

= Stafford L. Warren =

Stafford Leak Warren (July 19 , 1896 - July 26 , 1981) was an American physician and radiologist who was a pioneer in the field of nuclear medicine and best known for his invention of the mammogram . Warren developed the technique of producing stereoscopic images of the breast with X @-@ rays while working in the Department of Radiology at the University of Rochester School of Medicine .

Warren was commissioned as a colonel in the United States Army Medical Corps in 1943 and appointed Chief of the Medical Section of the Manhattan Engineering District . He was responsible for the health and safety of the thousands of personnel involved in the Manhattan Project . He was present at the Trinity nuclear test in Alamogordo , New Mexico where he was responsible for the safety aspects of the detonation of the world 's first nuclear weapon . He led a survey team from the Manhattan Project to assess the effects of the atomic bombings of Hiroshima and Nagasaki . In 1946 he was Chief of the Radiological Safety Section of the Joint Task Force for Operation Crossroads , the nuclear test at Bikini Atoll .

In 1947 Warren became the first dean of the School of Medicine at the University of California , Los Angeles (UCLA) . Under his leadership , the new school grew from nothing to a major medical school . Warren became Vice Chancellor , Health Services in 1962 . From 1963 to 1965 he served as special assistant to President John F. Kennedy and later Lyndon B. Johnson on mental retardation . Returning to UCLA in 1965 , he became professor emeritus , a position he held until his death in 1981 . In 1971 , he was awarded the Enrico Fermi Award for his contributions to science and medicine .

= = Early life = =

Stafford Leak Warren was born in Maxwell , New Mexico on June 19 , 1896 . He attended the University of California , Berkeley , where he earned his Bachelor of Arts degree in 1918 . He married Viola Lockhart on May 22 , 1920 . Their marriage produced two sons and a daughter . He went to medical school at the University of California , San Francisco , graduating with his Doctor of Medicine degree in 1922 . He then did post @-@ doctoral work at Johns Hopkins School of Medicine and Harvard University .

= = University of Rochester = =

Warren joined the faculty of the Department of Radiology at the University of Rochester School of Medicine in 1926 , becoming an Assistant Professor of Medicine . The department was a new one that had only been founded in 1921 , based upon the ideals of medical education propounded by Abraham Flexner in his 1910 Flexner Report . The medical school had opened in 1925 and did not graduate its first class until 1929 . Warren was one of the original group that Dean George Whipple assembled to staff the new medical school . At Rochester , Warren investigated the effects of artificial fever , including its possible use for treating gonococci infections . He was also interested in radiography .

In 1930 , Warren became an Associate Professor of Medicine . That year he published " A Roentgenologic Study of the Breast " . X @-@ ray imaging of the breast had first been investigated by Albert Salomon at the University of Berlin in 1913 . He produced images of over 3 @,@ 000 mastectomy specimens , and observed different forms and stages of cancer . He was even able to detect an undiagnosed cancer in a breast that had been removed because of a large cyst . However , Salomon apparently did not appreciate the life saving potential of his observations . Warren used radiology to track changes in breast tissue as a result of pregnancy and mastitis . He developed a stereoscopic technique , using patients rather than specimens and adapting general purpose X @-@ ray equipment to his needs . His method involved having the patient lie on her side with one arm raised while being X @-@ rayed . In 119 women who subsequently underwent surgery , he correctly found breast cancer in 54 out of 58 cases . This represented a leap forward , as it made

diagnosis of breast cancer possible without surgery . It also sparked intense interest in the technique around the world . Today mammography saves thousands of lives .

= = Manhattan Project = =

In February 1943 , Warren met with Dr Albert K. Chapman , the Vice President and General Manager of Eastman Kodak , Brigadier General Leslie R. Groves , the director of the Manhattan Project and Colonel James C. Marshall , the commander of the Manhattan Engineer District (MED) . They asked him about his work with radiation and isotopes and asked Warren to become a civilian consultant for the MED . In March 1943 , Warren met with Major Hymer L. Friedell at the MED 's New York City headquarters . Friedell had joined the Metallurgical Laboratory in August 1942 from the University of California , Berkeley , where he had been involved in radiology research under Dr Robert S. Stone . Friedell requested information about safety matters involving radiation . Warren was unable to provide all the information , but agreed to initiate research at Rochester .

Friedell recommended that in view of the scope of the Manhattan Project , a more senior officer be placed in charge . In October , Groves penned a letter to the Surgeon General of the United States Army , Major General Norman T. Kirk , requesting that he cooperate with the Manhattan Project in furnishing medical supplies , providing funds for medical care of military personnel , and directly commissioning Warren and other doctors at specified ranks . This letter was signed by Lieutenant General Brehon B. Somervell and delivered in person by Colonel Kenneth D. Nichols , who had replaced Marshall as the district engineer . Kirk was furious at what he saw as usurpation of his statutory responsibilities as Surgeon General . When told that Warren was the man the district had in mind to commission as a colonel , and apparently familiar with Warren 's work only from his use of radiation to treat venereal disease asked " Why do you want that clap doctor ? "

Warren was duly commissioned as a colonel in the United States Army Medical Corps on November 3 , 1943 . He was appointed as chief of the MED 's medical section and medical advisor to the director of the Manhattan Project , with Friedell as his deputy . Warren 's office was initially located in New York City but moved to Oak Ridge , Tennessee soon after . Warren 's initial task was to staff hospitals at Oak Ridge , Richland , Washington and Los Alamos , New Mexico . Warren 's section was responsible for medical research , but also for the MED 's health and safety programs . This presented an enormous challenge , because workers were handling a variety of toxic chemicals , using hazardous liquids and gases under high pressures , working with high voltages used in novel ways , and performing experiments involving explosives , not to mention the largely unknown dangers presented by radioactivity and handling fissile materials . Yet in December 1945 , the National Safety Council presented the Manhattan Project with the Award of Honor for Distinguished Service to Safety in recognition of its safety record . Between January 1943 and June 1945 , there were 62 fatalities and 3 @, @ 879 disabling injuries , which was about 62 percent below that of private industry .

Warren was personally responsible for the safety aspects of the Trinity nuclear test on 16 July 1945 at Alamogordo , New Mexico . There was considerable concern about radioactive fallout and a network of geiger counters was established to track the fallout cloud . Groves found Warren at the base camp shortly after the explosion and was displeased to discover that Warren had been awake for the previous 48 hours . Groves had US Navy Captain George Lyons take over so Warren could get some rest . Fortunately , no problems arose with the test .

The atomic bombings of Hiroshima and Nagasaki were carried out on 6 and 9 August 1945 . On 11 August , Groves phoned Warren and ordered him to organize a survey team and proceed to Guam , and thence to Japan to evaluate the effect of the atomic bombs and take measures to insure the safety of Allied troops occupying the cities . Initially the survey team was to accompany the assault troops of the III Amphibious Corps and the V Amphibious Corps in the invasion of Japan , but Japan surrendered on 14 August , the day the survey team departed San Francisco by air . The survey team arrived on Tinian on 17 August , where it was split into two parties , one under Warren and the other under Friedell . Warren 's party , equipped with portable geiger counters , arrived in Hiroshima by air on 8 September as part of a group headed by Brigadier General Thomas F. Farrell that also

included Brigadier General James B. Newman Jr and Japanese Rear Admiral Masao Tsuzuki , who acted as a translator . They remained in Hiroshima until 14 September and then surveyed Nagasaki from 19 September to 8 October . They were impressed by both the damage done by the atomic bombs and the extensive Japanese preparations for an American invasion .

The detonation of the two atomic bombs in Japan " raised as many military and medicomilitary questions as they answered " . A series of nuclear tests was planned , codenamed Operation Crossroads . Some 42 ,000 personnel were deployed to Bikini Atoll as part of Admiral William H. P. Blandy 's Joint Task Force 1 to conduct the test . Their health and safety was Lyons 's responsibility , but the specialised job of radiological safety was handled by the Manhattan Project . Warren , as Chief of the Radiological Safety Section (RADSAFE) , planned and implemented measures to assess , limit and control the impact of radiation . Teams were given special training at Oak Ridge in the operation of instrumentation to measure radioactivity , and the interpretation of their readings . Training was also conducted aboard USS Haven en route to Bikini Atoll , where it arrived on 12 June 1946 . In all , some 3 ,500 personnel were assigned to RADSAFE . Warren was appalled by the effects of radioactive contamination on the environment . " The deadly range of radioactive products from the atomic bomb has been clearly demonstrated under controlled conditions ... " he wrote , " the only defense against atomic bombs still lies outside the scope of science . It is the prevention of atomic war . "

Warren left the Army on 6 November 1946 . He temporarily became the Chief of the Medical Section of the Atomic Energy Commission , the civilian agency which succeeded the Manhattan Project . In February 1947 , he was replaced by Dr Shields Warren . For his services with the Manhattan Engineer District . Warren was awarded the Army Distinguished Service Medal and the Legion of Merit .

= = University of California = =

Toward the end of World War II , a group of physicians proposed that the University of California should establish a medical school in Southern California . One of them was the urologist Elmer Belt , whose patients included the Governor of California , Earl Warren . The University of California Board of Regents voted to establish a medical school as part of the University of California at Los Angeles (UCLA) on October 19 , 1945 . In 1946 the California State Legislature unanimously voted \$ 7 million to establish the new school , and Earl Warren signed it into law .

In 1947 , Warren was appointed the new school 's first dean . Once again he found himself involved in creating a new medical school . His first appointments were three former associates in Rochester : Dr Charles Carpenter as the first professor of infectious disease ; Dr Andrew H. Dowdy as the first professor of radiology ; and Dr John S. Lawrence , who had pioneered the use of phosphorus ³² as a radioactive tracer , as professor of medicine . With Dr William P. Longmire Jr , a 34 -year -old plastic surgeon from Johns Hopkins University recruited by Lawrence as professor of surgery , they became the " Founding Five " of the new school . Initially , the new school was accommodated in wartime Quonset huts scattered about the UCLA campus . Warren was still wearing his army fatigues . Construction of permanent accommodation commenced in 1949 . By 1951 when the first students , 26 men and two women , arrived there were 15 faculty members . By the time the first class graduated in 1955 there were 43 faculty members . The UCLA Medical Center opened in 1955 .

Under Warren 's leadership , the school grew steadily , adding Schools of Dentistry , Nursing , and Public Health . Against some influential opposition , Warren established his medical school on the UCLA campus rather than in another part of the city . He strove to integrate not only the structures but the faculty with other departments of the university . He fostered the development of a major biomedical library as both a tangible and intellectual link between the life sciences and the health sciences .

Warren became Vice Chancellor , Health Services in 1962 . From 1963 to 1965 he served as special assistant to President John F. Kennedy and later Lyndon B. Johnson on mental retardation . Returning to UCLA in 1965 , he became professor emeritus , a position he held until his death in

1981 . His first wife Viola died in 1963 and on July 18 , 1970 he married Gertrude Turner Hubberty . In 1971 , Warren was awarded the Enrico Fermi Award . His citation read :

For the imaginative , prescient , and vigorous efforts which made possible the early development of atomic energy so as to assure the protection of man and the environment , and for the establishment of a biomedical research program which has resulted in many substantial applications of ionizing radiation to diagnosis and treatment of disease and to the general welfare .

He died on July 26 , 1981 in Pacific Palisades , California . He was survived by his wife and three children . His papers are in the UCLA Library , Department of Special Collections .