

The Mallory Era (1926–1951)

DAVID N. LOUIS AND ROBERT H. YOUNG

TRACY BURR MALLORY (chapter 6) took over as director of the department on September 1, 1926. Tracy Mallory was, by report, a rather quiet, shy person, but Anna Castleman (widow of Dr. Mallory's successor, Dr. Benjamin Castleman) remembered him as being far more talkative at home with his wife, who was a professor at Wellesley College. Despite his retiring nature, he proved an extremely capable leader of the department, and Dr. Castleman would later write of him, "Dr. Mallory's mind, characterized by clarity of thought, an infallible memory, a keen insight, and an unswerving intellectual honesty, was balanced by a warm personality pervaded with gentleness, generosity, and humility" (1).

At the start of the Mallory era, the department consisted of four staff pathologists, one resident, two technicians, and one secretary; by the end of Dr. Mallory's tenure, the department had grown to eight staff pathologists, seven residents, six fellows, and about 30 technicians and secretaries (2). The Mallory years would also witness early specialization within anatomic pathology. For example, during this time the department began its long-standing collaborations with Neurology and Dermatology and started to process the otolaryngology specimens from the adjacent Massachusetts Eye and Ear Infirmary (MEEI), which allowed special expertise to develop in head and neck pathology as well (see below).

The rapid growth of clinical volumes within the department during this period also brought

about adjustments in specimen handling and economies of scale, and these changes generated the kinds of challenges experienced by laboratory directors ever since. By 1935 Dr. Mallory observed:

Satisfactory relationships between the laboratory and the clinical services demand for the most part a working compromise between maximal accuracy and reasonable speed of reporting, a result most efficiently accomplished by a fairly routine mass handling of material. On the other hand many patients present problems of special interest or difficulty requiring individual, and consequently time-consuming, attention. Yet it is through the results of this type of examination that the influence of the laboratory upon the hospital is particularly felt. Each successive year, moreover, whether or not beds are added to the hospital, the volume of material submitted to the laboratory increases and the proportion requiring special handling also rises. Since 1931, when the last addition was made to the technical staff, the increase has been nearly 30 percent. Under such pressure it is becoming difficult to keep up even with routine without sacrifice of standards and less possible to treat important material with the individuality it deserves.

Dr. Mallory wrestled with this issue, trying to justify more resources from the hospital. In 1936 he wrote:

One of the most important aspects of the relationship of laboratories to hospitals is their cost. Significant figures bearing upon this are difficult to obtain and have rarely been published. During the past year a review of the laboratory expenses over a ten year period was made and a group of figures arrived at which seem worth recording. The expenses of a laboratory are significant primarily in comparison with the volume of work it is called upon to do, and this in turn depends much more directly upon the number of patients admitted to the hospital than upon the number of beds.

Thus, though the total expenses of the laboratory rose between 1926 and 1935 from \$25,628 to \$39,370, an increase of 54 per cent, the volume of work during the same period rose 123 per cent. When the average cost per patient was computed it was found to rise from \$2.72 in 1926 to a boom level of \$3.38 in 1929, then to drop progressively during the depression to \$2.66 in 1935. The average for the period was \$2.99, and figures much below this level can probably not be maintained over a period of years without deterioration in equipment and personnel. The work covered in these figures includes only post-mortem examinations, surgical and bacteriological specimens and serology. The costs for each type of examination can be only approximately calculated, but the following figures are believed to be fairly accurate and should interest the hospital staff.

Cost of autopsy	\$33.10
Cost of surgical specimen	\$2.76
Cost of bacteriological examination	\$1.34
Cost of serologic examination	\$0.06

Although the department grew, the era also witnessed the migration of clinical laboratory testing, such as chemistry and hematology testing, into the laboratories of the Medical Service; the Pathology Department focused largely on bacteriological examinations, surgical pathology, autopsies, and serologies. By 1935 the hospital

directory listed over 20 laboratories. Clearly, the hospital leadership understood the growing profound significance of the laboratories to the function of the clinical services during this period. In 1937 the General Executive Committee report stated that "unquestionably the greatest difference between the hospital of today and that of fifty years ago is the development of the laboratory services" and commented on "their importance to the well-being of the patients, to the intellectual development of the staff and to the progress of medicine." So important were the functions of the diagnostic services that the chiefs of the two largest such departments, Pathology and Radiology, were added to the General Executive Committee as permanent members.

Nonetheless, during the period the development and expansion of multiple laboratories under the Medical Service created a confusing situation, which the General Executive Committee recognized. There were "a score of more or less distinct laboratories, essentially uncoordinated, each with its own peculiar proportion of routine and research work, of hospital or outside support, its own system of charges for examinations, and of remuneration of the workers." Some of these laboratories did specialized testing relating to particular diseases, such as metabolic and endocrine testing; others were responsible for more standard testing, primarily clinical chemistries and hematology. The latter laboratories were manned by a combination of technicians and house officers. As summarized in the 1937 report:

Out of the welter of laboratory tests devised in the course of years to examine the various secretions, excretions and withdrawable fluids of the body, a group was gradually selected of proved diagnostic value, many of them so important that it became customary to do them routinely on every patient, regardless of the nature of his ailment. The majority required comparatively simple equipment and little more specialized training than that of any competent physician. This heterogeneous, vaguely delimited

collection of the simpler morphologic, serologic and chemical methods of examination became known as clinical pathology. Tied together by convenience rather than by any unity of intellectual content, it merges insensibly on the one hand into hematology, on the other into biological chemistry. Training and experience in the field were so evidently necessary to the prospective physician that a tour of duty in the laboratory became the initial stage of every internship. Originally centralized in the laboratory building and supervised, none too imaginatively it must be confessed, by one of the laboratory assistants, the work was eventually divided, when the Bulfinch building was remodeled, into a number of units, each with its individual laboratory in proximity to the wards. The gain in convenience was considerable, but the decentralization rendered supervision and instruction of the newly arrived intern rather haphazard at best.

Overall, given the essential role of all of these diverse laboratories in both clinical care and house officer education, the committee felt in 1937 that “the time has come to let the pendulum swing back, to re-centralize once more at least a part of the clinical pathology under a full-time laboratory director.” By “part of the clinical pathology,” the committee was referring to large portions of the more standard clinical chemistry and hematology testing, not to the specialized laboratories. Over the course of 1937–1938, the laboratories were reorganized into the Clinical Laboratories—which restricted themselves to clinical testing and which were supported in part by patient fees—and the Research Laboratories. Nonetheless, “certain laboratories which performed both clinical and research activities were formed into a special group.” In addition, in 1938 Clinical Pathology was officially made a part of the Pathology department at an administrative level, and major changes were made in how the clinical laboratories were run across the hospital.

About the new director of the centralized

laboratories, the committee recommended: “He should be responsible during the first few weeks of the intern’s service for his instruction in laboratory procedures and also for general supervision of the ward laboratories. He must be of a caliber to be a valuable consultant on the wards and in the private pavilions. On the man rather than the details of the organization, will the success of the plan depend” (3). This responsibility was to fall to Dr. Francis Hunter (see below), who had been in charge of the Phillips House, Baker Memorial, and Out-Patient Department laboratories.

Key events driving laboratory volumes during this period include the opening of the Baker Memorial in 1930 and the White Building in 1940, and the advent of antibiotic therapy in the late 1930s. These all added to the work of the laboratories, with resulting challenges; in 1941, for example, laboratory expenses had grown to \$47,000, reflecting the large increase in activities. The incorporation of the Vincent Memorial, with its gynecological work, into the MGH occurred in 1941. Finally, World War II, and the accompanying difficulty of maintaining personnel, was also a major event in the laboratories during Dr. Mallory’s tenure, as he would describe in 1941:

In normal times significant additions to both staff and budget would be obligatory to maintain the standards of the laboratory at a level commensurate with those of the clinical services. Under war conditions only the minimum adjustments necessary to the maintenance of the diagnostic services are in order.

No changes in the plant have been made during the last year and none are recommended for the immediate future. The overcrowding which has been our major difficulty will all too probably be relieved by irreplaceable losses of personnel to the military services.

In addition, in 1942: “The major problem of the Department of Pathology and Bacteriology as well as the other diagnostic laboratories of the hospital has been to maintain a reasonable level

of efficiency in the face of constantly shifting personnel. With each experienced person lost, replacement has become progressively more difficult and frequently has been possible only after significant delay. In fact, what with sickness and vacations, a full staff was available for only one of the fifty-two weeks of the year.”

Different departments undertook varied additional responsibilities during the war. For example, when labor shortages made the production of food for MGH patients challenging, there was sharing of related responsibilities: the Pathology department was responsible for sterilizing all dishes (2)!

The resident staff was reduced from three to two during the war, and for some periods the department was without any residents. Indeed, Dr. Mallory himself was called away to the war from 1943 to late 1945, serving as a lieutenant colonel and pathologist to the 15th Medical General Laboratory in the Mediterranean Theater of Operations. He made major contributions to the war effort as well as to the understanding of military-related conditions such as traumatic shock. Dr. Benjamin Castleman took over as acting director in May 1943, serving until January 1, 1946. With its reduced and less trained secretarial staff, the department had to make surgical pathology reports a priority, while delaying autopsy reports. Dr. Castleman was very thankful that so many “faithful employees . . . are ‘sticking with us’ during this period.”

The transition after the war years, however, was also difficult. Dr. Mallory wrote:

The year 1946 has been for the laboratory, as for the hospital as a whole, a year of transition from wartime operations back to the standards of normal peacetime procedure. The transition has been slow, difficult and incomplete, owing to rapid turnover of personnel and difficulty and delay in finding suitable replacements. The primary problem is economic. Despite significant elevation of wages of all grades of employees, we are unable to meet the competition of

the Federal health services, of physicians in private practice and of the business world. The problem is accentuated by working conditions in the laboratory, the severe overcrowding and the inconvenience of an old building without elevator service.

Thus, the Mallory years were ones of major growth, but also ones of significant challenges and changes.

LABORATORIES

At the start of his tenure in 1926, with the laboratories already in need of remodeling and updating, Dr. Mallory obtained the required funds from the Trustees. Given the rapid growth of bacteriology testing (nearly doubling between 1925 and 1926), the former house officers’ laboratory was converted to a bacteriology laboratory with modern equipment. Two other small rooms were remodeled as a small laboratory and office. By 1927, Dr. Mallory could report:

Our equipment is gradually being brought up to modern requirements, but though the absolute working minimum has been passed, inadequate heating and lighting cut down materially the efficiency of the personnel. New sterilizers and automatic refrigerators have simplified greatly the preparation of bacteriological culture media. The most important recent acquisition is a Zeiss photomicrographic camera, an indispensable requirement to histological research. A convenient filing cabinet for the autopsy slides has been a valuable instrument in our efforts to render the old histological material readily available for study. A similar one for surgical slides, and cabinets for our rapidly growing card-catalogues are urgently needed. The collection of gross specimens for teaching purposes has been considerably increased, but many more museum jars are urgently needed.

The laboratories underwent far more extensive renovations in 1929, presumably because the



Figure 5.1 The Allen Street Building, which housed MGH Pathology from 1896 to 1956, shown during demolition

conditions in the old Allen Street House (figures 5.1 and 5.2) were not only inadequate but dangerous as well. For example, Dr. Mallory had previously praised the replacement of an old wooden staircase with a new steel one, commenting that it “has greatly increased the safety of the building.” In the course of 1929:

The old Allen St. house, the wooden framework of which was in dangerous condition, was completely gutted and the interior rebuilt in steel and cement, fire-proof construction. This remodeling allowed the construction of a thoroughly modern postmortem amphitheater, a small auxiliary autopsy-room, the enlargement of the morgue to meet the prospective demands of the Baker Memorial [a new hospital building slated to open in the near future], the construction of suitable photographic and dark rooms and of a small research laboratory for bacteriology. The

remainder of the laboratory underwent a less extensive reconstruction but completely new lighting and heating equipment was installed, the plumbing overhauled, new floors laid, and the whole interior repainted. The added rooms resulting from the more economical utilization of space in the Allen St. house give for the first time a suitable museum for gross specimens and a combined record-room and library. The changes add notably to the cheerfulness, convenience, and efficiency of the plant.

Nonetheless, as is true of all laboratory construction, it proved disruptive to the routine work, and Dr. Mallory added that “the technical staff is becoming better rounded and deserves great credit for cheerfully carrying out the routine work in the face of trying difficulties imposed by the constant presence of workmen in the laboratory for nearly eight months.”

In 1930 three surgical pathology frozen section laboratories were equipped, one in the hospital amphitheater, one in the new Baker Memorial, and one in the Phillips House. But by 1933 the “necessary economy of the period” had prevented additional updating of the laboratory facilities. Marked crowding in the laboratories resulted from increased numbers of fourth-year Harvard medical students and from additional work taken on by the department laboratories in 1932—increased numbers of autopsies and surgical specimens, pneumococcal typing previously done in a medical laboratory, and emergency Kahn tests relating to the increase in therapeutic blood transfusions. Dr. Mallory suggested partitioning the bacteriological laboratory to provide more space, but renovation of the bacteriology laboratory would not occur until 1937.

In 1933 the garage and electricians’ shop were removed from the first floor of the laboratory building to create additional laboratory space, enabling adequate room for neuropathology, for medical students, and for additional research and technical work. Bacteriology, however, remained in need of additional space. This need reached crisis proportions when antibiotics revolutionized the field of infectious diseases in the late 1930s, and the bacteriology laboratories were expanded at that time to occupy part of the third floor of the Domestic Building. The remaining portion of the third floor was adapted into a centralized clinical pathology laboratory in 1939 under Dr. Francis Hunter, primarily to handle specimens from special surgical services such as Orthopedics, Urology, and Neurosurgery, and for medical house officer laboratory instruction.

In 1941 a major piece of equipment was added for anatomic pathology: the Autotechnicon, an early tissue processor, “a machine which automatically shifts blocks of tissue through a series of eight solutions and permits us to obtain as good paraffin sections in twenty-four hours as we could formerly get in four days.” As a result of this technical improvement, Dr. Mallory could happily

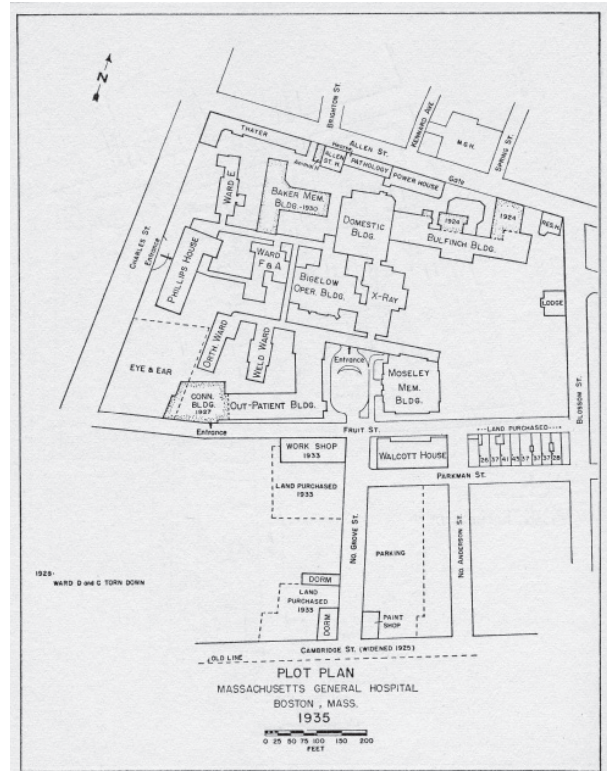


Figure 5.2 MGH plot plan, 1935, showing the Allen Street/Pathology buildings

report, “The increased speed of biopsy reports has been gratefully noted throughout the hospital and the saving in patient-days has already more than compensated for the expense.” A second Autotechnicon would be purchased in 1948.

In 1942 the laboratory took over the surgical pathology for the otolaryngology services at the Massachusetts Eye and Ear Infirmary, a relationship that exists to this day. Initially, the technical work was performed in the Eye and Ear Infirmary Mosher Laboratory, and then the diagnoses were rendered by MGH pathologists, but the differences in technique between the Mosher and MGH laboratories made it more satisfactory to do all the processing at MGH.

By the mid-1940s the laboratory space had been in operation for nearly 50 years and was in need of major renovation. Anna Castleman (in 2009) recalled visiting her husband in the old Allen Street Building in the 1940s and remembered the

antiquated door, at which one had to pull a chain to enter and proceed up the stairs to the laboratory. An editorial published in the *New England Journal of Medicine* in 1957 would recall the old Allen Street Building:

Always difficult to locate, the department, once found, was notoriously tricky of access. One's wits were first pitted against the cunning of an ancient, hissing, mechanical door guarding the approaches to the pathology buildings. Negotiating this famous portal without becoming impaled by its jaws merely required native ingenuity and nimble footwork. The victorious caller was then free to climb two flights of uncompromising iron stairs leading to the main Pathology Laboratory—premises that, although honorable in tradition and years, could charitably be designated as modest in outlay. Elderly hospital alumni were invariably appreciative of this faithful maintenance of the status quo, for memories were warmed and quickened by the sight of fixtures and surroundings almost unchanged for generations. (4)

In 1944 Dr. Castleman (then the Acting Director, while Dr. Mallory served in the military) wrote:

It is perhaps in order at this time, when so many plans are being proposed for the post-war period, to bring up the question of a new Pathology building. When the present building was built in 1897, it was one of the first pathology laboratories in this country. Dr. J. Homer Wright in his first annual report wrote, "It is generally regarded as a model hospital laboratory." Today, almost fifty years later, it would be in keeping with the pioneer spirit of the Massachusetts General Hospital if we could take the lead again and be able to repeat Dr. Wright's statement. Some thought should be given to a large laboratory building to house not only the Department of Pathology and Bacteriology, but all the routine and research laboratories in the hospital.

The situation was grave. By 1947 Dr. Mallory recorded: "Overcrowding has reached the stage where it has become a significant factor in decreasing efficiency and completely inhibits development in several important directions. . . . The load of routine work has increased relentlessly. . . . Bacteriology remains understaffed, ill-equipped and barely adequate for current routine needs. . . . The clinical laboratories have likewise suffered from personnel problems and from overcrowding."

Blueprints had been prepared in 1945 and, as Mallory wrote, "Execution of these plans merely awaits a philanthropic donor. With the public so aware of the important role that science played in winning the war, it is hoped that we will not have long to wait." In fact, the wait would prove to be about 10 years.

Before then, however, some relief was provided when money was obtained from the Commonwealth Fund to remodel part of the Domestic Building, to adapt parts of the fourth, fifth, and sixth floors for a combined bacteriological and infectious disease unit. The move of Bacteriology to this location freed up much-needed space in the Allen Street Building, allowing histology to move to the first floor and freeing up office space for the assistant pathologists. A file room was created for slides and surgical pathology reports, and the secretaries' office was reorganized. A large area on the third floor of the Allen Street Building was then available for all the pathology residents and rotating radiology and surgery residents. Moreover, an area on the first floor of the Domestic Building, where the pharmacy had been located, was remodeled for the Blood Bank, under Dr. Lamar Soutter. Nonetheless, funding was difficult, and 1949 was dubbed a "year of great disappointment" because the necessary major construction could not be undertaken. And in 1952, in frustration, Dr. Castleman commented that "our non-professional staff continues to work in what is probably one of the least attractive and poorly appointed buildings in the hospital! (How

long, how long, must we wait for that new building?)” Sadly, the solution, the Warren Building, would not open until 1956, five years after Dr. Mallory’s death.

THE PATHOLOGISTS

The change in leadership on September 1, 1926, was accompanied by a quick change in faculty (figures 5.3 and 5.4). In the fall of 1926 Dr. Oscar Richardson (chapter 3) retired after nearly 30 years in the department, and Dr. Albert Steele (chapter 3) resigned as bacteriologist after 16 years. Thus, of the three longest-serving pathologists associated with Dr. James Homer Wright, only Dr. Harry Hartwell (figure 5.5), the surgical pathologist who had been working with the department since 1911 (chapter 3), remained to serve during

Dr. Mallory’s tenure; he would continue to do so through 1938. The change in leadership also occasioned a change in personnel; Dr. Mallory noted that, over the first 16 months of his tenure, “the technical personnel has completely changed and has been increased sufficiently to meet for the present the steadily increasing demands upon the laboratory.”

Dr. Wright remained on the faculty as Consulting Pathologist and continued to teach medical students. In 1927, Dr. Mallory wrote in his Annual Report, “The present director wishes to take this opportunity of expressing his appreciation of Dr. Wright’s friendly aid and valuable counsel during this difficult period.”

Drs. Mallory and Hartwell were joined in 1928 by Dr. John Bradley as an Assistant Pathologist,



Figure 5.3 MGH Pathology, mid-1930s. Standing, left to right: unidentified, Louis Dienes, Tracy B. Mallory, Charles S. Kubik, Harry F. Hartwell, unidentified, unidentified, unidentified. Seated on the right in the front row is Benjamin Castleman. The woman immediately in front of Dr. Hartwell, with her face partly hidden, is most likely Edith Parris.



Figure 5.4 MGH Pathology, spring 1935, on the Bulfinch lawn. Front row, left to right: unidentified, unidentified, Charles S. Kubik, Harry F. Hartwell, Tracy B. Mallory. Back row: Louis Dienes, unidentified, Benjamin Castleman, unidentified.

a position he was to hold through 1935—“seven years of valuable service,” in Dr. Mallory’s words. Dr. Bradley did research primarily on the morphological aspects of gastric ulcers, and on the relationship between gastritis and ulcers.

A major change in physician personnel, however, was brought about by the creation of a formal training program in Pathology (see below). By 1928 two interns had been in Pathology for most of the year (see the Appendix), and trainees would be a key part of the department from then on. Two early graduates of the training program who would go on to faculty positions were Drs. Benjamin Castleman and Edward Gall. Benjamin Castleman was the first MGH resident in Pathology who would go on to a career as a pathologist (figures 5.6, 5.7, and 5.8). His career at MGH and life are covered in detail elsewhere (chapter 8). He

held positions as Resident Physician in Pathology from 1932 to 1935, Assistant Pathologist from 1935 to 1941, Pathologist from 1941 to 1951 (including serving as Acting Director of the department from May 1943 through January 1, 1946, while Mallory was serving in the U.S. Army), and Acting Chief of Pathology and then Chief of Pathology at MGH from 1952 until 1974.

Edward Alfred Gall was the Resident Physician in Pathology in 1935–1937 and then Assistant Pathologist from 1937 to 1940. Dr. Gall moved in 1940 to become Instructor in Pathology and a research fellow at Harvard Medical School. After World War II he became Chair of the Department of Pathology at the University of Cincinnati, serving until 1970, when he became Vice President of the university. His career was highly successful and included a stint as editor of the



Figure 5.5 Harry F. Hartwell, 1930s

American Journal of Pathology from 1957 to 1966. When Dr. Gall left MGH, Dr. Mallory commented, “His ability and energy will be missed.” (See also the story below under “Teaching and the CPCs.”)

In addition, some key faculty were recruited to the department after training elsewhere, including Dr. David G. Freiman (figure 5.8), who had trained in New York. Dr. Freiman was an assistant in Pathology at MGH in 1944–1945 and Assistant Pathologist from 1946 to 1950. He left for the University of Cincinnati in 1950, but he was recruited back by Dr. Castleman to run the Department of Pathology at Beth Israel Hospital in Boston in the late 1950s. Ruth Freiman (in 2009) recalled the trip that Dr. Castleman made to Cincinnati to recruit her husband back to Boston, when David Freiman informed her that Dr. Castleman had “made up *his* mind” that Freiman should take the job. Dr. Freiman chaired the Beth Israel department from 1956 to 1979, and he

was the first person at that institution to hold an endowed HMS chair.

Other faculty recruits to the department were Drs. Lloyd Morris Jr. (who joined the department for a year in 1945 from Ohio State University while Dr. Freiman was ill), Fathollah K. (“Kash”) Mostofi, Ronald C. Sniffen, Austin L. Vickery Jr., and Robert E. Scully (figures 5.7 and 5.8). Dr. Mostofi had trained for three years with Drs. Wolbach, Farber, and Hertig at HMS and was an Assistant Pathologist at MGH from 1943 to 1945, covering clinical work when Mallory left for WWII. Dr. Mostofi went on to a highly successful career as a leader in genitourinary pathology, primarily at the Armed Forces Institute of Pathology.

Ronald C. Sniffen (figure 5.7, and see figures 7.7 and 7.8) was an Assistant Pathologist at MGH from 1941 to 1948, and he did important early work on testicular pathology (chapter 16).



Figure 5.6 Three MGH Pathology trainees, 1933: John Dulin (house officer), Benjamin Castleman (resident), and Roy Cohn (house officer)



Figure 5.7 MGH Pathology, 1942. Front row, left to right: Raymond Morrison, Louis Dienes, Tracy Mallory, Ronald Sniffen, Benjamin Castleman, Charles Kubik. Second row: unidentified, Dr. Brown, Dr. Robertson, Henry Edmonds, Raymond Donaghy. In the second-to-last row, on the extreme right is Virginia Towne; in the back row, third from the right, is most likely Edith Parris.

He moved to become Pathologist at Memorial Hospital in Worcester in 1949 but continued his affiliation with MGH as a Visiting Attending Pathologist. When he died in 1966, Dr. Castleman wrote: “Ronnie rarely missed a Friday in our Department, where he is deeply missed by all of us. Over a period of seventeen years he devoted a day each week to working with the residents or teaching surgical pathology to the Harvard Medical School third-year students. His dedication and responsibility to patient care were qualities that permeated his interpretations and discussions. His standards were high, and all of us gained much from the opportunity of working with him.”

Austin Vickery (chapter 9) was appointed in 1949 to replace Dr. Sniffen, and he was then

promoted to fill Dr. Freiman’s position as Assistant Pathologist when Dr. Freiman left in 1950; Dr. Vickery went on to a highly successful career in surgical pathology, with an emphasis in endocrine pathology, at MGH over the next 50 years. Robert Scully (chapter 10) was hired six months later to fill the second position of Assistant Pathologist, which had been held by Dr. Vickery. Dr. Scully’s career in surgical pathology was characterized by remarkable diagnostic acumen and a prodigious output of scholarly works, particularly in gynecological and testicular pathology. He remained at MGH for the next 55 years and left a legacy as one of the most prominent surgical pathologists of the latter half of the twentieth century.

Robert H. Fennell Jr. (figure 5.8, and see



Figure 5.8 MGH Pathology, 1950. Front row, left to right: David Freiman, Tracy B. Mallory, Benjamin Castleman, Austin L. Vickery. Middle row: Agustin Roque, unidentified, unidentified, Robert H. Fennell. Back row: unidentified, David Kahn, Agnes Burt Russfield, Frank Mantz, unidentified

figures 7.6 and 19.6) was a resident in 1948–1949, an assistant in Pathology, 1949–1950, and an Assistant Pathologist, 1952–1954 (he spent one year, 1950–1951, at the University of Tennessee). Dr. Fennell ran the Cytopathology Laboratory (chapter 19) when it was transferred to Pathology, and he did research in cervical cancer and cytology. He left in 1954 to join the University of Pittsburgh, primarily at the Magee Women’s Hospital, and went on to a successful academic career that included a position at the University of Colorado.

A major new appointment early in Dr. Mallory’s tenure (“an important step in the closer cooperation of clinical and laboratory services”) was that of Dr. Charles S. Kubik (figures 5.3, 5.4, and 5.7, and see chapter 17) as assistant in Neurology

and Neuropathology in 1927. Dr. Kubik worked in both the Neurology and Pathology departments, beginning an extraordinarily strong and productive collaboration in neuropathology between these two departments that continues to the present day. He served as an Assistant Neuropathologist from 1927 until 1936 and as Neuropathologist from 1936 until his retirement in 1951. During this time he trained Dr. E. P. Richardson Jr., who would direct and define Neuropathology at MGH for many decades after Dr. Kubik’s retirement. In 1961 the Neuropathology Laboratory was named the C. S. Kubik Laboratory for Neuropathology.

Another key appointment with one of the clinical departments was Dr. Walter F. Lever of Dermatology (see chapter 18). Dr. Lever began

working in the department in 1938 and was affiliated with Dermatology from 1942 for many decades. Dr. Lever was a pioneering dermatopathologist, and he trained many dermatopathologists and published the leading textbook in the field. Other important affiliations were with MEEI. Dr. Theodore L. Terry was a pathologist at MEEI from 1929 to 1946. He was the first eye pathologist associated with MGH Pathology, and he provided the initial description of retinopathy of prematurity (originally “retrolental fibroplasia”).

The position of Bacteriologist to the hospital was an essential one for Dr. Mallory to fill, after Dr. Steele stepped down in 1926 and with the sharp increases in bacteriological testing. Dr. George Lawson was appointed to the position in 1927 and held it for two years, leaving in September 1929 to become Associate Professor of Bacteriology at the University of Louisville. He was followed for a year (1929–1930) by Dr. Merrill J. King, who left to pursue a career in ophthalmology. Finally, in 1930, thanks partly to input from the famous Professor Hans Zinsser of HMS, the position of Bacteriologist resumed its stability with the appointment of Dr. Louis Dienes (figures 5.3, 5.4, and 5.7, and see chapter 21). Dr. Dienes served as Bacteriologist from 1930 to 1952 and as Consultant Bacteriologist for many years thereafter.

Dr. Dienes was a remarkable individual (he was also the father of Dr. Priscilla Taft, who directed the Cytopathology Laboratory at MGH for many years; see chapter 19). He had already had an outstanding record in immunology research as well as practical experience in bacteriology before moving to MGH, and he continued his illustrious clinical and academic career there. In addition to running the Bacteriology Laboratory, he first pursued his ongoing work on delayed hypersensitivity (chapter 23), which included collaborating with Dr. Mallory. In the 1930s he shifted his research to pursue pioneering work on L-forms of bacteria and then on mycoplasma

(chapter 21). Even after his formal retirement in 1952, he would continue to do research in the hospital for almost 30 more years. Upon his death, his longtime colleague Sarabelle Madoff wrote of him, “The work of Louis Dienes was characterized by the highest ideals of the research scientist, in imagination, in tenacity, and in discipline.” It was further said of him: “He was by nature a warm, kind, and gentle man. Those who knew him best will always remember that twinkle in his eye, his obvious delight in a new observation regardless of who had made it, his deep personal involvement in the work in his often cluttered laboratory and the devotion he engendered in his students and associates” (5).

The clinical laboratories were directed during the Mallory years primarily by two individuals. Dr. Francis T. Hunter was the Clinical Pathologist from 1937 to 1954. He ran the largest of the clinical pathology laboratories and pursued research in toxicology, arsenic metabolism, and benzol poisoning. Dr. Wyman Richardson was appointed a Clinical Pathologist in 1941, initially to fill the place of Dr. Hunter, who had been called to war and who returned in late 1945. He served as Clinical Pathologist officially until 1949, while holding other positions in Medicine.

CLINICAL SERVICE

When he took over in 1926, Dr. Mallory undertook a reorganization of the laboratory that involved new personnel and new procedures. In 1928 he wrote: “Sixteen months have passed since the reorganization of the Pathological Laboratory was undertaken and extensive changes have been carried through. The technical personnel has completely changed and has been increased sufficiently to meet for the present the steadily increasing demands upon the laboratory. The chief effort during the past year has been centered upon the re-establishment of the routine work upon a thoroughly efficient basis. This requires not merely the rendering of the diagnoses, but the preservation, description, and cataloguing of

valuable material as a basis for future investigative work.”

The importance of interactions between Pathology and the other departments, initially highlighted by the appointment of a neuropathologist in conjunction with the Neurology department, was carried forward by Dr. Mallory. As he wrote for 1928: “Constant effort is being made to bring the laboratory into closer contact with the clinical services. An important move in this direction has been the inauguration of weekly clinico-pathological conferences at each of which autopsy or biopsy material of general medical and surgical interest is presented in gross and histologically, together with a resumé of the clinical findings. As opportunity offers, material from the special departments is also shown. The conferences have been well attended and the general discussions which have followed the case-presentations have proved interesting and instructive.”

Throughout his tenure, Dr. Mallory was continually impressed by how well the laboratory personnel kept up with the growing clinical workload, but he nonetheless felt that the workload exceeded the workforce.

Bacteriology

The rapid growth in the field of bacteriology was reflected in laboratory testing. For example, between 1925 and 1927, the test volume in bacteriology doubled to 5,700. On April 2, 1928, the department introduced the Hinton test for syphilis, which largely replaced the Wassermann reaction test. The number of Wassermann reactions dropped from 16,297 in 1927 to 3,858 by 1931, and the number of Hinton tests rose from 12,483 in 1927 to 16,621 by 1931. (The test had been developed by Professor William Hinton of HMS, who had been at MGH in the early 1920s.)

By 1937 the numbers of bacteriological cultures performed by the department had grown steadily, reaching nearly 6,700 in 1936 and increasing more than 20 percent in 1937, to 8,130. This reflected the first example of what would be

a driving trend in the discipline of microbiology: the development and carrying out of laboratory testing relating to antibiotic usage. As Dr. Mallory commented, the marked increase in 1937 was “traceable primarily to clinical enthusiasm for two new drugs, sulphanilamide and mandelic acid.” The increase would prove a strain on the existing laboratories, and attempts to shed tests, such as outsourcing outpatient Wassermann tests to the state laboratory, did not improve the situation. By 1938 the number of cultures had again climbed remarkably, to 11,400, and additional personnel were routinely requested to accommodate the expanded testing. Mallory wrote in 1938 that “every sign points to continued rapid increase in the significance of bacteriology to the hospital as a whole, and a program of expansion of our facilities is urgently required.”

For 1939 Dr. Mallory stated that “chemotherapy for infectious diseases has become established as the most important advance in medicine since the discovery of insulin. Its intelligent application depends primarily on adequate bacteriologic investigation and the demands upon the laboratory have more than doubled.” Indeed, by 1939 the number of cultures had again risen, to 14,563. Despite the use of a research technician and further outsourcing of some serologies to the state laboratory, there was a dire need for additional staff and laboratories to adapt to these changes. Plans were developed to expand into the third floor of the Domestic Building, which was formerly occupied by the kitchens. Indeed, the numbers continued to rise, to 17,292 in 1940 and 19,500 in 1941. The number of guinea pigs used to test for tuberculosis also climbed quickly, from a typical total of between 300 and 500 for the years 1925–1939 to over 1,000 in 1940.

An arrangement with the Medical Service in 1940 brought some relief, since a pair of medical interns was assigned to the Bacteriology Laboratory for three-month periods. More expert help was sorely needed, however. Dr. George E. Foley, formerly in the Department of Preventive

Medicine at HMS, joined the department as an assistant in bacteriology from 1945 to 1946, and Dr. Lewis Kane from the Bacteriological Department at HMS joined the laboratory to work on antibiotics for bacteria not sensitive to penicillin. Nonetheless, the growth in bacteriology was so rapid that it outpaced the ability of the Pathology department to keep up with the changes; as will be seen in chapter 7, it was the rapid growth in the discipline of microbiology that would result in Bacteriology's leaving Pathology and joining the Infectious Diseases section of the Medical Service.

Clinical Laboratories

The development of laboratories associated with the Medical Service after 1912 and through the 1920s resulted in a proliferation of independent laboratories, each either covering patients from particular buildings or performing specialized types of tests. This change resulted in specialization and dispersal of clinical laboratories throughout the hospital and toward oversight by the Medical Service rather than Pathology. According to Dr. Francis T. Hunter, who directed the laboratory in the Baker Memorial Building in the late 1930s and 1940s, and who was appointed as a Clinical Pathologist at MGH from 1937 to 1954:

From 1917 to 1927 laboratory services for private patients (Phillips House) was performed by an unsupervised technician in a small room on the second floor of that building. In that year a Staff physician was appointed to oversee her work. . . . In 1930, the Baker Memorial opened its doors, and the same physician was put in charge of the clinical laboratory for that unit as well. Thus, in March 1930 the technical staff of the laboratories for private patients consisted of a supervising physician, three technicians in the Baker laboratory and one in the Phillips House laboratory. These technicians helped each other when not occupied in their own departments.

In the Baker laboratory the number of laboratory tests increased in the following year

. . . by 66%, and in addition this laboratory was given the task of listing and testing professional blood donors. From time to time certain of the half-time technicians in the Out-Patient Department were given afternoon work in the Baker laboratory.

In 1933 the small Phillips House laboratory was abandoned, and all laboratory procedures were carried out in the Baker laboratory, thus effecting a saving of space and apparatus. A rearrangement of time also permitted having one technician on duty Saturday afternoons and Sundays until noon.

Several changes took place in 1934. As the laboratory was constantly employing some of the half-time Out-Patient Department technicians in the afternoons, it was found that supervision of the Out-Patient laboratories, and a saving of money, could be brought about by having the Baker laboratory enlarge its staff and take the responsibility for the Medical and Genito-Urinary laboratories in the Out-Patient department. By rotation of work the technicians were not subjected to too much routine in a special field. The Consultation (Diagnostic) Clinic, also, was furnished laboratory service, and another burden was placed on the Baker laboratory in that it had to take over the preparation of stock grouping sera used by the whole hospital. In the next two years the number of blood transfusions increased enormously.

At the end of 1936 the personnel consisted of a physician, a diener [literally, "corpse servant"], a secretary, and eight full-time technicians. . . . What the future of this laboratory will be, one can hardly guess. With another 80–100 beds to be opened up in the Baker Memorial, when the George Robert White building is finished, the laboratory work will increase by 30%. (6)

Another example of an independent laboratory was the new Chemical Laboratory in the Bulfinch Building, which in 1929 came under the direction of a Miss Durgin, a chemist, who worked directly for the famous endocrinologist

Dr. Fuller Albright. A note from Dr. Albright on November 3, 1938, testifies to the growing diversity of the chemical laboratories:

When Dr. Sulkowitch came to work with me on my research work, four years ago, he started lending a hand on the supervision of some of the tests being carried out by the Chemistry Laboratory. As time has gone on he had done more and more of this. At the present time we have a small section of the Chemistry Laboratory entirely divorced from Miss Durgin's supervision, and directly under Dr. Sulkowitch.

The marked growth of the Chemistry Laboratory is shown by the following abstract: "There has been a steady rise in the number of chemical tests over a period of years. The laboratory did 6730 separate determinations in 1925; 10,728 in 1931; 12,733 in 1933 and 18,886 in 1937."

It is clear from Dr. Mallory's annual reports in the late 1920s and early 1930s that the clinical laboratories were no longer considered a functional part of Pathology. Indeed, his Annual Report for 1932 is headed as being from the "Department of Pathology and Bacteriology," rather than from the previously used and more generic "Pathological Laboratory"—perhaps reflecting this move away from the clinical chemistry and hematology laboratories. But in 1937 a detailed report of the General Executive Council of the hospital recognized the problems inherent in overseeing such a diverse and fragmented group of clinical laboratories. This resulted in an administrative reorganization of the clinical laboratories in 1937–1938, when Dr. Hunter was brought into Pathology as a Clinical Pathologist. Nonetheless, as is documented in chapter 20, the clinical laboratories would remain functionally independent of the department for many more decades, growing, specializing, and returning to the Department of Pathology only in the late 1980s and early 1990s.

Surgical Pathology

With the advent of a training program in Pathology, initially in the form of house officers (rotating

physicians from other specialties such as Medicine or Surgery), there were additional hands and eyes to enable working up cases more extensively. This primarily provided the ability to do more extensive histological examinations. As such, although the volume of surgical pathology specimens increased only about 10 percent between 1925 and 1926, the number of microscopic slides prepared from these specimens rose by more than 50 percent, from 2,843 to 4,356. By 1931 the first Resident Pathologist had been appointed, the employment of another technician was authorized, and the department purchased additional microtomes, microscopes, and a larger paraffin incubator; these changes further augmented the capabilities of Anatomic Pathology.

In 1930, when there were three frozen-section laboratories (in the hospital amphitheater, the new Baker Memorial, and Phillips House), the length of time required for intraoperative diagnosis was reduced significantly. The surgeons responded by calling for an increased number of frozen sections. With the opening of the Baker Memorial, the overall number of surgical specimens increased as well, from 3,073 in 1930 to 4,074 in 1931.

During this period the interactions between pathologists and specific clinical services also increased. For example, pathologists worked with clinicians in the Tumor Clinic, and in 1937 a new weekly conference was developed with the Dermatology Service in which the biopsies of the preceding week were reviewed by both the dermatologists and pathologists.

Harry Hartwell resigned in 1937, an event that Dr. Mallory recorded "with genuine regret. . . . His long experience was frequently of the greatest value to a predominantly youthful department, and his personality inspired warm regard in the younger men who passed in fairly rapid succession through the laboratory." Dr. Hartwell had been a Surgical Pathologist at MGH for 26 years, and he had been the Senior Surgical Pathologist for 21 of those years. He had provided extensive clinical support to the growing Surgical Services,

and in his later years he had begun to train pathologists to follow in his footsteps.

By 1940 the new White Building had opened, and the volume of work had increased significantly in all areas, about 11 percent in Surgical Pathology. And by 1944 the number of surgical specimens had jumped markedly again. Dr. Castleman, as Acting Director of the department, noted with his characteristic wit:

During the past few years we have noticed that the number of surgical specimens sent to the laboratory has increased out of all proportion to the number of surgical patients admitted. . . . In 1944 there were over 8500 specimens, a seventy percent increase over the 1934 figure, and the increase in surgical admissions . . . was ten to fifteen percent. The main reason for this discrepancy is the recent tendency to use diagnostic biopsies more freely. In 1934 biopsies made up only fifteen to twenty percent of the surgical specimens, whereas in 1944 they comprised about fifty percent of the specimens submitted. It should be mentioned that many of these biopsies are so small that very often numbers of slides have to be prepared . . . in order not to miss the lesion. . . . Two surgical specimens are now taken from many surgical patients, one a biopsy, and the other a specimen taken when the entire lesion is removed. . . . A large number of patients have biopsies taken while on medical wards. Now the endoscopy is used so extensively, except in cardiac, renal and neurological cases, most patients entering hospital have either a bronchoscopic, esophagoscopic, peritoneoscopic, proctoscopic, or cystoscopic examination, almost always with a biopsy; and if none of these procedures is fruitful, a skin, lymph node, endometrial, cervical, or other biopsy is taken. The slogan of Massachusetts General Hospital would seem to be, "Get a Biopsy." I do not decry this trend toward biopsies as a means of diagnosis. I believe it has produced a great improvement in the medical care of patients, and it should be encouraged.

The slogan might be changed to "Bigger and Better Biopsies."

The late 1940s saw an increase in the complexity of resection specimens. "The present trend towards radical surgery of malignant disease provides us with surgical specimens containing several organs and a score or more of lymph nodes which must be examined individually for metastases. In consequence, despite a notable drop of 1400 in the number of surgical specimens submitted, there was an increase of 10,000 in the number of histological preparations required to examine them adequately."

The Cytochemical Laboratory was started in 1949 under the direction of Drs. David Freiman and Agustin L. Roque. Within a year, the special stains performed in this laboratory (e.g., for glyco-gen) were judged useful for tumor classification.

In a sense, these developments of the 1940s—smaller biopsies; larger, more complex resections; and specialized methodologies for tissue analysis—laid the groundwork for modern surgical pathology, and the large Medical and Surgical Services at MGH placed the Pathology department ideally to lead the emergence of modern surgical pathology during the next few decades.

Autopsy

The training program in Pathology also enabled additional workup of autopsies; as was true in Surgical Pathology, more extensive histological examination was now possible. For example, although 10 fewer autopsies were performed in 1927 (167) than in 1926 (177), the number of microscopic slides prepared from these cases more

Year	Autopsies	Autopsy slides
1926	177	987
1927	167	2,300
1928	211	3,030
1929	226	3,375
1930	299	4,815
1931	371	6,757
1934	419	7,460

than doubled, from 987 to 2,300; in 1934 there were 419 autopsies and 7,460 slides prepared.

Charles Kubik's appointment as Neuropathologist enabled far more detailed examination of postmortem nervous system tissues, "thus rendering it possible for the first time to handle adequately this highly specialized type of work" (Mallory, Annual Report 1927). Dr. Mallory's comment is a telling one, and it argues that the general pathologists felt quite uncomfortable with neuropathology. By 1932, however, the increasing numbers of autopsies and "the effort to make complete examinations of the central nervous system whenever possible" had "nearly overwhelmed Dr. Kubik and his technician." The situation was exacerbated further after World War II, when Dr. Kubik also undertook the position of Chief of the Neurologic Service. He retired in 1951, whereupon Castleman commented that Dr. Kubik's "careful, thorough, and critical approach to the subject [of neuropathology], always keeping in mind the clinicopathological correlation, made his laboratory a mecca for those interested in the central nervous system. He trained not only general pathologists, but neurologists and neurosurgeons and it is gratifying to welcome back one of his pupils—Dr. Raymond D. Adams—as his successor." Dr. Kubik had by that time also trained Dr. Edward Peirson Richardson Jr., who would serve as the hospital's neuropathologist for many decades (see below and chapter 17).

Outreach

Departmental outreach to help with the pathology needs of other hospitals expanded in the post–World War II years. This had the additional benefit of providing further cases for residency training. Dr. Mallory made the following comment in 1948:

An experiment in relationship with community hospitals has been given a year's trial and has proved satisfactory. This laboratory [MGH] has assumed responsibility for surgical pathology and autopsies for the Emerson Hospital in

Concord and the Brockton Hospital. This supplements, particularly in autopsies, the MGH material and improves the training of our residents. It has permitted also increasing the salaries of some of the Assistant Pathologists. Modest profits, after all direct expenses to this hospital have been covered, have been pooled in a fund named in honor of James Homer Wright for research and other activities of the laboratory outside of the routine.

Cytology

Exfoliative cytology had been started in the 1940s at MGH by Ruth Graham, working under Dr. Joe V. Meigs in the Gynecology Service of the Vincent Hospital. In 1948, upon Graham's resignation to move to the Roswell Park Memorial Institute in Buffalo, Meigs wrote, "Mrs. Ruth Graham . . . had so clearly demonstrated the value of the cytological method in the diagnosis of cancer of the uterus, bladder, kidneys, lungs, bronchi, and stomach that it had been accepted as a routine procedure" (2). Indeed, Dr. John J. McGraw, a research fellow in pathology, had done a study in 1946 on discrepancies in the diagnosis of cervical and endometrial cancers between the usual biopsy method and the cytological smear techniques being carried out in the Vincent Laboratory, and he demonstrated the reliability of the cytological approach. In 1948 the Cytological Laboratory was transferred administratively into Pathology, "in recognition of the change in the status of exfoliative cytology from a research project to an established diagnostic method," but the laboratory would not move physically until the opening of the Warren Building in 1956. In 1949 Dr. Robert Fennell became the first director of this laboratory in Pathology, assuming a newly created position of Assistant in Pathology once he had completed his residency. By the end of 1949 Dr. Mallory was already concluding that "it is clear that exfoliative cytology is indispensable in the diagnosis of certain forms of cancer and that it will continue to be an essential division of the laboratory."

Blood Bank

A blood and plasma bank was established at MGH in April 1942, under the direction of Dr. Lamar Soutter in the Surgery department. The bank was initially housed in the old emergency ward in the basement of the Moseley building, and was intended to serve both the MGH and MEEI. The bank had been started in response to the war effort, but its value was quickly proven locally in helping the victims of the Cocoanut Grove fire that occurred on the night of November 28, 1942. The Blood Bank remained in the department of Surgery through the Mallory era and remained outside Pathology until the late 1980s. A more detailed history of the Blood Transfusion Service at MGH is given in chapter 22.

TEACHING AND THE CPCs

One of Dr. Mallory's legacies was the beginning of a formal resident training program in pathology, which had been a mandate to him from hospital leadership. Another was his incorporation of the Case Records in the Pathology department. Both traditions continue strongly to the present day.

Even before Dr. Mallory established a formal training program in pathology, numerous medical students and residents from other programs had spent time in the department. The department was busy with medical students as well as with medical and surgical interns performing standard clinical laboratory tests. But Dr. Mallory began a program in which physician trainees would dedicate themselves to the study of pathology for longer amounts of time, eventually as full-fledged residents intending to pursue careers in pathology.

Throughout the history of MGH and HMS, there had been house officers affiliated with HMS who rotated at MGH. Over the course of the late 1800s and early 1900s, these had been both medical students and postgraduate physicians. In 1924 HMS changed its rules, insisting that house officers be medical graduates. The first two house officers who served in Pathology after

that change arrived in 1927, William Shipp Justice and Irving Wright Parkhurst (see Appendix).

By 1931 the first full-time Resident in Pathology, Dr. Paul W. Hugenberger, was appointed. Following his one year in the department, the length of training of many residents increased, which reflected the amount of training deemed necessary to prepare a physician for a career in diagnostic pathology. As a result, many of these residents went on to become diagnostic pathologists, some remaining at MGH after their training. The first two, for example, went on to illustrious careers: Benjamin Castleman, who was a resident from 1932 to 1935, and Edward Gall, who was a resident from 1935 to 1937. Dr. Castleman told a humorous story about how Dr. Gall came to follow him as a resident: "Ed loved to tell the anecdote of how he became a pathologist. In 1935, he was a district physician at the Boston Dispensary; and one evening, on a double date, I asked Ed whether he knew anyone interested in a pathology residency, as I was finishing my training at the Massachusetts General Hospital. His cryptic answer was, 'How much does it pay?' My answer, 'Five hundred dollars per year.' Ed was silent. A few days later he applied and got my job."

Initially, the Pathology residency program grew as an informal curriculum. These programs were not uniform or uniformly effective in education, and the importance of establishing rigorous standards was raised nationally. For the field of pathology, this had ramifications not only for the training of pathologists, but for the education of other specialists who would need experience in pathology as well. In his Annual Report for 1934, during Dr. Castleman's residency, Dr. Mallory commented:

One of the most significant trends in American medicine at the present moment is the concerted effort to raise the standards of practice in the specialties by the awarding of diplomas by the national societies based upon examination and rigid prerequisites of training. Among the prerequisites urged or demanded by several

of the societies, graduate work in pathology appears.

If this training is to be of value to the prospective specialist it must be at once practical and clinically oriented, the type of experience which hospital laboratories offer. The available positions in such laboratories are, however, distinctly limited in number and special provisions may soon have to be made to provide these men with opportunities suitable to their needs.

In a tradition that has existed to the present day, the trainees have themselves developed teaching materials. As early as 1927, Dr. Mallory was praising one of the house officers, Dr. Harry Derow: "A considerable number of interesting and important gross specimens have been excellently preserved through the efforts of Dr. Harry A. Derow and should form the nucleus of a valuable teaching museum of gross pathology." By 1930 this collection, improved by another house officer, Dr. Emanuel Mintz, was "becoming constantly more useful and is being used by the clinical services as well as by us with increasing frequency." By 1932 Dr. Benjamin Castleman, then in his first year of residency, had "reorganized the teaching museum and has greatly increased its value by preparing a complete set of clinical abstracts to go with the specimens. Its increasing utilization by the clinical men, and the numerous personal gifts of money by members of the staff for museum jars, are evidence of its value."

The number of residents increased from three to six in 1946: three interns, two assistant residents and one resident. It was intended that this increase would result in more complete examinations of material and quicker autopsy reports, as well as more time for research. But by 1949 it was clear that a more organized structure was required. Dr. Mallory, so committed to resident training, stated:

Much thought has been given to the proper training program for residents in pathology. This laboratory has been able to offer a

well-rounded program in pathologic anatomy since surgical pathology, neuropathology and autopsy pathology are all available in more than adequate amount and quality. It has never been attempted heretofore to give training in clinical pathology, yet the majority of hospital pathologists must supervise clinical laboratory work. Surveys conducted by the American Board of Pathology indicate that the majority of hospital pathologists are inadequately trained in this field. With the cooperation of Dr. Dienes, Butler, Hunter and Soutter it is planned to rotate pathology interns through Bacteriology, Biochemistry, the Blood Bank and Baker Laboratories. A start has been made in biochemistry but development of a truly satisfactory program which will meet Board requirements will require two additional residents and increase of the training period from three to four years in order to supply constant coverage in all laboratories involved.

All told, by 1951, over 100 house officers and residents had received training under Mallory, including the first woman resident in Pathology, Dr. Catherine R. Michie, in 1944. Toward the end of Dr. Mallory's tenure, the first residents also began clinical subspecialty training, specifically in the field of neuropathology (chapter 17).

Dr. Mallory and his faculty were also dedicated to teaching HMS medical students, and Dr. Mallory actually served as HMS Chair of Pathology from 1947 to 1950 (at that time the chairmanship of the Department of Pathology at HMS rotated). Early in his tenure Dr. Mallory taught a fourth-year course in pathologic histology with Dr. Wright, and Dr. Hartwell continuing his demonstrations in surgical pathology, primarily at the gross pathology level, to fourth-year students. By the early 1930s Drs. Mallory, Hartwell, and Bradley were teaching a variety of second-, third-, and fourth-year HMS students, as well as some second-year Tufts students. The 1930s also witnessed the beginning of weekly visits by medical students assigned to Medicine, Surgery,

and Neurology to the Pathology laboratories for demonstrations of pathological material. The exercises proved so popular that they were also adopted at Boston City Hospital and quickly drew attendance from graduates as well as medical students. But the war years taxed the ability of the small remaining faculty to teach medical students. Dr. Castleman estimated that he spent 12 hours a week on second-, third-, and fourth-year HMS student education during these years, and Dr. Sniffen about four hours each week with second-year Tufts students. And, notably, there were visiting medical students; no account of the department is complete without mentioning that Benjamin Castleman had visited the department as a student in 1930, encouraged by Dr. Mallory, and that this had shaped Dr. Castleman's subsequent career (chapter 8).

The role of pathologists as educators of other physicians in the hospital expanded as well during this time. By 1946, Dr. Mallory would write that "members of the laboratory staff must be assigned to attend group and service meetings to demonstrate specimens and maintain liaisons." Dr. Castleman's summary of the Mallory years (see below) documents that this interdepartmental teaching component had become a major activity of MGH Pathology.

The other key educational development of Dr. Mallory's tenure was his bringing the stewardship of the MGH Case Records into the Pathology department. Dr. Richard Cabot retired in 1932, and this occasioned a change in how the MGH Case Records were organized. Initially, Dr. Mallory had taken over the Pathology component of the CPCs from Dr. Oscar Richardson, but in 1935 Dr. Mallory took over their overall direction as well, basing them on the clinicopathological conferences that he had been doing on Thursdays with the other departments, as he recorded: "Dr. Mallory has assumed the responsibility for selecting a member of the clinical staff, unacquainted with the outcome of the autopsy, to discuss from a summary of the clinical record the differential

diagnosis. This has altered considerably the tenor of the Thursday conferences but the popularity of the innovation seems proved by the constantly increasing attendance and the enthusiastic collaboration of the clinical staff."

Dr. Mallory thus began the period in which the CPCs resided in the Pathology department, and it remained the primary responsibility of Pathology to produce these valuable but complicated teaching exercises. His initial comments echo to the present day: "The assumption of the large amount of stenographic work required for the preparation of summaries and recording of the conferences has proved a severe burden upon the secretarial staff of the laboratory."

Of note in this regard was the work of Edith Parris (figures 5.3 and 5.7), who worked with Dr. Mallory for many years until she left in 1949 to become managing editor of the *Journal of Cancer Research* at the National Institutes of Health. Parris had been an integral member of the department, "Dr. Mallory's right-hand person" (in the words of Anna Castleman in 2009); in addition to being the Assistant Editor of the Case Records, she had been an important administrator in the department and had helped Dr. Mallory with some of his scholarly papers.

During the war years many copies of the *NEJM* MGH Case Records were sent to the various armed forces as a method for continuing medical education, partly though a grant from the Rockefeller Foundation. This increased the influence and the popularity of the exercises and spread the names of MGH pathologists—particularly Dr. Castleman's (chapters 8 and 24)—around the world.

RESEARCH

Dr. Mallory realized, at the start of his term as chief, that the research component of the department needed reorganization. In 1928 he wrote: "It is hoped that very soon research will be in progress in both pathologic and bacteriologic fields, though as yet only a small start has been made.

The lack of an experienced resident pathologist, of adequate cataloguing of the old autopsies and surgical material, of equipment, and of funds for experimental animals are needs which must be met, before a proper proportion of investigative work can be undertaken in the laboratory.”

One early step was cross-cataloguing of both surgical and autopsy diagnoses, thus allowing retrieval of related cases from both resources. Another was optimizing access to the records. The remodeling of 1928 had created a records room, which Dr. Mallory felt “should prove especially valuable. All records of the surgical, bacteriological, serological and postmortem material will be filed there, also all surgical and postmortem slides in convenient metal cabinets.”

Nonetheless, during the early years of his tenure, in which the major renovations were carried out in the laboratories, he felt that “research has been nearly out of the question.” Subsequently, the opening of the Baker Memorial Building in 1930 brought about increased clinical work, which “heavily encroaches upon the time of the professional staff, which has not been correspondingly increased, and allows them almost no time for research. Besides problems of our own which we feel deserve active investigation we are constantly being asked for help by other departments studying a variety of subjects all of which should be checked by histologic examination. Under the present arrangement we are forced to refuse most such requests and at best can give only inadequate aid.”

Still, Dr. Mallory encouraged closer relationships between Pathology and the clinical departments, which extended to research collaborations. He provided opportunities for clinical faculty to use the laboratories for pathology and bacteriology studies. By 1931 these extensive relationships between Pathology and other clinical departments were beginning to bear fruit. In addition to Dr. Kubik’s work in neuropathology, Dr. Earle Chapman, an assistant medical resident, was working in both the Tumor Clinic and the laboratories

on lymphomas, and tissue culture work on these tumors had been started by Dr. Henry Stebbins, a medical house officer; John Bradley, the Assistant Pathologist, had been collecting materials relating to ovarian disorders; and Louis Dienes continued his successful research on hypersensitivity. Of note, the Annual Report for 1931 finds first mention of Benjamin Castleman: “Further studies in collaboration with Dr. Mallory and Dr. Castleman which are under way include the relation of hypersensitivity to tubercle formation, to the histology of typhoid lesions and to necrosis and cirrhosis of the liver.” By 1932 Drs. Greenwood and Rockwood from Dermatology had begun working on skin diseases, which would begin a long-standing rich, collaborative interaction between Dermatology and Pathology in Dermatopathology; and Dr. Hirsch K. Sulkowitch—who went on to a long career in the clinical laboratories at MGH—was assigned as a Dalton Scholar to the Pathology Laboratory, working on applying novel techniques such as spectroscopy to pathology. Thus, that year Dr. Mallory observed that “so large a body of workers is beginning to tax the capacity of the laboratory seriously.” The collaborative studies noted in Dr. Mallory’s reports from the 1930s are impressive; they range from anatomical to clinical to experimental pathology.

Important collaborative work in parathyroid disease began in the 1930s. As Dr. Mallory reported in 1934: “A large proportion of the attention of the laboratory has been focused upon disease of the parathyroids in close collaboration with the departments of surgery and medicine. Drs. Churchill, Albright, Castleman and Miss Bloomberg described the syndrome of hyperparathyroidism due to hyperplasia of the parathyroid glands. Dr. Castleman and Dr. Mallory, with the remarkable material accumulated at this hospital as a basis, have described the histologic features of the parathyroid glands in hyperparathyroidism, and have proposed a classification of the types and criteria for the distinction between the hyperplastic and neoplastic types.”

Dr. Edward Gall began his interest in hematological diseases during his residency and continued when he became an Assistant Pathologist. He initially worked on new staining techniques for white blood cells that enabled him to study the lymphocytes of infectious mononucleosis, and he published, with Dr. Mallory, his important classification study of lymphomas (chapter 6).

In 1937 an X-ray machine was placed in the laboratory, allowing routine chest X-rays to be done on postmortem cases, primarily for the research purpose of allowing close radiological-pathological correlations. It was this setup that encouraged the pioneering studies by Dr. Castleman and Dr. Aubrey Hampton of Radiology on pulmonary infarcts.

In 1947 Dr. L. Raymond Morrison, in the laboratory for research neuropathology, began work on experimental encephalomyelitis in rabbits, to mimic multiple sclerosis by inoculation with an antigen. Dr. Morrison worked extensively with Dr. Kubik and with the Psychiatry Service, including Dr. Stanley Cobb, the Chief of Psychiatry, who was also a neuropathologist. Sadly, Dr. Morrison died in 1950 at the age of only 53. Dr. Mallory wrote, “Dr. Morrison was a brilliant and faithful research worker whose loss is a great one to science as well as to his friends and co-workers.” Drs. Stanley Cobb and Walter Bauer would publish a posthumous monograph under Dr. Morrison’s name on changes in the spinal cord with aging.

Another noted researcher associated with the laboratories was Dr. Fritz Lipmann. Dr. Lipmann, a well-known biological chemist, came to MGH in 1941 and by 1947 he was leading the Biochemical Research Laboratory there, studying fundamental properties of enzyme reactions. Worldwide recognition for Dr. Lipmann’s work was evidenced by a number of awards, including the Nobel Prize in 1953. His laboratory moved from the White Building to the top floor of the Bulfinch Building in 1948.

Nonetheless, despite the success of collaborative

work between pathologists and others, the opening of additional clinical buildings in the 1930s and 1940s increased the faculty’s workload throughout the period, and Dr. Mallory felt that this “inevitably cuts into scientific productivity” (1941 Annual Report).

THE END OF THE MALLORY ERA

The Mallory era ended in 1951, with Tracy Mallory’s death from metastatic lung cancer on November 11. In 2009, Anna Castleman recalled receiving a telephone call in 1950 when she and her husband were in Rio de Janeiro at the end of a visiting professorship trip to Brazil; the caller informed Dr. Castleman that Dr. Mallory was to undergo lung surgery. She remembers that Dr. Castleman was shocked by the news, and that the following months were an extremely difficult period for Dr. Mallory and for the department. As Dr. Castleman herself commented, “The year 1951 was a sad one for the Department of Pathology and Bacteriology—it marked the death of its Chief, Dr. Tracy B. Mallory on November 11, after more than a year’s illness.” Dr. Mallory had been a cigarette smoker; indeed, one extant portrait of him shows him working at his desk with a lit cigarette in hand. He had suffered for about a year with the disease, but had persevered remarkably, even serving as President at the annual meeting of the American Association of Pathologists and Bacteriologists in 1951, despite being hemiparetic. Dr. Castleman wrote of Dr. Mallory: “During the last year of his life he displayed an indomitable fortitude which has left a lasting impression on all who knew him” (1).

Dr. Castleman also provided a portrait of the department left by Dr. Mallory, stressing its growth, its extraordinary integration with other clinical services, and its broad teaching roles—all accomplishments of the Mallory era:

[Mallory] had been head of the Department for 25 years, replacing Dr. James Homer Wright in 1926, and during that period over

100 physicians received training in Pathology under his direction. He introduced the house officership and residency in the Pathology Department and made it not only a service but a teaching department. From a complement of four staff doctors, one resident, two technicians and one secretary, he saw his department grow to include eight staff men, seven residents, six fellows, and about thirty technicians and secretaries. His own staff and all members of the hospital family will miss his sound teaching, his forthright advice, and the pleasant welcome he had for everyone. There is no need to list the advances that he made in the field of Pathology; they were numerous and varied and have been covered in the notices in many of the scientific journals. Just before he became ill, he received one of the greatest honors that can be bestowed on any pathologist in this country—Presidency of the American Association of Pathologists and Bacteriologists.

Probably very few members of the Staff realize how interwoven the Pathology Department is with the other departments in the hospital, and this interrelationship has been effected over the years because of Dr. Mallory's willingness to cooperate with any department or individual who was sincere in his request. This esprit filtered down to every member of the department whether he be doctor, technician or secretary. . . .

The best rapport between the laboratory and the clinical services can be seen at the "organ recital" conducted each morning at 8:30 when the gross material of the previous day's post-mortems is reviewed by the entire laboratory staff. Many of the clinical interns, residents, and other physicians interested in a particular case usually appear to assist in a clinico-pathological correlation—a mutually advantageous exercise and one that is getting so popular that we may have to move to a larger room. Virtually every service and many special clinics in the hospital have a member of the Pathology Department present at their meetings. Either the Chief or an

Assistant Pathologist attends Medical, Surgical, Gynecological and Orthopedic Grand Rounds. A resident demonstrates specimens at the West Surgical, East Surgical, Urological and Gynecological Service Meetings. Dr. Vickery participates in the Thyroid Clinics and X-ray Seminars. The skin biopsies are reviewed with Dr. Lever and the Dermatological residents. The Neuropathologist demonstrates specimens for the Neurological and Neurosurgical Services. A resident sections the thoracic surgery specimens for the radiological and thoracic groups and also demonstrates them at the Thoracic Clinic. The Chief is a member of the Tumor Clinic and a resident projects microscopic slides of pertinent tumor cases at their weekly conferences. More recently with the Medical Services conducting death meetings for house and private patients, two more sessions have been added to this list. Beginning July 1, 1952, two of the Assistant Pathologists will devote half time to the arthritic and Huntington groups, respectively. All these meetings provide a more direct liaison between clinical service and laboratory than can be obtained in the written report.

If one describes a hospital as having three major functions: the care of the patient, teaching, and research, then the attendance of members of the Pathology Department at these service meetings and rounds is primarily for the care of the patient, plus a fair degree of resident teaching. However, a much heavier load of teaching is borne by the Pathology Department. Undergraduate teaching at Harvard Medical School consists of lectures, weekly classroom exercises and demonstration of post-mortems to the second year class; weekly surgical pathology demonstrations and a clinico-pathological conference for the third year students; and all through the year an elective for fourth year students to spend an entire month in the laboratory. Demonstrations for second year Tufts Medical Students are held three mornings a week. Most post-graduate courses

in the hospital include pathology exercises and members of the Department devote many hours to the Cardiac, Internal Medicine, and Gynecological Courses. In addition, since most of the surgical specialty boards require some knowledge of pathology, there is usually a tutoring course being given for the young surgeons seeking certification.

The Mallory years were thus characterized by consistent growth, despite the challenges imposed on the department and hospital by World War II, and by strong leadership, further integration with the clinical services of the hospital, and development of a training program that would go on to train many leaders in academic pathology in the twentieth century. Dr. Mallory ran the department for 25 years—a long period by any measure—but one is left to wonder how the department would have developed differently

had he not died at the relatively young age of 55, in particular whether Bacteriology would have migrated out of the department as it did shortly after his death.

REFERENCES

1. Castleman B. Tracy Burr Mallory (1896–1951). *Cancer* 3:1, 1952.
2. Faxon N. *The Massachusetts General Hospital, 1935–1955*. Cambridge: Harvard University Press, 1959.
3. General Executive Committee. *Report of the General Executive Committee of the Massachusetts General Hospital*. Boston: MGH, 1937.
4. Anonymous. The passing of Allen Street. *N Engl J Med* 256:277–278, 1957.
5. Swartz M, Dvorak H. Louis Dienes, Obituary. *J Infectious Dis* 130:89–91, 1974.
6. Washburn F. *The Massachusetts General Hospital: Its Development, 1900–1935*. Boston: Houghton Mifflin, 1939.