

Alexander Blackburn

The Physicist

1.

A lone gray wolf had been for many y
roaming the Jémez Mountains and the val -
ley of the Rio Grande. In the higher eleva -
tions where there were no man-made
marks in applegreen meadows and blue forests of spruce, aspen, and pon -
derosa he had howled unmolested at many moons with bones in their teeth.
Free, he had looked down thousands of feet from rocky promontories to
ancient Indian pueblos and Spanish villages. Free, he had hunted for rab -
bits and wild turkey in the deep-cut, golden-streaked canyons and arroyos
of the Pajarito Plateau where the Old Ones had built and abandoned their
pueblocitos a thousand years ago. Even when the lodge and log cabins and
water tower of the Los Alamos Ranch School intruded upon his sanctuary,
he seemed to have nothing to fear. He believed in the principle of eminent
domain.

So he had grown bold.

About the time when brilliant Canopus skimmed the southern horizon
with her red, blue, and yellow feathers, about the time snow whirled and
drifted to a depth over his head, he followed a narrow, winding, precipitous
dirt road down to the valley and sacrificed chickens, sheep, and goats. As he
licked the bones he listened to what Brother Eagle or Brother Deer might
have to say to him about the farmers with thundersticks; he had developed
some acquaintance with their whine and, occasionally, sting. But about the
time when winds dried the earth to a parched khaki color and walls of
blood-red water hurtled down from the mountains to the river, he always
returned safely to the wilds of immeasurable America.

Suddenly huge yellow caterpillars churned dust, leveled trees, tore down
hills. Applegreen barracks and factories sprouted where meadows should
have been; fencing appeared, miles and miles of it, chain-link fences seven
feet high with barbed wire coiled atop. Armed men patrolled the mesa on
horseback. Sirens wailed. The air was full of black smoke. Jeeps and trucks
and tractors crawled into the mountains. In the past year there had been
many ear-splitting explosions. Thousands of trees lay flattened as if smacked
by the hand of a wanton god. Game grew scarce. Streams and puddles
stank.

Now the old wolf grew sick. Slowly and painfully his life was ebbing away. . .

Just before dawn one day early in April, 1945, Aeneas emerged from a laboratory in remote Omega Canyon and lit his pipe. For weeks he had been assisting Otto Frisch and his group with an experiment that Dick Feynman had likened to tickling the tail of a sleeping dragon: split-second atomic explosions. The group had erected a ten-foot iron frame, a “guillotine” that supported upright aluminum guides, these being surrounded at table level with blocks of uranium hydride. To the top of the guillotine the experimenters raised a hydride core slug about two by six inches in size; it would fall under the influence of gravity, accelerating at 32 feet per second/per second, and when it passed between the blocks it would momentarily form a critical mass. Even though the U-235 reacted slowly due to its having been mixed with hydride, the Dragon did stir. The experimenters had come as near as possible to direct evidence of an explosive chain reaction without blowing up the lab and its weary inhabitants—or the world.

Like Frisch, Aeneas had worked about seventeen hours a day and allowed only the hours from dawn to mid-morning for sleep. He had never felt so exhausted in his life. Between his actions and his consciousness a sort of chasm had been widening for years, and now it seemed a permanent fault in the geography of his mind.

His hand trembled. Stress-pain, as it had for years, gnawed at his cranial nerves. His eyeballs felt as if a cat had been scratching them. Perhaps there was something more to his symptoms than fatigue and stress, something secret and insidious. No one knew what acceptable levels of radioactivity were. No one knew how many years, weeks, or days might pass before the Dragon’s bite produced a fatal proliferation of leukocytes. That he was suffering from a kind of moral asphyxia, he suddenly had no doubt. The work at Los Alamos had been difficult and exciting, the culmination of three centuries of physics, work that should have been accompanied by a feeling of exaltation commensurate with the discovery in secret places of the ticking of the universe. Although he was only a small vessel in a flotilla surrounding such battleships as Bohr, Fermi, Teller, Segré, Bethe, Frisch, Director J. Robert Oppenheimer and others, he had made his contribution to the building of the Bomb. He had assembled particles so that they would interact with each other, hit each other, scatter, sometimes give rise to new particles. As one of the seniors associated with the project—he was fifty-five, five years younger than Bohr but fourteen years older than Oppenheimer and more than twice the age of the majority of the assembled scientists—he had sometimes been consulted about matters for which the very young, locked-in to their specializations and cowed by authority, might have limited discernment. But to suffer a loss of moral consciousness and at the same

time to be aware of that loss was a disturbance bordering on schizophrenia. It was as if he could permit himself only a small dose of remorse of conscience. Once he started *thinking* he exposed himself to the contamination of guilt.

Puffing on his pipe he had the sensation that he was being watched. He scanned the rim of the canyon. Probably some of General Groves's ubiquitous security agents were prowling around up there, sniffing for treason. Indeed, now, something on a rocky ledge outside the chain-link fence had just moved. A shadow, a gray blur. An animal of some kind, a large animal, larger than a coyote. It was a wolf. It was hunkered down on the ledge and was staring, it seemed, at him, staring with eyes that mirrored the slate-gray birth of billions of years of dawn.

For a moment Aeneas knew the atavistic fear of the Paleolithic hunter. His viscera tightened. Then he relaxed. There was less and less mystery now about nuclear reactions. When the Dragon stirred, it produced little wonder. But this majestic wolf—why, it was mysterious and wonderful!

Still it stared at him. Aeneas gave the wolf a hand-salute of recognition, knocked ashes from the pipe, and returned to the lab. Some men were already stretched out on cots, sleeping the instant, dreamless sleep at the limit of endurance. A nauseating odor of unwashed bodies mingled with that of scorched metal. A cotton-woolly fog of drowsiness was gathering in his brain. As he sat on a cot and prepared to sleep with his boots and field jacket on, he thought he heard the howling of the wolf. The sound shimmered through him. Again there came the cry of the wolf, a hauntingly melancholy song that awakened in his soul long memories of its own ancestral wildness.

He kept by his cot a pair of binoculars with which to observe the eagles and hawks and bluejays of the Pajarito Plateau. Now he grabbed the binoculars and went outside to study the wolf. It was still there on the rocky ledge outside the chain-link fence. After focusing the binoculars, he could see that the wolf was scratching himself. And then he saw a sight that he would hope never to meet in dreams.

He had seen this sight before, seen it only six months ago when Roguey, who had been running loose near the Tech Area ever since Aeneas had arrived in Los Alamos two years ago, exhibited a suppurating jaw and swollen tongue and patches where hair had fallen out. He had to have the cocker spaniel put down by a vet. The wolf was also dying of radiation contamination.

He lowered the binoculars. He had not permitted himself a grieving for the loss of his dog except for a momentary feeling that had passed through his heart like a slug accelerated by gravity. Now the sight of the wolf undid him with the unspeakable realization of the undoing of the wild. Tears

rolled down his cheeks in the acid-cold air. He did not try to stop them.

The wolf had closed the chasm in his mind. Whether it was he had always mystically perceived a bridge between mind and matter, or whether he had never quite lost his innocence, from the moment he saw the dying wolf his faith flooded back. He was once again intensely aware of the interconnectedness of all life. He was once again filled with awe and reverence, with compassion, and with a sense of brotherhood with suffering. Surely the primal consciousness of a creative spirit in the universe had never been wrong. Science affirmed it. One had but to lift the mask of the obstructing self in order to participate in a dance of light and feel humbled in relationships of every kind, including relationship with a dispossessed and heedlessly sacrificed wolf.

Frisch of the British Mission made his report about the Dragon experiments, and the group disbanded. Aeneas returned from Omega Canyon to his “normal” life, kept office hours in the Tech Area, filed classified documents in his safe, attended Oppenheimer’s colloquia, dined at Fuller Lodge, and slept in the snug little chinked-log cabin which had been his “bachelor” quarters. He was *thinking* again. Like everyone else who knew the purpose of the secret project on the Hill, he had chosen to surrender authority in the matter of the atomic bomb to a separate, secret state, an elite presided over by President Roosevelt. Silence had been justified by the need to race against time as the German Reich made itself invulnerable and dominated the planet through possession of atomic bombs. But with the liberation of Paris by Allied troops came the news that Germany’s uranium project had failed or been sabotaged by Heisenberg. The “Lost Almosts,” as wags among scientists and their families called themselves, were proceeding to build the Bomb. Yet now there were no enemies to fear—except himself.

Now Roosevelt had died. Suddenly, it seemed, the secret state and the public state might be combined as a single sovereignty to which alone the scientists and other independent-minded investigators would become subservient, no longer hierophants of the mystery and wonder of the universe but mere pawns of coercive government.

Aeneas realized how empty his life had become. He could live it, such as it was, no longer alone, separated from his family, from Trinc, and the kids, Diana and Billy.

2.

So the wolf had made him whole again.

He wasted no time in developing a plan for Sunday, April 15. As soon as Oppenheimer’s memorial tribute to Roosevelt had been delivered,

Aeneas would rent mounts from the Army and ride with Trinc to Valle Grande, an ancient volcanic cone high in the Jémez Mountains, and in the seclusion of a hot spring there have the long-delayed heart-to-heart talk with her. As few people seemed to know about the spring, he had already received from his mother, Ma-Betty, who knew it well from the old days, detailed directions. Then he contacted the young English physicist, Karl Playfair, Diana's boyfriend, in hopes that he would be available that day for keeping her and Billy entertained. In order to affirm love, Aeneas would have to commit a kind of treason against empire.

Sunday morning found the mesa deep in snow. Bright sun shone, casting blue shadows behind the walls of silent buildings. He was hopeful there would be enough snowmelt by noon to proceed with his plans.

The family arrived on time to join the crowd in the theater. He and Trinc sat next to the Tellers and the Ulams. It worried Aeneas that Ed Teller and Stan Ulam were already working on a Superbomb that would be a thousand times more powerful than the atomic bomb, even though Niels Bohr had been warning scientists and politicians about the absolute necessity of placing all these so-called "weapons" under international control. Aeneas could think of nothing he could do to stop the imperial rush to destroy Moby Dick.

Oppenheimer, as usual, looked ghastly. His pale skin was drawn tightly over the bones. The burning intensity of his eyes was more than ever accentuated by the glossy black eyebrows.

"When, three days ago," Oppenheimer began, "the world had word of the death of President Roosevelt. . . ." Aeneas's mind wandered. Then he heard, "We have been living through years of great evil, and of great terror. Roosevelt has been our President, our Commander-in-Chief, and, in an old and unperverted sense, our leader. All over the world men have looked to him for guidance, and have seen symbolized in him their hope that the evils of this time would not be repeated; that the terrible sacrifices which have been made, and those that are still to be made, would lead to a world more fit for human habitation. . . ."

Aeneas's mind wandered again. What was a world more fit for human habitation than one without nuclear bombs? And why were the good and gentle scientists gathered in the theater not yet ready to identify with humanity itself?

". . . For this reason it is possible to maintain the hope, for this reason it is right that we should dedicate ourselves to the hope, that his good works will not have ended with his death."

The speech concluded, Aeneas held Trinc's hand in his and sat silently for a few moments. The speech had been moving, fitting, and eloquent. But what did those phrases mean, "possible to maintain the hope" and "dedi-

cate ourselves to the hope"? Did the "good works" of the President continue to include the creation of weapons no longer, because Japan was ready to surrender, militarily necessary? Aeneas perceived Oppenheimer's dilemma: the man's *Abimsa* conscience was gnawing at him even while his appointed destiny drove him onward. He was someone very like Aeneas himself.

As they were leaving the theater with the subdued crowd, one actual, vengeful enemy, Dr. Troy Turner of G-2, approached them, his face tomato-red beneath a fedora askew. Aeneas could smell his sour breath. "You going intr'duce me your pretty daughter?" he said with a smirk.

Aeneas read an appeal to him in Trinc's eyes. "You're drunk, Turner," he scowled. "Please don't intrude where you're not wanted."

"Oh?" The smirk faded. "The ten to the tenths shaying things they'll regret. . . Don't jeopardize shance of salvation or you'll be blacklisted." After pushing up his fedora Turner about-faced; with a stagger he went to the street and climbed into an olive-drab truck marked "U. S. Army Corps of Engineers."

"Well, you guys," Trinc addressed Diana, Billy, and Karl, "what are you going to do?"

"We're popping off to the ski slopes," Karl replied with a deadpan expression. "They're going to teach me not to fall on my face."

"And what are *you* guys going to do?" Diana asked a bit too brightly.

"Your mother and I are thinking about what married couples do," Aeneas said.

Diana blushed. "Da-aaad," she grimaced.

They rode black horses up a winding dirt road from shadowy depths. Suddenly sunlight pierced snow-laden trees. Aeneas and Trinc paused to survey the great valley. The soft powder of snow had settled everything into a pure and pristine composure. Nothing stirred save a hovering hawk in the wind and a jackrabbit which poked elongated ears above a mass of yellow sagebrush. Up ahead, shining in naked splendor at one end of Valle Grande, steep cliffs rose; from a narrow canyon an ice-rimmed stream printed its tumbling passage on boulders with a meandering gleam like that of a flung necklace of diamonds. They spurred their mounts toward the canyon. Having reached it, they followed an old bridle path that wound upwards along the roaring stream. After half an hour they came to its end. Tethering the horses to putty-colored aspens, they climbed for fifty feet up a palisade of red rocks until they reached a level shelf of rock in a deep forested glade. And there it was: a huge bowl in the rock nearly fifteen feet across and filled with hot water steaming from the Genesis bowels of the earth. Of the spring itself, there was no sign, for it seeped slowly, without a bubble, up through a white sand floor.

Aeneas opened his knapsack. Soon he and Trinc were warming their bellies with hot black coffee mixed half and half in the thermos bottle with scotch. Then hungrily they devoured the Spam-and-cheese sandwiches he had purchased from the mess hall. Trinc held out her hand; he took it, pulled her into his arms. They kissed contented murmurs in their mouths.

“I love you,” he said.

“I love you, too,” she said.

They sat side by side and listened to silence. Aeneas finally broke it.

“There is a time for everything,” he said, “and the time has come for me to reveal what I’ve been doing. I am sworn to secrecy, but secrecy has almost destroyed your trust in me—and my peace of mind. I need your advice and support. . . . We are on the Hill and elsewhere engaged in what is undeniably the most far-reaching and significant project in the history of man, a project that may well be the determining factor in the continued existence of civilization itself. But though we will be held responsible for the project, those of us who are most experienced in its various phases have little authority. Ed Teller, Hans Bethe and others have already tried to have decisions fully placed in our hands, and they failed. Still, we will be held responsible, both by the public and by our own consciences, for facing the world with the existence of new powers. Actually, the things we are working on are so terrible that no amount of protesting will serve to save our souls. For men to choose to kill the innocent as a means to their ends is always murder. So what can I do? I cannot clear my conscience. All I can do is hope to preserve it. Even a bad conscience is better than none at all.”

“It’s a weapon,” Trinc prompted.

“They like to call it a weapon,” he replied, ruefully shaking his head, “but in the scale of things it’s not really a weapon so much as it is an instrument of mass annihilation. We have usurped the power of the sun to make this instrument. We may use it to end the war; if we so use it, we will create a myth that we have saved a million lives. But that will not be the end of it. Nick Baker—that’s the code name for my old mentor, Niels Bohr—believes that a world resurrection must come from horror, and that in the long run all nations must possess our secret and work together to control it. So either we abolish all weapons of this kind and change the bad habits of human culture, or the planet itself is doomed. I don’t know whether humanity is up to the task. I do know, however, that we need the circles of love to expand, like the ever-widening ripples on a pond, to include the mutual humanity of all the other selves here and now and to come. That’s the only new world worth the creation. As an expression of culture, war no longer functions as either divine or just. Given patience and fortitude to persevere and vigilance to protect our fragile planet from the last trumpets of our own folly, we may prevail. In the meantime—let me ask

you—would it do any good, any good at all, so to act that our children and their children’s children knew that at such and such a time some people existed who cared about them and worked for their welfare?”

“Does the instrument, we’ll call it, work?” she asked.

“At first, lots of us, including the president of Harvard, Conant, who’s overlording things in Washington, hoped it wouldn’t work. If it failed, that would mean the Germans also failed. Now we’ve progressed too far to anticipate failure. The gadget will work. We’ll be testing it soon.”

“Suppose you quit the project? What are the consequences?”

Aeneas thought, then said, “Ed Congdon quit early, and nothing happened to him that I know of. On the other hand, Leo Szilard, who invented the instrument, has hassled the government so much there was talk he’d be interned for the duration of the war. He hasn’t been interned, but agents shadow his every step. . . Me, I’m a minnow in this pond. Perhaps everyone would be delighted to get rid of me—one less person with whom to share the glory, so to speak. Turner threatened to have me black-listed from universities. As I’ve said, I cannot clear my conscience. Not even by violating security regulations by spilling secrets to you. I could make a stand, a small one that will do absolutely no good, but a stand.”

“I’ll stand with you,” Trinc said.

He looked at her sharply. In the new world the old excessively masculine codes would be as outmoded as the Books in which they were inscribed. With Trinc standing with him, he would not flinch from the tasks ahead. In spite of her patrician background she had come the hard way up, after all, just as he had himself. “You’ve given me all I wanted,” he said. “Let’s swim.”

“Let’s,” she said.

They flung all their clothes onto the snow. She stepped into the spring until the water came up to her breasts. “God! I feel alive!” she laughed, and he too laughed after bellyflopping into the spring. He paddled over to her and they kissed. “I have a hard-on the shape of Florida,” he murmured in her ear.

“Let’s be glad it’s only the shape, dear,” she murmured back.

3.

Would the Earth disappear in the explosion? It was the most agonizing question in human history. Aeneas had been pondering it for years. According to calculations the extreme pressures and temperatures reached in the interior of the atomic bomb would not be high enough to fuse hydrogen with either nitrogen or helium in a self-sustaining nuclear reaction. One would have to take an incredibly enormous mass of water or air and raise

it to a temperature of many millions of degrees before ignition of the atmosphere would even be possible. Although science had long been a story of accidents and miscalculations prior to Eureka-moments of discovery, in this instance where the explosion of the Bomb was concerned there must be no such thing as a margin of error. It was all or nothing. The *nothing* was too dreadful to contemplate. The all—a successful testing—meant that man, a stranger in the cosmos, had assumed god-like powers.

When he woke at five o'clock on the morning of July 15, he felt weighed down by the burden of destiny. Perhaps only he and a few other men could fully appreciate the joyous aliveness of the day. It was like a waft of love irradiating the universe. He had never lost his faith that the future of mankind lay in the evolution of consciousness, synonymous with conscience. The book of his dreams, "The New Physics and the Coming World of Conscience," was already, though as yet unwritten, taking shape in his mind. Today, however, he could not steadily envision a bouncing-back from the abyss of annihilation.

He dressed for desert heat, putting on jeans, fatigue shirt and boots. He cleaned out the log cabin, strapped a bag containing his belongings to the Harley, breakfasted in the mess hall and went to the Tech Area for the last time. To MPs he turned over keys and the contents of his safe and the "Top Secret" white badge; he also left with them a letter of resignation to be delivered to Oppenheimer upon his return from Trinity, assuming there would be a return.

By seven he was ready to go. Seated on the sputtering Harley he took a last look around. Customarily there would have been sirens and factory whistles blowing at seven every morning but Sunday. Today everything in the city was quieter than usual; the city, in fact, seemed deserted. A lambent breeze played in the leafed-out trees and deposited slow-moving washes of shadow on the mesa. With a little effort he imagined how Fuller Lodge once had been, full of innocent boys, and still he seemed to hear Karl playing the bagpipes, to see him marching up and down, his kilt and sporran swinging, chandelier lights glinting in his silver-handled dirk, the sound thrilling, mournful, and indomitable. Once, warrior-heroes, following their warrior-gods, had rejoiced in the glories of virtuous battle. Once, but no longer, Los Alamos had been part of an Old West where distance from society was considered a virtue and repudiation of the past a ding-dong of freedom bells. It was no Shangri-la now, if indeed it ever had been.

He lowered goggles over his eyes, gunned the Harley, and descended the road to Otowi bridge on the Rio Grande. Once there, however, instead of heading directly toward Santa Fe he swerved onto the road to Española. A sudden impulse had blossomed in his mind. From Española it would be only a few miles to the tiny Santuario de Chimayó, sometimes grandiosely

called “the Lourdes of America.” He had visited it once as a boy, coming with Ma-Betty by wagon through the gulches to the eroded pink granite of ancient Tsi Mayoh, the hills dotted with thick juniper and piñon scrub, the air of the plaza scented with lilac and wild plum bushes, and then to the earthen-floored church that to his irreverent eyes resembled a sort of ungainly tugboat with two crooked wooden belfries serving as smokestacks. It had been Holy Week. The church had been packed with pilgrims, many of whom had walked barefooted for dozens of miles. The boy had had little concept of sacrifice expressed through pilgrimage or of salvation earned by suffering, but he had been fascinated by a side shrine in which supplicants gathered handfuls of soil from a dry well. The faithful believed in the healing power of that dirt, as attested to by the number of abandoned crutches that lined the wall. Now Aeneas wanted to receive the gift of resignation to painful circumstances present and to come. He was a pilgrim.

Arriving half an hour later at the Santuario, he entered the dark candlelit chapel just as Mass was ending with a priest’s softly intoned, “. . . *en el nombre del padre, del hijo y del Espíritu Santo.*” Bearded men and bent-over women in their black *rebozos* surged toward the shrine. Aeneas sat on a hand-carved bench and adjusted his eyes. Santo Niño and other festively arrayed statues in front of the retable gave off a warmly beautiful glow that soon dispelled his feelings of self-consciousness. He closed his eyes and silently prayed as best he could. . .

He was startled by a hand laid gently on his shoulder. He glanced up to the kind face of the small priest. “*Pareces preocupado, hijo mío,*” the priest said.

It was true. He was very troubled indeed. “*Sí, padre,*” Aeneas sighed. “*Lo estoy.*”

The priest held out a small paper bag and pressed it into Aeneas’s hand. “*Acepta este regalo, por favor.*”

The bag was filled with dirt, the healing dirt. “*Gracias, padre,*” Aeneas nodded. He put the bag in his breast pocket to signify its position over his heart. He was ashamed of his lack of traditional faith. But he was glad to have a talisman of earth to carry with him on his journey.

It was a journey of almost 200 miles, Española to Santa Fe, Albuquerque, Belen, Socorro and finally to Trinity. The skies were overcast; the air was hot and humid. Several times he stopped at filling stations not only to pump gas but also to wipe insect-goo from his goggles. He had already tied his red bandanna over his forehead and hair. Passing motorists looked at him askance as if he were a bandit. All he had stolen was the fire of the sun. South of Socorro he crossed the sluggish Rio Grande. Parched river terraces faded behind him as he entered the stretch of high desert called Jornada del Muerto—“Dead Man’s March”—lying between Socorro and

El Paso. Feared by early travelers for its lack of water, the Jornada seemed uninhabitable save for a herd of antelope which he saw glaring at him before it plunged away. Gradually to the east the peaks of the Sierra Oscuro range rose to elevations of over 4,000 feet above the shimmering heat of the high alkaline plain. He stopped at a security checkpoint, received directions. He made his way past earth-sheltered bunkers, reported to Base Camp. After dining in a mess hall he sat in the shade of a barracks building, smoking his pipe, surveying the site with his binoculars and waiting for the temperature to drop below a hundred degrees.

Five miles to the north a Command Center protruded above the plain. About six miles further beyond that was Ground Zero; it was marked by a steel tower in which was cradled the Bomb. About twenty miles northwest of Zero was the hill named *Compañia* where the VIPs would soon be gathering. If only Japanese and Russian diplomats could be present for a demonstration, then this Ahab-like madness . . . ! Wishful thinking clutched his soul.

In spite of the hum of generators and the groaning of vehicles busily coming and going, he felt detached from the whole scene. Where previously, and to the detriment of his personal and family life, he had been engrossed in his work, now it no longer belonged to him, if it ever had. He had resigned his position and renounced further responsibility for the project. All was in any case beyond his control. The world would wag without him. Anxiety was pointless. He felt free to imagine himself in the sky, looking down from a realm of absolute silence upon the piled-up centuries of pretentious folly.

High and deep in that sky, coming into focus through the binoculars, an eagle was undulating, resting on thermals, wings steady and sure and serene as it was spiraling upward in tight circles, then coasting downward only to mount upward again. Could it see with the eyes of its ancestors a continent pristine and immeasurable, the shining mountains, the glistening rivers, the shadowed barrancas and the abysmal gorges? In the last millisecond of the Earth's existence would it see the surface shake and sigh a moment, then lie still in an ineluctable and unbearable light?

He lay awake in a pup-tent that night. He remembered his father's pottery in North Carolina in the old days, how pots were kicked out and the family took them by wagon to market. The wagon would be piled high with vessels for sale—corks, churns, telegraph insulators, pickle jars and whiskey jugs, all glazed in tobacco-spit brown. While his father inched the mule over rutted roads, the boy would sit with Ma-Betty on top of the vessels and watch small fields of wheat being harvested. The men cut wheat with cradle-scythes while the women bound the sheaves. Boys in faded blue overalls ran back and forth to the fields to refresh the thirsty harvesters with water dipped out of jugs by gourd dippers. Would Keats's cold pastoral

remain a friend to man?

Some day he would write his memoirs. He would not immobilize his spirit in the past nor capitulate to the onrush of complex civilization. He would explore upstream, past cities and factories and machines, against the current of time and change and toward the clear waters of an inexhaustible source of life. He would recall his relationship to that source—it was always in nature—and try to clear away the shrubbery of despair that concealed the sanctuary of hope.

He slept.

At midnight a fierce clap of thunder directly overhead woke him up. A torrential downpour with high winds was battering his tent. Cloud-to-cloud lightning illuminated the desert at frequent intervals. The test shot, he reckoned with more wishful thinking, would have to be postponed.

Although he tried to go back to sleep, his mind was racing and randomly flashing images to him out of the past. Then an image appeared that refused to go away, the image of a night in a Cambridge pub in the 'twenties. Cousin Tubby was there and Professor Playfair was there and Playfair was quoting from a poem by Blake and raising his pint of ale and proposing a toast to the future in which tribalism and puritanism, which set peoples apart, developed into an awareness of oneself in relation to all other selves. Next day he had gone to a book shop in Petty Cury, purchased a copy of *Songs of Innocence and Experience*, and immersed himself in reading it as he sat in the Copper Kettle coffee shop on King's Parade. From "The Little Black Boy" he took and memorized a stanza:

*And we are put on earth a little space
That we may learn to bear the beams of love,
And these black bodies and this sunburnt face
Is but a cloud, and like a shady grove.*

Now in the wind and the rain and the thunder and the lightning he was thinking, *The body is a cloud. It shades the soul from direct exposure to God. But we must none the less move from innocence to experience and seek true divinity on earth, in the behavior of human beings, and gradually through fidelity and commitment and compassion and sacrifice we may hope to learn to bear the beams of love. And these beams, both exposure to the radiance of the light of truth and the weight of suffering as in the bearing-up of a rood-tree, make us supportive of one another and recall a purposive source, be it God or creative evolution. . .* These interpretative words faded. The poem remained. To learn, to learn!

Thus he lay awake for hours until the storm abated. Outside the tent a revival meeting of countless frogs rent the night with a raucous sound of

copulation. He reached for his boots and was about to put them on when he tilted them upside-down as a precaution. Out fell a scorpion. Boots on and laced he crawled from the tent and stood up. Occasional stars now were visible. The sparkle of lights in the Command Center indicated that the shot was still possible.

He squashed through mud to the mess hall. As he finished a breakfast of powdered eggs, French toast, and coffee, Karl Playfair approached his table, clothes sopping wet and blond hair plastered to forehead.

“Mind if I join you?”

“Sit down, please, mister.”

“Talk about English weather.” Karl raised eyebrows. “I’ve been up on Compañia Hill with the big blimps, Conant and Bush and my boss, Chadwick, and everyone’s feeling a trifle edgy. What if lightning had exploded our little toy before we were ready? We would probably all be dead from radioactivity, thanks to the beastly winds. . . You seem calm enough. How many roentgens can one take before one sloughs off the old mortal coils?” He tapped the film badge on his shirt. The badge measured exposure.

Aeneas shook his head. “Nobody really knows. Five, I’d guess. What’s the scoop? Any time soon?”

“Five thirty,” Karl said. “Zero Hour in—” he paused to look at a wristwatch “—two more hours. . . I don’t suppose you bloody Americans serve tea around here?”

“Any VIPs who look like Japanese or Russian diplomats?”

“Blest if I know,” Karl replied with a shrug. “Why do you ask?”

“Oh,” Aeneas said, “I was hoping we could speed up a Japanese surrender by means of a demonstration that meets a moral condition. . . You wouldn’t happen to have a drink by any chance, mister?”

Karl drew a flask from a pocket and passed it over. “Presto,” he said. “And now for my next trick—”

Aeneas tilted the flask, drank until the whiskey burned his throat, and returned the flask. He wiped his lips with the back of a hand caked with gypsum soil. “Thanks. There’s something you should know, Karl. I’ve resigned from the project.”

Karl drew back in surprise. “I hope that doesn’t mean you’ll be taking Diana away. I’m in love with her, you know.”

“She’s only eighteen,” Aeneas smiled.

“I intend to wait, of course,” Karl protested. “Hang it, I was wondering if you had objections.”

“I wouldn’t drink a man’s whiskey, mister, if I didn’t like him. . . We’ll stay in Santa Fe until my job situation is clarified. There’s a chance I’ll be fired back at South Atlantic University and blacklisted anywhere else.”

“Jolly good,” Karl whistled in amazement full of sympathetic irony. “In that case you must come to Cambridge. Dad will do the necessary, a Sir Isaac Newton Fellowship and all that. It won’t pay more than a thousand or two quid, but you have to consider the advantages: decent beer, port and cigars at High Table, punting on the Backs, cricket and the royal family. And *tea!*”

“I hadn’t considered exile until this moment, Karl. I shall do so in future. That is, assuming all’s lost on this side of the pond.”

“What you lose on the roundabouts you gain on the swings,” Karl offered and with this philosophical bromide stood up in the puddle of water at his feet. “Time for tea, correction, coffee. I have to toddle on back to Chadwick before he bothers people with his flaming neutrons. See you at the Apocalypse. *Ciao.*”

He watched his young friend depart. Cousin Tubby’s father, Van Dyke of New York, had disinherited her and driven her to become the mistress of an old creep, the German psychiatrist Dr. Karl, by whom she had this child. Trinc, unmarried and spontaneously generous, had given Tubby a loan sufficient not only to support her but also to enable her to make a home for him, alienated and isolated Aeneas, in Cambridge during his post-doc research there. Married to Professor Playfair, the Trinity College don, Tubby had raised Karl, seen him graduate from Cambridge University with a first-class Honors degree and be retained as a Fellow at St. John’s College. And now he was working with Chadwick, discoverer of the neutron in 1932. The roundabouts and the swings again.

During the next hour he passed the time by consuming three more breakfasts. He stuffed his pockets with French toast for later snacks. It was then he decided to cycle down to the Command Center. If today was the time for an apocalypse-crisis, he might as well have a ringside seat only 10,000 yards from Zero.

Emaciated, pale, and apprehensive, Oppenheimer leaned against a post as a 5:25 siren signaled five minutes to go. He looked like a lost shade waiting for the next ferryboat to Hell. Kenneth Bainbridge and George Kistiakowsky, both of Harvard, had put into operation a timing mechanism. Joe McKibbin and Don Hornig were throwing switches. Sam Allison of the University of Chicago had begun counting over a loudspeaker.

When Kistiakowsky announced that he was leaving in order to observe events from the earth mound that covered the Command Post, Aeneas followed him, taking a plank in which dark welder’s glass had been inserted. Presently he was lying on the mound with his feet facing in the direction of the blast and with his eyes shielded by the welder’s glass.

In the slate-gray dawn, Allison counted the final seconds over the loudspeaker:

“. . . minus 45. . . . minus 40. . . . minus 20. . . . minus 10. . . . 3. . . 2. . . 1.”

Dark horizon is streaked with the first faint rays of dawn.

In the darkness of dawn, in the absolute silence, suddenly there is light.

A billion searchlights have been turned on simultaneously and directed into your eyes.

A billion oxyacetylene torches have been simultaneously ignited and directed into your eyes.

A billion magnesium flares have been simultaneously exploded.

It is light as it must have been at the beginning of the world.

Twenty suns have been switched on.

Brightlightflash fuses earthsky.

It is light as it must be at the end of the world.

The world stays lighted.

Has the thermal nuclear transformation of the atmosphere actually occurred?

He counted five seconds, dropped the welder's glass, and spun himself around to see Zero.

The sky has turned red.

The Oscura Mountains are bright as day.

There is a ball of fire. It is about a mile in diameter and changes colors from deep purple to orange to greenish chlorine yellow.

The fireball is the snaky head of a luminous Medusa. She swells over the sweep of desert, bathing it in her brilliant glow. A tidal wave of dust erupts from her loins.

Men were cheering jubilantly over the PA system as the detonation wave hit. Kistiakowsky went sprawling in mud.

Blast-thunder growls and reverberates in an awesome roar.

The earth shakes, rumbles.

A cloud like a gigantic mushroom billows upward. It spreads in a "Z" form.

He had a sensation of heat on his face. It felt as if he had been sun-burned in thirty seconds.

"God-a-mighty!" he muttered under his breath.

He used his binoculars to pan across the Jornada. A herd of antelope burst from concealment and silently galloped just in front of the dust storm. Dawn was breaking.

It is dark again.

When at nine o'clock in the morning the Command Center was approached by fog, and Geiger counters began to click with an ominous rapidity, Aeneas climbed on the Harley and began his journey home. He had not gone more than five miles before he slowed to a stop. A stratum

of fog was slowly creeping upon the speckled arroyo in front of him. Was the fog filled with radioactive dust? If he hurried he could still get across the arroyo before the fog smothered it.

But then a strange sight met his eyes. An eagle, perhaps a thousand feet above his head, suddenly folded its wings and plummeted straight down to earth.

Dismounting, Aeneas ran to the spot where the eagle had disappeared from his sight. There indeed was the broken, partly eviscerated, bubbling birdflesh. It already smelled of death and lay, a fallen star, its eyes melted, its beak opened wide as if around a silent scream.

It had, he reasoned, been blinded by the first flash of the Bomb. Unable to find its bearings in relation to the earth, it had been gradually and helplessly descending upon thermals.

He kneeled. From his breast pocket he removed the bag of Chimayó soil. He sprinkled some of it over the eagle.

By the time he was back on the Harley the fog had rolled in. For a moment, he considered the possibility of returning to Base Camp. But the horror—in spite of the beauty—of the atomic bomb kindled in his mind an overwhelming desire to take his stand with Liberty—to lift the lamp of enlightenment beside the golden door. He wanted nothing now more than to fold his loved ones in his arms. He started the engine. Just before he released the brake, he remembered the French toast he had crammed in a pocket of his jeans. Taking out a piece of the toast he clamped it against his nose and breathed through it. With his free hand he settled his goggles in place, then operated the motorcycle.

He roared into and through the fog in less than two minutes. When he stopped in bright sunlight on the other side of it and looked at his film badge, he realized he had exposed himself to 5.5 R., a dangerous dose of radioactivity. At Los Alamos it had been speculated that radioactivity from the explosion of the Bomb might be equal to one million times the world's supply of radium. And exposure to gamma radiation was one of the possible causes of leukemia.

His clothes were covered with a white powder as fine—and in its own way as wanton—as a strumpet's cosmetic. As soon as he got home he would burn everything, boots, jeans, shirt, bandanna, goggles and all.

4.

Not from the perspective of July 16, 1945, nor from that of August 6, 1945, when an atomic bomb was dropped on Hiroshima and the secret work of scientists at Los Alamos was disclosed, but from the perspective of autumnal days in 1947 when Aeneas was writing his "Sketches for a

Memoir” in his tutorial rooms at St. John’s College, Cambridge, England, did certain events of his life come into final focus. Often, then, writing at ocean’s length from his beloved country and feeling the exile’s heartbreak, he paused to listen to the close-by ting clang ting clang, like a harbor buoy in fog, of the Trinity College clock. Before him, open, lay Wordsworth’s *The Prelude*, for as an undergraduate at St. John’s in 1787 Wordsworth had heard the same sound at the same distance:

*Near me was Trinity’s loquacious Clock,
Who never let the Quarters, night or day,
Slip by him unproclaim’d, and told the hours
Twice over with a male and female voice. . .*

A few lines further on in the poem, Aeneas often read:

*And, from my Bedroom, I in moonlight nights
Could see right opposite, a few yards off,
The Antechapel, where the Statue stood
Of Newton, with his Prism and silent face. . .*

And still further on, the great and inspiring lines:

*The marble index of a mind for ever
Voyaging through strange seas of Thought, alone.*

Aeneas could, like Wordsworth, see right opposite his rooms at St. John’s the Trinity antechapel with its statue of Sir Isaac Newton. The sight filled him with awe and reverence and gratitude. Who would have dreamed that he would be ending his life in such close proximity, as it were, to the founder of modern science? Who would have dreamed that here in Cambridge a quarter of a century ago he would be present during the exciting early stages of the Age of Atoms? Dying now of leukemia, the likely result of exposure to radiation at another, but unholy, Trinity—*this sun-burnt face is but a cloud*—he could but gloomily reflect upon the historical and morally unjustified sacrifice of more than 100,000 innocents in the atomic bombing of Hiroshima. But Newton’s voyaging through strange seas of Thought, alone, reassured him of the value and necessity of free inquiry unfenced and permitted him to accept himself: he had upheld the honor of living, given the tragic limitations of history and the heart. Perhaps in his fifty-seven years he could not have done much more. He could certainly not have done any less.

But who would have dreamed he would find his own integrity cloud-

ed with doubt? Who would have dreamed he would fall afoul of the Laurentian indictment of the American soul, not that he was altogether hard, isolate, stoic and a killer? Who would have dreamed that his belated repudiation of weapons of mass destruction—for the sake of science and for the sake of children not yet born—would be compromised? Retaliation he had expected. Support he had believed possible. Already the number of concerned scientists and leaders was increasing. And so when he was fired from South Atlantic University on the spurious grounds of moral turpitude as supplied by Turner, and when his attempts to communicate with other American institutions were met either by silence or by scorn, he had not been entirely surprised. But who would have dreamed that Oppenheimer would reject Aeneas's letter of resignation? Aeneas had become a hero. He seemed to have the benefit of a free ride.

It was exactly what he didn't want.

Framed on the wall of his tutorial room was the front page of the Late City Edition of the *New York Times* for August 7, 1945. When he took off his reading glasses, he saw the familiar headline plainly enough:

FIRST ATOMIC BOMB DROPPED ON JAPAN; MISSILE IS EQUAL TO 20,000 TONS OF TNT; TRUMAN WARNS FOE OF A "RAIN OF RUIN"

This was the glory he had abdicated. In a cruel irony another newspaper had published photographs of the heroic scientists—including one of himself. So how could he then have said, *I abjure?*

Galileo was nearer now. Galileo abjured heresy but knew perfectly well that the celestial body had moved.

Compassion endured.

From the perspective of autumnal days in 1947, as he was slowly and painfully dying in exile, he could survey the world he was leaving and find signs of hope. Trinc was financially secure for the rest of her life. The Playfairs had been faithful: they had secured him his fellowship at St. John's. And Karl, now at Princeton and talking of plans to put a man on the moon, had married Diana; they were expecting their first child by Christmas. And Billy had just matriculated on an academic scholarship to Yale. Ma-Betty was still alive and well and seeking a recipe for grasshopper molasses.

As for Trinc, what could he think beyond what he already knew and approved, that wherever the International Red Cross in London would ask her to go, she would go, that wherever there was earthquake or famine or epidemic, whether in Europe, Africa, Asia or South America, she would be there? The "poor little rich girl" had converted herself into a planetary saint. Some day there would be billions like her.

He would never write now the book of his dreams, "The New Physics and the Coming World of Conscience." But his lectures on the subject at Cambridge and at Oxford and over the B. B. C. Third Programme had been received enthusiastically and he was confident that, just over the horizon, as 2,000 years of personal, tribal, and national separations came to a close, there would indeed and at last be a new world.

It all might as well be called the beams of love.

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