THE MANHATTAN PROJECT ON THE MOVE

A paragon of efficiency, Groves used the train as his mobile office and his roomette became the temporary headquarters of the Manhattan Project. To cram more work into a day, an aide would accompany him partway while he dictated letters, gave instructions, and kept on top of his busy schedule. After an hour or two the assistant would get off, take another train back to the office, send off the letters, file the reports, and schedule his future appointments.

Sometimes an aide might travel to meet him as he was returning. If he had been in Los Alamos an aide might meet the General's train in Chicago, and return with him the rest of the way to Washington, briefing him on developments while he was gone, bringing him reports, mail, and news from the office. By the time the train pulled into Union Station, many hours of work had been accomplished. When he could, Groves used Sundays to travel or traveled overnight, arriving at his destination in the morning fresh and ready for action.

— ROBERT S. NORRIS

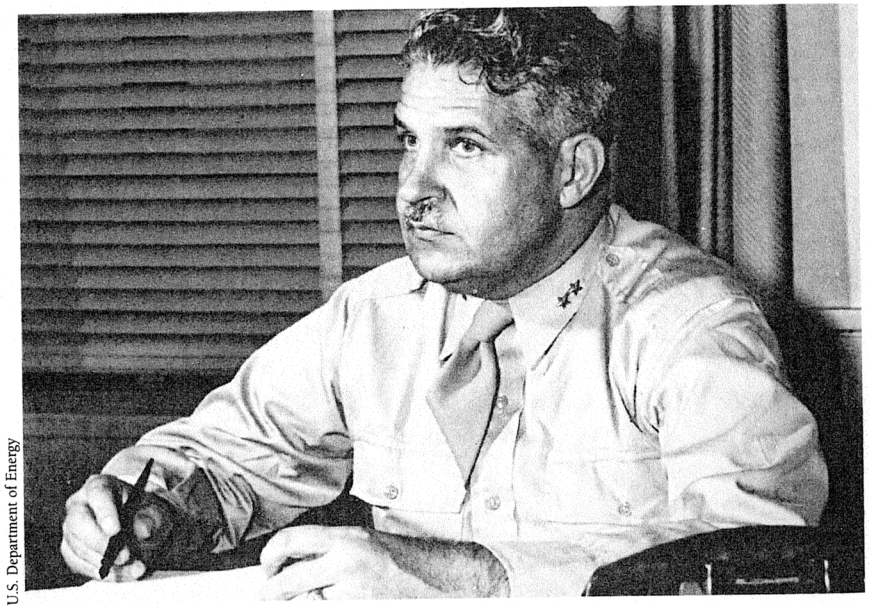
"When you looked at Captain Groves, a little alarm bell rang 'Caution'"

William Whipple, a member of the Army Corps of Engineers, recalls his impressions of General Leslie R. Groves, with whom he worked before Groves was selected as head of the Manhattan Engineer District.

From *Racing for the Bomb*
BY ROBERT S. NORRIS

Another young engineer at the time had an opportunity to observe

Groves and later made some telling comments about his character. William Whipple had several relatives who had gone to West Point. He graduated third in the class of 1930, and, after studying as a Rhodes Scholar at Oxford, served with the corps. While at the Omaha district office he had contact with Groves, whom he remembered as "large, tough, and very intelligent"; although "only a captain, no one took this man lightly. I was careful not to have any trouble whatsoever with him. When you looked at Captain Groves, a little alarm bell rang 'Caution' in your brain." He did not resort "to the usual ploys and swaggering to magnify his own importance. He gave the impression of a man of great latent power, who was biding his time. He was not rude; but neither did he go out of his way to be friendly. He was obviously highly intelligent. His subsequent career did not astonish me."



U.S. Department of Energy

General Leslie R. Groves oversaw all aspects of the Manhattan Project.

Decisive, Confident, and Cool

From an interview in the October 1945 issue of Collier's *magazine, General Groves emerges as an extraordinarily decisive person who did not harbor self-doubts.*

From "The Man Who Made Manhattan"
BY ROBERT DEVORE

In the days when he was building Army camps, Groves insisted upon quick decisions. It was a standing rule that all questions on the sites had to be answered in twenty-four hours or an explanation given. In Manhattan, Groves cut the time for decisions down to one hour or less—even for the most complicated ones. He can remember only one occasion when it took longer to reach a decision. That was when they had to put up at Hanford Engineer Works "things" (someday the world may know the secret of those "things") that they couldn't be sure would be needed. They only knew that they either were building essential parts of the plant, or, said Groves, "monuments to a bad guess."

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You can't explain General Groves by the little things that keep up the morale of many men. He never lost faith in his ability to succeed. He and his friends will tell you that quite simply and without pretension. His friends would ask him how he bore his responsibilities. He would grin and reply, "If I can't do the job, no one man can."

"My emotional graph is a straight line," Groves told me. "I never worried. This job would never have been done if I had. I never had any doubts. Not having any doubts, I could not feel very surprised or elated by our success."

> "If I can't do the job, no one man can."
>
> — GENERAL LESLIE R. GROVES

A BUREAUCRATIC WARRIOR OF THE FIRST RANK

If General Groves walked into your office and wanted something it was virtually impossible to say no, as War Production Board Director Donald Nelson quickly learned. Before taking over the Manhattan Project, Groves spent the previous two years grappling with the priority system. Resources such as steel, copper, and dozens of other scarce items were allocated to projects according to their rating, with AAA the highest. The competition for resources was fierce and success or failure often depended on what rating your project received.

On September 19, 1942, Groves marched into Donald Nelson's office at the War Production Board with a letter to himself in hand, lacking only Nelson's signature. The letter said that Director Nelson agreed to provide the Manhattan District a rating of AAA, or any lesser rating that Groves might determine. Nelson knew nothing about the Manhattan Project, had never laid eyes on Groves, and initially refused to sign.

At this point Groves applied a hammerlock on Nelson and told him he would recommend to Secretary of War Stimson that the Project be abandoned on the grounds that the Director of the War Production Board refused to carry out the wishes of President Roosevelt. At this point Nelson demanded to sign and there were no further problems concerning priorities for the Manhattan Project for the remainder of the war.

— ROBERT S. NORRIS

"The biggest S.O.B."

Colonel Kenneth D. Nichols was District Engineer of the Manhattan Engineer District beginning in August 1943. From his office at Oak Ridge, Tennessee, he oversaw the construction and operation of all MED facilities. Nichols worked directly for Groves and had this review of his boss.

From *The Road to Trinity*
BY COLONEL KENNETH D. NICHOLS

First, General Groves is the biggest S.O.B. I have ever worked for. He is most demanding. He is most critical. He is always a driver, never a praiser. He is abrasive and sarcastic. He disregards all normal organizational channels. He is extremely intelligent. He has the guts to make timely, difficult decisions. He is the most egotistical man I know. He knows he is right and so sticks by his decision. He abounds with energy and expects everyone to work as hard, or even harder, than he does... if I had to do my part of the atomic bomb project over again and had the privilege of picking my boss, I would pick General Groves.

"Not right—do it again."

Colonel John Lansdale Jr. was a special assisant to General Groves in charge of all security and intelligence matters. He shared his impressions of Groves in his memoirs.

From "Military Service"
BY COLONEL JOHN LANSDALE JR.

It is true that General Groves, like many of us, had a very adequate appreciation of his own abilities. The problem was he had no hesitation in letting others know of his own high opinion of himself and his abilities. This is the origin of the feeling that he was arrogant and the reason why many people disliked him. However, I know of no one who worked closely with him who did not have the highest regard for his intellectual abilities and his ability to get things done. He had an uncanny intuition for the right answer. I can remember more than one occasion when he returned something I wrote for him to sign with the notation: "Not right—do it again." On one particularly frustrating case I asked him what he wanted to say. His answer was "If I knew I would have written it. I just know this is not right." The adverse comment comes primarily from those who did not know him well or who had little contact with him. The only side of the General that they saw was what they regarded as his arrogant disclosure of his own high abilities.

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General Groves was a man of extraordinary ability and capacity to get things done. Unfortunately, it took more contact with him than most people had to overcome a first bad impression. He was in fact the only person I have known who was every bit as good as he thought he was. He had intelligence, he had good judgment of people, he had extraordinary perceptiveness and an intuitive instinct for the right answer. In addition to this, he had a sort of catalytic effect on people. Most of us working with him performed better than our intrinsic abilities indicated.

The Most Compelling Man

In this excerpt, Jennet Conant describes Robert Oppenheimer through the eyes of two women who were central figures in his life. One was Dorothy McKibbin, who has been called the "Gatekeeper to Los Alamos." All new arrivals to Los Alamos were instructed to first proceed to her office in Santa Fe, at 109 East Palace Street, where McKibbin arranged for housing and directed them up to the laboratory. The other was his secretary, Priscilla Greene.

From *109 East Palace*
By Jennet Conant

There was something about the man, that was all there was to it. He was six feet tall and very slender, and had on a trench coat and a porkpie hat, which he wore at a rakish angle, so that people, women in particular, could not help taking notice. His face had a refined quality, with closely cropped black curls framing high cheekbones and startling blue eyes that radiated a strange intensity. He stuck out in Santa Fe like a sore thumb. But it was not his unusual looks, his city clothes, or even the pipe that he waved about in one hand while talking that caught Dorothy McKibbin's attention. It was something in his bearing, the way he walked on the balls of his feet, which "gave the impression he was hardly touching the ground."

Someone might have mentioned his name when they were introduced, not that it would have meant anything to her at the time. She had done little more than shake his hand, but she felt instinctively that their meeting was about to change everything about her quiet life. She had never intended to make a decision so quickly. She had only planned to come in for an interview, but she was so struck by the man's compelling personality that she blurted out the words "I'll take the job" before she had any idea what she was saying. In less than a minute, she had agreed to go to work for a complete stranger, for some kind of government project no one in Santa Fe seemed to know a thing about, doing God only knew what. She was forty-five, a widow with a twelve-year-old son, and flustered as a schoolgirl.

*

At his request, she plunged herself into the clandestine wartime project. She did not have the slightest idea what he was doing in the high country, or what would be asked of her. She did not care, she wrote, "if he was digging trenches to put in a new road." He was the most compelling man she had ever met, and she would have done anything to be associated with him and his work. Perhaps the desert had worked its cure on her a second time, and she was strong again. Her heart, like her scarred lungs, had healed. Maybe after so many years the town had become a bit too small, and she felt the stirrings of an old restlessness. It may also have been that her father's spirit of adventure ran deeper in her than she knew, and she was ready to see what else life held in store for her. Oppenheimer asked her to start right away, and she agreed.

To people in town, she remained the same sweet widow, working at a nondescript office around the corner from her old job and spending all her free time with her boy. She was told to attract as little attention to herself and her new position as possible, and she did as she was asked, sticking carefully to the daily rhythms of her previous life. No one, not even her son, was aware of what she was really doing. To people inside the project, however, she became Oppenheimer's loyal recruit, his most inspired hire, and the indispensable head of the Santa Fe office. For the next twenty-seven months, she would lead a double life, serving as their confidante, conduit, and only reliable link to the outside. She would come to know everyone involved in the project and virtually everything about it, except exactly what they were making, and even that she would guess in time. One of the few civilians with security clearance, she was on call night and day. As she soon discovered, she would learn to live with that one word—"security"—uppermost in her thoughts at all times. Everything was ruled by "secrecy, the conditions of secrecy," she wrote. "One's life changed. One could not speak of what one was doing, not even in the smallest detail, to one's family or friends. Every scrap of paper used in the office was burned every evening before closing." This was a well-known wartime practice, but part of a whole new world to her.

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"We were all completely under his spell."

Standing a few feet away in the lobby of La Fonda, Oppenheimer's twenty-three-year-old secretary, Priscilla Greene, watched him work his magic on Dorothy McKibbin. The meeting could not have lasted more than a few minutes, but she had no doubt of the outcome. Dorothy appeared to be bright, lively, and intelligent, with rosy cheeks and fine-boned features topped by a mass of curls. She had an engaging manner, a gentle, assured way about her that was very attractive. Oppenheimer would like her, and there was no question of her liking him. In the short time she had worked for him, Greene had observed that it was the rare individual who was not beguiled by his Byronic looks, quick mind, and grave, courteous manner. "I don't think he really interviewed her. He just offered her the job," she recalled, "and she didn't hesitate for a minute to accept."

Priscilla Greene understood this all too well. She had fallen for Oppenheimer almost as quickly as Dorothy McKibbin had. Scarcely a year earlier, in February 1942, Greene had landed a job working for Ernest Lawrence, a Nobel Prize–winning physicist at the University of California at Berkeley. Not long after she had started, Lawrence had doubled her workload by loaning her out on a part-time basis to his good friend "Oppie," yet another tall, handsome, flirtatious physicist. Oppenheimer (who had picked up the nickname "Opje" during a postdoctoral stint in Europe and would sign personal letters that way for the rest of his life, though the nickname eventually became Americanized as "Oppie") was head of Berkeley's theoretical physics department and had an office in Le Conte Hall, the same administrative building where Lawrence worked. Oppenheimer had been asked to hold a special wartime science conference that summer and needed a hand getting it organized. As it turned out, he had needed a lot of help, and Greene was delighted to find herself in the employ of such a dynamic figure.

At the time, Oppenheimer was thirty-seven, and had a reputation on Berkeley's campus as an inspiring lecturer. He was also known to be impatient, arrogant, and possessed of a razor-sharp tongue—and as a young teacher had been infamous for terrorizing anyone in his classroom he found plodding, dull-witted, or in any way crass. He was considered one of the very best interpreters of mathematical theory, and study with him guaranteed the ambitious a fast-track career in theoretical physics. Many

people were intimidated by him, though those who knew him better claimed that he had mellowed in the decade since he had come to Berkeley in 1929 after a sojourn in Europe, where he had studied with a small colony of world-class physicists, including James Franck and Einstein's friend Paul Ehrenfast [Ehrenfest], and been a recognized participant in the quantum theory revolution. But there was always the sense with Oppenheimer that the mediocre offended him and that he did not regard the denizens of a West Coast university as quite his equals. John Manley, a refreshingly low-key experimental physicist at the University of Illinois whom Compton assigned to assist Oppie on the wartime physics project, recalled that when he met Oppenheimer for the first time, he was "somewhat frightened of his evident erudition" and "air of detachment from the affairs of ordinary mortals."

Oppenheimer could also be dismissive to the point of rudeness. He had a habit of interrupting people mid-sentence by nodding and saying quickly, in a slightly affected Germanic accent, "*Ja, ja, ja*" as though he understood exactly what they were thinking and where their argument was headed—an argument he would then proceed to rip apart in brutal fashion. After witnessing one such performance, Enrico Fermi, who was every bit as agile if not more so, observed that Oppie's cleverness sometimes allowed him to sound far more knowledgeable about a subject than he might be in practice. But with his magnetic presence, astonishing quickness of mind, and wide range of intellectual interests, Oppenheimer was an exciting figure to be around, and students and colleagues were drawn to him as much by his great capacity as a physicist as by his immense charm. "We were all completely under his spell," said Philip Morrison, one of the brightest of the young physicists who studied with him. "He was enormously impressive. There was no one like him."

His allure extended well beyond the lecture hall. Oppenheimer had the powerful charisma of those who know from birth that they are especially gifted. He expected to dazzle—the implacable blue eyes said as much in a glance. It was his mind that burned so brightly, with an intensity that he brought into every room, every relationship, every conversation, so that he somehow managed to invest even an offhand gesture or remark with some extra meaning or significance. Everyone wanted to be initiated into his inner circle. Even his younger brother, an astute observer of the Oppie effect, was not immune. "He wanted everything and everyone to be spe-

cial and his enthusiasms communicated themselves and made these people feel special," said Frank, who was eight years his junior and idolized his talented brother, following him into physics even though he knew he would never be in the same league. "He couldn't be humdrum. He would even work up these enthusiasms for a brand of cigarettes, even elevating them to something special. His sunsets were always the best."

What drew people to Oppenheimer was that he was so very serious and he took those he collected around him so seriously, endowing them with rare qualities and facets they did not know they possessed. He would focus on them suddenly and relentlessly, showering them with phone calls, letters, favors, and unexpected, generous gifts. His attention could be unnerving, but at the same time exhilarating and gratifying. He was far from perfect, but his flaws, like his dark moods and savage sarcasm, were part of his fascination. He liked to show off, but the performance disguised a deep well of melancholy and self-loathing he carried with him from his cosseted New York childhood. It was the loneliness of a prodigy. He was named for his father, Julius Oppenheimer, a wealthy textile importer, but was always known simply as Robert or Bob until his early twenties, when he felt compelled to embellish his name, perhaps in the belief that "J. Robert Oppenheimer" sounded more distinguished. He suffered from serious bouts of depression as a student first at Harvard, and then later at Cavendish Laboratories in Cambridge, England, and even flirted with the idea of suicide. After failing to find satisfaction in psychiatry—one high-priced London doctor diagnosed his condition as "dementia praecox" and a "hopeless case"—he immersed himself in Eastern mysticism and became a fervent admirer of the Bhagavad Gita, the seven-hundred-stanza Hindu devotional poem, which he read in the original, after studying Sanskrit for that purpose. For a scientist, his search for wisdom in religion, philosophy, and politics was so unusual as to be considered "bohemian." While it got him into trouble at Caltech (the California Institute of Technology), where he also taught, and the Nobel Prize–winning physicist Robert Millikan refused him a promotion on the grounds that he was too much of a dilettante, at Berkeley it only added to his appeal.

His style was to be the tormented genius, and his spare frame and angular face reflected his ascetic character, as if his desire to engage every moment fully and completely were consuming his inner resources. He had been a delicate child, and when he pushed himself too hard, he became almost skeletal, resembling a fifteenth-century portrait of a saint with eyes peering out of a hollowed face. There was something terribly vulnerable about him—a certain innocence, an idealized view of life that was only saved from being adolescent by the sheer force of his intellect—that touched both sexes. His students all adored him, and he inspired the kind of devoted following which led some jealous colleagues to sneer that it was more a cult of personality, that Oppenheimer was the high priest of his own posse. He was trailed everywhere by a tight, talented group of graduate students, the stars of their class, and Greene learned to easily identify them by their pompous attempts to imitate Oppenheimer's elegant speech, gestures, and highbrow allusions. She sometimes had the impression that Oppie was conscious of his ability to enthrall. It was no accident that people wanted to help him and would go to extraordinary lengths to earn his approbation.

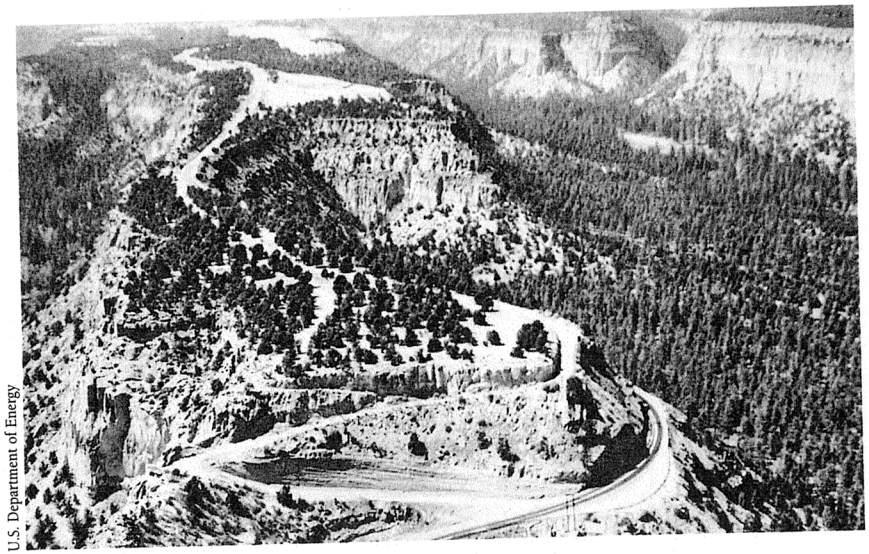
Greene, who had graduated from Berkeley the previous year and still wore her long, blond hair loose on her shoulders like a schoolgirl, found him "unbelievably charming and gracious." His voice was one of the most mesmerizing things about him. When he singled her out for attention, he was "so warm and enveloping," he made her feel like the most pleasing guest at the party. "When he came into a room, my most characteristic memory of him is [his] coming across to shake your hand, with a slight tilt and a marvelous smile," she said. "And what secretary wasn't going to be absolutely overwhelmed by somebody who, in the middle of a letter—we all smoked in those days—whipped his lighter out of his pocket and lighted your cigarette while you were taking dictation and he was talking."

Compared to Ernest Lawrence, Oppenheimer was a person of enormous culture and education. Lawrence was celebrated for his invention of the cyclotron, the powerful atom smasher, but was proletarian in his pursuits outside of physics. Oppie was from a wealthy New York family, wore good suits, and tooled around campus in a Packard roadster he nicknamed "Garuda," in honor of the Sanskrit messenger to the gods. He spoke six languages, quoted poetry in the course of everyday conversation, and could be snobbish about music and art. "Bach, Mozart and Beethoven were acceptable," noted his protégé, Robert Serber. "Ditto the Impressionists." He had fierce opinions when it came to food and wine. "Martinis had to be strong. Coffee had to be black.... Steak had to be rare," listed the British physicist Rudolf Peierls. Once, Oppenheimer took Peierls

and a group of graduate students out to a steak restaurant for dinner. He proceeded to order his entrée rare, and this was echoed by everyone in turn until the last student at the table requested his, "Well done." Oppie looked at him for a moment and said, "Why don't you have fish?"

He spent a great deal of time cultivating people and interests that had nothing to do with science, and even Greene could not help being struck by the wide variety of his correspondence. One of the first things he asked her to do was take down a letter to a San Francisco museum to which he was planning to give a painting by Van Gogh, which he had inherited from his father. He had pronounced the artist's name in the guttural German style with lots of breath—"Van Gaaaccchhh"—which was beyond her, and in the end he had to spell it. "The people he thought about, wrote about, and talked to, he had such a wonderful *feeling* for, that you really wanted to be part of whatever he was doing," she said. "It was very hard to resist him."

His personal life was equally flamboyant, and a subject of much comment. Two years earlier in 1940, he had shocked friends and colleagues by marrying Kitty Puening after a whirlwind romance, and their son Peter had been born so soon afterward that Oppie had attempted to jokingly defuse the scandal by dubbing him "Pronto." Kitty was dramatic, dark-haired, and petite; claimed to be a German princess; and was prone to putting on airs. She had also been married three times before the age of twenty-nine and had been with her previous husband for less than a year when Oppie met her at a Pasadena garden party. It was characteristic of Oppie that he would fall for someone so exotic, utterly unsuitable, and beyond reach as Kitty, who, among her many problems, was at the time another man's wife. Oppenheimer, who was besotted, called her "Golden." His close-knit circle was less charitable, considering the poetic young wunderkind—who was so bereft after his mother's death in 1930 that he described himself to a friend as "the loneliest man in the world"—easy prey for a calculating woman. The faculty wives who had doted on Oppie, who was known for bringing flowers to dinner, took an instant dislike to her. After his marriage, many of his peers felt he became more socially ambitious than ever, as though seeking to remove himself from the dreary confines of academic life, and came to regard him with a mixture of envy and resentment. To Greene, however, he seemed even more of a romantic figure. While she would never have admitted it at the time, she was, she said, "more than a little in love" with her boss.



U.S. Department of Energy

The road to the laboratory at Los Alamos, New Mexico, was treacherous, winding its way along steep canyon cliffs up to the isolated mesa.

The Case of the Vanishing Physicists

Mathematician Stanislaw Ulam was asked to join a secret wartime project in New Mexico while working at the University of Wisconsin-Madison. Here he recalls the way in which he discovered that he was not the only recruit from the Wisconsin campus for this hush-hush effort.

From *Adventures of a Mathematician*
By Stanislaw Ulam

Soon after, other people I knew well began to vanish one after the other, without saying where—cafeteria acquaintances, young physics professors and graduate students like David Frisch, and his wife Rose, who

was a graduate student in my calculus class, Joseph McKibben, Dick Taschek, and others.

Finally I learned that we were going to New Mexico, to a place not far from Santa Fe. Never having heard about New Mexico, I went to the library and borrowed the Federal Writers' Project Guide to New Mexico. At the back of the book, on the slip of paper on which borrowers signed their names, I read the names of Joan Hinton, David Frisch, Joseph McKibben, and all the other people who had been mysteriously disappearing to hush-hush war jobs without saying where. I had uncovered their destination in a simple and unexpected fashion. It is next to impossible to maintain absolute secrecy and security in war time.

Learning on the Job

In late 1942, Rebecca Diven decided that she wanted to leave her home in Pasadena, California, to take spring semester classes at the University of New Mexico. She took an odd job at California Institute of Technology in order to earn enough money to make the trip. However, her work there led her down a very different path from the one she had anticipated.

From AHF Oral Histories
Interview with Rebecca Diven

The job I got was unexpected. It was at California Institute of Technology (Caltech) in the sub-basement. We were not exactly honest with each other. I didn't say I planned to leave in February and they didn't tell me I was working on a National Defense Project. So December 7th came along. I went to work, a great big sign on the door: National Defense Project, No Entrance without Permission. I was locked in....

You couldn't leave work without written permission, to prevent postulating during the war. It wasn't the time to go to New Mexico anyway, so I stayed. This job involved quartz fiber work, micro fibers. It was in the

sub-basement of the chemistry building working on Linus Pauling's invention of an oxygen meter for submarines.

I was trained on the job. I had never worked with micro fibers. By close to October of 1943, the oxygen meter had gone into manufacturing to make it on scale for the submarines and I was bored silly. That wasn't what I wanted, so I told my bosses at Caltech that I was going to quit and was told, "You can't quit. You are locked in."

I said, "But I can quit. I have saved my money. I can live at home for the three months I have to be without employment and then I am going to join the Navy, the Army, or Red Cross, or whoever will take me."

They said, "Well, let us think about that." And in a little while I was called in and [they] said, "We have a job. We can't tell you what it is, where it is, but they want you to come and do quartz fiber work." Well, that sounded kind of strange. They said, "After you agree to take the job, we'll tell you where it is and what you will be doing."

I said, "Can you tell me whether it is for the war effort?"

"Yes. But we can't tell you what it is."

"Well, why?"

"It's secret. I will only tell you that I don't approve of it."

"Why?"

"For moral reasons."

"But it is for the war effort?"

"Yes."

I thought about that for awhile and said, "Okay, I'll take it." What they told me was only that it would be an Army base, it would be in the mountains, there would be pine trees, and that once I agreed I had to stay there for the duration of the war. I really don't remember what the salary was, but for a non-technical person I thought it was very handsome so I agreed to take it....

To this day I don't know how they knew I did micro fiber work at Caltech. Then I was told, "First, you will go to Berkeley and you will report to the top floor of the chemistry building." I got up there and was told, "Oh, you're going to make a microbalance with quartz fibers and you're going to design the jigs and things to make it."

I looked at them absolutely appalled. I never designed anything in my life and I had not made a balance. They said, "We're sure you'll figure it out. We'll give you all of the help you need and we'll expedite things through the machine shop." I just stared. If the war effort depended on people like me, we simply had to do it. I had to learn some math, I had to learn some drafting, and they did help me.

But after I'd been there two months, I wrote the project and said, "I quit. I've been here two months, I've never been paid, I'm hungry, I don't have a place to stay anymore, and I'm going home."

A few days later, just before I planned to leave, a man with money in his hand arrived. "Your pay check was in Los Alamos [and we were] wondering why you weren't picking it up." So I now had money, but really no place to stay because everything was full. There was a housing shortage, so I spent the next month sleeping in beds of project workers who were away on business. For some time, I lived out of a suitcase.

Then everything was through, the machine shipped, and I went home to Pasadena for maybe a week. But then I couldn't get transportation [to Los Alamos] and I told them that I'm ready but I can't get there. The train master in Pasadena called, "You have a reservation on the train on a given date and just come." It apparently [had] been paid for. I later discovered that I had bumped a major account captain from this little roomette and that I was traveling in luxury to Los Alamos.

I was to be met and so I dressed with care, a little pillbox with a veil, my precious nylons, high heels, and I was ready to go to Los Alamos. Well, I stood on the platform and waited and waited and finally a WAC came up and said, "Are you Becky Diven?"

I later discovered they said, "She's never going to last here." I got to Los Alamos and discovered I was making a microbalance

SINGING HUNGARIAN

The first year I was here, I was eating at Fuller Lodge, having lunch, and at the next table were about five or six men eating. All of a sudden they started singing the Hungarian National Anthem, so I joined in and sang with them, since I grew up singing it with my folks. Afterwards, I went over to one of the men and asked who he was, what he was doing here, and, well, he was Edward Teller! So that was how I got to meet some of the fellows early—not on the job, but after the job, when they were off socializing.

— FRED AUSBACH

to weigh plutonium. They only had micro amounts in January of 1944. And in due time I made a microbalance. However, nobody had calculated static electricity. Every time we were ready to weigh something it smacked up against the wall and broke, so the balance was delayed and delayed. In due time, we made a weighing of the total supply of plutonium on a microbalance.

Life at P.O. Box 1663

Ruth Marshak contrasts the life of a physicist's wife in peacetime and in wartime as she remembers following her husband, Robert Marshak, to an "unknown, secret place...a destination without a name."

From "Secret City"
By Ruth Marshak

A physicist's wife in peacetime and a physicist's wife in wartime are, I have discovered, two very different things. In the years before our country was at war, this wife's interests were identical with those of any other academic lady. She went to faculty teas, fretted over her budget, and schemed for her husband's advancement. Although a physicist was inclined to work rather longer hours than his colleagues in other departments of the university, his wife's life was no different from that of the wife of a history professor. It was a good life, too.

Even before the Pearl Harbor attack, however, the physicist's routine had changed. Defense projects were started in college laboratories; armed guards began to pace the thresholds of physics buildings. One's husband grew more secretive about his work, and one knew that his job must be important, for he was immune from the draft. The physicist's wife realized that her husband, in wartime, was more than just a college professor—his was a key profession in the defense of his country.

Some physicists remained at home to teach the few students who were left in the universities. Others worked on subcontracts for the Army or the Navy in their own laboratories. But many were forced to leave home in order to do their part in developing and perfecting the weapons of war. They went to a giant installation at the Massachusetts Institute of Technology to work on radar. They went to Washington as Naval Ordnance men. They went to Aberdeen Proving Grounds. Then, sometimes, the wives who accompanied them found that they were moving to a destination without a name.

I was one of the women thus bound for an unknown and secret place. "I can tell you nothing about it," my husband said. "We're going away, that's all." This made me feel a little like the heroine of a melodrama. It is never easy to say goodbye to beloved and familiar patterns of living. It is particularly difficult when you do not know what substitute for them will be offered you. Where was I going and why was I going there? I plied my husband with questions which he steadfastly refused to answer.

"Be careful what you say," he warned me over and over again. As if I, confused and distraught, knew anything which might be of aid and comfort to the enemy! German agents could probably tell me a thing or two, I reflected bitterly. I went about my packing in a daze. Many questions quivered on my lips, but I would have to wait two years to find out most of their answers. "What's it all about?" I cried to my husband. "At least tell me why we are going away?"—That was in 1943, and only when an atomic bomb ripped Hiroshima in the fall of 1945 did I really understand.

When I left home, I had never even heard the name, "Los Alamos." I gradually became aware, however, that we were going to the Southwest. My husband had received a letter of instructions which said, in part, "Go to 109 East Palace Street, Santa Fe, New Mexico. There you will find out how to complete your trip." What should I expect? Rattlesnakes? Outdoor privies? My concerns as a housewife over the mechanics of living seemed rather petty in the face of the secrecy surrounding our destination. I felt akin to the pioneer women accompanying their husbands across uncharted plains westward, alert to danger, resigned to the fact that they journeyed, for weal or for woe, into the Unknown. The analogy is incomplete, for I rode, not in a covered wagon, but in a red coupe, comfortably, over silver highways. The hazards of the road were not Indians but the broken glass that menaced our thin, irreplaceable tires.

Just before reaching New Mexico, we stopped at a gasoline station in Colorado. The attendant looked over the loaded car, examined our license

plates, and asked us where we were heading. We replied that we were bound for New Mexico. The man studied my husband and said, "Oh, you folks must be going to that secret project!" He needed no encouragement to launch into a detailed and accurate description of our new home. Thus for my husband's caution! We proceeded on our way, feeling considerably less important.

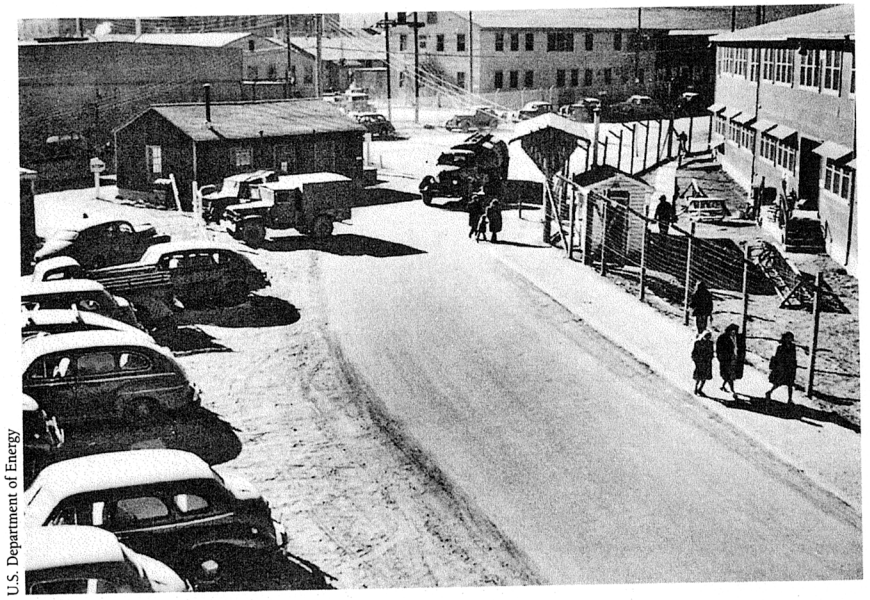
We arrived in Santa Fe, dusty, tired, and hungry. The Plaza, the antiquity of the architecture, the Indians hawking their wares—all were just as we had imagined they might be. Too much cannot be said for the poetic gesture which placed that fantastic settlement, Los Alamos, in that fantastic state, New Mexico. Santa Fe is the second oldest town in the United States, and its various racial and cultural strata have never quite jelled. There are Indian pueblos nearby with civilizations that were old in Coronado's time and have changed but little since. The predominant racial stock in Santa Fe and the country around it is Spanish-American. These people are descendants of the conquistadores, have some Indian blood certainly, but still are completely different from the Indians in both appearance and customs. They till the soil much as their ancestors did centuries ago. I was to find both kinds of "natives" working at Los Alamos, and they gave a remarkable flair to the place. There they were, the oldest peoples of America, conservative, unchanged, barely touched by our industrial civilization, working on a project with an object so radical that it would be hailed as initiating a new age. The Indians and Spanish Americans of New Mexico were the most unlikely of all peoples to be ushers to the atomic epoch.

The day after we arrived in Santa Fe, we went to 109 East Palace for our passes. We received our instructions from Mrs. McKibbin, who was in charge of the office. I learned nothing new, really. I had already realized that when my husband joined the Manhattan Project it would be as if we shut a great door behind us. The world I had known of friends and family would no longer be real to me. Why, my parents were not even allowed to come to Santa Fe on a pleasure trip! The only bridge between us would be the shadowy one of censored letters. By a rapid transmutation, my husband and I had become different people. He could not even admit that he was a physicist; his profession was "engineer." Now we were part of the top secret of the war, that great secret which lay behind our innocent rural address: P. O. Box 1663, Santa Fe, New Mexico.

P. O. Box 1663 went by many names. Those who lived there were inclined to call it Los Alamos or the mesa. People in Santa Fe referred to it as the Hill. In Manhattan District jargon it was known as Site Y, and although another designation, Zia Project, never really caught on, everyone said, familiarly, "Here on *the* Project." A mournful GI once wailed, "Lost—almost," and the populace laughed, but few called it that. People coming to the Project often spoke of it as Shangri-La.

The first thing I learned about my new home was that it was not, as I had supposed, in the desert, but rather was on top of a mesa thirty-five miles from Santa Fe. The most direct road to it was a treacherous washboard running through the Indian pueblo of San Ildefonso, over the muddy Rio Grande, and then up a series of narrow switchbacks. As we neared the top of the mesa, the view was breathtaking. Behind us lay the Sangre de Cristo Mountains, at sunset bathed in changing waves of color—scarlets and lavenders. Below was the desert with its flatness broken by majestic palisades that seemed like the ruined cathedrals and palaces of some old, great, vanished race. Ahead was Los Alamos, and beyond the flat plateau on which it sat was its backdrop, the Jemez Mountain Range. Whenever things went wrong at Los Alamos, and there was never a day when they didn't, we had this one consolation—we had a view.

A mile or two before reaching the settlement itself, we had to show our temporary passes to the MP on duty. He jotted our pass and car license numbers on the record for the day. Passes were to be a solemn business in our lives. A lost pass meant hours of delay in the guard's hutment, an elemental little structure, its stark walls decorated with starkly naked pinup girls. The expiration date of a pass was apt to creep up, finding one unaware on just the day one had planned an outing. Many a tearful woman or belligerent gent found themselves stopped at the guardhouse, while the rest of the party sailed gaily by. The fence penning Los Alamos was erected and guarded to keep out the treasonable, the malicious, and the curious. This fence had a real effect on the psychology of the people behind it. It was a tangible barrier, a symbol of our isolated lives. Within it lay the most secret part of the atomic bomb project. Los Alamos was a world unto itself, an island in the sky.



U.S. Department of Energy

Only scientists and personnel with proper clearance were allowed to enter the fenced-off Technical Area at Los Alamos.

THE GENERAL'S IN A STEW

General Leslie R. Groves was reputed to have complained to Dr. Oppenheimer about the number of children being born on the Hill. Couldn't something be done about it, the General wanted to know. A jingle celebrating this remark went in part:

The General's in a stew
He trusted you and you
He thought you'd be scientific
Instead you're just prolific
And what is he to do?

FIZZLERS AND STINKERS

No one could mention the professions "physicist" and "chemist" even within the gates of Los Alamos. We called them, I'm sorry to admit, "fizzlers" and "stinkers." A friend in the Tech Area, seeking the Chemistry Office, once asked a janitor, "Where is the Stinker's Office located?" He led her up the stairs and down a long hallway, then ceremoniously opened a door and ushered her in. She was embarrassed to find herself in the Ladies Room.

— JANE WILSON, *STANDING BY AND MAKING DO*

A Boy's Adventures at Los Alamos

Dana Mitchell was the son of Dr. Dana P. Mitchell, whom J. Robert Oppenheimer had recruited from Columbia University to become an assistant director for the Los Alamos Laboratory in charge of procurement and other matters. Dana shares some of his adventures at Los Alamos as a ten- to twelve-year-old boy.

BY DANA MITCHELL

My father had been recruited by Oppenheimer to become an assistant director of the Los Alamos project. I have a letter that my father wrote to my mother, dated March 16th, 1943:

> Dearest,
> Arrived on time to hotel, then went to see Oppie. He left me his office, a Packard convertible coupe, an appointment at $7200 per year with the University of California, a check for $1000 made out to "cash," and *carte blanche* to do as I pleased with absolutely noth-

> ing to work with, or on, except a great vacuum to be filled with what the staff will soon need, and no cue as to what that is except for my past experience.
>
> Practically no catalogues, one typist, no files, almost no stationery supplies, a lot of heterogeneous lists of things to come, some that others have had, and some that they sort of want. Much too little of the latter. I feel like I was in the desert now, and I think I'll soon go there, since there seems to be little more to work with here. I'm not down—it's so appalling, it's almost exhilarating!

A few months later, when I was ten years old, he got permission to get us out there. He told Oppie, "I've been separated from my family for too damn long and I really want to have them here." So we got on a train. Apparently they had a compartment reserved on every Santa Fe train back and forth between Chicago and Los Alamos, so we had that compartment, which was very nice. We met Oppie at Lamy, and I got all excited because he was in an Army sedan, a khaki-colored sedan. So we went up that dirt trail to Los Alamos, which was really a dangerous road. He put us in the Ranch School guest house. At this point, they hadn't yet built the quad apartments where we lived later on. There wasn't much housing at all.

One of the things I remember about the guest house is that my mother turned back the sheets that evening and it said, in big black print, "U-S-E-D." I was about ten years old and I said "*Used*?! That's pretty strange. Used sheets? Can't they afford new sheets?"

My mother said "No, no—that stands for United States Engineering Detachment."

I didn't care, as long as they were new sheets!

This was seven months before they built a school. The kids there were all children of physicists and engineers and chemists and so on, and these kids were dangerously bright, so they had to do something with us for those seven months, or else we would have prematurely blown up the site ourselves! They figured out some things to do, and we figured out some things to do. They used the cavalry horses to teach us how to ride horseback. The graduation present for that was terrific. We saddled up—I still remember to get that cinch strapped tight, or you're going to end up under your horse. We went over to the post theater, which was just a frame building with potbelly stoves on the sides to heat it and wood benches, and we watched a Western. And then we got back on our horses at the hitching rail and rode back to the stables. For a city kid, born in New York City, this was it! This was great!

We went hiking and mountain climbing. Several of the women there were really good skiers and they taught us how to ski, and that was great. So that spring they were just getting to building the school and we'd walk over there and look at this construction activity and think "Oh, no! Should we tip over the nail kegs, or rip some of the framing apart? No, wouldn't do any good, they'd just put it back together again."

*

We were always raiding the junk pile there. In the Project, they decided that it was a lot better to throw stuff out than to repair it. By the time they could have repaired something, they would have invented a better version anyway. So this junk pile filled up with discarded electronics and lab equipment. And as the children of physicists, chemical, and electrical engineers, we grabbed whatever we wanted and filled our bedrooms.

One of the things we found in the junk pile was one of the searchlights that they used on the guard towers around the technical area. We decided we had to do something with it. It had a cracked reflector but we took it apart and repaired it with airplane glue and it turned out pretty well. But then we had this great big socket for a huge bulb. One of the fathers said, "I think that's such-and-such a base for a 1000-watt bulb." And one of the kids was going with his parents to Denver shortly, so we took up a collection, and sure enough, he was able to get a bulb.

So we hooked it up and screwed in the bulb and turned it on, and it was like a campfire! This was in the winter, and we were warming our hands over it. It was amazing. So what do you use something like this for? Well, one of the first uses was to shine in one of the guys' sister's bedroom window. She totally freaked out! That was the last time we did that. There were better things to do.

Some months before we found the searchlight, a B-24 twin engine bomber came over almost at treetop level. Los Alamos was a no-fly zone. I remember standing on the back porch of our place and seeing this plane and waving to the pilot. Well, about fifteen minutes after that, the plane was out of gas, and it crashed and the people on board died. That really upset us. They were completely lost. They might have thought Los Alamos

was Santa Fe or something but because it is not on a map anywhere, it is really disorienting.

So sometime after that, after we had set up our searchlight, we saw a plane circling Los Alamos one evening and it just went around and around. A couple of our teenage gurus, our Eagle Scouts, said, "We have to do something. We can't let this happen again." So they went over to the tree house and climbed the ladder and went out on top. One of them trained the searchlight on the plane, and the other one tapped out in Morse code: "Not Santa Fe, not Santa Fe! Go southeast! Go southeast!"

After a few more circles, the plane went off. When the plane arrived safely in Santa Fe, the pilot must have told somebody about this miracle, how he was signaled what to do. That worked its way back to the security people at Los Alamos. The security folks scratched their heads and finally they figured out what had happened and removed our searchlight. That was the end of that one!

*

The parents were very good, once we started school, about taking us on class trips. We went to pueblos and to see Indian dances and so on, but the class trip that I remember best was when we went to Maria [Martinez of the San Ildefonso Pueblo]. I don't know if you've heard of Maria the potter, but her pots fetch thousands of dollars today. Even back then she was *the* potter. She showed us the bluff where she got her clay, and we dug some out. We put it in crocks with damp rags to season it for a month or two according to her instructions.

Then we went back with our clay and Maria instructed us in how to coil the pot and how to bake the pots. The method was that you first dig a pit and line it with stones. We did this just a little ways from our group of apartments. Then you build a big fire there, let the fire burn down, dump in a bunch of horse manure, lay down the pots on the horse manure, and add another layer of horse manure. Then you cover the whole mess with a couple of sheets of metal and let it cook for three days.

In the meantime, this smell of roasting horse manure went all over the neighborhood causing people to ask, "What the hell is that?! Why did you dig the pit *there*?!" But we got the pots out and following Maria's instructions, went to the Rio Grande to get smooth stones. The stones were used to polish the matte finish to a shine. Of course, being a kid, I polished too hard on mine and polished down to the brown. But I still have the pot, and was quite proud of it at the time.

*

My father knew that I was "Mr. Questions," and tried to keep me busy. He came up with projects for me, like building a little seismograph together. One time he went away for a little while, and at that point, they blew up the atomic bomb [in the Trinity test]. When he came back, I had heard lots of buzz, nothing about an atomic bomb, but about a bright flash and lots of lights. I asked him, "What was all that about lights in the distance?" "Oh," he said, "we were doing an experiment out there and we had a lot of big searchlights. But I stopped in Albuquerque and got these electronics parts you have been wanting for a year to build that power supply." I didn't ask another question for three days, because I was busy building that power supply. He had it all figured out.

Later on, when the news came out, we went to the post theater to see a movie of the first detonation, and believe me, that was scary. The film that they showed us was taken a thousand yards or so from the blast. It showed the detonation, and the bubble, and as soon as the bubble started up, the film got a dot in the middle, and then the dot started to spread, and it spread out until you couldn't see anything on the film, and they stopped the projector. They said the dot was from the heat of the bomb, and it just burned a hole in the film, and sorry, but they couldn't do anything about it. I thought, "Oh, my God!"

About three months after the test, my father said he wanted me to know what he was working on and why he would be away from home a lot after we moved back to New York. Somehow he wangled a Trinity pass for me, a red "T-pass" with my name on it. It turned out that my father was good friends with the guy that was in charge of security out there. Colonel Bush took us on a tour, and he drove us to the actual explosion site. He got out of the car and he said, "Here are the canvas boots, and here's the Geiger counter. You take my car, because I can't go in with you. I've had my radiation dose already and then some. But we've got a radio out here and another car. If you break down or something, call us immediately on the radio and we'll come and get you, because you've got 10 minutes in and 10 minutes out. That's it."

So we drove in, and I immediately asked my father "How come the road didn't get blown up?" He said "Oh, it got melted and somewhat vaporized, but it is asphalt and it just solidified again." Before we got to the actual explosion site, I noticed that all the desert brush had been blown out away from ground zero by the shock wave, and then the tremendous heat of the bomb had charred these bushes and trees into place. It looked like something out of Transylvania. It was pretty gross. That really made me feel icky about this whole thing.

When we got out of the car, my father turned on the Geiger counter and it just roared. It scared the hell out of me! I said "We've got to get out of here!" I was twelve by then and starting to know a few things.

He said, "No, no, it's okay." He set it for a less sensitive range, but it was still making noise and I wasn't entirely convinced.

It looked just as though a big hand had gone and punched down into the desert sand and made a dish twenty feet deep or so and melted all the sand. When the sand solidified, it was kind of a greenish color, and that's "trinitite." We collected some samples, and I still have a jar of it somewhere.

He showed me the stumps, and that was interesting because the glass around the stumps was stained red, streaks of red, a dark red, to me it was a blood red. I asked what it was, and my father said, "Well, when all the sand got vaporized, the tower was vaporized too, and some of the ferrous from the tower mixed with the silicon from the sand and dyed it red. So you're just seeing the condensed tower there."

Believe me, this made one hell of an impression. To this day, I remember that vividly.

Tennessee Girls on the Job

In this selection, Colleen Black discusses her experience at Oak Ridge, Tennessee, as a leak detector. Because most of the able-bodied young men were off fighting the war, Oak Ridge hired a large number of young women to serve as machine operators and perform other essential duties.

From AHF Oral Histories
INTERVIEW WITH COLLEEN BLACK

I came with my parents in early 1944 and got a job at Ford, Bacon and Davis. I was a leak test operator. I would find leaks in pipes in the welding and mark it. I would send it back if it had a leak or if it didn't put an "OK" on it. I didn't know where it was going or what it was carrying in those pipes and I didn't ask. We weren't supposed to. Security was very tight.

My mother was an inspector because she was older and had more sense than I did, but there were many girls just my age out of high school who were working. One time, they sent these mass spectrometers (we weren't

U.S. Department of Energy

Many of the workers at the Y-12 plant in Oak Ridge, Tennessee, were women because of wartime labor shortages.

supposed to say that word) which could only be operated by Ph.D.s. Eventually they found out that if you taught these Tennessee girls how to use these machines, they did a good job. We climbed all over the pipes and did a good job finding the leaks with helium. I didn't know whatever went into it. The GIs knew exactly what they were doing and why the machines worked, but I didn't know, didn't care, didn't ask questions. We were doing something for the war effort and I wanted to win the war quickly and get back home to Nashville, Tennessee.