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⑤ Armed Forces Inst. of Pathology.  
Army Medical Center, Washington. ①

SOME MEDICAL ASPECTS OF THE HISTORY  
OF FORT SAM HOUSTON,

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⑩ BY MAJOR FRANK W. KIEL, MC, USA

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## Some Medical Aspects of the History of Fort Sam Houston

**Major Frank W. Kiel, MC, USA\***

ARMED FORCES INSTITUTE OF PATHOLOGY  
WASHINGTON, D.C. 20305

JUST A FEW MONTHS had passed after the annexation of Texas in the summer of 1845 when Company G of the Second United States Cavalry arrived and encamped at the Alamo. In the next year a quartermaster depot was established in the city, and a large supply activity developed because the Mexican War broke out and San Antonio became a recruit training center. Following the war, troops continued to maintain an establishment in the city, and the Alamo was restored for use as headquarters and supply depot. The Arsenal, on South Flores Street, was started in 1858 to supplement the Alamo and surrounding leased buildings as a supply depot; interrupted by the Civil War, it was finished in 1866. Thus, this complex of buildings served for 33 years (1846-1879) as the supply center for forage, equipment, and maintenance of the Department of Texas and its 20 pioneer posts. The Arsenal continued supply functions through World War II, and even now serves for Navy and Marine reserve units.<sup>6</sup>

Troop barracks and officers' quarters were located in leased buildings along Houston Street in the region of the present Gunter Hotel. The hospital was also in a leased private residence that was considered to be admirably suited for its purpose. On the first floor were the doctor's office and patient wards, and on the second floor were the steward's room, linen room, and more wards; there was no bathroom. The hospital was filled most of the time, for troop quarters bordered the river on such low ground that they were inundated whenever the river rose. Chol-

\* Chief, Forensic Pathology Branch, Armed Forces Institute of Pathology.



Maj. Frank W. Kiel entered the Army immediately after graduation from George Washington University Medical School in 1954. He had been born in Altoona, Penn.; raised in Pittsburgh, Penn.; and received his undergraduate degree from the University of Pittsburgh. His first Army assignment was an internship at Tripler Army Hospital in Hawaii. Following this came a 5½ year tour at Fort Sam Houston, Tex. during which he attended the Army Medical Service Company Officer Course, and the Army Medical Service Officer Advanced Course at the Medical Field Service School and completed a residency program in anatomic and clinical pathology at Brooke General Hospital. His current assignment is in Washington, D.C. as Chief of Forensic Pathology at the Armed Forces Institute of Pathology.

era epidemics were not infrequent, occasionally necessitating withdrawal of the entire encampment out into the country. The common diseases of the day were recorded as intermittent and remittent fevers, plus various forms of catarrh.<sup>2</sup>

### Establishment of Fort Sam Houston

In 1870 the need for a permanent post in the area was recognized, a major reason being the unhealthful nature of the encampment along the river in downtown San Antonio. The Landa Park region at New Braunfels was offered, but San Antonio officials prevailed, and a donation of 40 acres was accepted; it came to be known as "Government Hill."<sup>6</sup>

Hereon the Quadrangle was constructed, starting in 1876, with occupancy effected on 22 December 1879. Originally, the exterior was windowless and loop holes for rifle firing were featured on top of the walls. An 87-foot watchtower was also built, serving as a water reservoir at first, but later becoming a clock tower. The inside rooms were mainly

storerooms, for the Quadrangle assumed the supply depot function of the Alamo and the leased buildings downtown.<sup>6</sup>

Troop life in those days was frontier in character, consisting largely of escort duty, for wagon trains were continually leaving for the many small posts in the Department of Texas such as Fort Ringgold and Fort Concho. So short were the intervals in San Antonio that barracks were not considered necessary, tent bivouacs inside the Quadrangle being used. A hard-riding, hard-fighting type, the soldier of the day received \$13.00 per month.<sup>13</sup>

Very soon after completion of the Quadrangle, a temporary wooden building was erected just west of the present Staff Post to serve as a hospital. It is said the doctors were kept busy treating the old cavalymen for gunshot wounds and the new recruits for saddle sores.<sup>13</sup>

In 1881 a permanent hospital building was included in the Staff Post construction program, along with 15 sets of officers' quarters.<sup>6</sup> The hospital building was typical of the small Army hospital of the times, having a T-shape, with a second story over the central portion (Fig. 1). The offices of the wardmaster and doctor were in the central core; to the right and left were patient wards; extending toward the back was the kitchen wing. For over 25 years, including the mobilization period of the Spanish-American War, this



Fig. 1. Bose hospital, 1881-1908. This building is presently used as BOQ for visiting senior officers. (BR 18530.)



Fig. 2. Station hospital, 1908-1937 and later (used in expansion program of World War II). Presently administration building for Fourth Army Headquarters. (BR 18530.)

building served as base hospital. Still standing, this building saw service as a dental clinic in World War II, and it is currently used as a BOQ for visiting senior officers.

By 1890 the "Post of San Antonio" had progressed far since the first cavalry unit arrived 45 years before. Now including 154 acres, it consisted of the Quadrangle, Staff Post, and Infantry Post (then being constructed as permanent barracks for 12 troops of cavalry and a band). In 1890 the post was deemed worthy of the great hero of Texas and was formally designated as Fort Sam Houston.<sup>6</sup>

#### The Old Hospital

After the turn of the century a new construction program was begun. Between 1905 and 1912, Cavalry and Artillery Posts were built, including 16 barracks and 45 sets of officers' quarters. A new hospital was completed in 1908<sup>6</sup> (Fig. 2).

This hospital, as originally planned, had only two wards, each having 12 beds. When it opened, however, its capacity was rated at 84 beds. In 1910 the east and west wings were added, increasing the capacity to 152 beds. A large mess hall and kitchen were added.<sup>8</sup> With the Mexican border mobilization in 1916, 20 pavilion wards were created. In 1917, 10 more wards were created, and an extension was put on the main building to provide for a new operating room, x-ray sec-

tion, and women's ward. With these additions, the hospital capacity was increased to 1,000 for the period of World War I.<sup>14</sup>

A room for a laboratory service was included in this hospital. At first it was a 23-ft. × 18-ft. room on the second floor over the entrance and was provided with a sink and two gas inlets. When the surgery annex was added, the laboratory was moved there, and later a separate morgue was established in the basement of the isolation unit.

When World War I occurred, an enormous expansion in facilities took place, including the creation of Camp Travis on land that is now occupied by Brooke General Hospital. This was a training camp, designed to take care of 46,000 men and 13,000 animals. Thought was given to expanding the Fort Sam Houston station hospital to care for this camp, but because of the massiveness of the operation, an entirely separate hospitalization unit was built. This unit opened for patients on 2 November 1917. The medical care was a big operation; for example, there were 5,081 admissions in the month of January 1918; at one time there were 89 doctors assigned. Three epidemics hit the training center—a pneumonia epidemic in December 1917, a mumps and measles epidemic in February 1918, and an influenza epidemic in October 1918. During the influenza epidemic it was necessary to press 76 double-story barracks into use for the victims. After hostilities ceased, the station hospital became a rehabilitation center for veterans from France, while the battle-proven Second Division occupied the training camp.<sup>7</sup>

#### The Corps Area Laboratory

In the spring of 1918 construction of a laboratory building (the present Fourth U. S. Army Medical Laboratory) was begun, designed to serve both as a reference laboratory for the Southern Department and as the laboratory for the station hospital (Fig. 3). In 1920 an Army reorganization made this the reference laboratory for the Eighth Corps Area comprising Texas, Oklahoma, Colorado, New Mexico, and Arizona.



Fig. 3. Laboratory for station hospital and for Eighth Corps Area, 1918-1937 (reactivated 1941). This building presently houses the Fourth U. S. Army Medical Laboratory. IBR 18530.)

The staff of the laboratory in 1919 consisted of five officers. The Commanding Officer was Colonel Edward Vedder, who was interested in vitamin research and had been one of the early experimenters in producing beriberi in chickens by feeding them polished rice. The bacteriologist was Harvey Livesay, recently returned from France. Dr. Case was autopsy and surgical pathologist. In addition, there were a chemist and a veterinarian.

Autopsies were done across the street in the hospital morgue; furnishing gross descriptions was the rule, with completion of the case being accomplished in Washington at the Army Medical Museum. Surgical pathology specimens included a few frozen sections, which E. H. Shaw had introduced in England 20 years before. Clinical laboratory tests were varied. They included hemoglobin estimation by the Tallquist method; the Craig serologic test for syphilis; and a notoriously poor test for blood sugar, performed by means of a picric acid filtrate and a wedge colorimeter, and having a potential error of 30 per cent.

Harvey Livesay, the bacteriologist, was principally engaged in water analysis for outlying stations and in a study of Malta fever, for which he was testing goat milk and blood from all over the Southern Department. Before coming into the Army in 1917 he had had 2½ years of laboratory residency at the University of Louisville. In France he was a division general medical officer doing sanita-

tion and sick call, before he was transferred to a laboratory at Dijon. There he undertook the anaerobic culture aspects of a study on gas gangrene in war wounds. Later he was transferred to the Third Evacuation Hospital, where some of the earliest work in blood transfusion developed. Type "O" blood was collected from German prisoners of war and subsequently given by the gravity method to wounded.

In 1925 the laboratory was placed under hospital command. No change in workload ensued, the Eighth Corps Area still being served. The main change was that the laboratory officers could be levied for additional assignments—e.g., the veterinarian became the hospital mess officer.

When Elbert DeCoursey interned in 1928, Major O. B. Sott was chief of the laboratory; an expert on snake bites and the preparation of antivenom, he was called to treat cases throughout the Southwest. Other commanding officers of the laboratory in the 1920's included Wesley C. Cox, a serologist and bacteriologist who later was in charge of the Environmental Health Laboratory at the Army Chemical Center, and Charles Craig, who later collaborated with Faust to write "Clinical Parasitology."

A. R. Thomas became chief of the laboratory in 1930. After entering the Army in 1917, he had been a general duty officer until he went to the Army Medical School in 1923; thereafter he devoted himself to laboratory work. Laboratory activities in the early 1930's were not dissimilar from today's—routine cultures; simple blood chemistry; serologic tests for syphilis using Noguchi's modification of the Wassermann reaction in addition to the Kahn test; examination of routine surgical specimens, including frozen sections; an average of 99 autopsies per year with a permission-granted rating of 58 per cent.

Post living was slightly different, though; those were the days when the post exchange would deliver groceries to the home at quartermaster cost plus 2 per cent, with billing at the end of the month.

In 1935, when George J. Matt was one of

eight interns, the hospital load was about 600 patients. The interns, all single, lived in a BOQ near Chambers Pavilion; there was a personal orderly assigned to the group. In the hot summers, working hours of 0700-1300 hours were observed. The laboratory, under Colonel Charles G. Sinclair at the time, still utilized the 1918 building. One big activity was the preparation of Dakin's solution, a chlorinated soda modified with sodium bicarbonate, then used extensively for irrigation of wounds.

In 1937, when a new hospital opened, the old laboratory building was retired, to be used as troop quarters.

#### Brooke General Hospital

In the 1930's a great building program started on the post, to include the post exchange, Theater No. 1, Christy Mathewson baseball stadium, the officers' club, 157 sets of officers' quarters, and a new station hospital of 350 beds. The new hospital, together with the old hospital, was expected to handle a normal capacity of 1,000 patients."

Located on Argonne Hill, sometimes referred to as "Agony Hill," the site of old Camp Travis, the new hospital was completed on 22 November 1937, and 329 patients moved in 3 months later. When its status changed from station hospital to general hospital (1942), the name of Brigadier General Roger Brooke was commemorated because of the outstanding manner in which he had identified himself with community interests while in command of the station hospital at Fort Sam Houston.

The laboratory occupied the rearward wing on the second floor of the new building. It included sections in bacteriology, chemistry, and serology; an anatomic pathology section, which received its first automatic tissue processor in 1941; and the morgue, which was in the present serology room with the elevator. Joint use of the elevator by Food Service and the morgue resulted in continued discomfiture to the personnel of the former.

Colonel Charles G. Sinclair continued in command of the relocated laboratory, to be

followed by Francois H. K. Reynolds, a veterinary officer who had worked considerably with rinderpest in the Philippines. Colonel A. R. Thomas returned in May 1941 and headed the hospital laboratory for the duration of World War II.

During the war the staff was usually composed of four officers. Colonel Thomas was Chief; on difficult Wassermann tests he would frequently collaborate with the civilian consultant, B. F. Stout. Surgical and autopsy pathology was handled at first by Captain William Tigertt and later by Colonel Harbert Davenport. In bacteriology were Max Levine and Sgt. Robert Ingersoll. Major Paul Preisler headed the chemistry section until 1944, when Captain Tom Wallace succeeded him. In 1943 a transfusion section was started, located on the third floor near the surgical suite.

#### **Reactivation of Eighth Corps Area Laboratory**

With the rapid expansion attendant on World War II, the need for a separate reference laboratory arose, for the hospital laboratory could no longer serve both hospital and Corps Area. Therefore, Colonel Harvey Livey was ordered to activate a new laboratory in 1941; he chose the old Eighth Corps Area laboratory, where he had been bacteriologist 17 years before, to house this new facility. The serology section was the first to open, in December 1941; subsequently bacteriology, chemistry, veterinary medicine, and virology sections opened. Lt. Colonel Reynolds, who had been at the station hospital, was responsible for opening the first virology unit in the Army, setting up viral agglutination studies on the third floor. Surgical and autopsy material continued to be referred to the station hospital.

A blood-processing section was begun in 1942 under Captain Reichardt and Captain Hensell. Blood obtained downtown was processed into plasma units for Army-wide distribution; 25,000 units had been processed by 1944, when the operation was discontinued

because of the disconcerting incidence of hepatitis.

In October 1943 a call was made to Lt. Colonel William Hettler for an Rh serum. Fortunately he had just completed a review of literature on the subject amounting to 29 articles, not including Wiener's classification, which at that time had not yet been published. For this first serum, the blood of a woman who had delivered an erythroblastotic baby was utilized, producing a serum with a titer of 1:2000.

When the war ended, activity at the laboratory intensified as the old station hospital at Fort Sam Houston became a principal separation center. For example, the serology section was expected to report Kahn tests in 3 hours. A one-tube presumptive test was used, followed by the three-tube test if the first gave positive results.

It was the winter of 1946-47 before the last soldiers left the old hospital area. The laboratory continued operations, however, for the by-then-designated Eighth Service Command and later for the Fourth Army Area, as it does today.

#### **Bullis Fever**

At the hospital in the spring of 1942 a group of soldiers was encountered whose illness defied diagnosis. They presented (a) unusually low leukocyte counts with moderate neutropenia, (b) severe postorbital and occipital headaches, and (c) constant lymphadenitis involving a few to all glands. All these soldiers had been on maneuvers at Camp Bullis and had received tick bites. Laboratory studies were conducted by Morris Pollard, a veterinary officer at the Eighth Corps Laboratory. He found negative results of complement-fixation tests for Rocky Mountain spotted fever, Q-fever, and typhus, as well as of agglutination tests for brucellosis, tularemia, typhoid, and paratyphoid and the heterophile agglutination test. Lymph node biopsy specimens showed only lymphoid hyperplasia.

The next spring 485 cases of Bullis fever

were discovered, which—added to the cases of the previous year—meant about 1,000 cases of the entity. These 1943 cases were more severe, perhaps because the troops were no longer of local origin, but from Brooklyn.

Two deaths were attributed to the disease, both victims apparently developing a greatly lowered resistance to bacteria. One man had a pneumococcal psoas abscess, while the other had clostridial gangrene of the bowel.

A complement-fixation test was conceived, with the antigen prepared by triturating the enlarged spleens of mice infected from a human case. The supernatant antigen reacted with 76 per cent of the patients showing the clinical syndrome, and also with 10 per cent of the deer on the reservation, pointing to them as a reservoir. Histologic examination of dead infected guinea pigs disclosed delicate intracellular rods or coccoid bodies in the lung and liver.

Survveys at Camp Bullis confirmed the fact that ticks are abundant, especially under ground litter where it is cool and moist. Under one small juniper tree 4,086 adult ticks were found. The individual record for ticks on a soldier was set by a man who had 294 removed from his body.

In 1944 the disease did not occur, nor has it occurred since. Unfortunately, the organism that was being propagated in mice suddenly disappeared, so further study was prevented. All that remains to commemorate the disease are nine papers in the literature.<sup>1, 3, 4, 5, 9, 10, 11, 12, 15</sup>

#### San Antonio Society of Pathologists

Civilian-military cooperation was formalized in 1941 with the organization of the San Antonio Society of Pathologists. The idea was first suggested by Captain Elbert DeCoursey, then Assistant Chief at the station hospital laboratory. After he left to head the 18th General Laboratory in the Pacific theater, the idea was crystallized by B. F. Stout and Colonel A. R. Thomas. Monday night slide conferences were instituted; these were held twice a month, alternating between Colonel

Thomas' office at the station hospital and rooms at the old Medical and Surgical Hospital. That early group was composed of Colonel Thomas, B. F. Stout, John Moore, Herbert Schattenberg, David Todd, and A. O. Severance. The first tumor seminar of the San Antonio Society of Pathologists was held in 1942, organized by B. F. Stout and conducted by A. P. Stout. Discontinued for the war, the annual seminar was resumed in 1945. Today the group comprises approximately 60 members, drawing from three military bases and the city proper, as well as from Austin, Kerrville, the Rio Grande Valley, and Mexico.

#### Residency Program in Pathology

As the war drew to a close, the future of the Army Medical Service was in question, and it was decided to institute a strong resident training program. Colonel Floyd Wergeland in 1945 originated the idea, which was supported and executed by Colonel Raymond Duke. The latter was Director of Education and Training from 1946 to 1949. One large group that could be assimilated into a residency program was comprised of the many Regular Army medical officers who had entered service about 1936, had advanced to high ranks largely in administrative settings, and wished to return to clinical medicine.

Oliver, Madigan, Gorgas, Letterman, Fitzsimons, Brooke, and Walter Reed Hospitals all had abundant clinical material, but many lacked a full complement of trained preceptors. A liberal consultant system was allowed to replace board-certified staff men in some programs. Slowly but steadily the various residency programs were approved by the specialty boards and consequently by the American Medical Association. In pathology strict demands were promulgated by the Board representative, Robert Moore; these were met, and after only three talks, the pathology residency programs were approved.

As the last training division left Fort Sam Houston in 1945, the hospital expanded into the vacated buildings on the east side of MacArthur Field. Colonel Thomas was asked to



Fig. 4. Beach Pavilion, with Anatomic Pathology Section occupying basement portion, 1946 to the present. (BR 18530.)

allot space in the new buildings to the various hospital interests, the survey to be completed in 48 hours. For the Laboratory Service he chose the site presently occupied by the Anatomic Pathology Section. This area is said to have been a kitchen when the building had been a regimental barracks. Since the area was then unenclosed, he figured that the floor could be sloped to ground level and a good autopsy amphitheater would be provided. When the area was enclosed, however, the same high floor as in the rest of the basement was extended, destroying the idea of an amphitheater. Initially the laboratory section consisted only of the morgue, histology section, and offices (Fig. 4).

In 1946 Colonel Elbert DeCoursey returned from his study of the pathology of the effects of the atomic bomb to become Chief of the Laboratory Service. Other changes that year were the institution of morgue activities and a clinical laboratory in Annex IV, presently Beach Pavilion. A photography section, headed by Henry Marasco, was initiated in 1947. Another activity started about that time was the Tumor Registry.

The department staff in 1947 consisted of six officers. Chief was Colonel DeCoursey; the position of assistant chief and surgical pathologist was held by Philip Flynn, John Ellis, and Frank Vellios at various times. Joseph Akeroyd was hematologist; in addition there were a bacteriologist, a chemist, and an administrative officer. The first residents to arrive were Robert Holmes, Gilbert Stansell,

and William Hurteau; the latter resigned after a few months.

To aid in the teaching program three consultants were appointed—Dr. Joseph Hill, a hematologist from Dallas, Dr. E. E. Muirhead, a kidney researcher from Dallas, and Dr. A. O. Severance, a surgical pathologist from San Antonio. At first Dr. Severance came out twice a week just to consult on a personal basis with the man studying surgical specimens, working then in the present transcription room. Robert Holmes, however, working next door on his autopsies, overheard them and came calling with his microscope. Later William Hurteau joined them, and thus the slide sessions on Tuesday and Friday evolved. In 1949 the conferences switched to the newly acquired conference room. Dr. Severance's own residents were invited to the Tuesday evening sessions in 1952. The sessions still continue, with attendance often approaching 20.

A new chief was designated in 1949, when Colonel Carl J. Lind arrived. He remained until 1955, when Colonel George J. Matt replaced him. Physical improvements during this time included the acquisition of the residents' room and air conditioning of the laboratories. In 1955 bacteriology was consolidated in Annex IV, and chemistry in the Main Hospital, correcting in part the previously objectionable duplication of activities. The Fourth Army Area Medical Laboratory resumed histopathologic work for Texas and neighboring states, a task that had accounted for 30 per cent of the workload in anatomic pathology at Brooke General Hospital. The proudest achievement of 1951 was the completion of the last of the World War II autopsies. In 1953 the laboratory assumed responsibility for bleeding operations in the blood donor program. About this time, also, when liver biopsies were coming into prominence, Brooke's disease was recognized as an entity in a group of patients at this hospital; it represented a concurrent hepatitis and pericholangitis.

#### Present and Future

Today, with an organization of about 90

persons, including a staff of 7 officers and a full quota of 8 residents, the Laboratory Service at Brooke General Hospital has a large and important role. The Fourth U. S. Army Medical Laboratory continues to serve as a reference laboratory for the posts of six States.

The laboratory function has evolved considerably from its status in the early hospitals in the 19th century, when not a microscope was present, to its importance today. ~~How the laboratories continue to evolve remains to be seen.~~

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