr. Stuart A. Wallace, chair of pathology in Dallas, and Mrs. Anna Haley, a tissue technician who had been working under Dr. George T. Caldwell, were the two members of the department



Baylor College of Medicine was temporarily housed in this Sears Roebuck Building 1943-1947.  
Courtesy of Baylor College of Medicine.



Courtesy of HAM-TMC.

### Jefferson Davis Hospital

Jefferson Davis Hospital began as four army barracks at Camp Logan, turned over to the city of Houston in 1919 for the care of the indigent sick, a service provided by St. Joseph's prior to that time. With approval of a bond issue in 1924, the City of Houston and Harris County built Jefferson Davis Hospital as a 150-bed hospital on Elder and Girard Streets, the same year that Hermann Hospital was built with private funds, also for the charity care of patients. Jefferson Davis was moved to larger quarters on Buffalo Drive in 1938, shortly before Baylor College of Medicine moved to Houston, and the pathology faculty there began providing clinical services for the hospital.

### Paul A. Wheeler, M.D.

Dr. Paul Wheeler was the second member to join the pathology faculty at Baylor, after the medical school moved to Houston in 1943. When he came to Houston, he already had considerable experience in pathology, having served residencies in pathology at Barnes Hospital in St. Louis (1932-1933) and St. Louis City Hospital (1933-1935). During his tenure on the faculty at Washington University School of Medicine between 1935 and 1944, he had risen to the rank of assistant professor of pathology, before he came to Baylor as an associate professor in 1944. He quickly earned affection and respect, both among Baylor faculty and students, and in Methodist Hospital, where he served as interim pathologist during the illness of Dr. Martha Wood, chief pathologist. Through his work at Methodist as pathologist until his death in 1949, he was instrumental in building bridges between the two institutions, culminating in an official affiliation in 1950.

who agreed to move as well. Anna Haley was married to Dr. Melvin Haley, who had just graduated from Baylor in Dallas, and came to Houston for an internship at Hermann Hospital. They were joined in the first year by Dr. Paul A. Wheeler, recruited from Washington University School of Medicine, where he was an associate professor of pathology, and Dr. S.E. Kerr, an instructor in pathology. To supplement the small number of full-time faculty in pathology, Baylor offered pathologists in local hospitals appointments as voluntary faculty; Jefferson Davis Hospital became the first major teaching hospital for Baylor. Clinical appointments were also offered to many pathologists in private laboratories, most of whom accepted the offer. Over the following ten years, Baylor arranged affiliations with Hermann Hospital, Southern Pacific Hospital, Houston Negro Hospital, San Jacinto Memorial Hospital at Baytown, the Veterans Administration Hospital, and Houston Tuberculosis Hospital.

Thus, the list of faculty in pathology at Baylor immediately looked impressively large; but most of those faculty were voluntary faculty. The full-time, salaried faculty in pathology at Baylor grew from the initial two in 1943, to three in 1949, gaining two additional salaried positions by 1952. When Baylor established a residency program in 1946, all pathology residents were appointed as instructors with responsibilities for teaching medical students and performing service work in the many affiliated hospitals, further swelling the ranks in the department. By 1967 the department counted 17 full-time faculty, 6 full-time faculty shared with other departments, 8 instructors, 5 full-appointment volunteer faculty, and 26 volunteer faculty with clinical appointments. There were an additional 30 house staff, fellows, and trainees. The department now numbers a total of 67 faculty members.

The first endowed professorship at Baylor was established in 1943 in the pathology department as a memorial to R. Clarence Fulbright, under the direction of his widow, Mrs. Irene Fulbright. Any funds unused in supporting the professorship were to be used for the maintenance of the department of pathology. Dr. Stuart Wallace was the first professor to fill this chair. Dr. Wallace was known as a man



#### Stuart A. Wallace, M.D.

Dr. Wallace was chair of the department of pathology at Baylor University College of Medicine in Dallas from 1927-1934. When Baylor College of Medicine relocated to Houston in 1943, Dr. Wallace came to assume chairmanship of the new department, bringing with him one tissue technologist from Dallas. He quickly built up the pathology department, with the assistance of pathologists in hospital and private laboratory practice, and the addition of full-time salaried faculty. Shortly after establishing the pathology department here, he was named to Baylor's first endowed chair, the Fulbright Professorship in Pathology. He worked tirelessly to fulfill the service needs of hospitals in the Houston area, and worked steadily to improve the pathology education for medical students, expand the pathology residency program, and establish a creditable research program at Baylor. He retired in 1961 as chairman just one year before his death. He was honored by HSCP for his activities on behalf of pathology in the community, the state, and the nation.



1954, Courtesy of HAM-TMC.

who lived very simply, driving a small car and residing in a modest home. Supposedly, Mrs. Fulbright felt that the Fulbright Professor should travel more grandly than he did; and she provided him with a new, very large Cadillac. The only problem was that the car would not fit into his garage, so Dr. Wallace resorted to removing his garage doors to accommodate the new vehicle, until he eventually traded cars with a medical student, ending up with a Pierce Arrow instead.

At Baylor, the curriculum in pathology was spread over the last three years of medical school, with second-year students taking courses in general and systemic pathology, and biology of neoplasms, and attending two full autopsies. Third-year students studied surgical pathology under Dr. Bela Halpert at the Veterans Administration Hospital. They, with the fourth-year students, were required to attend all of the clinical pathology conferences during the year. Fourth-year students learned autopsy technique. The immediate challenges the department encountered were an overload of service work at Jefferson Davis Hospital, and the difficulties of supplying the medical students with fresh surgical and necropsy material for instruction.



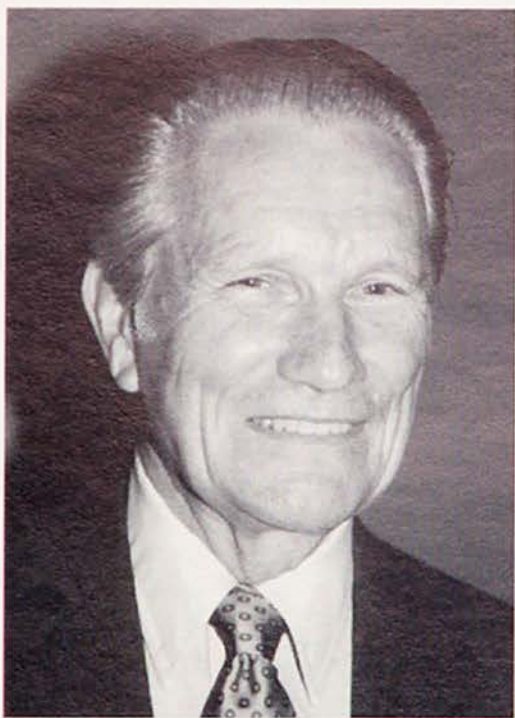
New quarters for Baylor College of Medicine in the Texas Medical Center, 1947. Courtesy of HAM-TMC.



Veterans Administration Hospital 1959. Courtesy of HAM-TMC.



## DEALING WITH SHORTAGES OF PATHOLOGISTS



Photo, 1991. Courtesy of Dr. Harvey Rosenberg.

### Harlan J. Spjut, M.D.

Dr. Spjut is known by innumerable medical students, pathology residents, and fellow pathologists as an extraordinary teacher. In his capacity as a professor at Baylor College of Medicine he has set a model of excellence and dedication in pathology practice, education, and research. Dr. Spjut completed medical school and a residency in anatomic pathology at the University of Utah College of Medicine before joining the faculty in surgical pathology at Washington University School of Medicine in 1953. He served there until he was recruited by Baylor College of Medicine in 1962. He influenced an entire generation of pathologists in his capacity as chief of anatomical pathology services at Jefferson Davis, Ben Taub, and St. Luke Episcopal Hospitals at various times. Dr. Spjut also served as acting chair for the Department of Pathology from 1969-1972, and again from 1987-1988. In 1983 he was named to the Fulbright Professorship of Pathology. Dr. Spjut's primary interests have been in orthopedic, gastrointestinal, and cytologic pathology, especially neoplasms of the bones and gastrointestinal tract.

However, a more serious long-term concern was the small number of medical students who were attracted to careers in pathology. For many medical students, one of the major appeals of medicine was patient contact; and pathology was seen as a very isolated practice, far removed from patient care. Both Baylor and UTMB found it challenging to find enough high-caliber pathologists for academic work when there was a general shortage of pathologists in practice, and there remains to this day a major discrepancy between salaries for academic pathologists and the incomes pathologists earn in private practice. Dr. Harlan Spjut remembers his former colleague, Dr. Lauren Ackerman at Washington University School of Medicine, commenting in the 1950s on the fact that he could have earned in private practice three to four times what he earned as an academician. The choice of pathology as a profession was also often viewed as odd—Mrs. Anna Haley tells of encountering another physician's wife, who exclaimed with astonishment over the fact that Dr. Haley went all the way through medical training and *still* went into pathology! With those obstacles to attracting young physicians into the field, academic pathologists tried valiantly to interest greater numbers of medical students in pathology by emphasizing the clinical aspects of pathology, and trying to engage students in the excitement of research.

The UTMB introduced a plan for students who were interested in pathology to devote a year to research or special studies, in between the second and third years of medical school. Baylor followed with a similar scheme, with the year spent in research eligible for board credit. The department even offered financial fellowships to entice students into spending a year in pathology research, with the idea that the research would engage the minds of the medical students early enough that they might be interested in later specializing in pathology. Dr. Spjut explained the logic behind this: Baylor had a great shortage of pathologists, as did most other places in the United States, in part because medical students liked patient contact, and in part because students often had little idea of what pathology really was. The pathology faculty at Baylor hoped that some of the students would be sufficiently interested in their research projects that they would stay on at Baylor after graduation. The majority of the students who did take the additional year for research did indeed go on to specialize in pathology.

Both pathology departments continued to experiment with different methods of teaching, and different curricula, in search of a balance that would best serve the students' needs and foster their interest in pathology. At both UTMB and Baylor during the 1940s and 1950s, the bulk of the pathology curriculum was concentrated in the sophomore year, with juniors and seniors participating in clinical pathological conferences, surgical pathology training in hospital laboratories, weekly slide seminars, and tumor conferences.

Around 1960, both UTMB and Baylor adopted a revised medical school curriculum allowing the students more time to take elective courses. Pathology was introduced in the freshman year, and even though the majority of instruction in pathology still occupied the sophomore year, both institutions introduced many more options for elective work in the clinical setting. At Baylor, Dr. Joyce Davis, as director of the student teaching program, gradually revised the approach to education in pathology by moving most of the teaching into the hands of clinical faculty in the affiliated hospitals, dividing students into small groups, and emphasizing clinical pathological correlations through case presentation with autopsy materials. Experiments were introduced as a small-group teaching method in 1963, and a greater effort was made to coordinate the pathology course with the course in internal medicine.



When UT-Houston opened its doors to medical students in 1972, the pathology curriculum introduced first-year students to pathology through a histology course; and then most pathology instruction was in general pathology coursework during the sophomore year. Dr. Margo Restrepo, a student in the first class to graduate from the new UT-Houston Medical School, remembers arriving for her first year of medical school and discovering that laboratory work was part of the first year curriculum even though the school had no teaching laboratories set up. All the students were instructed to spread themselves out around the medical center, and find laboratories in which to work for the first year. For those interested in pathology, the laboratories of Hermann Hospital were already well equipped, and the staff were quite experienced in teaching. Dr. Restrepo remembers her dismay the first day of pathology class, when the professor walked in, pointed to boxes holding 5000 pathology slides, and announced that the students would know all 5000 by the end of the term. The exam was almost like an assembly line: the students marched past microscopes lining the room, paced in their examination of each slide by the press of students coming along behind.

The pathology faculty at UT-Houston began to reorganize and expand the pathology curriculum almost as soon as the school opened. Within two years, under Dr. Donald Cannon's leadership, the department had a vastly revised histology course, a new course as introduction to laboratory medicine, and summer fellowships for students to work in the labs over the summer. The department also proposed a masters degree program in medical laboratory sciences. During Dr. Cannon's tenure from 1974-1980, the numbers of hours that medical students spent in pathology doubled, with great expansions in the histology and general pathology courses and in opportunities to participate in the specialized clinical labs at Hermann Hospital. As both UTMB and Baylor had done when their pathology departments were new and expanding, the UT-Houston pathologists found it possible to try a variety of new approaches to teaching pathology to medical students.



University of Texas Houston Medical School, Courtesy of UT-Houston.



## SPECIALTY TRAINING IN PATHOLOGY

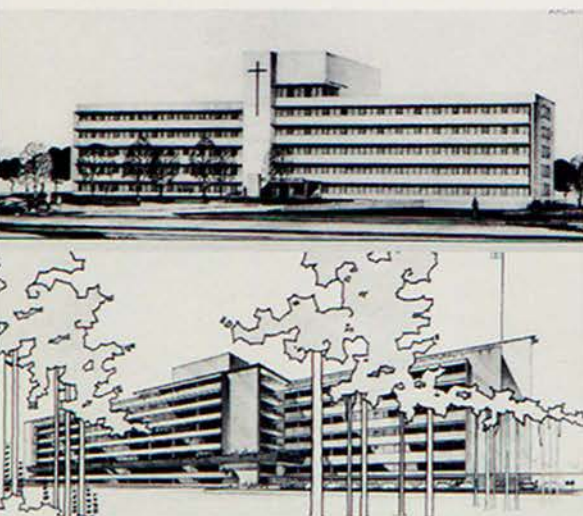
As early as 1913, long before residency programs were a formalized arrangement for post-graduate training in a specialty, the pathology department at UTMB effectively ran a residency program, with young physicians serving as instructors in pathology for a number of years before leaving to become pathologists elsewhere. The number of instructors employed at UTMB was usually only one or two per year until 1939. That year all of the pathology instruction that had been formerly scattered in various clinical departments was reconsolidated into the pathology department, which suddenly acquired from them seven instructors of various levels of experience.

The end of WWII led to a great surge in residency positions in pathology, as returning military personnel sought residency positions, and the demand by hospitals for board-certified pathologists escalated. The United States military had reinforced the benefits of residency training by offering higher salaries to medical officers who held board certification in their specialties. There was some confusion among hospital administrators about what the purpose of a residency was. Many hospitals requested approval for residency positions because they were shorthanded and looked to residents as qualified but inexpensive help in the laboratory. Residents were indeed a small cost to the hospital.

When Dr. Melvin Haley came to Hermann Hospital as an intern in 1943, his monthly salary was \$25; his wife made three times that much working as a tissue technician at Baylor. By the time Dr. Haley reached his fourth year of residency at Baylor, his monthly income had reached the handsome level of \$95. Since residents were expected to be young, unmarried, and to live in the hospital, such low salaries were considered to be sufficient. What was not apparent to many hospital administrators was that residency programs required additional time from the senior pathology staff in training the residents; residents meant more work, not less.

Formalized specialty training in pathology was introduced at Baylor in 1946, as it was in Galveston at UTMB, with just a handful of positions. In 1946, Baylor also instituted a special review course in basic sciences for physicians entering residencies after military service, with classes in anatomy, pathology, physiology, biochemistry, pharmacology, toxicology, parasitology, bacteriology, and hematology. By 1955, UTMB had four residency positions, and Baylor had twelve. When UT-Houston began with 12 approved pathology residencies in 1972, it was building upon the pathology residency positions that had been previously approved at Hermann Hospital under its own aegis since 1957.

From the time pathology residencies were first introduced, the number of positions was determined by the laboratory space and staffing of hospital laboratories. The core of instruction remained in hospitals for the most part, until research came to be considered a requirement in residency training in the 1970s. Until that time, it was the ability of the hospital to handle resident training that determined the number of residencies approved, and hospitals could have approved residencies without academic affiliation. So, for instance, the pathology department at St. Joseph Hospital was accredited for residency placements in both clinical and anatomical pathology from 1953 to 1977, with an average of three residents training each year. Through an informal affiliation with Baylor, residents had access to training in subspecialties. St. Joseph Hospital dropped its residency program at the point that the two medical schools, UT-Houston and Baylor, seemed to be filling the needs for pathology residents through their programs.



Architectural drawings for St. Luke's Episcopal Hospital, 1950 (top), and M.D. Anderson Cancer Hospital (bottom).  
Courtesy of HAM-TMC.



M.D. Anderson Cancer Hospital, St. Luke's Episcopal Hospital, and Hermann Hospital were three institutions in the Texas Medical Center (TMC) in Houston that offered residencies in pathology, beginning in the 1950s. M.D. Anderson Cancer Hospital was initially established by the University of Texas in 1941 as a charitable cancer hospital and research institute; the provision of land, buildings, and operating funds by the M.D. Anderson Foundation brought the UT plan to fruition in 1942, with the opening of research facilities, and patient care facilities in 1944. M.D. Anderson Cancer Hospital, now known as the M.D. Anderson Cancer Center (MDACC), began training pathology residents in 1950. The hospital quickly found that the narrow concentration on cancer produced residents with too little breadth of experience. The staff at MDACC decided that it would be more advantageous to have fellowships for two reasons: 1) The shortage of physicians after WWII and the increasing number of residency positions made competition for residents quite intense. The staff at MDACC decided that they would have a better chance of attracting physicians by creating a very high-caliber training program that gave experience with cancer to those who already had other specialty medical training. These fellows would serve some of the traditional functions of a resident, but would have more opportunity for research and study in the basic sciences. 2) There was much resistance to the idea that MDACC might produce "cancer doctors." A fellowship program that superimposed knowledge about cancer diagnosis and treatment on previous training in another specialty would lead to greatly disseminated knowledge about cancer in the medical community, without creating doctors who specialized solely in cancer.

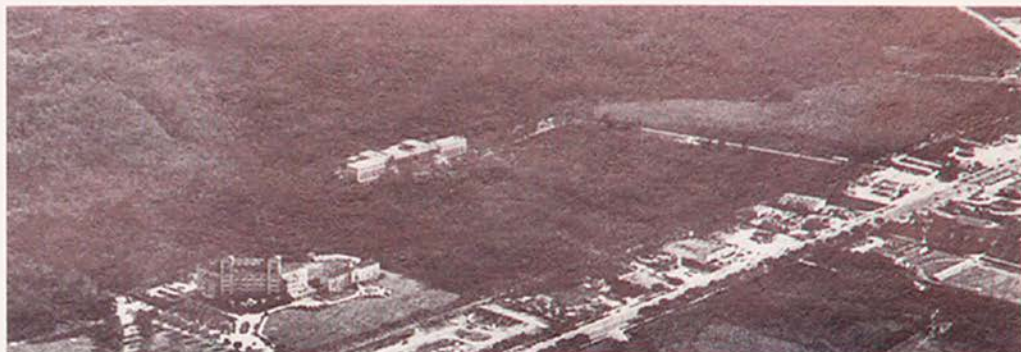
Like MDACC, St. Luke's Episcopal Hospital, completed in 1954, was a new hospital with its first location in the TMC; in fact, it was the first general hospital built in Houston since 1927. In the Pathology Department at St. Luke's, Drs. Carl Lind, William Hill, John Milam, and Harlan Spjut, among others, maintained an independent residency program specializing in transfusion medicine and surgical pathology; St. Luke's pathology residency program remained independent until 1988, when it formed an affiliation with UT-Houston.

Almost as soon as hospitals were built in the Texas Medical Center, the directors of different residency programs met to arrange residency rotations through the different hospitals so that residents would gain from the special expertise of the pathologists in each hospital. The M.D. Anderson Foundation had originally planned on requiring the hospitals that moved to the TMC to specialize in particular diseases, but that plan was met with great opposition. Nevertheless, the hospitals in the TMC did end up with particular strengths in their pathology departments, as did their affiliated medical schools. The Houston-Galveston area has developed well-recognized expertise in such areas as cardiovascular, oncologic, pulmonary, pediatric, forensic, dermatologic, dental, and ophthalmologic pathology, among others. The collaborative program organized by the directors of the various residency programs benefited the residents by giving them the chance to work with senior pathologists with international reputations for excellence in a wide variety of areas.



## Texas Medical Center

Although Monroe D. Anderson is the benefactor whose generosity made the Texas Medical Center (TMC) a reality in the 1940s and 1950s, his vision for the creation of a world-class medical center in the woods south of downtown Houston was anticipated years earlier by Will Hogg who had purchased the land currently occupied by the TMC. However, that initial plan for a medical center was not forthcoming, and Mr. Hogg sold the land to the City of Houston. Monroe D. Anderson created a foundation in 1936 for the promotion of health, science and education, and the trustees of that foundation used the funds in 1943 to buy back from the City of Houston the 134 acres of land that Hogg originally intended for a medical center. The foundation then encouraged the congregation of hospitals, research facilities, and institutions of medical education to relocate to the TMC by providing land, building funds, and matching funds. The M.D. Anderson Foundation offered to match the \$500,000 appropriated by the Texas legislature to the University of Texas for a cancer research hospital in 1941, and provide land. The foundation also provided 20 acres and a million-dollar grant to Baylor College of Medicine, and the Houston Chamber of Commerce provided an additional \$500,000 to assist Baylor in making the move from Dallas to Houston. After 1946, the TMC quickly expanded from Hermann Hospital, with its nurses and intern's quarters, to include the Hermann Professional Building in 1941, Methodist Hospital in 1951, the Arabia Temple Crippled Children's Hospital in 1952, and M.D. Anderson Hospital, Texas Children's Hospital, St. Luke's Hospital, and Jesse Jones Library, all in 1954. The M.D. Anderson Foundation continued to foster the stability and growth of the institutions in the TMC with subsequent contributions.



Texas Medical Center, 1947. Hermann Hospital is in the lower left. Baylor College of Medicine, barely completed, appears behind Hermann Hospital. Courtesy of HAM-TMC.



Texas Medical Center, 1975. Courtesy of HAM-TMC.



## EXPANDING THE SPECIALTY

### Martha A. Wood, M.D.

Dr. Martha A. Wood received her M.D. from UTMB in 1903 and stayed there for an internship before pursuing graduate work in pathology at Johns Hopkins and the Mayo Clinic. She returned briefly to Galveston before establishing a private clinical pathology laboratory affiliated with three physicians in Houston in 1911; her lab and the one started by E.E. Cooke in 1909 were the only two labs in Houston approved by the AMA in their 1929 directory. Between 1933 and 1945 she served as director of the clinical and pathology laboratories at Methodist Hospital, after which she set up a completely independent lab and Pasteur Institute. Dr. Wood was a highly influential pathologist in the greater Houston area: she served in turn as a founding member of the Houston Pathological Society in 1914, and the State Pathological Society of Texas in 1916, and vice-president of the newly reorganized State Pathological Society of Texas in 1934. At professional meetings she presented scientific papers and presented discussions on such topics as whether the practice of pathology was a technical or a professional activity.

### Methodist Hospital

Methodist Hospital began as a modest building at the corner of Rosalie and San Jacinto Streets in downtown Houston. The hospital, chartered in 1922, was the expansion of a private hospital originally built in 1908 by Dr. Oscar L. Norsworthy. During the first two decades of its existence, as the hospital struggled to survive, Dr. Edward F. Cooke served as the hospital's pathologist, sharing his time with St. Joseph's Hospital until his death in 1931. The role of chief pathologist was taken by Dr. Martha Wood, who had been in practice in pathology in Houston since 1911. Dr. Wood stayed with Methodist Hospital at its location downtown until her ill-health forced her to retire in 1945. It was through Dr. Wood's unfortunate illness that Baylor and Methodist were brought into an affiliation agreement. Dr. Paul Wheeler, the second professor of pathology to join the Baylor faculty in 1943, was recommended to Methodist as a temporary replacement for Dr. Wood, but the staff at Methodist were so pleased with Dr. Wheeler, and his associate, Dr. Wallace, that a more permanent affiliation was decided upon. The affiliation between the two institutions became more convenient when Methodist relocated to the Texas Medical Center, with a donation of land from the M.D. Anderson Foundation, and building funds from the foundation and from Hugh Roy Cullen. Dr. Jack Abbott bridged the move from the old location to the new; he served a residency in pathology at Methodist from 1949 to 1952, and then took a full-time position at the hospital for the next 23 years, joined by Dr. Berne Newton, also from the faculty at Baylor.

With pathology changing so quickly after 1910, the problem of educating physicians about pathology services, and maintaining standards of practice among pathologists became more pressing. The institution of clinical pathological conferences in most hospitals helped to keep the pathologist and the clinicians attuned, but it also served as a monitor on the standards of practice within the hospital. During the late 1930s, Dr. Martha Wood helped organize a Friday afternoon seminar for the medical staff at Methodist Hospital, in which she usually distributed slides for the group to identify, and participated in the discussions "...that ran the gamut from philosophy to ethics to fees...."<sup>5</sup>

At Baylor, Dr. Paul Wheeler organized a similar slide seminar, which was open to anyone interested in attending, including residents and basic scientists from other institutions. That tradition was continued for years at Baylor, but local pathologists were soon invited to participate as well. Everyone brought his or her own microscope and slides were provided by any pathologist who had interesting cases to share. The seminars could be grueling, since every person was expected to comment on each of the cases presented by the participants; but it was very well attended all the same. When Dr. Spjut arrived in Houston in 1961, he was impressed with the caliber of the community pathologists who participated in the seminars.



Methodist Hospital Pathology Laboratory, 1922. Courtesy of HAM-TMC.



The Friday afternoon slide seminars at Baylor Department of Pathology, 1952. Dr. Stuart Wallace is seated in the back corner. Courtesy of HAM-TMC.



When the Houston Society of Clinical Pathologists (HSCP) was organized in 1948, one of the express purposes of the society was to raise the standards of work in local clinical pathology labs. The HSCP initially approached this task by sponsoring monthly scientific talks at the Harris County Medical Society (HCMS). The monthly presentations on topics in pathology and the HSCP annual slide seminar were open to non-pathologists as well, and they served as a form of continuing medical education. When Dr. Hill suggested that the HSCP invite instrument manufacturers to demonstrate their equipment at some of the society's meetings, he proposed it as a means for gaining financial support for the society, but also as a way to keep local pathologists up to date on what techniques were currently available.

#### William O. Russell, M.D.

Dr. Russell was one of the five founding members of the M.D. Anderson Cancer Center, serving as chair of the Department of Pathology from 1948-1977. Prior to his tenure at MDACC, Dr. Russell taught in the Surgical Pathology Department at Washington University School of Medicine. Although Dr. Russell subspecialized in neuropathology, his research covered such diverse topics as changes in lung cells induced by tobacco, and cytochemical and biochemical diagnosis of malignant melanoma. Dr. Russell and his colleagues at MDACC are known for a number of significant contributions to pathology: a membrane filter technique for processing exfoliative cytology specimens for lung cancer screening; a technique for sectioning whole organs for studies of the mode of spread and stage of disease development; and the adaptation of the cryostat, a research instrument in histochemistry, for cold-chamber frozen sections in laboratory diagnosis.



Photo, 1954, Courtesy of HAM-TMC.

Dr. William Russell concentrated some of his efforts on fostering on-going education for pathologists through individual contact. When pathology positions became available around the medical center, he encouraged the institutions to hire graduates of Washington University School of Medicine. Dr. Lauren Ackerman was chair of surgical pathology at Washington University, and he was a major proponent for removing the pathologist from isolation in the laboratory and making the pathologist an active participant in the clinic and the operating theater. Through Dr. Russell's influence, a large number of pathologists came from St. Louis to fill positions in almost every institution at the medical center. This included Drs. Paul Wheeler, Harlan Spjut, William Hill, Edward Reynolds, Wilson Brown, Robert O'Neal, Robert Fechner, Joseph Skinner, Sid Anderson, Franz Leidler, Frank Townsend, and Peter Marcuse. Russell's idea was that each pathologist, placed in strategic positions in local hospitals, would be able to educate physicians in each institution about pathology, increase the judicious use of pathology services, and assist in training the next generation of pathologists.



## William T. Hill, M.D.

Dr. Hill has played a prominent role in surgical pathology in Houston, as a member of the pathology staff at St. Luke's Episcopal Hospital, in private practice in west Houston, and as a very active member of the Houston Society of Clinical Pathologists and the Texas Society of Pathology. Dr. Hill completed his medical training at the University of Arkansas Medical School in 1947 and entered family practice for two years. He decided that there was no peace in a small-town family practice, and he applied for residencies in pathology. After being accepted for a pathology residency under Dr. Arthur Purdy Stout at Columbia, Dr. Hill went to Washington University School of Medicine to spend a year with Dr. Lauren Ackerman. His return to Columbia was interrupted by two years of military service in Texas. During Dr. Hill's military service, Dr. Russell at M.D. Anderson Cancer Hospital borrowed Dr. Hill, as well as two other pathologists, on a rotating basis from the military to help alleviate the severe shortage of pathologists in Houston. Dr. Hill worked briefly as a pathologist in Flint Michigan, but was enticed back to Houston by Dr. Lind at St. Luke's Episcopal Hospital, and by Dr. Russell, who assured him Houston needed him.

Dr. Hill was instrumental in the organization of the Gulf Coast Regional Blood Center and a program for procurement and transplantation of organs, among many other activities. He has been a particularly active member of the HSCP and the TSP, contributing substantially to both organizations' efforts to maintain high standards of practice among pathologists and to secure their professional standing throughout Texas.



Photo 1991, Courtesy of Dr. Harvey Rosenberg.

Dr. Hill says that many clinicians were initially uncomfortable with the pathologist coming out of the lab, and many essentially told him to go back where he belonged because pathologists didn't know clinical diagnosis. However, a number of clinicians quickly came to favor such collaboration after the perspectives he offered as a pathologist proved useful. One of his early experiences with such collaboration was during his military service at Brook Army Hospital, when he was asked to start bacteriologic cultures on two children who had burns covering 80% of their bodies. The patients and the doctors all cried as the children were unbandaged for tissue sampling; eventually the medical group engaged a local opera singer to come distract both physicians and patients during such procedures. Faced with the medical challenge posed by extensive burns, Dr. Hill began using needle biopsies to determine the depth of burns. Once the depth of burn was determined, it was much easier to work out appropriate treatments.

Many of the pathologists who worked in medical institutions here have similar stories to tell of winning over clinical colleagues to the idea of pathologists as valued contributors to clinical decision-making. For example, pathologists specializing in transfusion medicine provided much needed and appreciated medical consultations in a variety of situations, from life-saving apheresis techniques, to the specialized support of cardiovascular surgery, cancer, and trauma patients. Dr. Tomas Klima was particularly impressed when he arrived in Houston in 1970 to see the emphasis placed on cooperation between clinicians and pathologists in the medical institutions here. By comparison, he found European pathologists to be far more isolated from clinicians.



## EDUCATING MEDICAL TECHNOLOGISTS

### Viola H. Keiller, M.D.

Dr. Viola Keiller, daughter of the chief of anatomy at the University of Texas Medical Department in Galveston, completed her medical studies and specialty training in pathology at the same institution, and garnered comment on her contributions to medicine in Texas as early as 1916. After working as an instructor in pathology and as surgical pathologist at UTMB, Dr. Keiller was chief pathologist at Hermann Hospital from 1927 until her retirement in 1948. Dr. Keiller maintained her affiliation with UTMB, commuting to Galveston twice a week to teach there, and also established an affiliation with Baylor, after the medical school moved to Houston in 1943. She received board certification in surgical pathology in 1937, the year after board certification in pathology was established. She also served as pathologist for Hermann Hospital for an additional year in 1951, during a period of rapid transition for Hermann Hospital, when the completion of a new hospital building added a second, much larger, laboratory.

As a surgical pathologist, her interests lay in the diagnosis of cancerous tissue, an appropriate special interest for a pathologist working in a hospital that excluded, at least initially, any patients considered to be contagious, incurable, or insane. In addition to running the pathology labs as a busy clinical service department, she also taught many cohorts of interns, residents, medical technologists, and nursing students; established an autopsy service for interns and staff to attend; and introduced weekly clinical pathology conferences. When M.D. Anderson Cancer Center first provided clinical services in 1943 in 22 hospital beds provided for their use in Hermann Hospital, Dr. Keiller volunteered her services as pathologist. One of her first projects was to analyze the clinical utility of the Pap smear in diagnosing uterine cancer. She continued to serve as a consultant in cancer diagnosis for both Hermann Hospital and M.D. Anderson Hospitals until her health declined in 1954, four years prior to her death.

Up to about 1930, pathologists working in the Houston/Galveston area trained their own medical technologists through apprenticeship. At St. Joseph Hospital, as at many other hospitals, training of medical technologists was an informal part of the pathology laboratory's function beginning in 1921 when the lab first became



Courtesy of Blocker Collections, UTMB

a service under the direction of a single physician, rather than a set of equipment accessible to all physicians. In 1927, Dr. Viola Keiller had the assistance of two hospital interns, whom she shared with all the other medical departments in Hermann Hospital. She had no technicians devoted to laboratory work or trained in its techniques until she began to train them herself. In 1928, the American Society of Clinical Pathologists established an accreditation program for hospitals training medical technologists through apprenticeship, and began a registry of medical technicians meeting acceptable levels of training and skill.

During the 1930s many hospitals in this area further organized their medical technology training programs: Dr. Meyer Bodansky, chair of chemical pathology at UTMB, started a medical technology training program at John Sealy Hospital in 1930. In 1940, Dr. Bodansky favored the eventual integration of medical technology training into the university curriculum, but he insisted that practical experience was far more valuable than lectures and laboratory exercises in the absence of university programs. One of his primary concerns was that the salary of medical technologists was not commensurate with their training, so the temptation to set up independent labs in competition with pathologists would be overwhelming. St. Joseph Hospital also developed a program in the same period. At Hermann Hospital, The School of Medical Technology was approved by the American Society of Clinical Pathologists as a school in June of 1943, the same year that the national Board of Registry of Medical Technologists stopped certifying technologists who were trained by apprenticeship. The Hermann program was unusual, both in requiring three years of college, and in having a college affiliation itself. In the decade after WWII, Memorial, St. Luke's Episcopal, Methodist, and the Veterans' Administration hospitals all started schools for medical technologists as well.



## Hermann Hospital

Hermann Hospital was established as a charity hospital through the generosity of George Hermann, who had provided for the construction of such a hospital in his will. Patients were admitted by the superintendent, who screened out patients with contagious or incurable diseases and those who were insane. When the original hospital was completed in 1925, laboratory space was built into the outpatient clinic area, not in the traditional location in the basement. The laboratory was a single room, equipped with a sink, microscopes and centrifuges, and the pathologist had an office adjacent. Surprisingly, the clinic area itself was lacking any facilities for washing hands, and a sink had to be added later. Although the operating rooms on the fifth floor had no adjacent laboratory space, there was an elevator connecting this floor with the laboratory in the outpatient clinic. The hospital was considered to be a model of modern hospital facilities, but it was so isolated from downtown Houston four miles away, that the hospital administration found it necessary to build a wild-animal-proof fence around the building to prevent wolves, attracted by the odor of blood and sickness, from parking themselves under the windows and howling endlessly.

Dr. Gibbs Millikan, who had been in the pathology department at UTMB, provided pathology services for the hospital in 1925 and 1927. Dr. Violet Keiller succeeded him, and worked at Hermann Hospital until her retirement in 1948. The excellent pathology services provided by Drs. Millikan and Keiller contributed to Hermann Hospital's accreditation in 1927 by the American College of Surgeons. After Dr. Keiller retired, Dr. Wilson G. Brown joined the staff and also served for 21 years as chief pathologist.

Dr. O. L. Norworthy left his estate of \$200,000 to Hermann Hospital in 1935, to be used for pathological research, education, and equipment. The first major expansion of lab space came with the remodeling of the main hospital in 1949, when new facilities were provided for both blood banking and laboratory equipment and personnel. The original Hermann Hospital building was remodeled in 1955. The same year, a radioisotope committee, headed by Dr. Brown, obtained licensing from the Atomic Energy Commission for the use of radioiodine for diagnostic and therapeutic uses. The committee also requested permission for the use of other radioisotopes as well, under the direction of the newly formed Department of Nuclear Medicine. By 1965, Hermann had more than 20,000 sq. feet dedicated to laboratory space, compared to the 2000 sq. feet originally provided in 1925. The entire third floor of a new wing to the hospital was devoted to pathology labs in 1967.

Hermann Hospital was one of the few local hospitals to gain approval for a pathology residency program in 1957, independent of any academic affiliation. In 1968, the pathology residency program was extended from a three-year program to four years, and the program remained hospital based until Hermann's affiliation with UT-Houston in 1972.



Courtesy of Hermann Hospital.

Despite the growing number of schools for medical technology in this area, the shortage of well-trained technologists and the overabundance of inadequately trained and unregistered medical technologists continued to be a major problem for pathologists who increasingly relied upon medical technologists to keep a lab running. The proper training for medical technologists was an issue frequently discussed by pathologists since the 1920s. Technologists inadequately trained in commercial schools posed a danger to patients and made it difficult for pathologists to control the quality of care in hospital laboratories, where technologists were hired by the hospital administrator and not the pathologist.

One of the problems was that graduates of commercial schools with short training courses had no problem finding jobs, given the chronic shortage of medical technicians. There was then little incentive for those entering training to complete three years of college and a year of lab work to qualify as a registered medical technologist when aspiring technicians could complete a short course after finishing high school. Some pathologists feared that the constant push to raise the requirements for registration would create an overly academic atmosphere and thereby discourage all of the better students.





#### Charles B. Sanders, M.D.

In 1948, Dr. Sanders was one of the founding members of the Houston Society of Clinical Pathologists and served as its first president, a role he filled for the subsequent five years. His tenure as president was prolonged by the inactivity of the HSCP during three of those years, during which there were no elections to select new officers. Dr. Sanders went on to become president of the Texas Society of Pathologists in 1956. Dr. Sanders began as an instructor in pathology at UTMB in 1927-1928, was promoted to adjunct professor the following year, and then served for several more years as an associate professor under the direction of Dr. Paul Brindley. Dr. Sanders moved to Dallas in 1934, and assisted in resurrecting the defunct State Pathological Society of Texas, precursor to the current Texas Society of Pathology. He was one of only three Texas pathologists to receive board certification in pathology in 1936, the year the program was instituted. In 1942, Dr. Sanders became vice-president of the American Society of Clinical Pathologists and shortly thereafter moved to Houston to join the pathology staff at M.D. Anderson Cancer Hospital.

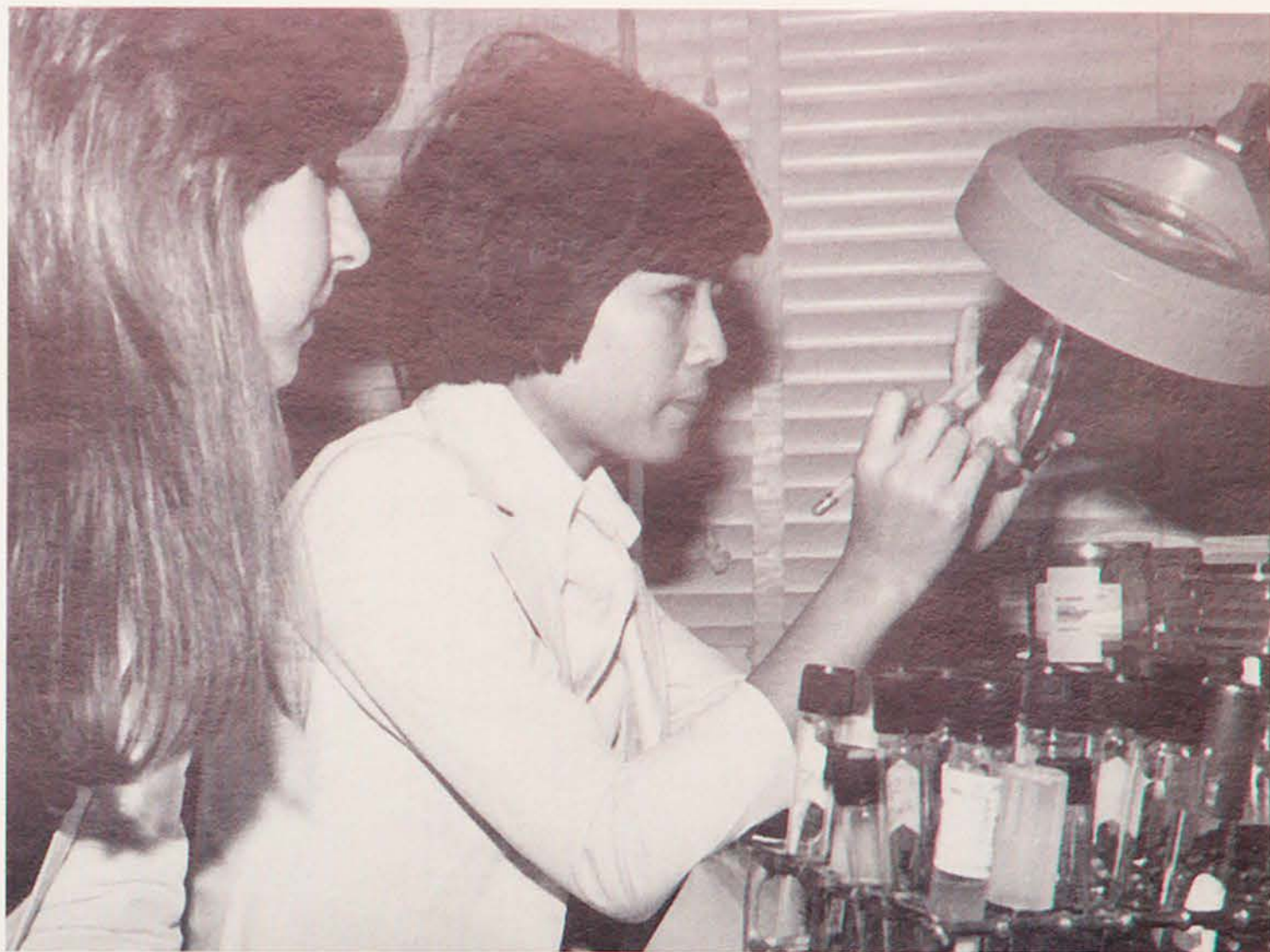
Despite the concern over the proliferation of commercial schools of medical technology, the pathologists vehemently opposed the idea of licensure of medical technologists. One such licensing bill was introduced to the Texas legislature in 1950 by the Association of Medical Technologists, a group of commercial medical technology school owners. Dr. Charles Sanders, the first president of the HSCP, expressed his complete opposition to the bill and suggested that all HSCP members do everything possible to oppose any similar bills. Pathologists objected to any sort of licensing for technologists because it would interpose the state between the pathologist and the technologist, and the requirements for licensing would become quickly outdated as the practice of clinical pathology advanced rapidly.



Photo 1954. Courtesy of HAM-TMC.

The HSCP addressed the issue again in 1961. The membership turned to public education for high school seniors about careers in medical technology, and voluntary registration by the AMA and the College of American Pathologists (CAP) to elevate standards of training for technologists and alleviate the chronic shortage of qualified medical technologists. The society organized a committee on health fairs for high school students, and Drs. Elizabeth Powell and John Thomas collaborated with local medical technologists to prepare a display on the different aspects of pathology. The display on tissue work, blood banks, chemical analyses, bacteriology, and hematology were intended to educate high school students about medical technology as a potential career, and to influence them to pursue good training and certification. The display featured all the latest equipment in diagnostic pathology, including a cryostat, many large pieces of apparatus from the clinical lab, slide projections from microbiology, and mannequins representing blood donors and patients. Various members of HSCP also volunteered to attend career days at local high schools to answer questions about medical technology as a profession.





Students at the University of Texas-Houston School of Medical Technology, 1975. Courtesy of HAM-TMC.

In 1966 Baylor addressed the continuing shortage of qualified technologists by proposing that the directors of all the medical technology schools in Houston organize a central curriculum for the didactic portions of the medical technologists' training. Baylor offered to conduct the didactic lectures for five hours per week. The expressed purpose was to improve the quality of the various programs and, therefore, the quality of the students. An added bonus was the opportunity to decrease the number of instructor hours required to train all the medical technologists. Seven schools chose to participate in the plan: Baptist Memorial, Methodist, St. Joseph, St. Luke's Episcopal, The Veterans Administration, Texas Children's, and Harris Country Hospital District hospitals. Hermann Hospital, with a well-established school of its own, did not participate. The faculty were drawn from all of the schools, and included not only pathologists, but other physicians, medical technologists, microbiologists, biochemists, and immunologists, among others. The lectures proved to be such a thorough training in biochemistry, hematology, blood banking, microbiology, serology, parasitology, and clinical microscopy that residents and graduate students also frequently attended the lectures. In 1972, UT-Houston Medical School formalized the overlap in clinical pathology training for medical technologists, graduate students, and residents by merging their residency program with the Hermann Hospital School of Medical Technology.

Despite innumerable changes in the location and facilities for teaching, the vacillating perspectives of the medical community on pathology, the scientific content in the field, and the overlap between pathology and other departments, pathologists in this area have maintained throughout this century a very strong commitment to education. This emphasis on constantly elevating the standards in education for medical students, for medical technologists, and for themselves, has been one of the most successful tactics used by local pathologists to improve the caliber of pathology practice in this area. It has also contributed substantially to the good reputation of the medical institutions here.





## Research

Although research in medical schools is often thought of as a post WWII phenomenon, the pathologists in Houston and Galveston had incorporated research into their academic and clinical settings long before. Admittedly, the scope of research was limited by the heavy service and teaching demands, but it was a regular part of pathology practice and teaching all the same. At UTMB research was not the major preoccupation that it was at some other medical institutions, but faculty members did pursue their own research interests and encouraged students to do the same. In the first catalog, after Dr. Smith had described the commitment of the department to teaching, he added the comment that, "Throughout the course the laboratories and equipments are available to such students as may desire to prosecute special lines of study of investigation, without further expense, the teacher in charge of this department being anxious to foster any such tendencies on the part of the students of the school."<sup>6</sup> This atmosphere of supporting research interests among students, but not requiring it, persisted for several decades. Meanwhile, the faculty at UTMB found time to pursue research of their own, despite the fact that there was no outside funding to support the work.

The creation of extramural grant programs, first in the National Cancer Institute with its inception in 1937, and later in other National Institutes of Health (NIH), provided a major new source of funding for research in pathology. The ability of biomedical researchers, during both WWI and WWII, to quickly produce major advances with immediate practical applications in military medicine impressed the entire country with the advantages of federal funding for research, despite persistent resistance among biomedical scientists and medical practitioners to government involvement in their professions. The scope of possible advances was especially evident in serology and blood banking, services that had settled within pathology.

Research in pathology benefited substantially from the new availability of funds. The role of NIH after WWII was agreed to be the funding of *only* basic biomedical research, as a concession to the AMA, which strongly opposed any role for the federal government in medical education except in providing funds for building. However, with a severe shortage of all medical personnel, including pathologists, in the aftermath of WWII and during the Korean War, and the drain of biomedical personnel from academic institutions to the more financially lucrative fields of private practice and industry, NIH was highly concerned with the vitality of academic programs educating future generations of both basic scientists and practitioners.

The NIH staff members and Advisory councils emphasized that good medical research was absolutely inseparable from good medical education. Training grants were allowed only in cancer and mental health. To get around President Eisenhower's 1952 prohibition against NIH funding of medical education, the advisory councils adopted a tacit ranking scheme that encouraged the education of "good" research scientists over the production of knowledge itself. In awarding



grants they gave highest priority to: 1) research institutions that had substantial educational roles, 2) senior investigators who included graduate students or residents in the project, and 3) young investigators who looked promising because of reputations of their mentors. They also tried to lengthen the time of grants so that medical schools could attract and keep high-quality faculty, in response to the Reed Report, an extensive study during 1951 of the needs of medical schools and the effects of extramural grant funding. One of the outcomes of that report and other studies was the institution of a Special Fellowship Program, specifically for research training.



Electron Microscope at Baylor College of Medicine, circa 1962.  
Courtesy of HAM-TMC.

The effect of federal funding on research in pathology is evident in the annual reports of the pathology department at Baylor College of Medicine. In the academic year 1952-1953, Dr. Wallace, the department chair, expressed dismay at the lack of an active research program, while acknowledging that his desires for a strong research component had been subordinated to the pressing needs among local hospitals for pathology services in the time since Baylor had moved to Houston. He felt that it would have been "...undiplomatic, and I think would have been wrong as far as the local need is concerned, to have turned down certain of the requests for assistance in the hospital laboratories..."<sup>7</sup> But after nine years in Houston, the pathologists at Baylor felt they were finally reaching a balance, where research might take a more prominent role, and Dr. Wallace was clear that research was the single most significant need in the department. By 1961, the full-time faculty had increased to fifteen, nine were engaged in research projects, and four were supported by funds from the federal government. The research projects covered a wide array of topics including: experimental atherosclerosis in rats, fats and hypertension in pyridoxine deficiency, specific identification of pathogenic fungi with fluorescent antibody techniques, radiation effect on the central nervous system, pulmonary disease, the effect of hypertension on pulmonary arteries, drug-induced colonic polyps and carcinomas in rats, myocarditis in Cocksackie B viral infections, and blood lipids in experimental atherosclerosis. Plans for the following year included the addition of two more research pathologists to the faculty, one in neuropathology and one in cardiovascular diseases. The UTMB pathology department had a similarly broad research program, including projects on carcinogenesis, tumor metabolism, pineal gland relationships, immune mechanisms, endocrine tumors, and radiobiology.

One of the primary ways in which federal research funding assisted medical schools and hospitals, both in their research and their teaching capacities, was in providing funds for the equipment of laboratories. Although equipment purchases were specifically earmarked for research, the considerable overlap between research and teaching meant that the educational functions of pathology departments also benefited. Baylor arranged 900 square feet of laboratory space specifically for experimental pathology in 1961 when the department shifted their pathology museum into the student laboratories to make room for experimental laboratories for research in atherosclerosis, and electron microscopy. A generous contribution by Mr. Ben Taub equipped the Sam Taub Memorial Electron-microscopy Laboratory with an RCA-EMU 3F electron microscope, darkroom equipment, and two ultra-microtomes with stereo and phase microscopes. Furnishings and basic equipment were funded by a Cardiovascular Research Center Grant, one of the new multidisciplinary grants given by NIH designed to encourage large collaborative projects. The department acquired an additional 3300 square feet of experimental laboratory space the very next year, with most of the space devoted to microscope laboratories for individual faculty, and several others for radioisotopes, tissue culture, pulmonary histology, and hematopathology labs. From 1962 to 1968 Baylor enjoyed an enormous growth in research capabilities through federal funding.





Photo Courtesy of M.D. Anderson Cancer Center.

#### H. Stephen Gallagher, M.D.

Dr. Gallagher joined Dr. Russell's group of pathologists at M.D. Anderson Cancer Center in 1956 and was a vital part of the institution until 1990. He was highly regarded for his role as mentor for fellows in anatomic pathology, his scholarship, and his active participation in the Houston Society of Clinical Pathologists. He gave strong support to the HSCP, acting as parliamentarian for many years, as well as president and scientific director. He made the wooden gavel that is still used by the president of the HSCP. The H. Stephen Gallagher Annual Residents and Fellows Program was established by the HSCP to honor him; each resident or fellow who presents a research paper at this annual event is provided with a stipend.

Dr. Gallagher completed his medical education at Temple University in 1946, and completed a residency at Germantown Hospital in Philadelphia. He served in the military medical corps reserves while completing his medical training, and then took a position as assistant pathologist at Chester and Germantown Hospitals in Philadelphia. He spent two years as chief of laboratory services at Fort Knox before joining the staff at MDACC. While at MDACC, he extensively researched breast cancer, using a technique of whole organ sectioning. Dr. Gallagher was very active in numerous professional organizations related to cancer and pathology.

The national preoccupation with cancer, and the concentration of public funds for research on cancer, greatly expanded new roles for pathologists both as collaborative researchers in teams of specialists and as highly valued diagnostic clinicians working in concert with surgeons to diagnose cancer in earlier stages when surgical treatment might effect a cure. Dr. Russell, at MDACC, commented that, "The clamor about cancer steadily increasing as it disturbs [sic] the conservative physician, pleases the investigator and confuses the public."<sup>8</sup> The reason pathologists were particularly pleased with the clamor about cancer was that it focused attention, and funding, on the pathologist's forte—the explication of the physiologic processes accounting for a change from normal to abnormal, and the application of that knowledge to everyday clinical practice.

It was pathologists, not biologists, who first addressed cancer as a biologic problem subject to organized investigation and improved therapy. It was also pathologists who helped establish that the function and growth of cancer cells could be moderated by extrinsic factors. Cancer was not simply normal cells run amok without reason, or a curious but inconsequential symptom of other diseases, as was originally believed, but a disease that could be traced to genetic predisposition, age, hormonal levels, and such extrinsic factors as exposure to carcinogenic substances, irradiation, and viruses. With this information, cancer became a disease that could be investigated, not merely as a curiosity, but as any other disease with an etiology and prognosis, and a variety of avenues for intervention in a specific disease process.

Through the perspectives on cancer given by pathologists, with Drs. Russell, H. Stephen Gallagher, James Butler, J. Leslie Smith, and John M. Lukeman at MDACC playing a major role, cancer became a preventable disease, or at least one that could be moderated with therapeutic agents. At MDACC, much of the research focused on early detection of cancer, prior to overt symptoms. One of the first projects was on exfoliative cytology, adapting smear techniques to cancer of lungs, stomach, urinary tract, and other sites. With lung cancer a leading cause of death, the MDACC staff also instituted a joint pulmonary cytology program with the National Cancer Institute, and developed a membrane filter technique for diagnosis. Dr. Gallagher revived and modernized an old technique of whole organ sectioning to study the extent and behavior of various cancers. One of the contributions most useful to surgical pathology was the development at MDACC of the open cryostat for making high quality frozen tissue slides that could be kept as permanent slides after enzyme, histochemical, and immunochemical studies had been performed.

The experiences of the pathology departments at UTMB, Baylor, MDACC, and UT-Houston illustrate several trends that affected all academic pathology departments. Although research conducted in the laboratory had been an integral part of pathology for decades before WWII, pathologists who pursued research projects had mostly done so on their own time, at their own expense. This changed after WWII, when federal funds were devoted to supporting research as an integral part of medical education in university-affiliated institutions. Pathologists were particularly eager to avail themselves of these new research opportunities in the 1950s and 1960s because the field of pathology was perceived to be in a crisis.

In 1954, Dr. S. Burt Wolbach, emeritus professor of pathological anatomy at the Peter Bent Brigham Hospital in Boston, described the state of pathology as doleful. In his view, surgical and clinical pathologists had become so indispensable to medicine that the scientific and research aspects of pathology had been



completely overshadowed. Seven years later, Dr. Howard Hopps, chair of the Department of Pathology at UTMB and editor of the *Bulletin of the College of American Pathologists*, reported that clinicians and medical scientists alike thought that pathology had failed to keep pace with other medical fields. Instead, students were advised to take courses in physiology, immunology, and biochemistry, where they would learn more about the pathogenesis of disease. With pathology viewed solely as a diagnostic tool, and not as a scientific discipline, the field of pathology was in grave danger of complete atrophy. Active research programs were the key to reinstating pathology to the position it had once enjoyed as the science upon which all other medical disciplines depended.

The full integration of research into education appeared at all levels: the revised curricula for medical students included experiments as part of pathology training and encouraged students to take additional time to pursue research projects; graduate degrees in pathology for non-physicians were established at UTMB, Baylor, and the University of Texas Postgraduate School of Medicine; residency programs at the same institutions were turned into hybrid programs with residents splitting their time evenly between research and classical pathology training; and virtually all faculty became involved in either basic or clinical research projects. Instead of an individual pursuit, research in pathology increasingly became collaborative research involving participation by people from many disciplines and research projects turned into major programs, with long-term commitments to research in particular areas.



Cryostat developed at M.D. Anderson Cancer Hospital, 1957. Courtesy of HAM-TMC.





## Women in pathology

Despite the relatively small numbers of pathologists at UTMB, women filled a significant role in the Department of Pathology from early in the century. Drs. Marie Charlotte Schaefer, Martha A. Wood and Violet Keiller were among the earliest students to graduate from the University of Texas Medical Department in Galveston and go on to practice or teach pathology as a full-time occupation. It is fortunate for the women who trained as pathologists at UTMB that Dr. Allen J. Smith did not bring with him from the University of Pennsylvania its ultra-conservative view of women in the medical world. The University of Pennsylvania adamantly refused to admit women as medical students until after WWI; by contrast, the University of Texas Medical Branch was coeducational from the outset. Female students no doubt benefited from Dr. Smith's opinion that the influence of women in the classroom was good. In commenting in 1917 on the impact of women in the medical school, Dr. Smith reported that the women were excellent students.

The same year, Dr. W.S. Carter, dean of the University of Texas Medical Branch, expressed pride in the fact that UTMB had always been co-educational. Even though the school rarely had large numbers of female medical students, it averaged ten or twelve women in each class of 88 students. Dr. Carter admitted that he had been prejudiced against co-education when he first arrived at UTMB in 1897. However, after experience in the coeducational school, he was "...strongly in favor of this arrangement and believe it to be the very best that can be made....The tremendous cost of medical education at the present time makes it highly desirable that women should have the privilege of attending medical schools in good standing in different parts of the country and should not be restricted to a limited number of schools for women exclusively."<sup>9</sup> This staunch support for the medical education of women in a university-affiliated medical school was highly unusual.

Although women rarely held full faculty positions at UTMB during the early years, with the notable exception of Dr. Schaefer, women did fill a significant role in the education of medical students, especially in pathology. Many of the positions as instructors in pathology were filled by women who trained in medicine at the school. Between 1901 and 1903, when the Department of Pathology had four members, Dr. Schaefer was the demonstrator in histology, general biology, and embryology. These courses were later recognized as a separate department in 1912. For every year between 1907 and 1914, women served as fellows, student assistants, or assistants in pathology, making up the third person in a three-person department. Again in 1918 to 1921, a woman, Dr. Anna Mary Bowie, was the only instructor in pathology in addition to the professor of pathology, Dr. H.D. Hartman. In 1930-1932, Dr. Ellen D. Furey was the fourth member in a four-person department.



At a time when many medical specialties and academic disciplines were mostly closed to women, the Department of Pathology at UTMB provided an unusually open environment for women to train as practitioners, to serve as pathology educators, and to engage in scientific research.

This early precedent for women in pathology carried over into the following decades. Drs. Keiller and Wood were both very influential as chief pathologists in Hermann Hospital and Methodist Hospital in Houston. Dr. Wood helped found the Houston Pathology Society in 1914, the State Pathological Society of Texas (SPST) in 1921, and the reorganized SPST in 1934. Dr. Keiller served as president of the same organization in 1930. Even during the decades when the percentage of women in medicine as a whole declined, the numbers of women working in pathology in clinical practice, in education, and in research in this area continued to grow. In the post-WWII period, the great demand for pathologists and their relative scarcity meant that women found pathology to be a field more open to women than some of the other specialties. Today, approximately half of all residencies in pathology in this area are filled by women.

As the numbers of women in pathology increased, so did their influence on students and colleagues. For instance, Dr. Joyce Davis, director of student education at Baylor for many years, had a significant impact on Baylor students through her reorganization of the pathology curriculum to focus more on small group teaching and clinical experience. Women in pathology also played an active role in the HSCP since its inception in 1948. During its history, the HSCP has had seven women elected as president of the organization: Drs. Margaret Carter, Ethel Erickson, Joyce Davis, Ena Mocega, Jan Bruner, Rhonda Shannon, and Linda Green.



Histology lab taught by Dr. M. Charlotte Schaefer, 1905. Courtesy of Blocker Collection, Moody Medical Library, UTMB.



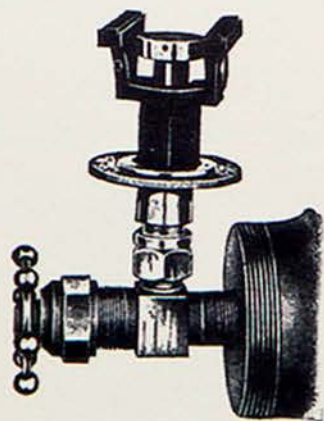
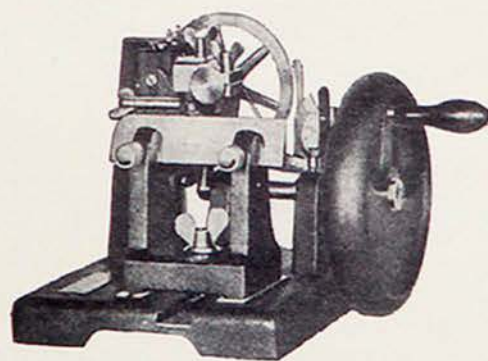
# Practice

The changes in pathology education during the first half of this century were paralleled by similar changes in the practice of pathology. Just as pathology was taught within a great variety of medical disciplines in the early 1900s, pathology was practiced, or ignored, by a wide variety of physicians and surgeons as part of their general practice. The emergence of pathology specialists in the 1910s marked a shift in both the location of pathology practice, and the people responsible for performing laboratory services. But the acceptance of pathologists as specialists depended on the acceptance of the idea that pathology was too complicated for general practitioners to master, and that pathologists possessed unique technical skills. The simplification and automation of laboratory techniques gradually changed the practice of pathology from a solo occupation into one entailing the delegation of much routine work to medical technologists, and later to machines. As a consequence, pathologists found themselves having to argue strenuously, once again, that pathologists provided valuable services, this time in interpretation, rather than in technique. World War II dramatically changed the demand for pathology services, expanded the medical fields in which pathologists made major contributions, and blurred the line between practice and research.

University of Texas	
Hospital No. _____	SEALY or ST. MARY'S INFIRMARY
Name _____	Date of Op. <i>Mar 1914</i> Surgeon <i>J.S.D.</i>
Age <i>65</i>	M.F.W. <i>M</i>
Home Address _____	Private } Case _____ Ward }
Short History: <i>Pain at 5 m. fat has become more &amp; more symptomatic requiring in last month large doses of purgative. There cramping pain in abd. &amp; attacks of diarrhea. Abdominal distension with gas. Discharge in lower abd. &amp; rectum. No blood in stool but much mucus.</i>	
Physical Examination: <i>Hard mass, freely movable, size of an egg - left iliac region.</i>	
Anaesthetic _____	
Surgical Treatment: <i>Multifocal removal of two nodules. Circular cancer of sigmoid. Entirely well - Mar 1924</i>	
Interne. _____	
Send specimens wrapped in moist gauze before 4 p. m. to Path. Lab. of the Medical College. Sunday specimens to be kept in Kaiserling Solution until Monday morning.	



# PATHOLOGY AS A PRACTICE WITH IMMEDIATE CLINICAL APPLICATIONS



Instruments for making tissue thin sections for microscopic examination. Top, a hand-held thin section knife, available in 1893 from the catalogue, *Price List of Physicians Supplies*, Chas. Truax, Green & Co. Middle, rotary microtome introduced in 1911, for the heavy work load of a hospital laboratory, advanced feed in steps of 2 microns. Bottom, a 1911 freezing microtome for rapid surgical pathology examination, with a feed of 20 microns. This instrument mounted on a CO<sub>2</sub> canister, and was fitted with a chisel knife. Both 1911 instruments were available from Chas. Truax, Greene & Co. Courtesy of Blocker Collections, UTMB.

Pathology, as it was first taught in Galveston under Dr. Smith, was a science of correlation, teaching the physician to visualize what would be revealed in a patient at autopsy. This type of pathology practice was intended to raise the scientific sensibilities of physicians, not necessarily to aid in diagnosis. The microscope initially took this type of pathology to new levels, but did not substantially change the intent of pathological examinations. Because autopsies were viewed as so distasteful by many, and pathology examinations were time consuming, few physicians were attracted to use pathology in their practices. Dr. Smith, in his 1901 address to the TMA Section on Pathology, even commented on the fact that the members of TMA had recognized the importance of pathology in the medical curriculum although pathology was only beginning to show any practical applications in hygiene and treatment of disease. He made no mention of the idea that pathology might be a practical aid in diagnosis.

It was at the point that specimens could be taken from the living patient and quickly analyzed that pathology became something more than a science with long-term contributions to the understanding of disease—it became a practical tool in diagnosis. Although the clinical application of pathology is often thought of as resulting from the development of increasingly sophisticated instruments, dramatic changes in the application of pathology to clinical practice came from the standardization of available techniques in clinical pathology to increase their reliability, the more standardized use of descriptive terms in anatomic pathology to allow comparisons of multiple cases between pathologists, and the more routine application of existing tests to identify the parameters of normal results.

In 1913-1914, the surgical pathologists' reports provided by the UTMB anatomical pathologists for John Sealy Hospital, St. Mary's Infirmary, and for doctors who mailed in specimens or slides for assistance in diagnosis, were often simply a confirmation of the physician's diagnosis after surgery. Even though freezing microtomes were available by 1900 for making frozen sections for quick diagnoses during surgery, the prevalent view of frozen sections prior to 1940 was that the resulting cell shrinkage and distortion of cell structure made frozen sections an unreliable diagnostic method. The more time-consuming method of fixation and embedding in paraffin or celloidin provided a good permanent slide, but was too slow to be done while the patient was still on the operating table.

The standard surgical pathology requisition form had spaces for a short history, physical examination, anesthetic, surgical treatment, and the signature of the intern, although this was rarely signed. Usually, a pathologist's report consisted solely of a diagnosis written in a single line squeezed onto the bottom of the form, underneath the instructions for how specimens should be wrapped and delivered to the pathology lab. Occasionally, a physician outside Galveston would send a specimen to the UTMB pathology department for diagnosis. One commented, "I am not equipped to make section of this [soft bony tissue taken from a tumor of the antrum of Hymore] and have no diagnosis to offer. Will you please make section of it and let me no[sic] know what the condition is?"<sup>10</sup> Another physician who was accustomed to making his own pathology slides for examination nevertheless sent in some specimens for confirmation, with the note that, "I have been doing very nicely with my pathology the last fortnight, but I have two conditions here which I wish you to diagnose for me....I am also enclosing a piece of tissue from this breast in the event that you cannot make a diagnosis from the slide that I am presenting."<sup>11</sup> Physicians had become more adept both at preparing samples for the pathologist to examine and at examining pathologic materials



themselves. By 1922, the pathologist was no longer noting on the charts that specimens were inadequate, or impossible to prepare slides from, as had been the case in the reports for 1913-1917.

A significant change occurred by the end of the 1920s. In 1928 the standardized request form for pathology tests had become a long check list of possible tests, with chemistry, blood, bacteriologic, and tissue studies all appearing on the same request form; surgeons and internists no longer used separate request forms. Likewise, the pathologist's reports increased in detail as well. The pathologist, usually Dr. Paul Brindley, described in great detail the gross and microscopic characteristics of each surgical specimen with a description of the tissue's color, form, texture, resistance to cutting, visual appearance of cut surfaces and microscopic findings, all rendered in a routine order, using a limited number of descriptors. The specificity of the pathologist's diagnoses had increased, and Dr. Brindley usually gave numerical grades for cancers.

Another notable new feature of the pathology reports was the distinction made between the treating physician's diagnosis and the pathologist's diagnosis. Dr. Brindley began to add a section for pathology diagnosis, even when it was not part of the printed form. At times the diagnoses matched. In many cases they did not, with the pathology exam revealing undetected cancers, infections, and chronic conditions not identified by the referring physician. It was about this time that the pathologist's microscopic examination of tissue, or other specimens, was increasingly viewed as the definitive diagnosis of disease, superseding the clinician's diagnosis if the two differed. The unfortunate consequence of this was that, for a time, pathologists were often asked by hospital administrators to police the medical staff, reporting on physicians who routinely misdiagnosed their patients.



Fig. 4074. TURCK'S COUNTING CHAMBER.

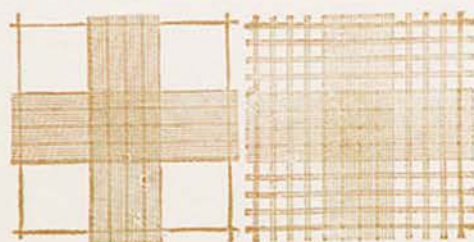


Fig. 4076. THOMA RUL-ING.

Fig. 4078. TURCK RUL-ING.



Hemocytometer, 1911, available from Chas Truax, Greene & Co. Courtesy of Blocker Collections, UTMB.



Manual counting of blood cells at Memorial Hospital Pathology Laboratory, 1950. Courtesy of HAM-TMC.

In laboratory testing, the tools used in the 1920s were essentially the same as those used at the turn of the century. These instruments fell into two general categories: those that aided in the microscopic examination of specimens; and those that involved measurements of specimen properties. The hemocytometer, a grid for counting the cellular elements of the blood, remained virtually unchanged from its inception in the late 1800s until the Coulter counter was introduced in 1953. Since counting blood cells was tedious and difficult, various

substitutes were developed. The hemoglobinometer, which estimated the red cell count by comparing the color of blood with a known standard, appeared in many variations by the turn of the century, as did hematocrits, which measured the percentage of blood cells in the blood by volume. The instruments for measuring the color, specific gravity, sugar, and urea content in urine also changed, but to a lesser degree. What did change was the idea that

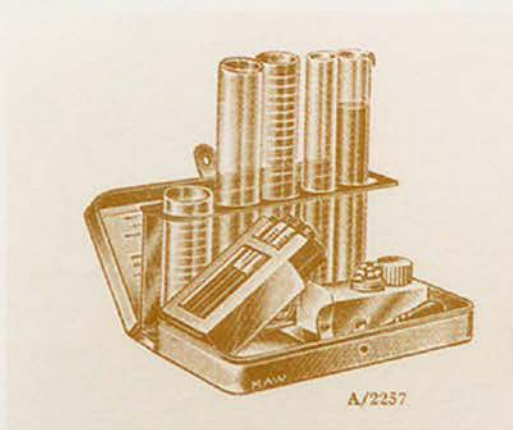


Coulter Counter, UTMB, late 1950s. Courtesy of Blocker Collections, UTMB.



these tests could provide not only an indication of a patient's general health, but accurate indications of specific disorders, even without the evidence of specific pathogens. Between 1905 and 1920, laboratory tests gradually became a means for monitoring the progress of disease and the effectiveness of treatment through repetitious testing, rather than a single diagnostic test performed only once.

In 1906, John Moore, a physician in Galveston and chair of the section on pathology and bacteriology of the TMA, bemoaned the fact that so few of his colleagues made use of the various instruments of precision diagnosis available to them. He argued that, "The physician or surgeon does not discharge his obligations unless he acquaints himself with every available method of diagnosis, or puts his patient in the way of getting these."<sup>12</sup> He noted that many of the older physicians were not trained in any of these methods, and resisted incorporating them into their practices because they had little appreciation of their value, and viewed laboratory testing as expensive, time consuming, and inconvenient. It is true that a patient's private physician still often examined the patient at home, and it was an inconvenience to carry around a microscope, a urinalysis kit, and instruments for blood testing.



Urinalysis instruments. Top, Ureometer, and middle, portable urinalysis kit, both from the 1925 catalog for instruments available through Maw, Son & Sons. Courtesy of Blocker Collections, UTMB.



Microscope owned by Dr. William Keiller, professor of anatomy at UT Medical Department in the 1890s. Physicians who used microscopes in the early decades of this century would have used ones similar to this one. Courtesy of Blocker Collection, Moody Medical Library, UTMB.



Automatic chemical analyzer, Methodist Hospital, 1970s. Courtesy of HAM-TMC.

Between 1900 and 1906, many of the laboratory instruments and supplies originally developed as research tools were standardized and made commercially available to general practitioners. This made it possible for them to incorporate an array of blood tests, urine tests, examination of stomach contents, feces, and sputum, and bacteriologic tests into their clinical practices. The minimal equipment required was still small, with a good microscope the most valuable tool of all. With the addition of a centrifuge, burettes for accurately measuring liquid volumes, test tubes, and a selection of reagents, a physician was equipped to perform a basic battery of laboratory tests. For those who wished to be more sophisticated in their clinical testing, a large array of specialized equipment was available. One of the changes most significant for the general practitioner was the development of portable lab tests that the physician could conveniently carry to the home of the patient or to the hospital, which rarely had its own lab equipment in this period.



## Memorial Hospital System

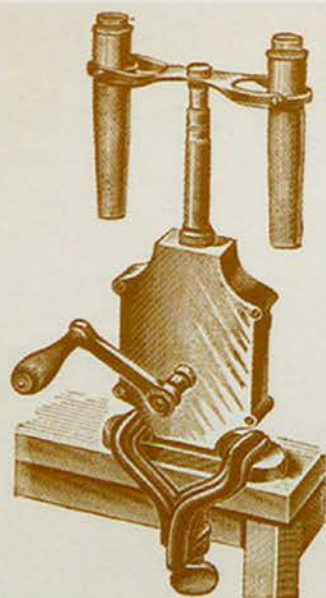
Memorial Hospital, first named the Baptist Sanitarium, began in 1907 as the wooden frame building that had formerly housed the Rudisill Sanitarium at the corner of Smith and Lamar Streets. It originally had only a rudimentary lab, but by 1921 the situation had changed, and advances in laboratory medicine had introduced a new array of equipment necessary for good laboratory services.

Dr. Elizabeth Powell arrived during WWII to run the pathology service from 1942-1945. A less complimentary account of the lab was given by Dr. R.H. Chappell, who came to Houston in 1946 to take the position as pathologist at Memorial Baptist, with his wife assisting him as medical technologist. By his account, the cramped laboratory was inadequately furnished and the working conditions were terrible, with no air-conditioning to alleviate the stench of chemicals. The pathology labs improved quickly after the war, and when Dr. Franz Leidler arrived as chief pathologist in 1958 the situation had changed. With funding from the Ford Foundation the hospital had purchased new laboratory equipment in 1956, the same year that Memorial Hospital opened its outpatient clinics for the diagnosis of minor illnesses not requiring hospitalization. The professional staff donated their time to the clinic, and patients received physical exams, and any necessary laboratory testing on a sliding fee scale.

Memorial Hospital System joined with the newly established University of Texas Medical School at Houston to create a residency program in family practice in 1971, as an antidote to the ultra-specialization in medicine over the previous decades. Under that agreement, Dr. Leidler accepted an academic appointment with UT-Houston.



Memorial Hospital, 1940s. Courtesy of HAM-TMC.



The centrifuge has held an important place in the pathology lab from the time hand crank models were generally available early in the 1900s. Although water-powered and electrically-powered models were available by 1910, this hand cranked model was still popular in 1925. From Maw, Son & Sons catalog of medical instruments. Courtesy of Blocker Collections, UTMB.

The lack of interest in laboratory testing among general physicians changed little in the next decade. Dr. B.F. Smith, a Galveston physician who later did much of the pathology work at St. Joseph Hospital in Houston, published detailed instructions for building a practical clinical laboratory, all of which could be contained in a table measuring four and a half feet long, and 22 inches deep. He even specified that it was best to stand for laboratory work and, thus, the height of the table should be measured by holding the microscope in a comfortable viewing position and measuring to the floor. Dr. Smith included a sink plumbed with fresh water, a Chapman suction pump for cleaning blood pipettes, and an electric socket for a light to be used at night or on dark days and for running an electric centrifuge. In his own lab he also included a hemoglobinometer, a urinometer, a hemocytometer, a ureometer, and a large variety of stains and fixatives for tissue work. He made no specific recommendations on microscope and microtome, since he assumed that every physician had his own preferences for those.

Despite the firm consensus around the turn of the century that laboratory work in pathology was an essential approach to teaching and to research, the idea that laboratory-based pathology had any role in general medical practice was slow to catch on. The reliance on laboratory test results for diagnosis was viewed by many physicians as antithetical to the true skill of the physician. In fact, Prof. Henry Bigelow, a leading authority in internal medicine, had claimed in 1870 that family doctors did not need laboratory training at all, because the more



Centrifuge at Baylor College of Medicine. Courtesy of HAM-TMC.

important attributes required for good medical practice were character and judgment. Some physicians even proposed that laboratory tools were just technical crutches for use by physicians who lacked clinical diagnostic skills.

Physicians who actively used laboratory diagnostic techniques around the turn of the century, and increasingly identified themselves by their skill and precision in using their equipment, embodied the challenge of the new scientific medicine to the traditional practice of medicine. This traditional approach was based on finely honed clinical diagnostic skills and intimate knowledge of the patient, and the patient's circumstances, habits, and history. Physicians who relied on quantitative laboratory tests for diagnosis represented to many physicians a dangerous trend toward the deskilling of medical practice. After all, if blood and urine tests could provide objective data and conclusive diagnoses while the patient was still alive, what role would be left for physicians, whether pathologists or general practitioners? Most disturbing was the idea that quantitative laboratory techniques could be so routinized that a physician was not needed at all, merely a well-trained technician who could take specimens, run the lab instruments, and identify disease on the basis of the resulting numbers.



## St. Mary's Infirmary, Galveston and St. Joseph's Infirmary, Houston

In 1866 a group of three French nuns responded to a plea from Bishop Claude M. Dubuis, the second Bishop of Galveston, and came to Galveston to begin the first private hospital in Texas, St. Mary's Infirmary in Galveston. At the point the University of Texas opened the Medical Branch in Galveston, the pathology department of the medical school took on responsibility for pathology examinations for the infirmary.

Six of the sisters in Galveston came to Houston in 1887 to establish St. Joseph Infirmary, which had no laboratory until 1912. After the donation of basic lab equipment by a former intern at the hospital, a resident staff member or visiting pathologist supervised all lab work. The hospital's first full-time pathologist, Dr. Albert H. Braden, Sr., was appointed in 1921. Under his guidance, the lab was modernized considerably, and he began to train sisters in laboratory techniques. Sister M. Angelique Grabbe served as lab assistant for most of the 1920s, and then her successor, Sister M. Romana Ryan, remained as assistant until after WWII. Sister Ryan is credited with introducing clinical pathology services at the hospital in the 1930s. The chemistry procedures provided were somewhat limited: the laboratory technicians tested for non-protein nitrogen and calcium with visual colorimeters, and did white blood cell counts and differentials. However, they did not have equipment for microbiology or immunohematology.

The situation changed dramatically after WWII. The laboratory began to perform prothrombin time determinations in the late 1940s, at the insistence of Dr. L.B. Zeis, an internist. The hospital acquired a photoelectric colorimeter in 1945 and a flame photometer in 1950. James Serrano, one of the chemistry technologists, developed a set-up for electrophoretic procedures. The new colorimeter provided the capacity for both a greater range of chemical tests, and faster and more accurate results. With the flame photometer, the lab was able to provide regular electrolyte determinations for gravely ill patients. The laboratory was further automated in the early 1960s when a single-channel glucose analyzer was added to the equipment.

Some of the services originally performed in the clinical laboratory later moved to separate departments, such as hematology. By the 1960s, hematology had emerged as a separate department, and the first fully automated Coulter S counter was likewise installed in the hematology lab in the early 1970s.

Blood banking had begun in the clinical laboratory under Dr. Braden, and the hospital kept its own blood bank from 1943 until 1950, when the Southwest Blood Bank was established as a commercial blood bank. The extent of blood work performed by the laboratories at St. Joseph's expanded greatly with the introduction of Rh typing in the 1940s, Indirect Coombs in 1950, and Direct Coombs a few years later. By 1957, the amount of time spent on blood testing was sufficient to justify hiring a full-time blood bank technologist. Within a decade, antibody testing of panels of red blood cells was a routine part of the laboratory work.

Dr. Peter Marcuse joined St. Joseph's in 1949 as its first board-certified pathologist, in the position of director for the clinical, pathologic, and research laboratories. Under Dr. Marcuse, Sister M. Aniceta Kelleher acted as technical director, supervising several laboratory technicians. Sister Ryan had trained Sister M. Aniceta Kelleher in laboratory techniques, and when Sister Ryan retired after WWII, Sister Kelleher returned to St. Joseph's as technical and administrative director, serving in that capacity until her death in 1976.



St. Joseph's Infirmary, 1910. Courtesy of HAM-TMC.

Those who objected to reliance on instrumental aids in diagnosis emphasized that accuracy was often of no utility in clinical diagnosis. For instance, the color of a drop of blood on a handkerchief could often give an estimate of hemoglobin level that was just as useful to the physician as the more accurate measurement of hemoglobin with a hemoglobinometer. For the physicians who still saw the vast majority of patients in their own homes through the early 1900s, the additional time, expense, and inconvenience of using laboratory diagnostic procedures was not compensated by a significant rise in diagnostic accuracy.

In Texas, few physicians in 1916 were equipped with even the most rudimentary laboratory equipment, or knew how to use it because relatively few of them had completed medical school after such instruments were widely available. At UTMB a course in blood chemistry was first offered as an elective in 1920, so those students who gained experience in blood testing prior to that time, did so through practical experience at John Sealy Hospital. The diagnostic methods available in that period included Widal tests, red cell or leucocyte counts, hemoglobin or color index estimation, microscopic urinalysis, pus or sputum examination, Wassermann tests, and spinal fluid cell counts. But general practitioners in Texas were not alone in omitting these diagnostic aids from their standard practices—in 1902, fewer than 10% of the general practitioners in Michigan did blood examinations or had them done by independent laboratories. Even when laboratory tests were performed they were most often not central to clinical diagnosis in the hospital prior to WWI.



Pathology laboratory at Baptist Sanitarium, 1920. Courtesy of HAM-TMC.

Laboratory testing was more readily adopted in hospitals than it was in private practice for a variety of reasons. For hospital administrators trying to transform the hospital from a place of pestilence for the indigent into the center of scientific care for all classes, pathology provided a powerful image of scientific rationality and efficiency, even with a modest collection of equipment. But even charity hospitals without paying patients saw pathology testing as a necessary part of hospital practice in the 20th century. In 1907 Baptist Memorial Hospital originally had room for only seventeen beds, but it did have a laboratory measuring eight by eight feet, equipped with a microscope, an alcohol burner, and ten test tubes. Although meager, this still provided the rudiments for basic laboratory work. At St. Joseph Hospital there was no pathologist, laboratory staff, or hospital laboratory equipment until 1912; instead, physicians all brought their own



#### Peter M. Marcuse, M.D.

Dr. Peter Marcuse came to St. Joseph's Hospital in 1949 as its first board-certified pathologist, after completing a residency in pathology at Jefferson Davis Hospital under Dr. Donald Henderson, and then serving as director of that laboratory himself. At St. Joseph's, Dr. Marcuse served as director of the clinical, surgical, and research pathology laboratories until his retirement in 1988. He was one of the founding members of the Houston Society of Clinical Pathologists, and served as vice-president the first year of its formal existence. He played a major role in the gynecologic-endocrinology research program instituted at St. Joseph's during the late 1960s. Dr. Marcuse and the clinical staff in the Pathology Department collaborated extensively with the obstetrical and gynecological clinical staff in the Colposcopy Clinic by providing elaborate hormonal tests for research and patient care. Out of that research came Dr. Marcuse's book, *Diagnostic Pathology in Gynecology and Obstetrics* (1966).



Photo 1955. Courtesy of HAM-TMC.

equipment with them, and conducted the blood and urine tests themselves. A former intern at the hospital, Dr. B.F. Smith, donated laboratory equipment to the hospital after WWI. The modest supply of equipment consisted of a microscope, a Bunsen burner, and some test tubes—exactly what Baptist Memorial Hospital had in 1907. Once the hospital had this basic set of equipment, a resident staff member or a visiting pathologist supervised the laboratory and physicians no longer did their own lab work. During the period

from 1912-1921, Dr. E.F. Cooke was the primary visiting pathologist. The first full-time pathologist employed at St. Joseph's in 1921 was Dr. Albert H. Braden, Sr., who made considerable changes in modernizing the laboratory; among other things, he performed regular autopsies and introduced the use of frozen sections for surgical pathology. Dr. Peter Marcuse assumed leadership of the labs in 1949.

For surgeons who were trying to reform their own specialty as a scientific field of practice, lab tests, especially blood tests indicating major infections such as in appendicitis, provided valuable support for surgical decisions about when to operate. For the hospital administrator trying to attract paying patients, pathology services were seen as a way of providing the best of scientific medicine to the patients and promoting the image of the hospital. In this context, it is not surprising that Hermann Hospital, built as the epitome of the modern scientific hospital in 1925, placed the pathology laboratory prominently adjacent to the outpatient clinic where all who came to the hospital would be able to see it.

## SPECIALIZATION

While many physicians were still reluctant to adopt laboratory testing in their own practices in the early decades of the 20th century, increasing numbers of physicians chose to specialize in pathology practice despite the fact that the role of pathologist was commonly considered a suitable position for a doctor-in-training, not as a suitable career for full-fledged physicians.

In the early 1900s, a few of the students graduating from UTMB, such as Dr. E.F. Cooke and Dr. Martha Wood in Houston, chose to specialize in laboratory practice after graduating from medical school. Within just a few years, they were joined by at least sixteen other pathologists in Houston. The precedent for specialization had already been set by physicians specializing in internal medicine and surgery; a major difference, however, was that physicians who specialized in diagnostic pathology removed themselves from direct contact with patients and became dependent upon other physicians for referral. The argument in favor of pathology specialization was that the methods used in the clinical lab required special technical expertise. Dr. Ira Chase, in an editorial supporting the idea of pathology specialists as a new professional group within medicine, proclaimed that,

"without such helps[sic] diagnosis is so imperfect that the physician is more of a comfort than a help to his patients, treatment is often misdirected, needed medication or operation overlooked and prognosis veritable guess-work. Every physician without such aids feels helpless,



oppressed and disgusted at times with medical practice. These methods are the crowning gifts of human wisdom for the welfare of man. If the public understood their value it would demand their intelligent application. How to secure the advantages of scientific methods of precision in daily medical practice is the greatest problem confronting the medical profession today.”<sup>13</sup>

Chase viewed the pathology specialist as the best solution to this gap between the clinical benefit promised by new science and technique, and the vast underutilization of pathology exams to aid in diagnosis. However, the clinical pathologist of 1916 was a far cry from the pathologist of today—the pathologists who set up as community pathologists in that period might serve as all-purpose support physicians to those in general practice. With the proviso that a community pathologist must not compete in general practice, the pathologist was often expected to engage in X-ray work, and serve as anesthesiologist, in addition to providing chemical, microscopic, bacteriologic, and serologic examinations.

The increasing reliance of physicians on clinical pathology is reflected in the number of laboratory tests and tissue examinations performed each year in the Houston and Galveston area. Between 1928 and 1948, the volume of tests performed increased sixfold at Hermann Hospital, with the laboratory staff providing 19,000 examinations in 1928, and 120,000 two decades later. By 1961 the volume of testing at Hermann Hospital had increased to 629,000 examinations in one year; this number almost doubled again within the next four years. The numbers from UTMB reflect the same kind of exponential increase in the volume of testing done: in 1955 the annual load of lab tests was about 220,000, compared to more than two million tests in 1995. This did not include the approximately 20,000 surgical pathology accessions done in 1995. At Baylor, the increase in numbers of tests performed in each of its affiliated hospitals was comparable. These numbers are impressive as a measure of the quantity of work demanded of pathology services and the concentration of personnel required to perform the procedures. But these numbers also reflect the increasing variety of tests available, the dramatic rise in population in the Gulf Coast area, the increasing use of periodic lab tests for monitoring a patient's status, and the use of lab tests for screening asymptomatic populations.



Clinical laboratory at UTMB in the 1940s. The practice of pipetting samples by mouth was standard practice in that period, but it would be unheard of today. Courtesy of Blocker Collection, Moody Medical Library, UTMB.



## THE RELATIONSHIP OF PATHOLOGISTS WITH HOSPITALS

During the 1920s, many pathologists set up private labs, but the more common pattern was to join the staff of a hospital. Hospitals for the care of paying patients was a new phenomenon in the 1920s, and in the effort to appeal to paying patients, hospital administrators were eager to enlist the pathologist as a symbol of the newly scientific approach to hospital care. Pathologists benefited from the automatic referrals from physicians treating patients in the hospital, and the increasing expense required to outfit a lab made hospital employment appealing. St. Joseph Hospital, Baptist Sanitarium, and Hermann Hospital all hired salaried full-time pathologists in the early 1920s. The pathologist's role as a hospital employee, grouped with other ancillary hospital services, was reinforced by the appearance of hospital insurance plans that guaranteed coverage of all hospital expenses including laboratory tests. This pattern of practice predominated for the next two decades, and provided a solid foundation for the incorporation of pathology services into routine clinical care.

Hospital employment, which started as a great boon to pathologists trying to carve out a niche for themselves, soon became a problem. Hospital administrators had discovered that the pathology lab was a lucrative division of the hospital, and they increasingly used the revenues from pathology to subsidize other services. However, if pathologists worked as employees or agents of the hospital, the hospital was then engaged in the practice of medicine, against legal requirements of the Texas Medical Practice Act and the ethical guidelines of the AMA. In addition, when hospitals used billing for laboratory services as a means to support other departments in the hospital, as was prevalent in radiology, that amounted to commercial exploitation of the physician employed by the hospital.

The relationship between the pathologist and the hospital had preoccupied Dr. Russell for some time, starting in the late 1930s, long before he came to MDACC. In 1939, the AMA specifically recognized clinical pathology as a specialty in medicine, and stated that the rapid changes in laboratory medicine required clinical medical knowledge for the safe conduct of many pathology tests. For this reason, they resolved that those physicians practicing pathology should have three years of specialized experience in pathology. Two years later, the AMA made the additional recommendation that staff pathologists should be members of the medical staff, with equal voice in medical decision-making in the hospital. This assessment of the situation was not shared by many hospital administrations, well into the 1950s. On the contrary, with the standardization of many tests and increasing reliance on laboratory assistants to handle routine work, pathologists found themselves facing a growing perception within the medical community that lab work no longer required the experience of a physician.

In the post-WWII era, the relationship of pathologists with hospitals, and the forms of compensation they arranged, changed significantly. Whereas pathologists had worked prior to the war primarily as employees of the hospital, after the war pathologists negotiated new relationships with the hospitals where they practiced. Between the 1930s and the 1950s, Dr. Russell repeatedly discussed with fellow pathologists the fact that pathologists needed to rethink their relationship with the hospital and with patients; hospital administrators needed to do the same. "It is needless to say that we [the pathologists] are going to comprehend these points more readily since we have a chance to improve our practice and to assist medicine more, and they are going to be slow to comprehend the advantages. Therein lies the problem."<sup>14</sup>



The hospitals in this area made many different arrangements, many of them complicated by the close integration of medical schools with various hospitals. In private hospitals after WWII, a contract for percentage of the profit from the lab had frequently replaced salary as the standard compensation, but many pathologists were not happy with that arrangement. The members of the HSCP had a lengthy discussion about payment arrangements in 1953, and proposed that a provision be added to the by-laws so that HSCP members in private practice could set a minimum fee structure for services. For example, they proposed \$10 for diagnostic surgical reports, \$5 for diagnostic cytologic studies, \$25 for bone marrow punctures, and \$100 for adult autopsies and reports. These fees were based on the average of fees charged by the four hospitals in the city with more than 250 beds: Memorial, Hermann, Methodist, and St. Joseph's hospitals. All services were to be billed directly to the patient on a fee-for-service basis, with the exception of those services performed for hardship cases, professional courtesy, and as part of medical education.

When Dr. Hill joined St. Luke's Episcopal, the pathologists billed patients directly, but that system was subsequently changed to billing by the hospital. The pathologists at Baylor made different arrangements with each of the school's affiliated hospitals, with some pathologists receiving a salary from Baylor, some receiving a salary from the hospital, and some receiving compensation from both institutions. Some of the pathology work was done gratis, as it was for the Houston Tuberculosis Hospital. Hermann Hospital paid an honorarium to Dr. Wallace for his services, and the Southern Pacific Hospital Laboratory paid the pathologists with annual passes for free travel on the railroad. It was at the point that Blue Cross and Blue Shield split into separate entities that direct billing by the pathologist became more common. By the mid 1970s, most hospital pathologists in this area had started to bill patients directly for their professional services, although a few hospitals continued to bill and reimburse pathologists with a percentage of the income generated by the pathology labs. The saga continues today, with ever more complicated regulations and cost-containment measures intruding on the function of the pathologist in the medical community.





## Bloodbanking

**B**rior to WWII, blood transfusions in Houston hospitals were commonly made directly from donor to patient, with the two lying side-by-side in the operating room. After the use of refrigerated blood was introduced in the early 1940s, laboratories were able to collect blood from donors, mix it with anticoagulant, temporarily store the chilled blood, and then transfuse it to the patient by syringe. Transfusion requests at Hermann Hospital were handled in the emergency room, where laboratory staff came to draw blood, establish compatibility, and refrigerate the blood during normal business hours for later transfusion. Patients were responsible for paying \$5.00 and furnishing two donors for each unit used. Similar systems for providing blood for patients were set up at Jefferson Davis Hospital, St. Joseph Hospital, and John Sealy in the same period. For several years during the war, the American Red Cross maintained two large freezers for blood storage at Hermann Hospital. However, these were soon removed and there was no blood bank at Hermann until 1949, when space was set aside for donor tables, cross-matching, and refrigeration for donations.

Procedures developed by the military during WWII for collecting, typing, separating, storing, and freezing blood profoundly changed the nature of blood transfusions in civilian practice after the war. Pathologists took on the responsibility of managing blood supplies, in large part because no other medical specialty expressed any strong interest in adapting the military blood banking techniques for the civilian setting.

With the advent of separation of blood into components, transfusions increasingly involved frozen plasma rather than whole blood. Longer-term storage and long-distance transportation of blood were made possible by the new techniques and it consequently became possible to develop a system of anonymous blood donation, banking of substantial quantities of blood, and widespread distribution of blood components. The new techniques also allowed more patients to benefit from each unit of blood donated, as the utility of specific blood components were recognized for particular needs. Nevertheless, the available blood supply in this area proved quite inadequate for handling large scale disasters. The American Association of Blood Banks was formed shortly after the treatment of casualties from a major explosion in Texas City in 1947 overwhelmed the capacity of local blood banks to provide blood.

Shortly thereafter, in 1950, the Southwest Blood Bank was established as a commercial blood bank, mostly eliminating the need for each hospital to run its own blood donation center. However, the drawbacks of a commercial blood bank were soon evident, when it became apparent that blood from paid donors carried viral hepatitis more often than blood from volunteer donors. Hermann Hospital and the Veterans Administration were both sued in 1963 for the transmission of hepatitis through the blood bank. The lawyers involved asked pathologists in the



HSCP to provide notarized statements about the technology of blood banking and the possibilities of blood contamination; the HSCP agreed to discuss the general topic of hepatitis transmission, but not the specific cases.

As a commercial organization, the Southwest Blood Bank distributed blood to all parts of the United States, occasionally leaving a shortage of blood for local uses. The demand for blood increased dramatically in this area during the 1950s and 1960s as more institutions joined the TMC, the population quickly expanded, and medical care used greater quantities of blood in treatment. The increase in cardiac surgery is just one example. For each patient undergoing operation, the surgeon required 12 units of blood just to prime the bypass pump, in addition to any blood required for transfusion. St. Luke's became a treatment center for hemophiliacs, and other hospitals developed expertise in various other types of blood therapy.

It was the uncertainty of the blood supply and the problems associated with commercial blood banking that prompted a special committee of the HSCP to begin working in concert with the Harris County Medical Society in 1950 to standardize and improve local blood banking. The efforts of Drs. Hill, Russell, Lind, Leidler, and Milam contributed greatly to the eventual creation of the Gulf Coast Regional Blood Center in 1974, later known as The Blood Center. As a non-profit organization, The Blood Center was designed to supply local needs for blood with all-volunteer donors, supported entirely by fees paid by hospitals using the service. The Blood Center presented many advantages over previous arrangements for blood supplies in this area.



Gulf Coast Regional Blood Center. Courtesy of Mr. Bill Teague.

By relying entirely on volunteer blood donors, The Blood Center greatly reduced the contamination of blood supplies with transmissible diseases. It also substituted for the six organizations previously operating in this area a coordinated system of inventory control, replacement policies, fee structures, and management of collecting agencies. This resulted in much better usage of available blood and far better assurance of adequate supplies for local needs.

During the first year of operation, The Blood Center collected more than 46,000 units of blood, producing 64,000 transfusable components. Even with such a large volume of blood, the outdating percentage was a very low 4% during 1976. The role pathologists played in educating the medical community about component therapy, and the collaboration they provided to The Blood Center, contributed greatly to its immediate success. The Blood Center quickly became a national model for the organization and maintenance of regional blood banks.





## *Professionalization*

Throughout the last century, the pathologists in Houston and Galveston have periodically drawn together to fight for the recognition of pathology as a legitimate, even vital part of medical practice, and themselves as medical equals among medical practitioners. They have fought together against the encroachment on their field by non-pathologists, despite occasional tensions among private laboratory, hospital, and academic pathologists about the proper arenas for their respective practices. While dealing with recurrent attempts from outsiders to define pathology as a technical rather than a medical practice, to undercompensate pathologists' time, to legislate and regulate pathology practice, the pathologists in this area have consistently called upon affiliation as a professional group, self-regulation, and quality improvement through voluntary action as the most effective way to cope.

### HOUSTON PATHOLOGICAL SOCIETY, 1914

There were no pathology labs in Texas in 1889, but there was sufficient interest in pathology among general physicians by 1893 for the State Medical Association of Texas to establish a Section on Microscopy and Pathology under the direction of Dr. Allen J. Smith. The number of physicians practicing pathology and identifying themselves as specialists in pathology increased rapidly after 1900, to the point that there were at least 18 pathologists practicing in Houston by 1914.

Whether or not these physicians devoted themselves full-time to pathology, they had a sufficient professional stake in pathology as a special field of clinical practice that they formed the Houston Pathological Society in that year. Drs. E.M. Arnold, C.M. Aves, C.C. Cody, Jr., E.F. Cooke, E.L. Goar, C.C. Green, A.E. Greer, R.F. Herndon, C.W. Hoefflich, E.H. Lancaster, M.W. McMurrey, H.L. McNeil, J. C. Michael, R.H. Moers, I.E. Pritchett, M.B. Stokes, A.E. White, and Martha Wood formed the organization. Dr. Edward F. Cooke, first president of the society, had been in private practice in pathology since 1906, and he played an important role in championing the practice of pathology as a respected medical field. Dr. Cooke served as the primary visiting pathologist at St. Joseph Hospital from 1912 to 1921. Since St. Joseph Hospital was the largest hospital in Houston at the time, Dr. Cooke was in a good position to impress upon a large number of Houston's physicians the benefits of pathology testing in diagnosis.

The Houston Pathological Society was one of the earliest specialty organizations to be established in Houston. The express purpose of the society was to foster interest among physicians for the study of pathology and its relationship to the practice of medicine, promoting fellowship and better mutual understanding among pathologists, and to collaborate with the Harris County Medical Society in maintaining the standards of the medical profession. The tacit purpose of the



society was to inspire the American College of Surgeons, only newly organized itself, to include a requirement for a laboratory director trained in either clinical or anatomical pathology to preside at all hospitals where ACS members operated.

Clearly, the pathologists were worried about the lack of knowledge among physicians about the tests available, and the diagnostic accuracy they offered. If pathologists wanted to build decent practices, they needed to educate all physicians about the utility of engaging a pathology specialist in diagnosis, so that physicians would refer cases to them for analysis. The reference to encouraging "better mutual understanding" within their own field of practice suggests that the pathologists who organized the society felt that there was undue discord and competition even among pathologists themselves. And competition and disagreement among pathologists was highly counterproductive when pathology was far from established as a useful clinical endeavor.

The Society appears to have been short-lived; its demise probably occurred during the WWI. The ACS did eventually require adequate pathology services in hospitals used by ACS board-certified surgeons, and pathologists gained far greater acceptance in the decade following, as further improvements in laboratory techniques provided more accurate and useful results to clinicians. The Houston Pathological Society may have fulfilled its goal and seen no further purpose in association.

The exact date that the Houston Society of Clinical Pathologists emerged as a distinct organization is difficult to identify. As early as 1944, clinical pathologists practicing in Houston met every Friday afternoon in the original Baylor College of Medicine quarters in the old Sears-Roebuck building on Buffalo Drive, to share slide viewing and discussion with the handful of other pathologists and basic science residents who wished to participate. Dr. Paul Wheeler inspired the organization of these informal meetings, and with Drs. Herbert Davenport, Earl Kerr, Schubert Knittel, Elizabeth Powell, Stuart A. Wallace, and several basic science residents, he continued the tradition for several years, setting the precedent for a regular convening of pathologists in this area for improving understanding and practice in pathology.

This focus on improving the caliber of pathology practice continued to predominate in the subsequent organization of local pathologists, first as a Section on Clinical Pathology of the Harris County Medical Society, and shortly thereafter, as the Houston Society of Clinical Pathologists. Dr. F. William Sunderman, a pathologist in private practice, was the driving force behind the initial attempt to organize local pathologists in 1948, leading in July of 1949 to the formal request to the Harris County Medical Society for recognition of the group as the Section on Clinical Pathology. This was shortly after HCMS opened up to the organization of special sections and within months of the organization of the Medical and Surgical Sections. Unlike its predecessor, the HPS, the HSCP provided a cross-section of pathologists in Houston and Galveston, with pathologists from academe and research joining pathologists practicing in hospitals and private laboratories to form the society. Drs. Melvin Haley and Stuart Wallace at Baylor, R.H. Chappell at Memorial Baptist, Peter Marcuse at St. Joseph's, William Russell and C.B. Sanders at MDACC, F.W. Sunderman, L.S. Smith, and M.H. Grossman in private practice were particularly active in the organization of the new society.

## HOUSTON SOCIETY OF CLINICAL PATHOLOGISTS, 1948



The stated objectives of the HSCP were:

- 1) To promote closer association of its members.
- 2) To encourage the standardization of laboratory methods and to elevate the standard of work performed in laboratories of clinical pathology.
- 3) To protect and promote the interests of pathologists.
- 4) To stimulate scientific investigation.
- 5) To promote the practice of scientific medicine by a wider application of clinical laboratory methods.

The statements of purpose of HPS and HSCP sounded remarkably similar, with both groups seeking to expand the use of pathology lab testing by other physicians, to raise the standards of practice, and to contribute to scientific advancement in pathology. The pathologists in 1949 were still concerned that too few physicians understood what pathology could contribute to their patient care, and that pathologists in the area did not uniformly adhere to a high enough standard of practice. Both groups saw scientific investigation as the route to improving these situations.

Yet the 34 years intervening between the establishment of the Houston Pathological Society and the formation of the Houston Society of Clinical Pathologists had changed the professional context for pathologists considerably. Full-time pathologists had been a regular part of hospital practice for at least two decades, and pathologists had a number of professional organizations devoted to their specialty: the Texas Society of Pathologists (formed in 1921), the American Society for Clinical Pathology (1922), and the College of American Pathologists (1945). Since 1936 the American Board of Pathology had provided certification in both anatomic and clinical pathology. The specialty of pathology had been well established by 1948, and military medical experience had highlighted to all physicians in military practice that pathologists made a quite valuable contribution to clinical diagnosis.

In 1948 pathologists no longer needed to promote pathology as an essential part of hospital practice, as the members of the HPS had felt necessary in 1914. Indeed the problem demanding solution in 1949 was quite the opposite. The demand for pathology services after WWII far outstripped the available number of physicians trained in pathology, a problem exacerbated by the growing habit of physicians to order a whole battery of tests for each patient, without choosing judiciously which tests would be the most relevant. At the same time, a vast number of military personnel, who had received some training in laboratory work, were returning to the United States. The HSCP was primarily concerned with preventing the deterioration in standards of practice with the employment of inadequately trained technicians, and the very real possibility that non-physicians would be hired to work as pathologists in the absence of physician-pathologists to fill those positions.

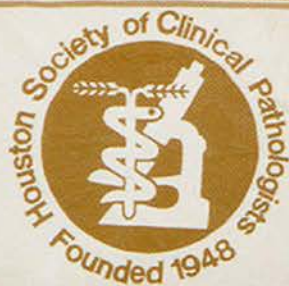
The purpose of the HSCP was thus quite different than that of the HPS. The HSCP did not have to convince physicians and hospitals that pathologists were valuable additions to the medical team; they had to educate the entire medical community about the most effective use of pathology services and the consulting pathologists. They were far more worried about the encroachment by non-physicians into pathology practice. The Houston pathologists were faced with the challenge of both training as many high-caliber pathologists as possible, and convincing the medical community that *physicians* with specialty training in pathology were the only ones who could properly interpret laboratory results in the



light of the clinical history of the patient. Because the question of who would practice pathology was so central to pathologists in all positions, whether practicing, teaching or doing research, the membership quite naturally reflected the whole range of institutions and types of pathology.

The combined focus on business aspects of pathology, and the science of pathology, immediately created problems. Almost as soon as the pathologists applied to the HCMS for status as a special section, they discovered that the HCMS would control the time, place, and content of the pathologists' meetings. Especially important was the fact that independent business meetings, and discussion of non-scientific or economic subjects would not be allowed. Since several of the most pressing issues for the pathologists revolved around reimbursement for services, the business relationships between pathologists and other physicians and hospitals, and the suppression of laboratories run by non-physicians, these proscriptions were intolerable.

The group immediately amended their request to the HCMS, and instead set up two societies, one as a section of HCMS, and the other as the independent Houston Society of Clinical Pathologists, with membership in the two being identical. Every monthly meeting was divided between the HSCP and the Section, with discussion of business, ethical, professional issues taking place over dinner at a restaurant, or occasionally the home of the president of HSCP. After dinner, the group re-adjourned at the Harris County Medical Society facilities for the scientific part of the program presented by the guest speaker. In this way, the pathologists had the opportunity to discuss business matters among themselves, but also to use the scientific presentations as general education for pathologists and other physicians about latest advances in pathology. The constitution of the HSCP also called for an annual seminar of scientific subject, in addition to the papers presented at each monthly meeting.



Active membership in the HSCP was originally offered to any physician licensed to practice medicine in Texas who was actively engaged in the field of pathology or one of its subspecialties. Despite the use of the term *clinical pathology* in the name of the society, Dr. Mervin H. Grossman emphasized in 1950 that the organization encompassed both "Clinical Pathologists and Pathologic Anatomists, representing both the practice of medicine as well as the academic side."<sup>15</sup> A decade later, as full-time pathology became more entrenched as a professional field, and the numbers of part-time pathologists dwindled, active membership was limited to those physicians engaged full-time in the practice or teaching of pathology, with part-time pathologists restricted to associate (non-voting) membership. Pathology residents were especially encouraged to become members of the society, with greatly reduced membership fees. During the 1960s, the residents who joined the HSCP called themselves the "black shirts" for some reason known only to them.

This dual identity, as a society and as a special section of HCMS lasted only a few years, until HCMS disbanded all special sections, leaving the HSCP with no home base for the scientific part of their monthly meetings. For the next several years the organization floundered, with infrequent meetings and conflicting ideas about the purpose of the Society and the organization of regular meetings. Suggestions for ways to revive the Society included: 1) abolition of the scientific portion of the meetings, with business and social programs each month; 2) limitation of scientific programs to only four times a year; or 3) continuation of scientific programs with limited business meetings as a means for HSCP to lead the way in developing the practice of clinical pathology. With such a split between those viewing the society



as primarily a business organization, and those seeing it as a forum for scientific exchange, it is not surprising that no consensus was reached. One member suggested that the society take an entirely new direction by becoming involved in community problems, with civil defense, blood banking, and the establishment of a medico-legal toxicology lab being the most pressing needs.



Jack Abbott, 1954, Courtesy of HAM-TMC.

The HSCP remained essentially defunct for several years, with only two meetings in 1951, two in the spring of 1952, and one in 1953. The organization revived fully again in 1955, when the members resolved to be more active in the future, and to include a scientific component at each meeting to which the public would be invited. One meeting each year was to be devoted to the discussion of business matters and professional ethics in pathology. Dr. Jack Abbott was one of the members most actively involved in resurrecting the Society.

Dr. Wilkenfeld recalls the HSCP as being a mostly scientific organization, with little involvement in politics. The monthly meetings, with socialization over dinner and a scientific paper presented afterwards, undoubtedly seemed mostly academic. But the HSCP was at the same time heavily involved in the politics of pathology education and practice. The HSCP focused its efforts in several categories: 1) protecting the practice of pathology against encroachment by non-physicians; 2) improving standards of practice through education; and 3) establishing a medical examiner's office.

### Protecting the practice of pathology against interlopers

Pathologists found their position as directors of clinical laboratories threatened from two sides during the 1960s—both from medical technologists and biochemists. The September, 1960 issue of *Medical Record & Annals* (the journal of the 9th District Medical Society, of which HCMS is a part) carried an article by a Ph.D. biochemist on clinical tests. The author lambasted directors of laboratories who were not chemists, on the basis that pathologists did not have the capacity to understand the reagents they used and would not be aware of potentially contaminating substances or the invalidation of test results because of variations in laboratory conditions. The HSCP members countered by pointing out that pathologists in charge of clinical labs were quite familiar with the selection and control of reagents. More important was their point that clinical pathology does not begin and end with the lab test; the function of the pathologist goes far beyond the technical level and requires profound understanding of disease processes in humans. The HSCP drafted a pointed letter of response to the editor of the journal.

At the same time, Ann Barden, a medical technologist with 19 years of experience in both research and clinical laboratories at UTMB, opened a private laboratory in Houston. The Physicians, Clinical and X-ray Laboratories was advertised as "A Texas Sized Lab for Texas Physicians. The largest private lab in the State of Texas." Although the HSCP members declined to comment on a specific lay lab, they did call a special meeting in October, 1960, to plan a strategy for dealing with lay laboratories in general. The statement they sent to the Harris County Medical Society was divided into three parts: 1) It reiterated the fact that the Medical Practice Act of Texas classified the practice of pathology as the practice of medicine and pathologists are required to adhere to the same legal and ethical requirements as other physicians. 2) It reviewed the principles of the College of American



Pathologists and its definition of the practice of clinical pathology. 3) It conveyed a personal admonition to the Harris County Medical Society members who supported lay laboratories by sending their lab requests to them.

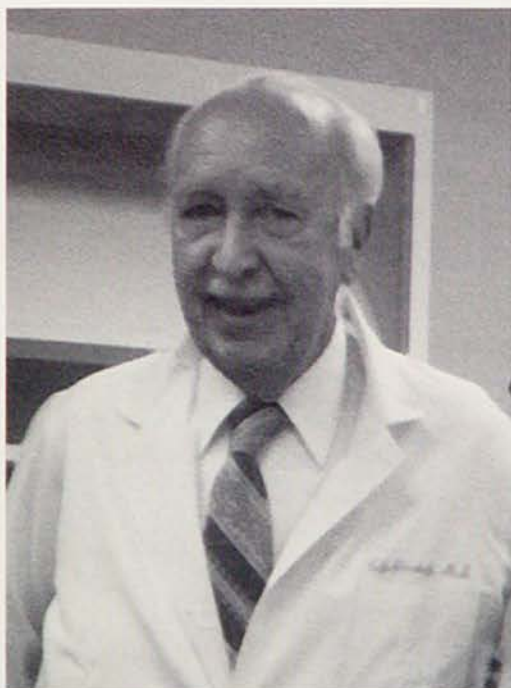
The following year, the HSCP was again engaged in legal matters by the introduction of a bill for licensure of clinical laboratories. The bill attempted to set standards for practice in clinical pathology, but it defeated its own purpose by "grandfathering in" all existing labs, regardless of the training of the laboratory director. The bill further attacked the prerogative of clinical pathologists to claim special medical expertise by stipulating that anyone with \$25 and a B.A. and a science major, a B.Sc., or a Ph.D. would in the future be eligible for licensing as a clinical laboratory director.

The bill, by declaring that the proposed licensing for clinical laboratories and their directors should not be construed as authorizing any person to practice medicine or furnish the services of a physician, in effect dismissed the sum of science, specialist training, and experience embodied in clinical pathologists as tangential to medical diagnosis and treatment. This was seen, understandably, by clinical pathologists as a direct attack on their role in medicine as physicians and clinical experts. In contradiction to the many advances clinical pathology had contributed to the understanding of disease, diagnosis, prognosis, and treatment, many people had an image of pathologists as merely technicians serving the patient's primary physician.

A new bill for licensure of clinical laboratory directors was introduced in 1963 by the Texas Association of Clinical Laboratories (TACL), a lay organization. The fact that there were enough lay laboratories at the time to support a professional organization and lobbying effort is indicative of the very real threat of substandard work in some labs, and the extent of competition among pathology labs to provide services. In the opinion of HSCP members, the TACL had engaged in a propaganda campaign filled with half truths and untruths. However, the appearance of the letter, emanating from the Austin headquarters of the TACL, misled physicians into thinking that the TMA was behind the proposed legislation.

Dr. Carl Lind, as president of TSP and an active member of HSCP, made the apt point that similar bills are introduced at almost every meeting of the state legislature, and the bills were usually intended to protect existing labs from competition from new labs, not necessarily to attack pathologists. After all, the lay labs were entirely dependent upon referrals from physicians, and many prominent physicians with considerable political clout used lay labs and were in favor of the licensing of these labs. So, the pathologists were not entirely supported in their insistence upon physicians as directors by physicians in the TMA. This gap in perspectives between pathology specialists and their other medical colleagues came from the persistent view among many physicians, with little training in pathology themselves, that pathologists provided a service, but were not, in fact, consulting specialists with diagnostic skills that might surpass those of the primary physician.

Of the three possible approaches to the problem, (suing lay labs for practicing medicine without a license, submitting an alternative bill on licensure, or amending the Texas Medical Practice Act to include laboratory medicine under the definition of the practice of medicine), legal action through the courts was the avenue most favored by the TSP, and presumably by such influential figures from Houston in the TSP as Drs. Lind and Hill.



Courtesy of Dr. Tomas Klima.

#### Carl J. Lind, Jr., M.D.

Dr. Lind moved to Houston as director of laboratory services and chief of pathology at St. Luke's Episcopal Hospital in 1959, after serving in turn as pathologist, chief of laboratory services, and senior consulting pathologist at Walter Reed Army Hospital in Washington, DC, with an interim period as head of the U.S. Army's medical laboratories in Heidelberg, and at Fort Sam Houston. During Dr. Lind's service at Fort Sam Houston, Dr. Russell at M.D. Anderson Cancer Hospital declared the severe shortage of pathologists in Houston to be an emergency, and gained the state governor's permission to borrow Dr. Lind and his fellow pathologist, Dr. William Hill, to assist once a week as pathologists in the operating room during surgery. Dr. Lind later recruited Dr. Hill to join him in pathology practice at St. Luke's Episcopal Hospital.



The HSCP, in collaboration with their state counterparts, decided in 1963 to bring legal action against several lay-operated laboratories for practicing medicine without a license. The decision to pursue this avenue against lay laboratories was supported by a ruling from the Attorney General of Texas, Will Wilson. Anyone who was compensated for using laboratory tests on blood, urine, tissue and other specimens from patients, for the purpose of diagnosing disease, was engaging in the practice of medicine, according to Article 741 of Vernon's Penal Code. This no doubt angered many physicians, since the suits against the laboratories also brought into the trial the physician who originally referred the patient to the laboratory.

In a continuation of the saga, the TMA informed the pathologists that it could no longer support the HSCP in its opposition to licensure of labs. If the HSCP could not prevent licensure of lay laboratories, the members at least wanted to have some method of publicly distinguishing between the two types of labs. They immediately requested the assistance of the HCMS in segregating in the yellow pages the listing of clinical laboratories directed by licensed physicians, and those run by non-physicians so that referring physicians could easily find labs supervised by physicians. It turned out that "Physicians & Surgeons—M.D.—Laboratory Diagnosis" was a listing available throughout Texas, but the by-laws of the HCMS prevented the use of that heading in Houston. The telephone company was unwilling to set up a new heading of laboratories, so the issue reached a stalemate.

### **Improving the use of pathology services by clinicians**

Educating physicians about the contribution pathology could make to clinical care has been an ever-present concern among local pathologists since laboratory tests first became routinely available in the early 1900s for clinical diagnosis; it still remained a pressing concern for the HSCP six decades later. Despite a considerable increase in the use of diagnostic testing since the turn of the century, and the post-WWII revival of anatomic pathology as an important part of surgical practice, HSCP members still felt that clinical pathology services were greatly underused or misused. In 1963, Dr. H.C. Allen proposed the development of an exhibit for the Post Graduate Medical Assembly meeting in July, as way to educate physicians about recent advances in pathological diagnosis and the best way to utilize the skills of the pathologist. In particular, the society wished to highlight the advantages of using laboratories directed by pathologists in comparison to the risks of using lay-operated labs. Dr. Allen's idea was to produce a traveling exhibit for use at medical meetings all over the state. The displays would illustrate the proper use of a good lab, and how a pathologist could give the primary physician a quick and accurate test result to assist in diagnosis. When Dr. Allen presented the idea to the members of the state society, they eagerly adopted the idea. As a way to emphasize the positive, rather than simply lambaste lay laboratories, the HSCP proposed that the exhibit focus on the history of laboratory medicine, contributions made by pioneering physicians, and recent advancements in patient care brought about by laboratory medicine.



The Houston pathologists were walking a tightrope—they hoped to educate physicians about pathology without antagonizing those physicians who regularly used laboratories directed by non-physicians. A traveling exhibit extolling the advances made in pathology seemed to be the best way to improve public relations between the pathologists and physicians in the TMA, who had landed on different sides of the fence over the issue of licensure of clinical laboratories and non-physicians as laboratory directors. The pathologists in HSCP were intent on defeating legislation allowing licensure of lay labs, but they were unlikely to achieve this without the firm support of the TMA.

#### Establishing a medical examiner's office

In Houston and Galveston, medical-legal autopsies were handled on an ad hoc basis for the first half of this century. For the Galveston area, the pathology department at UTMB provided forensic autopsy services, while the pathologists at Jefferson Davis Hospital conducted autopsies for Harris County until the Baylor faculty began to share the task in 1943. In 1949, shortly after the M.D. Anderson Cancer Hospital was opened, that institution arranged for the residents at MDACC to perform medicolegal autopsies for the City of Houston, because the very small patient care program would have supplied insufficient opportunities for the residents to perform autopsies. In 1952, the autopsy committee of the HSCP reported that pathologists who performed autopsies often encountered little compliance from funeral home directors; although fresh autopsies produced far more reliable results, the directors often embalmed the bodies before allowing pathologists to perform autopsies. The task of performing medicolegal autopsies became more complicated with the growing numbers of cases needing investigation, the increasing sophistication of laboratory techniques, and the intricacies of providing medical evidence in courts of law.

#### Joseph A. Jachimczyk, M.D.

As chief medical examiner for Harris County from 1960 to 1995, Dr. Jachimczyk greatly expanded the scope of forensic pathology, and made this area a leader in the techniques and instrumentation for forensic investigation, including, among other things, electron microscopy, toxicology, odontology, and genetic testing. Under Dr. Jachimczyk's direction, forensic medicine now includes examination of the living, not just the deceased, with such applications as the investigation of rape. Dr. Jachimczyk has also contributed enormously to the improvement of life for many, through the development of the medical examiner's office as a center for tissue and organ donation.

In a period when forensic pathology was just emerging as a subspecialty of pathology, Dr. Jachimczyk came to Houston in 1957 with an impressive amount of training in forensic pathology. He earned his medical degree from the University of Tennessee in 1948, and pursued training in forensic pathology at Harvard Medical School. He also obtained a doctorate in law from the Boston College Law School. Before coming to work as a forensic pathologist at Jefferson Davis Hospital in 1957, Dr. Jachimczyk served as assistant medical examiner for the State of Maryland, director of the laboratories in the U.S. Public Hospital in Brighton, MA, and a teaching fellow in the Department of Legal Medicine at Harvard University.



Courtesy of Dr. Tomas Klima.

The HSCP was galvanized into calling a special meeting for March 17, 1955 by the introduction of a bill to the state legislature to establish a coroner system in cities or counties with populations greater than 250,000. The HSCP particularly objected to provisions in the bill that made the coroner a politically appointed office, limited the term to two years, and set the annual salary at \$15,000. They argued that the tenuous political position of the office would not appeal to



pathologists of good caliber, and would interfere with the proper conduct of laboratory. Furthermore, they objected to the lack of provisions for lab facilities, financial and personnel support for the laboratory work, and eventual integration of the coroner into a state-wide system. What laymen did not fully appreciate was that forensic autopsy is not just an ordinary autopsy, and the laboratory equipment and support services required for forensic purposes are often quite specialized.

The HSCP offered their assistance to the Commissioners Court and County Judge in setting up a county coroner or medical examiner system that would attract good quality pathologists and provide sufficiently for the difficult job of forensic pathology. Their collaboration resulted in the establishment of the medical examiner office for Harris County in 1960, and the appointment of one of those few pathologists fully qualified in forensic pathology. Dr. Joseph Jachimczyk arrived in Houston in 1957 as Houston's first pathologist specifically trained in forensic pathology and law. He served as chief medical examiner from 1960 until his retirement in 1995. Houston was unusual in obtaining the services of such a highly qualified medical examiner as early as 1960. Many cities had no medical examiner as late as 1970, when there were fewer than 200 pathologists in the United States trained specifically in forensic pathology, and only 30 were engaged full-time in the field. Galveston did not have a medical examiner until 1975, when Dr. William Korndorffer was appointed to the position.

The HSCP membership eventually decided that the political and legal issues concerning pathologists in Texas were best handled by the state organization rather than by the HSCP. Instead, the HSCP turned to a greater focus on scientific meetings, especially the annual spring seminar with guest speakers and the presentation of a group of related cases, accompanied by slides.





## Conclusions

The development of pathology in this area, as in other areas of the country, was not a smooth course of advancement along a path of scientific discovery and application to clinical practice. Various elements in the science of pathology, such as bacteriology or blood chemistry, were selectively adopted by physicians here as the new information seemed pertinent to their practices and the attendant changes in practice style did not seem too difficult to master, too inconvenient to be practical, or too expensive to consider. Surgeons and internists saw in pathology different levels of utility according to their own circumstances. The resistance among general physicians to the use of laboratory testing in their own practices from the 1910s through the 1920s contrasts strikingly with the ready adoption of laboratories by John Sealy, Baptist Memorial, St. Joseph, and Hermann hospitals in the same period as a symbol of scientific modernity.

Initially, pathologists were the instructors trying to convince general physicians that laboratory testing was simple enough for all physicians to incorporate it into their practices. But as pathologists themselves began providing diagnostic services, their identity as medical specialists depended upon convincing the rest of the medical community that pathologists had mastered complicated techniques that were out of the realm of the general physician. This backfired when the association of pathology with technique led other physicians to think of pathologists as technicians, rather than as fellow physicians; this perception was exacerbated by the increasing reliance pathologists placed on laboratory technicians for routine aspects of clinical pathology. By WWII, clinicians valued the test results produced by the clinical labs, but rarely thought of the pathologist, working in the laboratory far removed from the clinical floors, as a fellow physician. Pathologists managed to dispel this notion only through a concerted campaign to present the particular skills of the pathologist as analytical skills, rather than technical skills, essential to the understanding of disease.

These trends affected pathologists throughout the country, but the pathologists in Houston and Galveston reacted to these challenges in their own ways. What was unusual about the community of pathologists here was the close collaboration between pathologists in many different medical institutions and the cooperation among pathologists in private laboratory practice, hospital practice, and academic positions. Both in formal organizations like the HSCP, and in informal associations, such as the Friday afternoon slide seminars, these different groups of pathologists all shared a common interest in constantly improving the standards in the field of pathology. There was occasional tension between private pathologists and academic pathologists, but that tension was inconsequential compared to the rifts among similar groups in other cities.



In their efforts to put pathology in Houston and Galveston in the forefront of pathology, local pathologists took advantage of the close proximity of many institutions in this area. By sharing their respective expertise with all of the residents at the TMC on a rotating basis, and combining efforts to train medical technologists, the pathologists here quickly produced an enriched educational atmosphere that would have been unattainable had the institutions worked in isolation. The pathology departments in the medical schools and some of the hospitals here had the advantage of starting as new institutions that were unfettered by existing organizational structures or traditions. Despite the inconvenience of working for a time in old warehouses, surplus army buildings, and incomplete buildings, it did allow a fair bit of flexibility in designing and modifying teaching methods, practice arrangements, and cross-disciplinary or cross-institutional research projects.

In the century since pathology was introduced into medical education in Galveston, pathology has made a full circuit. When Allen Smith first taught pathology, it formed a substantial part of every medical student's training. Over the intervening decades, pathology as a basic science waxed and waned in importance in the medical curriculum, just as the utilization of diagnostic pathology in clinical and surgical practice varied greatly within the medical community. After a long period during which training in pathology was divided up and absorbed by other medical disciplines, both clinical and surgical pathology have regained much of their centrality to medicine, and research and practice have increasingly overlapped in large scale clinical studies. Pathologists are once again perceived as providing unique insights into disease processes at ever more sophisticated levels.





*Past Presidents,  
Houston Society  
of Clinical Pathologists*

1948-1949	C.B. Sanders, M.D.
1949-1950	C.B. Sanders, M.D.
1950-1951	C.B. Sanders, M.D.
1951-1952	C.B. Sanders, M.D.
1952-1953	C.B. Sanders, M.D.
1953-1954	C.B. Sanders, M.D.
1954-1955	Wilson Brown, M.D.
1955-1956	Peter M. Marcuse, M.D.
1956-1957	Peter M. Marcuse, M.D.
1957-1958	Jack Abbott, M.D.
1958-1959	Jack Abbott, M.D.
1959-1960	H. Stephen Gallagher, M.D.
1960-1961	Franz Leidler, M.D.
1961-1962	Harold Wood, M.D.
1962-1963	John R. Thomas, M.D.
1963-1964	Ethel Erickson, M.D.
1964-1965	Berne L. Newton, M.D.
1965-1966	William T. Hill, M.D.
1966-1967	Samuel Skinner, M.D.
1967-1968	Melvin D. Haley, M.D.
1968-1969	Harvey S. Rosenberg, M.D.
1969-1970	Joyce S. Davis, M.D.
1970-1971	Carl F. Tessmer, M.D.
1971-1972	Carl J. Lind, Jr., M.D.
1972-1973	John A. Webb, M.D.
1973-1974	S. Donald Greenberg, M.D.
1974-1975	Ena E. Mocega, M.D.
1975-1976	John D. Milam, M.D.
1976-1977	Jerome S. Wilkenfeld, M.D.
1977-1978	Jack L. Titus, M.D.
1978-1979	Luis E. Mateo, M.D.
1979-1980	James J. Butler, M.D.
1980-1981	Ashok M. Balsaver, M.D.
1981-1982	Edward S. Reynolds, M.D.
1982-1983	Mark D. Chambers, M.D.
1983-1984	J. Leslie Smith, Jr., M.D.
1984-1985	J. B. Askew, Jr., M.D.
1985-1986	Bruce Mackay, M.D.
1986-1987	Tomas Klima, M.D.
1987-1988	Richard J. Hausner, M.D.
1988-1989	Alberto G. Ayala, M.D.
1989-1990	Gerard W. Del Junco, Jr., M.D.
1990-1991	Janet M. Bruner, M.D.
1991-1992	Thomas M. Wheeler, M.D.
1992-1993	Mario A. Luna, M.D.
1993-1994	Garry F. Rust, M.D.
1994-1995	Robert A. Wessels, M.D.
1995-1996	L. Maximilian Buja, M. D.
1996-1997	Rhonda L. Shannon, M.D.
1997-1998	Linda K. Green, M.D.
President-elect	Sergio A. Soroka, M.D.



The Annual Harlan J. Spjut Award was established by the Houston Society of Clinical Pathologists in 1989 to honor Dr. Spjut upon his retirement, for his brilliant scholarship, masterly teaching, meticulous patient care, and outstanding devotion to the highest principles of medicine throughout his long and productive career in pathology. The Harlan J. Spjut Award is bestowed annually upon a pathologist or other scientist, currently or formerly of this community, who has demonstrated sustained and distinguished scholarly achievement in pathology or a related discipline. The first Annual Harlan J. Spjut Award was presented in 1989.

## *Harlan J. Spjut Award and Recipients*

- 1989 S. Donald Greenberg, M.D.
- 1990 James J. Butler, M.D.
- 1991 Harvey S. Rosenberg, M.D.
- 1992 John G. Batsakis, M.D.
- 1993 Jack L. Titus, M.D.
- 1994 Alberto G. Ayala, M.D.
- 1995 Jerome H. Smith, M.D.
- 1996 Bruce Mackay, M.D., Ph.D.
- 1997 L. Maximilian Buja, M.D.
- 1998 Mario A. Luna, M.D.



Courtesy of Dr. Greenberg.

### **1989 S. Donald Greenberg, M.D.**

Dr. Greenberg is well known for his research in respiratory pathology and cytopathology, as well as his outstanding career in teaching pathology at Baylor College of Medicine. Dr. Greenberg received his M.D. degree from Baylor in 1954, and after completing his residency in pathology in 1961, he remained at Baylor on the pathology faculty. While at Baylor, Dr. Greenberg developed the pulmonary pathology research program, and served as professor of pathology, otolaryngology and communicative sciences, and medicine. He also contributed to work in environmental pathology as an adjunct professor at the University of Texas School of Public Health. In addition to being voted as an outstanding teacher numerous times and receiving many awards, Dr. Greenberg received the Minnie Stevens Piper Professor Teaching Award in 1987, and was recently the recipient of the 1998 Caldwell Award.





1989, Courtesy of Dr. Rhonda Shannon.

#### 1990 James J. Butler, M.D.

Dr. Butler joined the Department of Pathology of the University of Texas M.D. Anderson Cancer Center in 1959, after completing his medical training at the University of Michigan Medical School, postgraduate work at the University of Cincinnati Medical School and the State University of Iowa Medical School, and working for several years in the Section of Hematologic Pathology of the Armed Forces Institute of Pathology. At M.D. Anderson Cancer Center, Dr. Butler built a strong program of research and training in hematopathology, and promoted cooperation with clinical hematologists. The majority of his publications dealt with reticuloendothelial neoplasms, but he covered many other topics as well, including pitfalls in pathological diagnosis and the best means for their avoidance.



1991, Courtesy of Dr. Harvey S. Rosenberg.

#### 1991 Harvey S. Rosenberg, M.D.

Dr. Rosenberg is well known for his leadership role in developing pediatric pathology as a subspecialty. He has been part of the Houston medical community since 1949, when he graduated from Baylor College of Medicine. After a residency and fellowship in pathology at Boston Children's Hospital, interrupted by military service at William Beaumont Army Hospital in El Paso, Dr. Rosenberg returned to Houston to become chief pathologist at Texas Children's Hospital, and to join the pathology staff at Baylor College of Medicine. In 1979, he joined the faculty of The University of Texas Medical School at Houston. One of Dr. Rosenberg's most significant contributions to pediatric pathology has been as co-editor of the annual publication *Perspectives in Pediatric Pathology*, first published in 1973.



1989, Courtesy of Dr. Rhonda Shannon.

#### 1992 John G. Batsakis, M.D.

Dr. Batsakis fostered close collaboration between pathologists and head and neck surgeons during his tenure as chair of the Department of Pathology at the UT M.D. Anderson Cancer Center. He came to MDACC in 1981, after wide experience in pathology at other institutions. Dr. Batsakis graduated from the University of Michigan Medical School in 1954, completed a rotating internship at George Washington University Hospital, and then returned to his alma mater for a four year residency in pathology. He joined the faculty there, after a two year stint in Walter Reed Army Medical Hospital as Assistant Chief of Pathology. Before coming to Houston, Dr. Batsakis spent two years as Chair of the Department of Pathology and Laboratory Medicine at Maine Medical Center in Portland, and Professor of Pathology at University of Vermont.



Courtesy of Baylor College of Medicine.

#### 1993 Jack L. Titus, M.D., Ph.D.

During Dr. Titus' tenure in Houston, from 1972-1987, the Department of Pathology at Baylor College of Medicine flourished, attaining national recognition for its teaching and research programs. Dr. Titus was also a founding trustee for the Gulf Coast Regional Blood Center, and contributed greatly to the organization and running of blood services in this area. Dr. Titus began his career in general practice, after graduating from the Washington University School of Medicine. His pathology career began four years later, when he began a pathology fellowship and graduate program at the Mayo Foundation and Graduate School; after earning his Ph.D. at the University of Minnesota, he returned to the Mayo Medical School as a professor of pathology. Dr. Titus moved to Houston in 1972 as the W. L. Moody, Jr. Professor and Chair of the Department of Pathology, as well as chief of pathology services at Methodist, Jefferson Davis, and Ben Taub hospitals. Dr. Titus' special interest in cardiovascular pathology contributed significantly to Baylor's research program in cardiovascular pathology.





1997, Courtesy of Dr. Alberto Ayala.

#### 1994 Alberto G. Ayala, M.D.

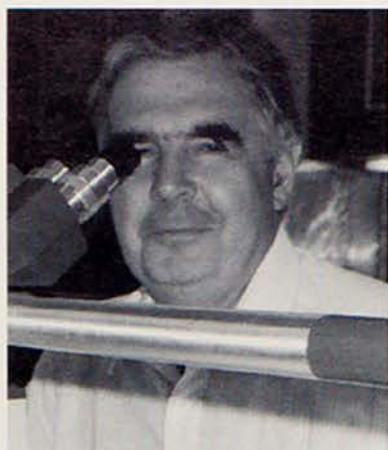
Dr. Ayala earned his nickname "El Supreme" from his tireless work in teaching, research, and diagnosis, and his role as mentor to surgical pathology fellows and residents, and foreign visitors at the M.D. Anderson Cancer Center. Dr. Ayala joined MDACC in 1957, after graduating from the School of Medicine, University of Nuevo Leon, Monterrey, Mexico, fulfilling military service obligations, and completing a residency in pathology at the University of Texas Medical Branch in Galveston. Dr. Ayala was named deputy chairman of the Department of Pathology at MDACC in 1966, and director of surgical pathology in 1982. His prolific publication record has helped establish his international reputation for excellence in anatomic pathology.



1995, Courtesy of Dr. Rhonda Shannon.

#### 1995 Jerome H. Smith, M.D.

Dr. Smith joined the faculty at the University of Texas Medical Branch at Galveston in 1977 after a very broad experience in pathology. He received his M.D. and master's degree in anatomy from the University of Nebraska, and went on to serve residencies in both anatomic and clinical pathology at Peter Bent Brigham Hospital in Boston. He went on to obtain a Master of Science in hygiene in the Department of Tropical Public Health at the Harvard School of Public Health in 1969. He then departed for Africa, where he directed three different pathology services, in the Democratic Republic of Congo, in Cairo, and in Kinshasa, Zaire. During his tenure at UTMB (1977-1984 and 1989-present) he developed an international reputation for his work on parasitology and infectious disease pathology, especially on schistosomiasis. He began the Decedent Affairs Office at UTMB, which maintains an autopsy rate of 50-60%. As director of pathology education at UTMB, he oversaw an extensive reform of the medical school's pathology curriculum.



1989, Courtesy of Dr. Rhonda Shannon.

#### 1996 Bruce Mackay, M.D., Ph.D.

Dr. Mackay is well known for his pioneering work at the M.D. Anderson Cancer Center in the use of electron microscopy in the study of human cancers and other pathologic processes. He completed his medical training and Ph.D. at the University of Edinburgh, and stayed as a lecturer in anatomy. Dr. Mackay joined the faculty at MDACC in 1969, after teaching at the University of Iowa, completing residencies in both surgery and pathology at Vancouver General Hospital, serving as chief resident in pathology at the King County Hospital in Seattle, Washington, and teaching pathology at the University of Washington. At MDACC, Dr. Mackay quickly gained great respect as a consultant in surgical pathology, as well as for his research in malignant melanoma, soft tissue tumors, and lung cancers using histochemistry, morphometrics and flow cytometry in addition to electron microscopy.





1997, Courtesy of Dr. Rhonda Shannon.

**1997 L. Maximilian Buja, M.D.**

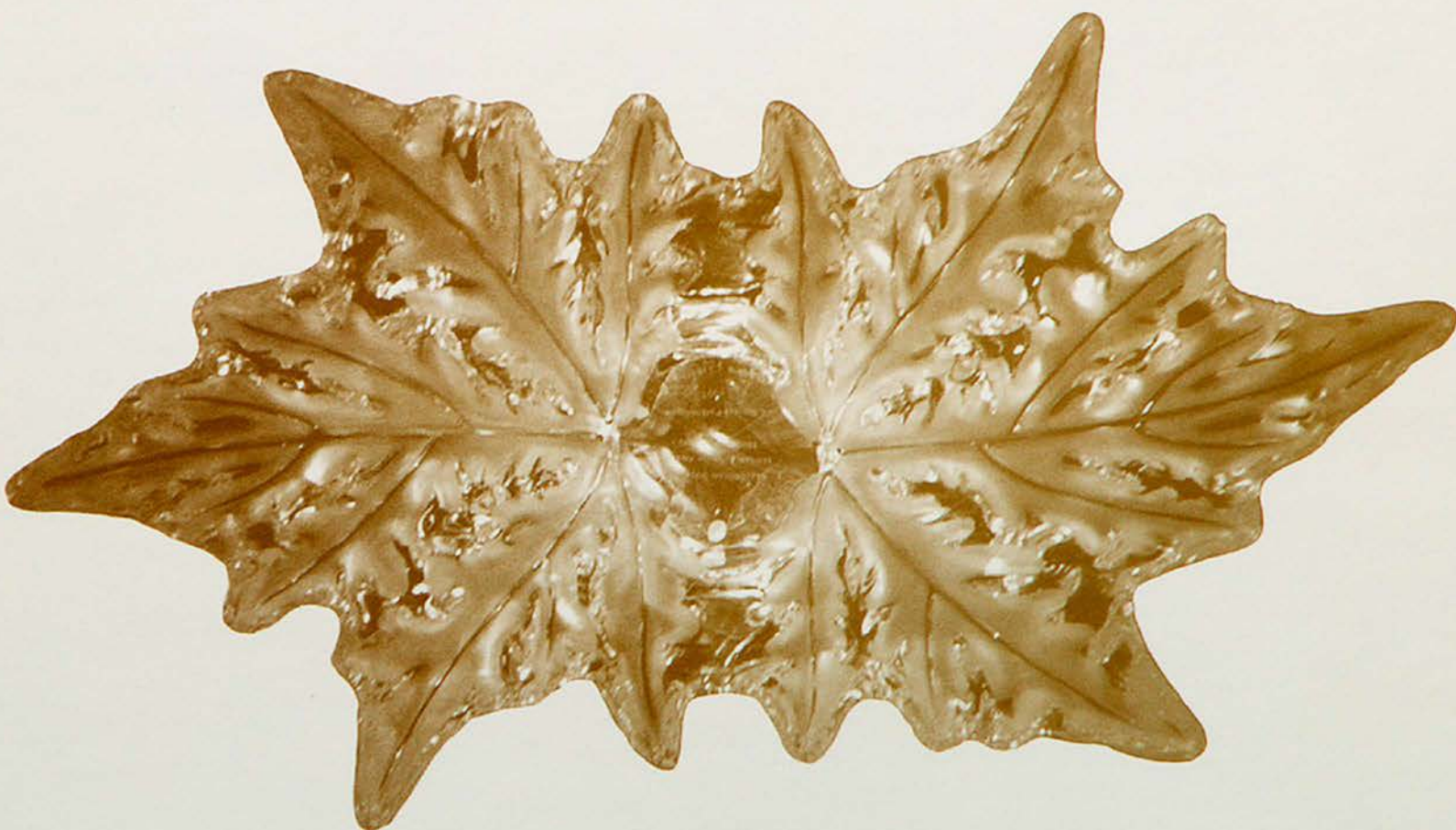
Dr. Buja, currently dean of the University of Texas-Houston Medical School, came to Houston in 1989 to assume the chairmanship of the Department of Pathology at UT-Houston. Dr. Buja earned his medical degree from Tulane University School of Medicine in 1967, and a masters degree in anatomy the following year. After a mixed medicine internship at Charity Hospital, he completed a pathology residency in the Laboratory of Pathology of the National Cancer Institute, and worked as a senior investigator in the Section of Pathology of the National Heart and Lung Institute. Dr. Buja served on the faculty at Southwestern Medical School in Dallas from 1974, and was appointed as the A.J. Gill Professor of Pathology in 1987. His primary research interests and areas of publication have been in aspects of cardiovascular pathology, including mechanisms of cell injury, and intracellular electrolyte balance.



1991, Courtesy of Dr. Rhonda Shannon.

**1998 Mario A. Luna, M.D.**

Dr. Luna has been the director of autopsy services at the University of Texas M.D. Anderson Cancer Center since 1968, after completing a fellowship and serving for four years on the faculty in pathology at the same institution. Dr. Luna received his M.D. degree from the University Autonomous of Guadalajara México, and completed residencies in pathology at both Unidad de Patología del Hospital General in Mexico City and the Cook County Hospital in Chicago. Throughout his career in pathology, Dr. Luna has maintained strong ties with pathology societies in Mexico, Venezuela, Chile, Argentina, Brazil, and Europe. Dr. Luna has published extensively on head and neck pathology and infectious diseases, and has received many awards for his work.





## Resources

In addition to the information obtained through interviews with Dr. Alberto Ayala, Dr. S. Donald Greenberg, Mrs. Anna Haley and Dr. Melvin Haley, Dr. William Hill, Dr. Tomas Klima, Dr. Margo Restrepo, Dr. Harvey Rosenberg, Dr. David Smith, Dr. Harlan Spjut, and Dr. Jerome Wilkenfeld, and from responses to a HSCP questionnaire distributed to members, the following resources were used in the research for this history of pathology in Houston and Galveston.

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<sup>3</sup>Opening Address By Dr. J. F. Y. Paine to the University of Texas Medical Department, October, 1906, University of Texas Medical Branch at Galveston: A Seventy-fifth History, Series 1 Research Files, Box 1, File 50.

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Notes



