

## Monroe Messinger and the Manhattan Project



The insignia of the Special Engineer Detachment

City College (CCNY) was a wonderful school when I arrived there in 1939. Nine graduates from the classes of 1935 to 1954 went on to win the Nobel Prize. That was but one of many indicators of the institution's distinction in mid-century America. Created in the 19th century to provide quality higher education for the children of America's immigrants, City College was rigorously selective but tuition free.

It was a public transport hike from St. Albans, Long Island, where my parents had moved from Brooklyn, to City College's 35-acre campus on a hill overlooking Harlem. I took a bus to get to Jamaica, Long Island, and then two subways to get to campus. It was a significant commute of about an hour each way, but I was able to study en route and the education I received as I pursued my chemistry major was indisputably first rate.

We saw the war on the horizon when I arrived at CCNY in that troubled time. I was aware of anti-Semitism from my own experience and certainly conscious of the frightening aspects of Hitler's Nazi Germany, but I can't say that I was remotely aware of the cataclysmic dimension of the evil engulfing Europe and the Jews.



When I was two years into my college career, The United States was at war and my peers were rapidly leaving school and the neighborhood for the military. I wanted an education, but also wanted to do my part for the common good, so along with many of my classmates I joined the U.S. Army Enlisted Reserve. We used to drill in CCNY's Lewisohn Stadium. It was a politically charged time and the campus was a hotbed of passion for various political causes. I recall a day when a Communist Party group tried to block us from leaving Lewisohn to go on a march in the campus neighborhood. The police came and quite roughly began pulling the Communists into paddy wagons. The Hearst newspapers - like *The Daily Mirror* - made a very big deal out of what was actually a small incident. It passed and life went on, but then I was called up.

I went through the induction process at Camp Upton at Yaphank, Long Island. A very notable fellow Jewish-American, Irving Berlin, was stationed at Camp Upton during World War I and subsequently did a Broadway musical revue, *Yip Yap Yaphank*, set at the camp. The review included "Oh How I Hate to Get Up in the Morning," which was part of Berlin's similar show, *This is the Army*, during World War II.



I don't recall if I especially hated to get up in the morning during the relatively short period I was at Camp Upton prior to being shipped out for basic training. I do know that I was alarmed by what I saw of the Army's make-work activities. They had a wheelbarrow filled to overflowing with cigarette butts. I saw how they would carefully dump the content of the wheelbarrow around the parade ground and would then direct newly inducted men to pick up what must have been thousands of butts. I was sufficiently aware to perceive that there were a number of other similarly useless assignments the Army employed to keep its new soldiers busy and in obedience mode.

The advantage I had at Camp Upton was that my uncle, Emmanuel Messinger, was a doctor at the camp. Uncle Emmanuel went on to be a quite notable physician. At that point, 1943, what pleased me was that Dr. Messinger had enough clout to be able to pull a couple of strings and get me out of some of the silly work details with which new recruits like me were being burdened. I was at Upton a matter of a few weeks, but it was my introduction to the Army. It is interesting that after the war it became the site of the Brookhaven National Laboratory, which was an extension of the Manhattan Project with which I became involved not long after I left Camp Upton.



Now, 1943, I shipped out for Fort Hood, near Austin Texas, for my basic training. I proceeded to get into "Army shape," which was largely a matter of doing thousands of calisthenics; taking pretty long runs while shouldering a heavy pack; crawling under barbed wire while machine gun fire was inches above my head; learning to fire a rifle with reasonable accuracy; and engaging in the other more or less challenging activities millions of soldiers have done so that they could be called

soldiers.

Somewhere along the way, I and many of my fellow soldiers took a test. There was no preparation and not really a good explanation of what was going on. They gave you the papers and you took the exam. But I was a good student; I passed the test and was selected for what came to be called the *Special Engineer Detachment* (SED). I was anything but a "natural" as a soldier, but because I was one of the early SED inductees and because I had done fairly well in basic training at Ft. Hood, I was pretty quickly promoted and in what seemed very little time found myself becoming a staff sergeant in charge of a SED contingent of 35 enlisted men.

Because I was stepping into modern American history at this time, the SEDs and their involvement in what became a central episode of the World War II period have been written about elsewhere. It might be useful here to insert a few pages from the [Atomic Heritage Foundation's website](#).

### **Special Engineer Detachment - Los Alamos**

“By the end of 1943, nearly 475 SEDs had arrived at Los Alamos. Most were mechanical, electrical and chemical engineers. About 29% of them had college degrees. Because of their special skills, exemption from drill was not the only privilege accorded them. They were all permitted to be non-commissioned officers, and two-thirds of them ranked sergeant or higher. The SEDs worked in all of Los Alamos' areas and activities, including the Trinity test, and some were involved in overseas operations on Tinian Island. The SEDs were so integral and important to the laboratory's operations that their discharge at the end of the war created another serious labor shortage at Los Alamos.

“**Monroe Messinger**, a young college graduate from Long Island, was in charge of the first contingent of 35 SEDs to arrive on the Hill. He was assigned to the "S" Site Explosives Division. Messinger received a BS degree from The City College of New York. While in college he joined the Army in the Enlisted Reserve in 1942. In mid-1943 his unit was called up. After his first few weeks of induction in Camp Upton on Long Island, he was transferred to Fort Hood in Texas for basic training.

“After a series of aptitude examinations, Monroe was transferred to the Army Specialized Training Program which was set up to assign students with certain abilities for further study. The ASTP assigned Monroe to The University of Illinois to study civil engineering and surveying. His knowledge of surveying led to his serving as a Teachers' Assistant. While at the University

of Illinois, he received an order to confer with a few men, who, as he was told, were Washington 'brass.' Their conversations revolved around his abilities in chemistry and photography. He asked why he was being questioned along these lines and was told that when the time came he might be informed.

"Late one night he was ordered to pack all his things including battle gear and was sent to the railroad station to board a special Pullman car. Monroe remembers that he was joined by two or three other young men whom he knew from the University. Other men, also students, were coming in from other areas to join them. When the train left the station there were about 20 men in the Pullman; none had the slightest idea of why they were there or where they were going! The conversation on the train dealt with various far-out guesses as to their final destination. Many of the ideas included secret spy work and/or being shipped overseas to infiltrate enemy lines. No one had an inkling of what the true nature of their jobs would be.

"The train arrived at Camp Claiborne, Louisiana, where the men stayed for about two weeks; several more were added with the final count now 35. No information about their status was revealed. By this time, however, their discussions among themselves led them to realize that all of them were college graduates, some with advanced degrees: Masters and PhDs, in scientific fields. No one, however, could predict what their journey was to accomplish.

"From Louisiana they boarded a train – destination unknown – and finally were deposited on a siding at Santa Fe, New Mexico during a snowstorm. A WAC driver picked them up in a bus for the final leg of their journey. They crossed the Rio Grande and climbed up dirt mountain roads with no protective barriers, in blinding conditions, to go up 7,000 feet above the Rio Grande. Many times the bus stalled and the men had to exit it to push it up.



"Finally the last lap of their journey was over when they reached the outer security tower of Los Alamos. The guard called in for permission to allow the bus to enter. Major Peer de Silva was in charge at that time, and the guard opened the gate leading to the Technical Area.

"J. Robert Oppenheimer was notified that the first Special Engineering Detachment had arrived; however, he had to be located from another area as he had not been told that the bus was on its way. The men remained outside or on the bus for a while, until Oppenheimer found space in an auditorium to meet with them. At that time he apologized to the group for keeping them waiting. He told them they were needed for a most important technical project. They had been sent for as an important and necessary addition to a civilian scientific group already in place. Their skills were needed on work connected with a 'New Era,' an 'Atomic Era.' Monroe felt that Oppenheimer was avoiding using the word 'bomb' at this time.

"Although Oppenheimer told them they were to be housed and treated like the civilian scientists, this was not to be. Their accommodations were poor. In fact, no adequate provision had been

made for them until their arrival. It wasn't until George Kistiakowsky, under whom the Detachment directly worked, complained to General Leslie Groves that it was impossible for the men to live under these conditions, which demanded also that they rise earlier to drill, and then be expected to do scientific work during a long day. He recommended that their living quarters be improved, and they not be required to train as arduously as before. Monroe, as a Sergeant, was put in charge of this, the first SED to work at Los Alamos. Many other detachments were to follow.

“General Leslie Groves was in charge of all the Army personnel, and as an engineer himself, took an interest in the scientific part of the project. Monroe recalls that once while he was inspecting a metal fragment under a microscope, General Groves came into the laboratory. While the General was inspecting another area, Monroe finished his work and removed the fragment from the slides. The General asked him if he could look into the eyepiece of the microscope and Monroe quickly agreed. Gen. Groves made a cursory viewing, then arose from the chair, patted Monroe on the shoulder and said: ‘Good work, soldier!’ Monroe, of course, never revealed to his superior that nothing was on the slide!

“A small group of SED personnel, with Monroe, was assigned to the Research and Explosives Testing Group under George Kistiakowsky. They were given White Badges, which allowed them in to the most secret areas of the Project. The testing was done in a hidden canyon on Site S. The work involved handling and firing high explosives molded around cylinders of various metallic compositions. High-speed air driven cameras designed to measure implosion were employed for data recording. Monroe worked on this site for about one and a half years; during that time, he was hurt in an accidental explosion and hospitalized. When he returned to duty, he was transferred to the Optics Unit under Dr. Julian Mack, which had the responsibility of working with high speed photographic equipment. This was the group which coordinated the pictures of the first test of an atomic explosion at the Trinity Test.”

That account jibes with my recollection of my experience. I will add just a few more words about my time in Illinois. While the Army is justifiably famous for inserting round pegs in square holes, temporarily assigning, under the auspices of the Army Specialized Training Program (ASTP), this chemist to study and teach surveying was not as curious a personnel move as it might at first seem to have been. I had learned surveying by taking a class in the subject at CCNY and by studying on my own. At Illinois I was part of a contingent focused on road building - civil engineering. I taught surveying in the role of a teaching assistant and I also assisted in curriculum development for the surveying program. I had paid my surveying dues by executing a survey of the CCNY campus and it was a reasonable step to extrapolate that methodology in tutoring Army students to learn the craft by surveying the Illinois campus in Champaign-Urbana. I enjoyed the teaching role, the passing friendships, and the many diversions available in the pleasant precincts of the college campus. It was fundamentally a tangent in my Army years, though.

Around the end of 1943, as the Atomic Heritage Foundation website explains, I returned to the main line when my unit and I were dispatched to Los Alamos. That was when I began functioning as a member of the Special Engineer Detachment (SED). I find it interesting that only 29% of the 475 SEDs were said to be college graduates, yet of the first contingent of 35

SEDs of which I had the signal honor of being the staff sergeant, all of us were at least college graduates and a good number had Master's or PhDs.

Of course that was an era when graduating from college was not the societal norm. Be that as it may, that first contingent of which I was a member apparently consisted of readily identifiable scientific and technical talent. As this juncture, I can't recall if I noted a distinction in the work assigned the members of my unit and that given to later units, but my sense is that there must have been a significant variation in the levels of expertise of that first unit and some of the later groups.

For a time, as the website suggests, my commander under the leadership of General Leslie R. Groves attempted to have my 35-man unit conduct ourselves as if we were ordinary soldiers. Mostly that meant a half-hour regimen of calisthenics in front of our barracks after reveille. There was enormous grumbling from my troops about that. It didn't take any of us very long to understand we were on a very special assignment, as the word "special" in our unit designation suggested. There was no way my guys would have been mistaken for ordinary GIs and Groves, J. Robert Oppenheimer and George Kistiakowsky fully grasped that fact. After a time the morning physical training simply disappeared as a part of our daily routine.

In addition to that omission we had a few positive perks, such as the ability to borrow a jeep and take it into the breathtakingly beautiful New Mexico countryside. Our cabin accommodations were pretty Spartan and the food we ate in the mess hall was absolutely nothing special, but at least it wasn't C-rations. Of course we were all about "the mission," and I do recall that almost all of us were very focused on getting our respective jobs done.

You know, when I entered the enlisted reserve, I expected that would be a path to officer's candidate school. That didn't happen and I more or less blame General Groves. Early on, he issued an edict that no one from Los Alamos would be sent to officer's training school because of the time it would have taken from the mission.

It took a while before any of us grasped the particular goal of the mission. While at first we were told we would be working on a "development," I knew enough science to be pretty certain that the heart of our mission was figuring out how to release energy from the atom for the purpose of creating a weapon.

There were frequent talks by Oppenheimer and others, and little by little I gained a fairly clear conceptual understanding of what the Army was attempting to accomplish on this approximately 7000-foot plateau just about everyone referred to as *The Hill*.

There were two hypothetical methods of triggering a nuclear release. One (the gun-type method) involved firing one material into another to create a fission reaction. This approach involved utilizing difficult to obtain plutonium or uranium. There were technical problems with this approach and it ultimately proved to not be a successful methodology for building an efficient, weaponized nuclear fission reaction. Notwithstanding its limitations, it was the design of the first atomic bomb, the uranium gun-type *Little Boy*, which was dropped on Hiroshima by the aircraft named *Enola Gay* after the mother of the pilot, Col. Paul Tibbets.

The other approach for triggering nuclear fission, the approach which I worked on, involved creating an implosion. The implosion methodology used explosives to crush a subcritical sphere of fissile material into a smaller and denser form. When the fissile atoms are compressed through an explosive reaction, the rate of neutron capture increases, and the mass becomes a critical mass. The metal needs to travel only a very short distance, so the critical mass is assembled in much less time than it would take with the gun method.

After more than a half year spent on preliminary exploration of the gun-type and the implosion approaches, Oppenheimer, the brilliant physicist in charge of the central Los Alamos component of the Manhattan Project, concluded by July 1944 that fissionable plutonium could not be used in a gun-type weapon design. Therefore, he made the decision to opt for an implosion design in the plutonium-based weapons.

The first atom bomb explosion, at Hiroshima on August 6, 1945, was, nonetheless, a weapon which utilized the less efficient gun-type design. That weapon had a charge fired into not plutonium but uranium. My team, though, worked on the plutonium fission process that was first tested at the Trinity Site on July 16, 1945, and then explosively delivered to Nagasaki on August 9, 1945.

The accelerated effort on an implosion design, code-named *Fat Man*, began in August 1944 when Oppenheimer implemented a sweeping reorganization of the Los Alamos laboratory to focus on implosion. Two new groups were created at Los Alamos to develop the implosion weapon, X (for “explosives”) Division headed by George Kistiakowsky and G (for “gadget”) Division under Robert Bacher.

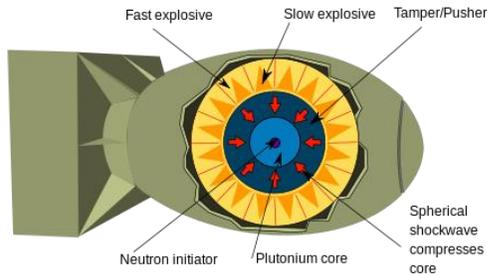
The new implosion design used explosive lenses to focus a sub-atomic explosion onto a spherical shape using a combination of both slow and fast high explosives. Alternating the faster- and slower-burning explosives in a carefully calculated configuration produced a compressive wave following a simultaneous detonation.

This so-called “explosive lens” focused the shock waves inward with enough force to rapidly compress the plutonium core to several times its original density. This reduced the size of a critical mass required for fission. It also activated a small neutron source at the center of the core, which assured that the chain reaction began in earnest at the right moment. Such a complicated process required research and experimentation in engineering and hydrodynamics before a practical design could be developed. The entire Los Alamos Laboratory was reorganized in August 1944 to focus on design of a workable implosion bomb.

I was assigned to a lab group focused on crafting high explosive charges that brought fissionable material to the desired critical point where fission occurred. The lenses were not optical lenses, which is how that word is generally used, but shaped explosives which channeled an explosive wave so that it interacted with other explosive lenses to create symmetrical implosion, which effected the fission reaction.

The lenses had to be carefully crafted so that they detonated in concert to create the symmetrical implosive wave. For many months, I was involved in the meticulous chemical lab work to make

the combination of explosive chemicals to produce the optimal symmetrical implosion. I was carrying out instructions in the lab, which for some reason was called “a set” in Los Alamos. I wasn't charting the course, yet I had to focus intently so as to carefully blend explosive chemicals that would give us the best implosion.



This is a drawing of an implosion type bomb device like the one I worked on in the latter half of 1944 on *The Hill*. There was the lab work indoors in the set, and then there was a good deal of time spent getting into vehicles with my young colleagues and driving into the desert, so that we could set off smaller versions of various explosive combinations, while simultaneously photographing the explosion in order to ascertain if the

desired implosive symmetry was being achieved.

This is a photograph that I have in my possession, but which also ran in the *Atomic Heritage Foundation* website in correlation with the paragraphs detailing my role in the SED. That's me on the far right of the picture. It was a delight to get out of the stuffy lab and into the gorgeous New Mexico landscape. I liked that part of it. The man in white was my friend Dan, who was the only civilian in the picture. These expeditions to test various explosive packages sometime took up a very good part of the day. Riding around New Mexico was a pleasure. The testing activity itself was a little more problematic. The tests were conducted in the vicinity of Sandia, New Mexico.



I organized the physical setting up of a great many explosions over the course of many months, and I actually handled the detonation process myself many times. When I was triggering the explosion myself, it was a piece of cake; I operated with full confidence and moved unerringly. However, when I was in charge of the explosion detail, but did not actually carry out the detonation, did not actually do a hands-on execution of the critical act, I found myself becoming progressively more nervous.

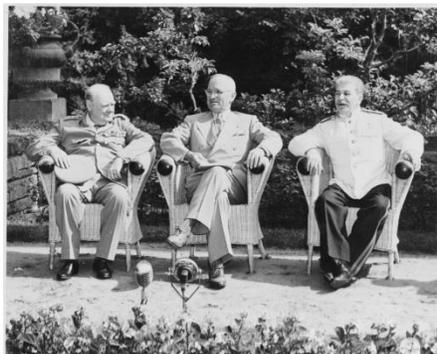


Before long, I could not help but be aware that I was experiencing “the shakes” while the somewhat complicated detonation process was being conducted by other agents. It wasn't long after I was aware of my nervous reaction that my fellow SEDs and subsequently my supervising officers were aware of my little problem. Contemporaneous with my stress reaction, there was an incident in which an accidental explosion propelled me from the jeep in which I was riding. The injuries were not major, but I was hurt. For both the stress reaction and the minor injury, I was transported to the Bruns Military Hospital in

Santa Fe. I was treated and tested, and then the attending physician wrote a note telling the Los Alamos commanders I should be assigned to a different duty regimen.

I had learned a good deal of photography in my 24 years, so I became involved with building, perfecting, tinkering with the high-speed photography equipment which captured the speed and the shape of the various explosions we were conducting in order to find the best chemical package for the detonation process of the nuclear fission weapon. I understood the photographic process and since I had been working on the explosions for more than a year, I already had a good grasp of how the rotating camera sleeve functioned.

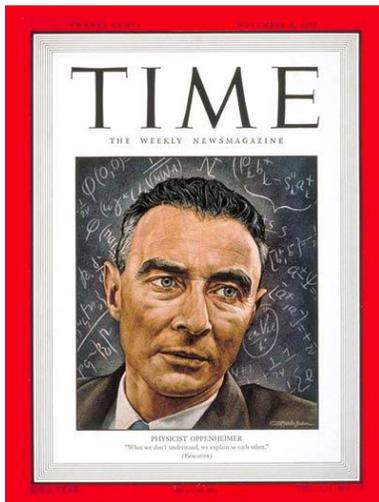
As was the case with the explosive combinations, the photographic equipment involved a combination; in this case, a combination of optical lenses artfully arranged to record all the visual information the weapon creation team required in order to guide their process. The “shakes” ended for me and I settled in to another six months of being a “good soldier” on the team that was fabricating the bomb that would be dropped on the city of Nagasaki, Japan, on August 9, 1945.



My stress during the explosive testing process was most likely not simply a consequence of the complexity and possible dangerousness of the explosive process. There was also the anxiety we all felt at Los Alamos about accomplishing our mission in order to end the war, which, though our side was now clearly winning, was nonetheless costing a great many lives every day. The Potsdam Conference which would bring together the leaders of the U.S., Great Britain and the Soviet Union was looming on the horizon throughout the first half of 1945. We were constantly

being encouraged to proceed expeditiously, so that President Roosevelt could claim ownership of a previously unimaginable weapon.

Of course President Roosevelt died in April of 1945, so then it was, “Get it done so President Truman can use the weapon for leverage, tactical advantage, in his talks with Churchill and Stalin.” We later learned that Soviet spies, including David Greenglass and Klaus Fuchs, with whom I had worked, had a good handle on what was going on in New Mexico. But from our vantage in early 1945, we were at the point of the spear of America's war effort and what we were doing daily might well have a dramatic effect on the last stages of the war and on the peace to come. Actually, that's what happened. Nonetheless, I don't think our being close to having an operational weapon was any secret to Joseph Stalin.



Robert Oppenheimer was a man, whose brilliance was clearly manifest. After listening to him for a few minutes you could tell that this was not an ordinary human. He frequently gave us what I called “rah, rah” talks, which is a pretty appropriate label for what we heard in the auditorium. They were motivational talks focusing on the urgency of our task and the crucial role each of us played in the war effort.

Oppenheimer was married to Kitty, a botanist. With all the other leaders of the Los Alamos branch of the Manhattan Project effort, the Oppenheims lived in what was called “Bathtub Row,” because the homes, left over from the site's days as the Los Alamos Ranch School, were the only buildings thereabouts that had bathtubs.

Oppenheimer was a famous smoker, pipe and cigarettes. If you saw his handsome, rail-thin form he would almost certainly be clutching either a pipe stem or a cigarette. The unfortunate habit proved to be the end of him inasmuch as he died of throat cancer in 1967.

Kitty Oppenheimer was a quite public drinker. While I was never invited to the many parties at the Oppenheimer place on Bathtub Row (it became an actual street name), I talked to a sufficient number of people who did go to understand that Kitty Oppenheimer was definitely a party girl.



William “Deak” Parsons was a Navy man and Oppenheimer's second in command. He is best known for being the weaponeer on the *Enola Gay*. To avoid possibility of a nuclear explosion if the aircraft crashed and burned on takeoff, Parsons decided to arm the bomb in flight. While the aircraft was en route to Hiroshima, Parsons climbed into the cramped and dark bomb bay, and inserted the powder charge and detonator. He was awarded the Silver Star for his part in the mission.

While I most definitely would never claim to have been a friend of the Oppenheims, or the other leaders like George Kistiakowsky or Parsons, I did exchange pleasantries with all of them, and with the

elegant Oppenheimer I had a little more contact outside the lab.

The Army kept a stable at *The Hill* and we, officers and enlisted men, were allowed to keep a horse in the Army stable, if we were able to acquire a steed. I developed a small passion for horseback riding while I was resident in New Mexico and for very little money, another G.I and I were able to buy a horse from a Native American man who lived not far from our Manhattan Project site.

We named the horse *Silver*, probably in imitation of the Lone Ranger, a popular cultural icon when we were growing up. When I had free time, I would saddle my horse and ride through the scrub country around Los Alamos. As it happened, Oppenheimer stabled his horse right next to ours, which was an interesting phenomenon: two New York Jewish guys engaged - in very different ways - in building the atom bomb, and each, in his free time, riding through New Mexico a little like a cowboy. Once or twice, I found myself near the physicist as we guided our mounts through a bit of the countryside.

There was horseback riding for diversion. There were a few trips on weekends to hit the bars of Santa Fe. On those excursions I was the designated driver, for while I might have a beer or two, I did not drink whiskey and was invariably in the best shape of my group to be able to safely navigate the ride back to Los Alamos. There was one trip to Juarez, Mexico, an adventure in which my buddies got into a fight in a bar and we all urgently hightailed it back to our vehicle and then across the border to safety. There were movies on *The Hill*, but I mostly watched the *Movietone* news of the war when I went into that little picture show theater. So much for fun during my time with the Manhattan Project.

With one big exception: exploring New Mexico. I was really drawn to Native American culture, and when I was able to borrow a jeep, I would often go off to Native American sites like Chaco Canyon or the nearby San Ildefonso Pueblo or the Santa Clara Pueblo. I was a curious young man and I marveled at how little water there was available at the pueblo sites that had been the centers of Native American civilization in this part of the southwest. I was aware that there might have been more water a millennium or so earlier. But while I had very imperfect comprehension of the ability of native peoples to live in harmony with what they had, what I saw of their culture did give me the conviction that our native ancestors in this land undoubtedly possessed ecological wisdom which does not come easily to us.

I loved what I saw of what remained of the Native American presence in this part of North America. I was also deeply captured by the beauty of the landscape of northern New Mexico. The land around Los Alamos and to the north is simply glorious country. I was consistently stunned by the beauty of the Sangre de Cristo Mountains and so much else in the northern part of the state. Buddies and I would frequently grab a jeep, perhaps a case of beer, and head into Valles de Caldera, now the Valle Caldera National Preserve, an ancient volcanic landscape that is now a natural wonderland. Of course I was there so long ago, it was then simply called the Valle Grande.



I loved being off with my buddies and sometimes alone in the gorgeous New Mexican country. In addition to the satisfactions that came with doing an important job for the war effort, I reaped great pleasure from simply being in that country at that point in my life.

But my associates and I were doing an important job and we never truly forgot that responsibility. Much was made later about Oppenheimer's ambivalence regarding atomic weapons. I have no doubt he was deeply conflicted. What thoughtful human would not be? What we worked on was a weapon that manifestly has the power to bring about something very close to our biblical imaginings of *Armageddon*.

During his “rah rah” talks, Oppenheimer would almost always observe that it was deeply lamentable that atomic energy was being explored in order to build a weapon of mass destruction. He would invariably go on to say that he was fully convinced that what we were doing would greatly reduce death and suffering, since he shared the then consensus view that the alternative to the atomic bombings was a landing in Japan, an eventuality which it was widely predicted would cause a horrendous loss of American and Japanese lives.

My own commitment to doing what I could to help make the bomb was intensified by my perception of what was occurring across the oceans. Japanese atrocities in many locations had been repeatedly brought to our attention. The enormity of Nazi evil was actually a little less clear until Germany was defeated in the spring of 1945. I, however, had read early reports of the horrors of the concentration camps in the Army's *Stars and Stripes*. As a Jew, I was very conscious of being involved on a major front on the world's struggle to vanquish not only an evil power but a power that had reserved its greatest evil for humans of my cultural identity.

Because Jewish-Americans so prize education, my segment of the Special Engineer Detachment had a large number of young Jewish scientists. We talked a great deal about what was happening in Europe and the Pacific, and the nightmarish reports coming back to us certainly added additional fuel to our motivation to finish our job.

The summer of 1945 was a hectic, stressful time for all of us at Los Alamos. Our implosion device was famously tested at the Trinity site on July 6. The test was conducted in the Jornada del Muerto desert about 35 miles southeast of Socorro, New Mexico on what was then the USAAF Alamogordo Bombing and Gunnery Range.



I was one of several hundred people from *The Hill* who were bused to the Trinity Site and then witnessed the dawn of the atomic age. I stood and peered through sunglasses over a wall of sandbags in a kind of bunker about seven miles from ground zero. There was a countdown and then an astonishing sequence of light and sound. The roar of the shock wave took 40 seconds to reach us. You know, I had been engaging in explosive activity for two years, yet all of that now seemed liked no more than a children's game in comparison to the monumental power of the real thing. It's been more than 70 years now and I can't recall what I felt. I presume it was deep awe. I suspect the awe and the images, like the one you're looking at, stayed in my conscious mind for a very long time. All the work, all the urgency. finally came into crystalline focus.



Oppenheimer and Groves were the foremost leaders of our Los Alamos effort. Oppenheimer was the scientist, Groves the administrator. They were both key players in what we, for better and worse, achieved from 1943 to the second half of 1945. Here they are—Oppenheimer in a suit and fedora, Groves in protective overshoes—inspecting what remained at ground-zero. The bomb was set off in a 100-foot tower and it released the energy equivalent of 20,000 tons of TNT. It was an altogether successful test and it led to a shift to the implosion method in the design of nuclear weapons.

A month later the *Enola Gay*, with Admiral Parsons in the bomb bay, dropped the bomb that utilized gun-type detonation. Three days after that, Nagasaki was devastated by the implosion device on which I had spent two years of my life. During the beginning of the second week of August in 1945, there was a very festive atmosphere on *The Hill*.

There was the near constant rat-a-tat of firecrackers and a good deal of beer was poured at a great many parties. We were all certainly aware that what we had wrought was most certainly not an unequivocally good development. Nonetheless, the war was ending. The SED had played a major role in bringing the war to a successful conclusion, and I believed then, as I do now, that dropping the bomb was a necessary evil, one that led to the saving of more lives than it took. The

historians I've read since generally corroborate that view. Nevertheless, what we did in Los Alamos from 1943 to August 1945 was profoundly unsettling in so many ways.

I would be out of the Army and on my way to a temporary stop at the Brooklyn Navy Yard by the end of 1945. Before I left the service, I, along with a number of Los Alamos's staff, was transported on a brief but very far trip to Japan. We flew in to Tokyo, and then flew to Hiroshima for a brief exploration of the bombs effects. Then we returned to Tokyo and were bussed to a couple of Japanese technical sites to investigate their high-speed photography. After those stops, we were bussed back to the airport for the long return.

Los Alamos would stay with me. I did important work in an important effort. It was a creative adventure, one which has remained vivid in my memory and imagination for more than seven decades.