

A Way of Life Lost

BIKINI

By WILLIAM S. ELLIS

NATIONAL GEOGRAPHIC SENIOR WRITER

Photographs by JAMES P. BLAIR

NATIONAL GEOGRAPHIC PHOTOGRAPHER

The year was 1946. World War II had just ended in a flash of atomic fury that even the bomb's inventors didn't fully understand. For further tests, the American military chose a remote island cluster in the Pacific called Bikini Atoll. Its inhabitants agreed to vacate their homes, assured that they could return when the tests were over. Today, 40 years and 23 nuclear explosions later, the Bikinians are still waiting, on a cramped, isolated island 500 miles from home. For as instruments on Bikini show (*below*), their atoll is still dangerously radioactive.



THIS PAGE FOLDS OUT

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THEY SANG when they left, and now that they were back, they sang again.

Sitting on the beach at night, they raised their strong, good voices until the harmony carried out over the black waters of the lagoon. They sang of love, a song about the fragrance in the morning lingering from the night before. They sang too of a spirit lost at sea, waiting to be caught up in a great current and to be borne to everlasting peace.

Nearly 40 years had passed since that Sunday in 1946 when Commodore Ben Wyatt of the United States Navy met with them after church services to say that their island was needed for a project that would benefit mankind. He implied that an authority higher than any on earth would be pleased if they decided to cooperate.

Being both a devout and benevolent people (and not without awe over America's military power), they announced this decision, through their chief, Juda: "If the United States government and the scientists of the world want to use our island and atoll for furthering development, which with God's blessing will result in kindness and benefit to all mankind, my people will be pleased to go elsewhere." All 161 members of the 11 families were transported to another place aboard a Navy LST. They took with them the thatch from their 26 houses, along with the dismantled church and community hall.

Less than six months later, on July 1, 1946, a B-29 bomber known to its crew as *Dave's Dream* appeared over the lagoon, and from its belly there fell an instrument, hurtling toward one of some 93 unmanned target vessels at a speed of 300 miles an hour. At 34 seconds after nine o'clock in the morning the device exploded at an altitude of about 500 feet. For a wrathful moment then, it seemed as if the sun had risen for a second time that morning.

And then the world came to know about this island and its atoll, a place in the western Pacific called Bikini.

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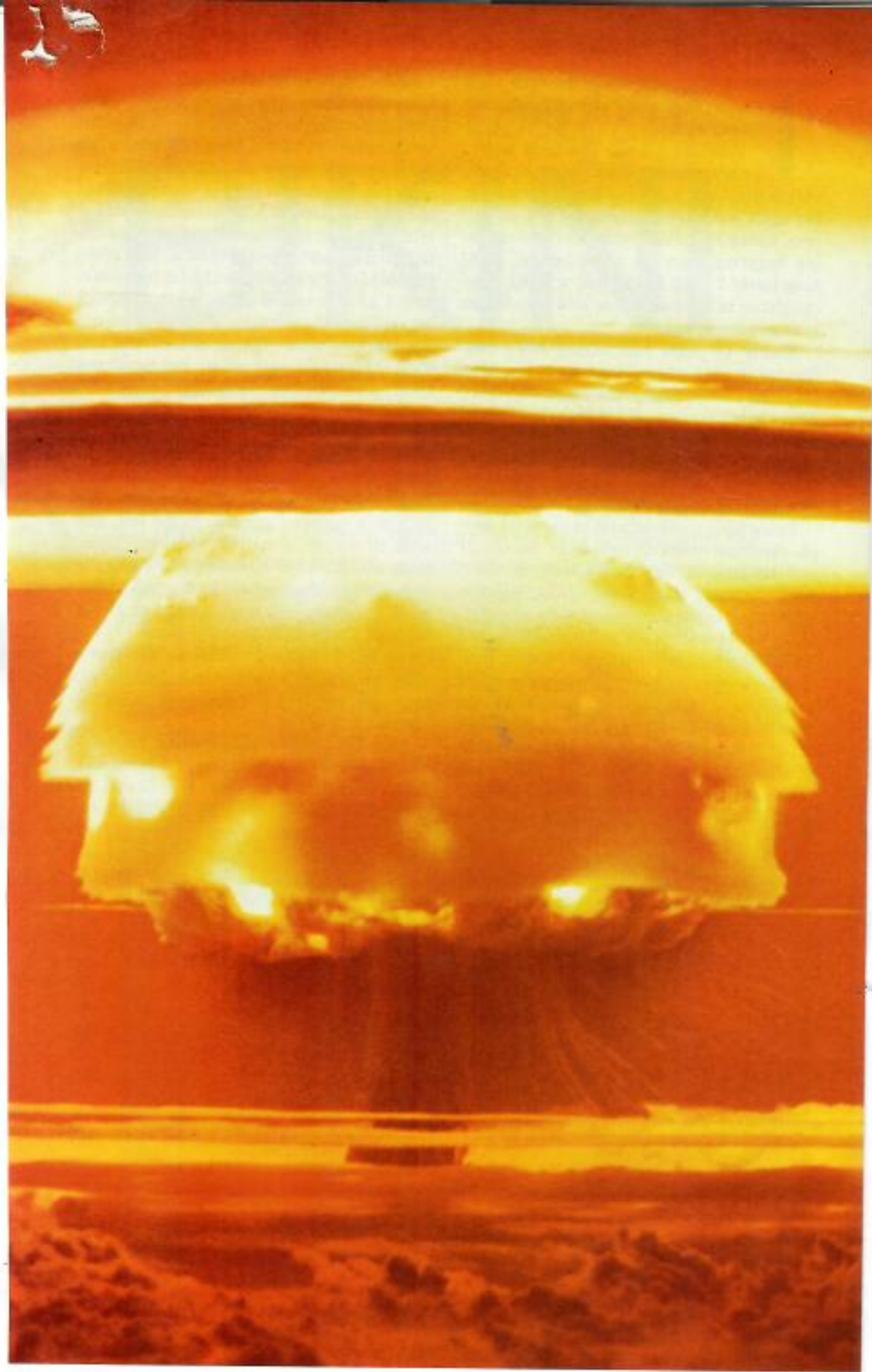
Islands. Of the 23 set off at Bikini, there was one called Bravo, the most powerful bomb ever detonated by this country. The combined power of all the weapons fired in all the wars of history would fall short of that released by Bravo over the 242 square miles of the Bikini lagoon. When the testing ended—when the tens of thousands of servicemen, technicians, and scientists had all left, when the ships of the target fleet had either sunk, sailed, or been towed away, when the shock waves stood the waters of the lagoon on end for the last time—Bikini island was still there with its coconut palms and pandanus trees, a testimonial, seemingly, to survivability in nuclear action.

BUT THE ISLAND and some of the 22 others in the atoll were not the same then and are not the same now. Radioactive material remains in the soil, and after two score years the people of Bikini have not been able to return to their home to live. Rather, they remain on a small, isolated island some 500 miles away, an island without a lagoon, a mere dot of land of 230 acres standing naked to the sea. Its name is Kili, the place where they live, and the old men and women there remember a way of life that is now lost.

Kili, like Bikini and Enewetak, is part of the Marshall Islands group of Micronesia, taken from Japan in World War II and administered by the United States as a United Nations trusteeship. Divided into two chains, the Ratak ("sunrise") on the east and the western-facing Ralik ("sunset"), the 34 atolls and single islands of the Marshalls lie 2,400 miles southwest of Hawaii.

For the most part these are not Pacific islands in the Gauguinesque sense of flowery bliss. These atolls, coral reefs built up on the slopes of sunken volcanoes, barely rise above the water. Many of them are like flagstones in a path, trodden by violent winds and waves, some under recurrent drought, others lush from almost daily rainfall.

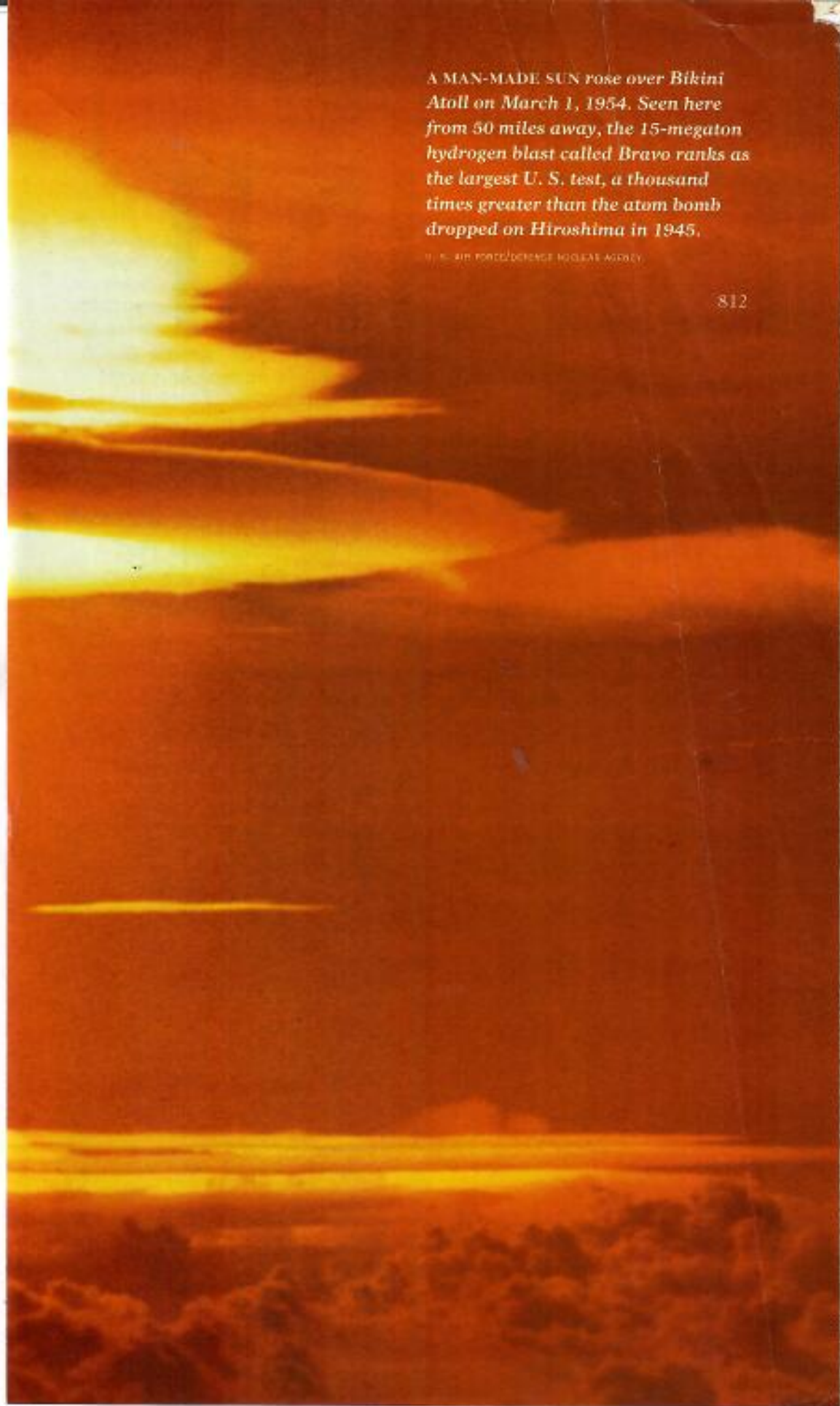
Once, the Bikinians were expert sailors, taking their outrigger canoes across many miles of water to visit other islands in the atoll. They fished and gathered turtle eggs. Their other foods were coconuts and arrowroot. With the disruption in their lives, they became landbound, and their seafaring



A MAN-MADE SUN rose over Bikini Atoll on March 1, 1954. Seen here from 50 miles away, the 15-megaton hydrogen blast called Bravo ranks as the largest U. S. test, a thousand times greater than the atom bomb dropped on Hiroshima in 1945.

U. S. AIR FORCE/BERNARD HODGKIN ARCHIVE

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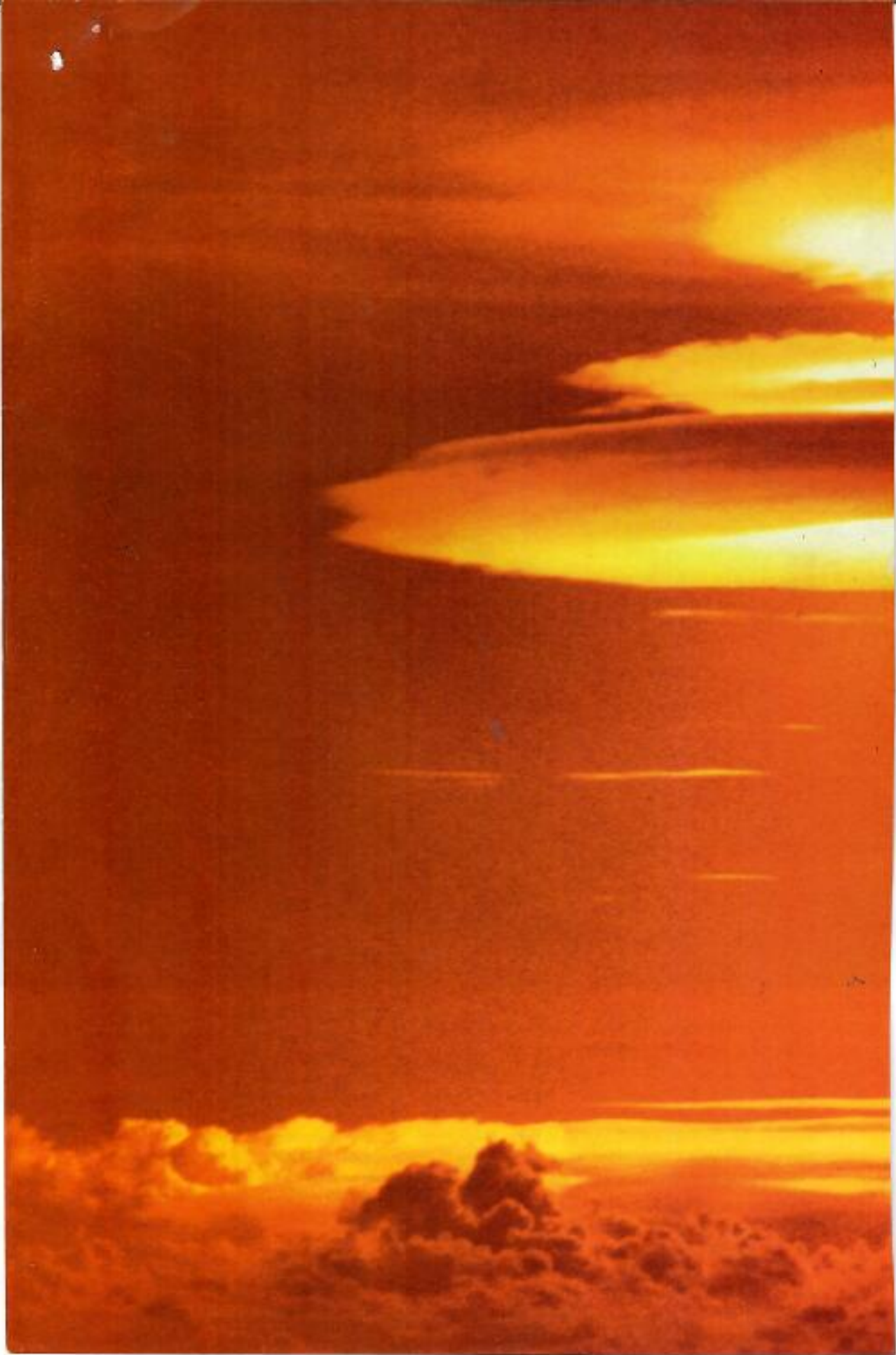
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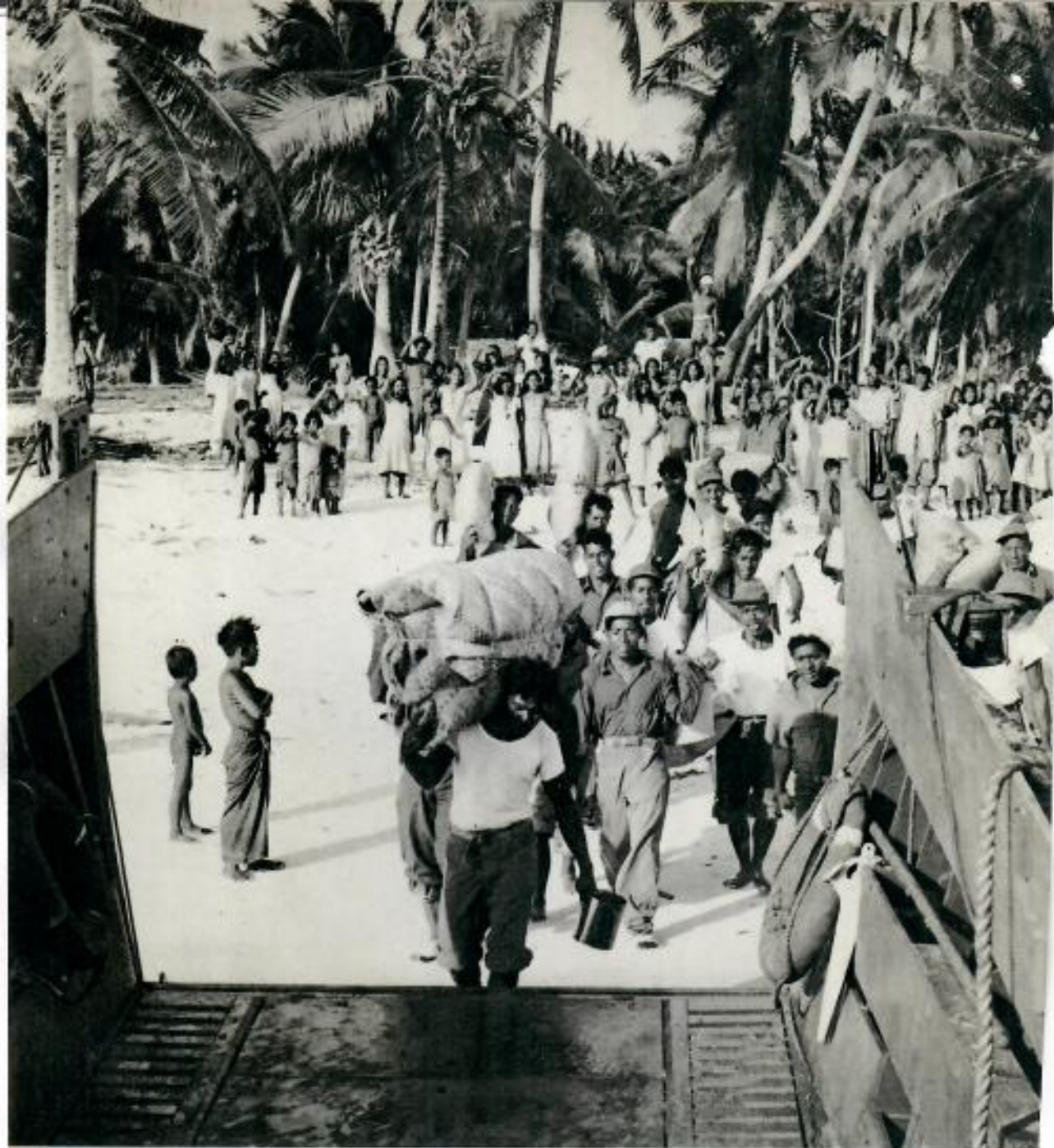
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skills died as the old men died. As wards of the U. S. government, they now receive food from the Department of Agriculture, such as peaches soaked in heavy syrup. Diabetes is a major concern among the Bikinians, and such food only adds to the problem.

They also suffer from despair, and so their comments to outsiders are weighted with complaints. But there is never rancor in what the Bikinians say, no confrontational

protest. Their culture does not permit that.

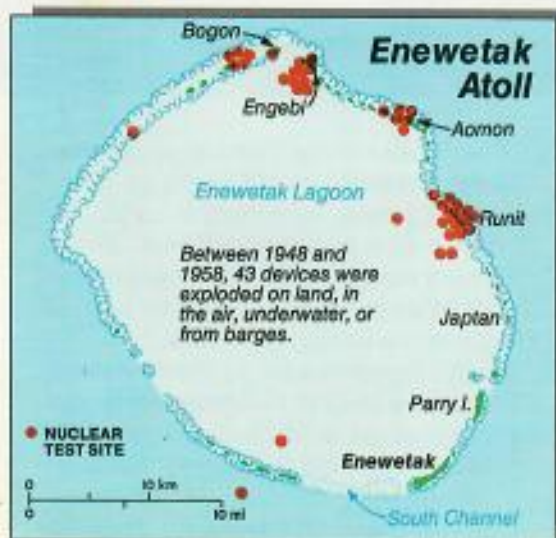
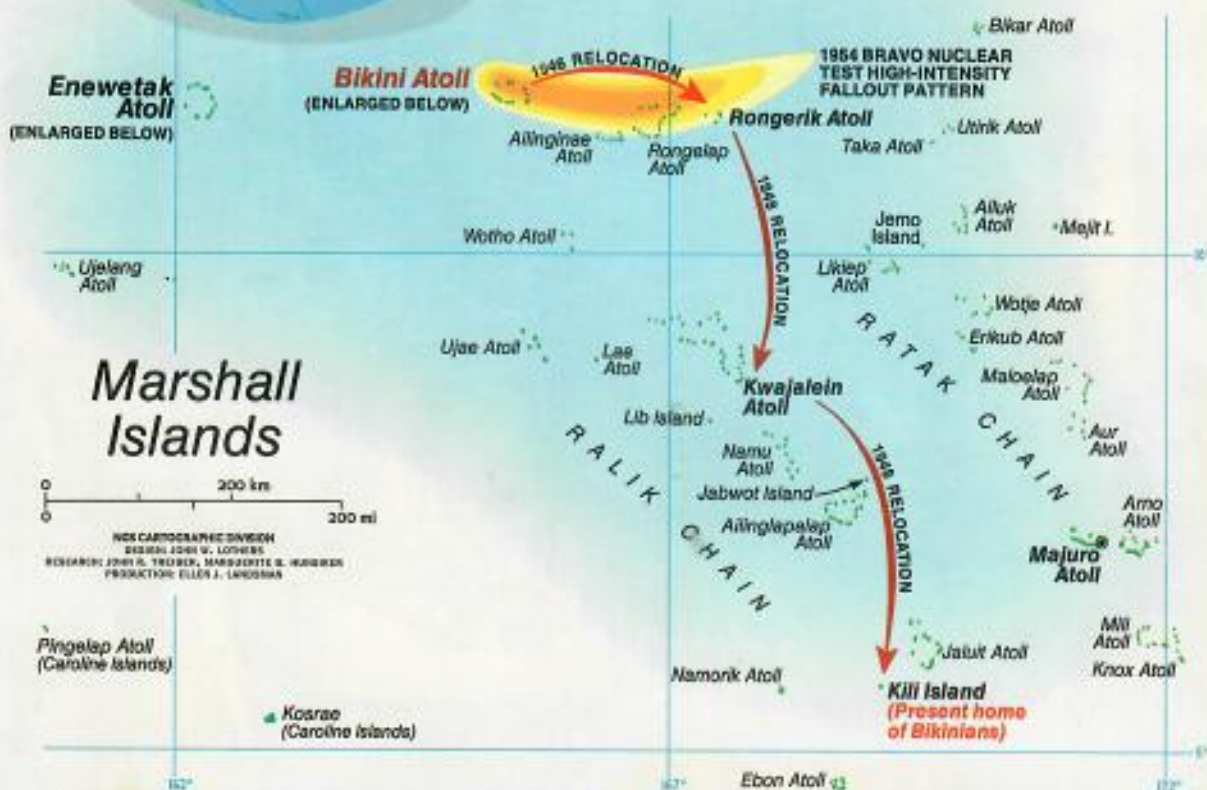
"They promised us we could go back," said Sorry Jelang, an elderly Bikinian, "so all we can do is stay here and wait. But we need more money, more food. You tell them to give us a big bank. Look at my hair, all white now; on Bikini, only black."

On the days when the airplane comes to Kili, banking lazily to the left before threading the eye of the needle between palms and the sea to set down on the runway of crushed



Route of the nuclear nomads

IT WAS A TEMPORARY MOVE, or so the people of Bikini thought in 1946, when they left for uninhabited Rongerik Atoll. Within two years they were starving; many local fish were poisonous and coconuts scarce. Evacuated to a U. S. naval base on Kwajalein, they were moved eight months later to Kili, where about half their numbers remain. The rest are scattered throughout the Marshall Islands. Enewetak (Eniwetok) Atoll, also used for testing, was partly resettled in 1980 after radioactive soil and debris were removed. Bikinians hope such a plan may one day end their 40-year odyssey.





U. S. AIR FORCE/DEFENSE NUCLEAR AGENCY

coral, there is a stir of excitement among the Bikinians. Except for the radio and periodic visits by a government supply ship, it is their only link with the rest of the world. It also brings them new stocks of Fanta grape soda.

In July of last year the plane—then the only operational one of the Marshall Islands airline—left Kili with the mayor of the community and members of the council among the passengers. The destination: Bikini.

They were returning not to stay but to be

“For the good of mankind,” Bikinians left home to make way for the Able and Baker atomic tests; American negotiators found the missionary-educated Bikinians especially open to religious appeals. Here an advance construction party of U. S. Navy Seabees and Bikinians loads supplies onto a landing craft for the trip to Rongerik.

shown what the government is doing to make the island habitable. Most of them were elders who had spent their early years as fishermen and boatbuilders, and they were the ones for whom the departure from Bikini in 1946 was most painful.

“Bikini not long now.” Lore Kessibuki looked out of the window, down to where the Pacific lay sunstruck and still. We had stopped at Kwajalein, the largest island in the largest coral atoll in the world, and were glad to be gone from there, for it is a place where outsiders are not made to feel welcome. Kwajalein Atoll is where missiles land after being fired from Vandenberg Air Force Base, some 4,800 miles away in California. They are seldom far off target as they slam into the lagoon or the sea nearby, unnerving fish and bird, and prompting one person on the plane to observe, “I have no doubt that in the event of a war, the United States can knock the hell out of Kwajalein.”

THERE IS no landing strip on Bikini, so we put down on Eneu, in the southeast corner of the atoll. No one lives on the 304 acres of Eneu, and the runway dates from the nuclear testing period.

Tomaki Juda, the mayor and son of the late Chief Juda, may have been the one who caught the first fish from the boat taking the delegation from Eneu to Bikini. It was a 45-pound yellowfin tuna, taken on a handline with only a few strands of burlap for a lure. Unfished for many years, Bikini lagoon gave generously that day of its tuna and other fish, all free now of radioactivity. The 17 vessels in the target fleet that sank during the testing act as convention halls for marine life, including sharks in menacing numbers.

Lore Kessibuki was among the first onto the beach. He is an old man, but he stood there with his back straight and his head tilted upward, like a visionary at a time of revelation, and said, in a whisper, “Bikini,



Bikini." He was finally home, if only for a few days.

THERE is one radioactive substance almost totally responsible for preventing Bikinians from living on their island. It is called cesium 137. Established in the soil, it contaminates the groundwater and food crops. That is not to say that a person eating a coconut from a tree on Bikini is going to die or even become ill. But a steady diet of locally grown foods could result in serious health problems.

That was the case during a ten-year period starting in 1968 when President Lyndon B. Johnson declared Bikini to be safe. By 1971 some Bikinians had returned, but by 1978 they were found to have ingested more cesium than was considered acceptable. Once again the island was evacuated.

Cesium 137 has a half-life of 30 years, meaning that after 30 years its strength is reduced by half. And then in another 30 years, it is again reduced by half (by contrast, plutonium 239 has a half-life of 24,360 years). By such calculations it will take another 80

to 90 years before the cesium on Bikini has been reduced to acceptable levels. However, there may be quicker ways of cleaning the island, and in the forefront of those seeking them is Dr. William L. Robison of the Lawrence Livermore National Laboratory in Livermore, California.

"It took us years of work just to get a data base so we could make radiological assessments of Bikini," Robison said. "Now we are looking at possible remedial measures, such as blocking the uptake of cesium into the food crops, or reducing the radioactivity by removing some of the soil."

It is possible to do the first, Robison believes, by applying fertilizer rich in potassium to the ground at Bikini. The second measure would require scraping off the top 12 inches of soil to reduce the cesium hazard. Clearly, the use of fertilizer would be less expensive and less destructive. To take 12 inches off Bikini's 560 acres could cost as much as 80 million dollars and destroy 25,000 trees and all the beneficial organic matter now in the soil. Finally, disposal of the "hot" material would present a problem.



U. S. AIR FORCE (ABOVE); U. S. NAVY/NATIONAL ARCHIVES

Ringside seats for the "bomb" were a hot ticket in 1951, when military and civilian VIPs (above) watched from the officers club on Enewetak, just 12.5 miles from ground zero. Naïveté was the order of the day during the 1946 tests, when radioactive target ships were boarded within hours of a blast, and men assigned to scrub down the decks (below) routinely ate on board.





For those reasons scientists hope that the soil will not be removed but rather that fertilizer will be applied. Whatever the cost, it would be a pittance compared with the billions of dollars spent to test the weapons.

"There is no question that we owe them rent, and we owe them renovation," said Dr. Henry I. Kohn, professor emeritus of radiation biology at Harvard Medical School. "I feel the United States owes it to Bikini's people to return their atoll as close as possible to its original condition."

Kohn is chairman of the Bikini Atoll Rehabilitation Committee (BARC), a group of scientists appointed by Congress to make recommendations on how to make Bikini livable again. He was among those who visited the island last summer, when the Bikinians were there.

BIKINI WAS SELECTED as the test site because it is isolated from sea and air routes, and because the winds in the atoll blow in predictable directions, thereby controlling the drift of radioactive clouds. But once the winds shifted at the time of a test shot, and because of that the Bikinians remain nomads after 40 years.

Bravo was the first test of a deliverable hydrogen bomb, a surface shot detonated in 1954. It was an explosion of about 15 megatons, or 15 million tons of TNT (the bomb exploded over Hiroshima had a force of 15,000 tons of TNT), making it the most powerful weapon ever activated by the United States. A freight train carrying Bravo's equivalent in TNT would span the North American Continent.

The errant winds showered radioactive pulverized coral and other material over a vast area—perhaps as much as 50,000 square miles. Those caught in the fallout included some 250 Marshallese from the islands of Rongelap and Utirik; 28 weather station personnel on Rongerik; and 23 crewmen of a Japanese fishing vessel, the *Daigo Fukuryu Maru* (*Lucky Dragon No. 5*), one of whom died of radiation exposure. To this day the tragedy of Bravo haunts the U. S. government and its victims.

Had it not been for the power of the explosion and the shift in winds from northward to eastward, Robison would not be kneeling down in the dirt of Bikini 31 years later,



U. S. AIR FORCE/DEFENSE NUCLEAR AGENCY (FACING PAGE); BROOKHAVEN NATIONAL LABORATORY

"*Bikini snow*"—bits of radioactive ash and coral—showered Rongelap Atoll when winds shifted during the Bravo test in 1954. Curious natives played in it, even tasted it, and many—like Iroji Kebenli (*facing page*)—suffered burns. He recovered, but three out of four children under ten later developed thyroid tumors. Lehoj Anjain (*top*) had his thyroid removed, free of charge, by New York's Brookhaven National Laboratory in 1968. He died in 1972 (*above*) of radiation-induced leukemia.

examining vegetables and other crops being grown in an experimental garden. In one place the hot soil had been removed, and in another, fertilizer had been spread on the ground. Robison rose and squinted in the bright sunlight as he explained to the mayor and members of the Bikini council that samples would be tested for cesium content.

"It may be that we can get rid of some of the cesium by flushing salt water through the soil," he told them. "We are experimenting with that." The Bikinians listened and said nothing.

Also present were Dr. Frank L. Peterson of the University of Hawaii, a hydrogeologist; Dr. Earl L. Stone, adjunct professor of soil science at the University of Florida; and Dr. Arthur S. Kubo, a nuclear and civil engineer at BDM Corporation in McLean, Virginia, all members of BARC and all active in working to decontaminate the island.

The scientists share a deep concern for the welfare of the Bikinians, but past decep-

tions, contradictions, and confusion have left the people with an eroded sense of trust.

"We don't really understand these experiments," said Kilon Bauno, at last. "The only thing we understand is that you poisoned our island and that I am old, with not too many years to live. So all we say is get us off of Kili and give us lots of money so we can live comfortably until Bikini is safe."

Lest the scientists take offense, another Bikinian added: "It's true that we do not understand your work, but we do know that you Americans are very smart."

ON ANOTHER DAY we traveled by boat across the lagoon, over the place where the U.S.S. *Saratoga* lies on the bottom, her flight deck only a hundred feet below the surface. The honored carrier went down during the second shot of the testing, settling upright on her keel, her planes still arrayed on the hangar deck.

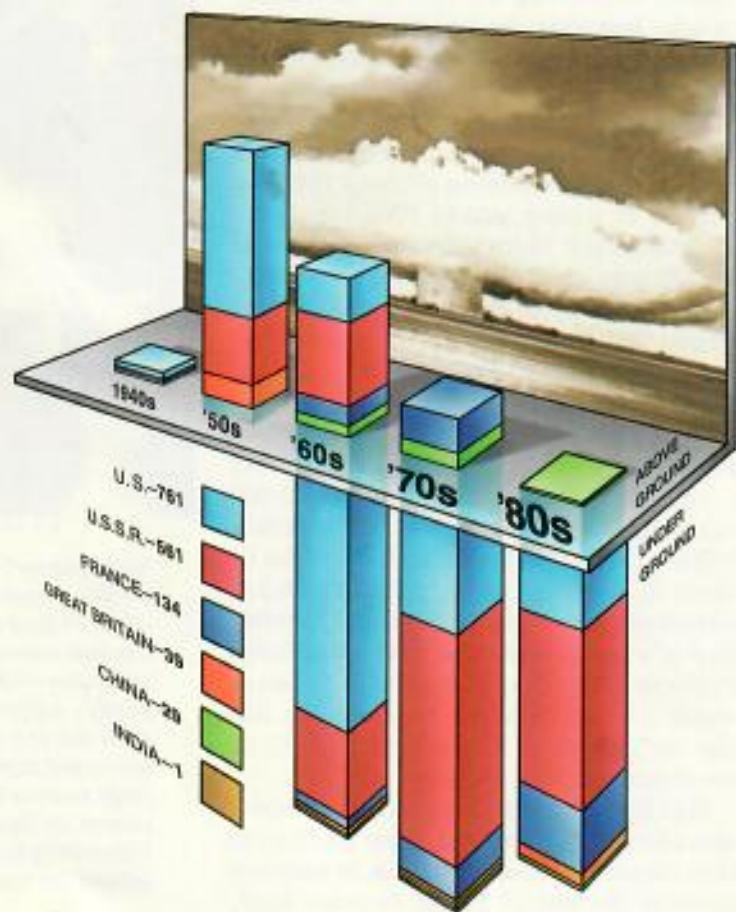
Then we sailed over the mile-wide Bravo

Nuclear scoreboard

THE ATOMIC CLUB had one member—the United States—when testing began in 1945. The Soviet Union made its debut in 1949. Since then four more players have joined the group, which through 1985 conducted 1,525 known tests.

Fallout from intensive atmospheric testing during the 1950s and early '60s peaked in 1963, when it added some 7 percent to the dose of radiation we receive naturally. The increase today stands at less than one percent, thanks in part to the 1963 Limited Test Ban Treaty signed by the U.S., U.S.S.R., and Great Britain that began the era of underground testing.

NATIONAL GEOGRAPHIC ART DIVISION
DATA SOURCE: STOCKHOLM INTERNATIONAL
PEACE RESEARCH INSTITUTE



National Geographic, June 1986

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crater, still clearly defined beneath the water. Nearby were old reinforced concrete bunkers in which automatic cameras recorded the infernal turmoil of atoms gone berserk—the steamy, dirty clouds rising tens of thousands of feet in the air, the waves of heat and sound and motion breaking across the atoll, the complete destruction of an island, its beaches and birds and trees all gone to vapor and dust.

As we passed the islands in the north of the atoll, sounding the ship's whistle to send the terns and petrels rising from the trees, the Bikinians spoke among themselves of the times they sailed here. "If we started out before the sun came up, we'd be here by mid-morning," one said. They knew the owner of each parcel of land on each island, for nothing is more important to a Bikinian than land. In their culture a man without land is denied his dignity, his very reason for being.

The Bikinians are a people with no written history. It is not certain where they originated, although the Marshall Islands atoll of Wotje is often cited as their ancestral home. Regarded as inferior by the Germans and Japanese, who controlled the islands at different times until the end of World War II, Bikinians came to hold themselves in low esteem. Even among other Micronesians they were considered backward, doltish.

They withdrew among themselves but retained a tenuous link to an outside *iroij lablab*, or paramount chief. Only with the arrival of missionaries in the early part of this century did they accept the teachings of others. They became staunch Christians.

NO ONE understands all of this better than 44-year-old Ralph Waltz from Menominee Falls, Wisconsin, who came to Micronesia with the Peace Corps and stayed on to marry a Bikinian and settle on Majuro, the capital of the Marshalls. For a time Waltz lived on Kili and came to know the hunger that gripped the people in their exile, when the arrival of supplies was delayed by heavy seas and a shortage of ships and by indifference on the part of the Trust Territory administration.

"I was lying in bed at four in the morning," he told me, "and I was still awake. You can't sleep when you're hungry. I heard a breadfruit fall to the ground from a tree just

behind my house. I jumped up from my mat and ran to the tree, but the breadfruit was gone. Someone had beaten me to it."

He went on to recall the time that he and four Bikinians set out offshore in a small boat to fish. "If we hadn't been so hungry, we wouldn't have risked the trip in that boat," he said. "The motor gave out, and two of the Bikinians went into the water to swim to shore for help. They never made it. They were eaten by sharks."



NATIONAL GEOGRAPHIC PHOTOGRAPHER DAVID ALAN HARVEY

Luck ran out for the Lucky Dragon when Bravo's gritty fallout covered the Japanese fishing boat and its 23-man crew, causing one death and many illnesses. Crew member Matashichi Oishi (*above*) sits on the renovated Dragon with his own model; both are part of a Tokyo memorial to the tragedy.

Unlike the Bikinians, Waltz shows flashes of anger about their plight. This anger has served them well, for he is employed by the council as its liaison officer.

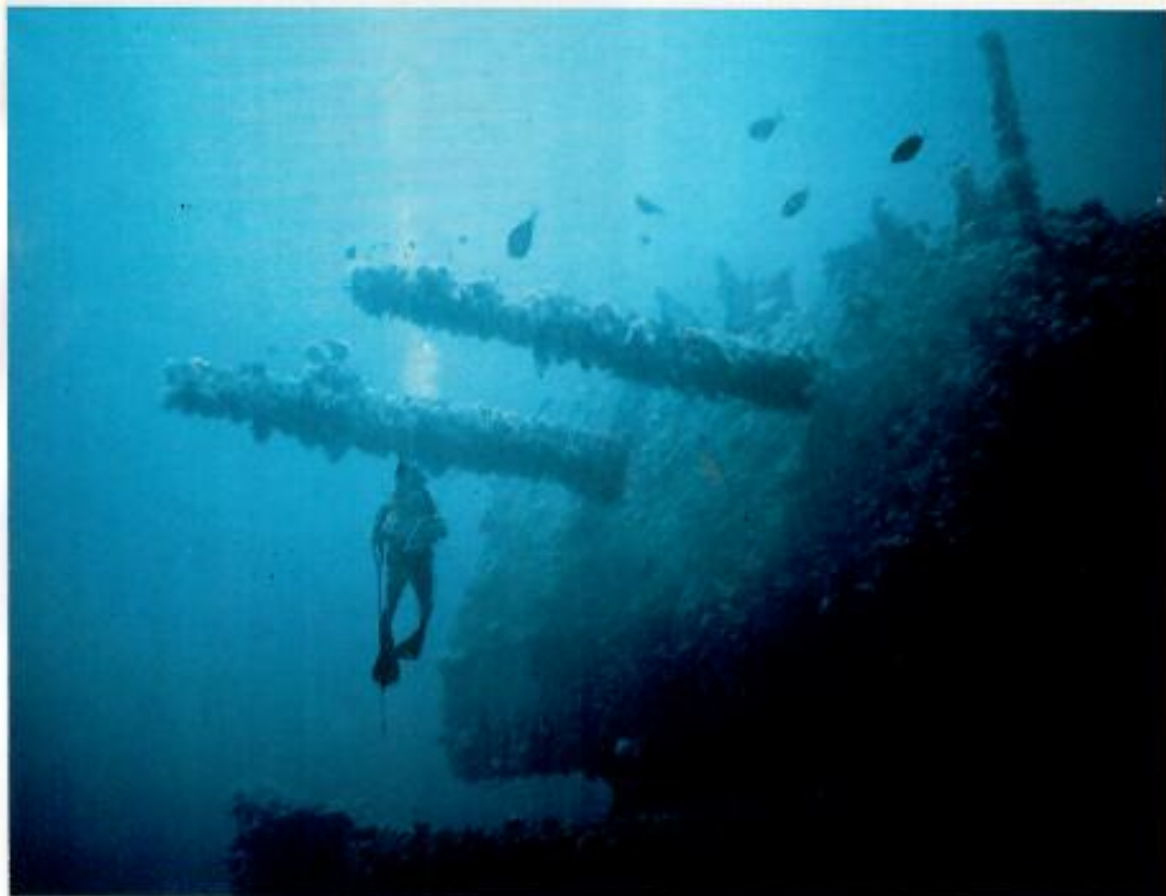
Even more of a counterpoint to the timidity of the Bikinians is the voice and untiring work of Jonathan M. Weisgall, a Washington, D. C., attorney who shepherds their lawsuits for compensation through the courts, who appears before congressional committees on their behalf. Weisgall, too, is driven in no small measure by the steam of outrage.

"In addition to all else," he said, sitting in his Washington office amid a clutter of

research material on Bikini, "the social impact on the people has been tremendous. They have lost virtually all their fishing and sailing skills."

STILL, they try: There was the mayor, Tomaki Juda, standing in the surf off Nam, the largest island on the northwest rim of the atoll, grinning and waving a spear from which flapped a small rabbitfish. They used to fish that way. On Kili they use a hook and line, sometimes floating on coconuts placed under their armpits, their heads down, moving silently, stalking the catch.

It was a jewel-like day, that time on Nam.



GORDON W. TRIMBLE, UNIVERSITY OF HAWAII (ABOVE); U. S. NAVY/NATIONAL ARCHIVES

The nuclear lagoon of Bikini holds the World War II carrier U.S.S. Saratoga (above), one of many vessels purposely targeted to test damage. Saratoga sank during test Baker, a 1946 underwater blast that raised 100-foot waves and shot water from the lagoon more than a mile high. Radioactivity showed up in a surgeonfish (right) that had eaten contaminated algae.



Pieces of red coral glistened in the sand, while giant turtles slumbered in the lee. The beach was heavy with flotsam, mostly Japanese Suntory whisky bottles (not a message from a castaway in the lot) and mangled flip-flop sandals. There are no dwellings, no people living on Nam, and being there in the harsh sunlight, numbed by the solitude, gives cause to wonder if this isn't the loneliest place on earth.

Nam covers 115 acres. It used to be larger, but Bravo carried away a piece of it and the island of Bokonejen to its west. The nearby island of Bokbata was also blown away in a later explosion.

"That island was a pantry for us," said Lore Kessibuki, speaking of Nam. "We'd sail there and stay two or three days, and then we'd go home with turtle eggs and birds and other things." Even now, going back to Bikini, there was a 300-pound turtle on its back in a skiff being towed by our vessel. Someone suggested that the Bikinians release the turtle, but the past had reached out to touch them, and they liked the feel. The turtle, they insisted, would go with them to Kili when they returned.

THERE would be one more day on Bikini—time enough for Lore Kessibuki to visit the graves of two of his sons. "They got a fever and died," he told me as he looked down at the mounds overgrown with brush. There were markers on the graves, chiseled out of coral.

Lore is the poet, the lyricist of the community. The evening before they were to go back to Kili, he sat in the old schoolhouse being used as a dormitory and said to the scientists: "The thing I want to do is thank you for the work you're doing on this island, the ways you are looking for to get rid of the poison in the ground. All the things you are doing are amazing to me. Just a little while ago I saw a beautiful cloud in the sky. I saw that with my eyes. With my mind I see America being thousands and thousands of miles ahead of all others scientifically. I see too that Bikini people added to America's advancements in science by giving up their island, and so there should be an understanding between Americans and our people. Well, I just wanted to say that."

He and some other council members then

went outside to the beach, and, sitting there by a fire fed with driftwood, they sang their songs of love and sorrow.

So they left the next morning. It is likely that Lore and some of the other elders will never see the island again. At the same time most young Bikinians show little sincere interest in going there. It may be, therefore, that even if the cesium is removed, Bikini will remain abandoned.

Those who were born after the 1946 evacuation of the island have grown attuned to a world broader than the traditional social order of their parents. And, as wards of the U. S. government since birth, they have become addicted to welfare. They are fed and housed, and their illnesses are tended to, more or less. There is no turning back now to fishing and gathering for the Bikinians. It is too late. They *like* Spam.

IT HAD RAINED for four hours on Kili, buckshot rain pinging on the metal roofs, and the water lay in chalk-colored pools from one end of the mile-long island to the other. All around, the sea swells beat against the shore. Here and there pigs rooted in garbage thrown on the ground while chickens performed in their interminable fandango of walking and pecking, walking and pecking. Generators fed power to the houses in noisy, fitful surges.

And everywhere there were children; the birthrate on Kili must be among the highest in the world. They have few toys so they squat in the sand and juggle pebbles. They walk with their mothers to the beach and watch as soiled diapers are discarded in the surf. Then they play in the water, imagining themselves as sharks and ships and madcap monsters risen from the deep.

Shem Jamore, Toshiro Jelang, and Uraki Jibas stood together in a doorway and waved to the driver of a pickup truck passing by. There are six pickups on Kili, and for a fare of a quarter a Bikinian can climb into the back and be driven around the island. It is a fine way to catch a breeze on a hot day, especially racing down the airstrip.

"Right here, where we are, is downtown Kili," Toshiro said, laughing. "At that end is Chinatown, and on the other end is the highest district."

There are no Chinese on Kili, and there is



Off-limits forever for habitation is Runit (below), where 111,000 cubic yards of radioactive soil and debris scraped from islands in Enewetak Atoll lie entombed in a bomb crater beneath an 18-inch-thick concrete dome. The effort earned Enewetak a clean bill of health, but medic Kunio Joseph (above) says fearful islanders think "maybe 'they' put radiation in the ocean, and that is why there is always sickness here."



no rent, high or low. Toshiro had meant to mock the suffocating confines of the island and the sameness of the 75 or so houses made of plywood and metal. There is also an elementary school, a church, and a restaurant that may or may not be open on any given day to serve chicken and rice—hardly ever anything other than chicken and rice. The sale of alcohol is banned on the island, although soda pop is available through a process laced with mystery and intrigue.

"You want a soft drink?" Toshiro asked. "It is very expensive. Seventy-five cents. And it may take some time." After half an hour the drink appeared, but not before furtive consultations behind a water cistern. The reason for this was never made clear.

Toshiro and his friends Shem and Uraki are all too young to have been born on Bikini. They know little, if anything, about sailing an outrigger canoe or tending coconut palm trees. Ask them where they would like to live and they will answer, as one, Maui, in Hawaii.

Maui is the first choice for a homesite among most Bikinians. Many say they want to live there until Bikini is ready, but after that intimate exposure to the outside world

would they want to return to the island?

SOMETHING ELSE: An agreement with the United States, through which the Bikinians received 20.6 million dollars for resettlement, stipulated that they must find a place to live within the Marshall Islands. Also, it has been made clear by a citizens group on Maui that the people would not be welcome there.

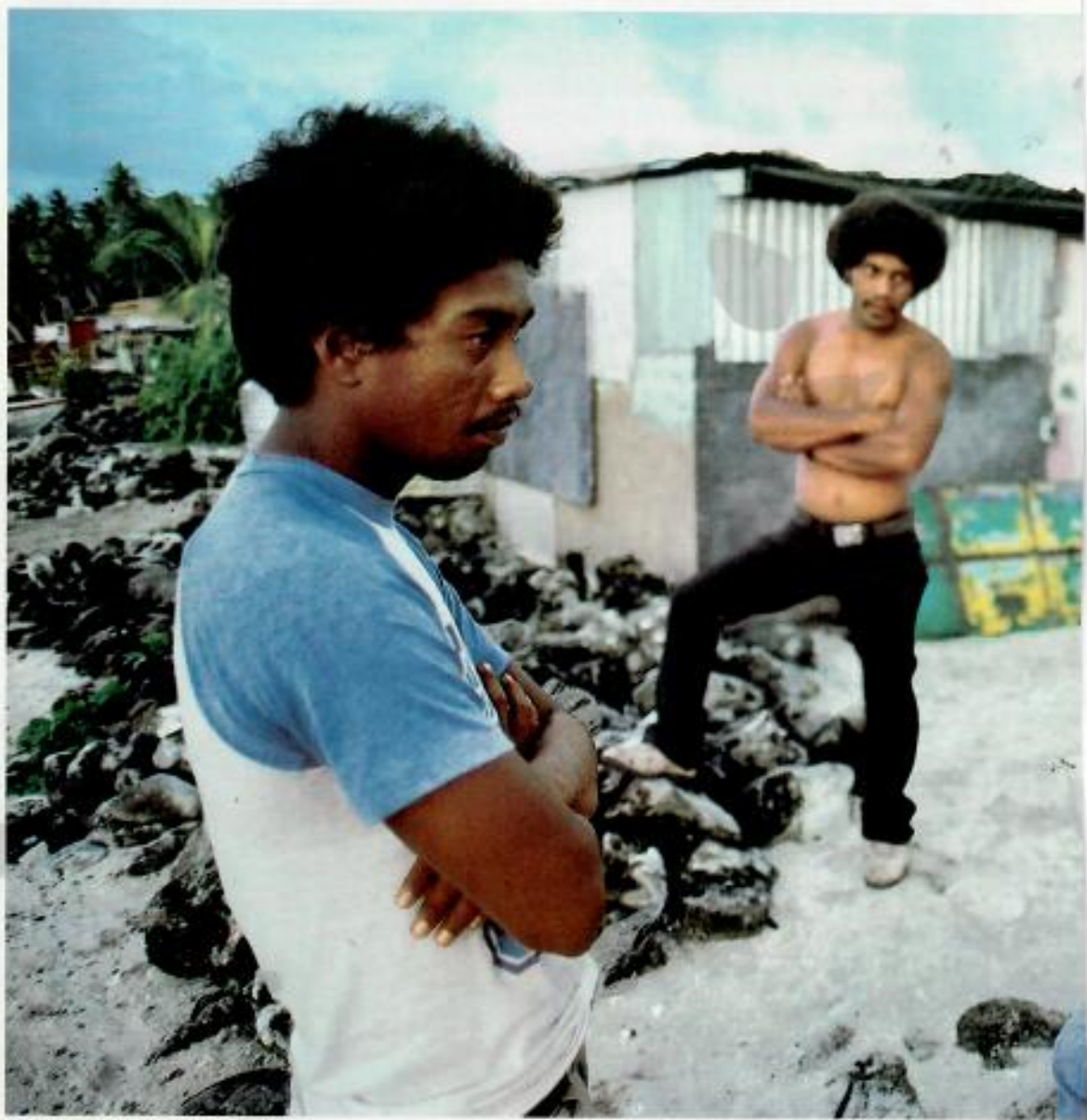
There has been other financial compensation in addition to the resettlement fund to ease the many hurts, but nothing like the 450 million dollars they are seeking in a lawsuit as payment by the U. S. for taking and damaging their atoll. This action was scheduled to go to trial last October, but it has been delayed because of a major development in the status of Micronesia as a trust territory.

Under recently signed congressional legislation the Marshall Islands, to which Bikini belongs, will become a "freely associated state," independent except for matters of defense. (This same surge toward political autonomy within the Trust Territory will also create the Federated States of Micronesia, the Republic of Palau, and the Commonwealth of the Northern Mariana Islands.)

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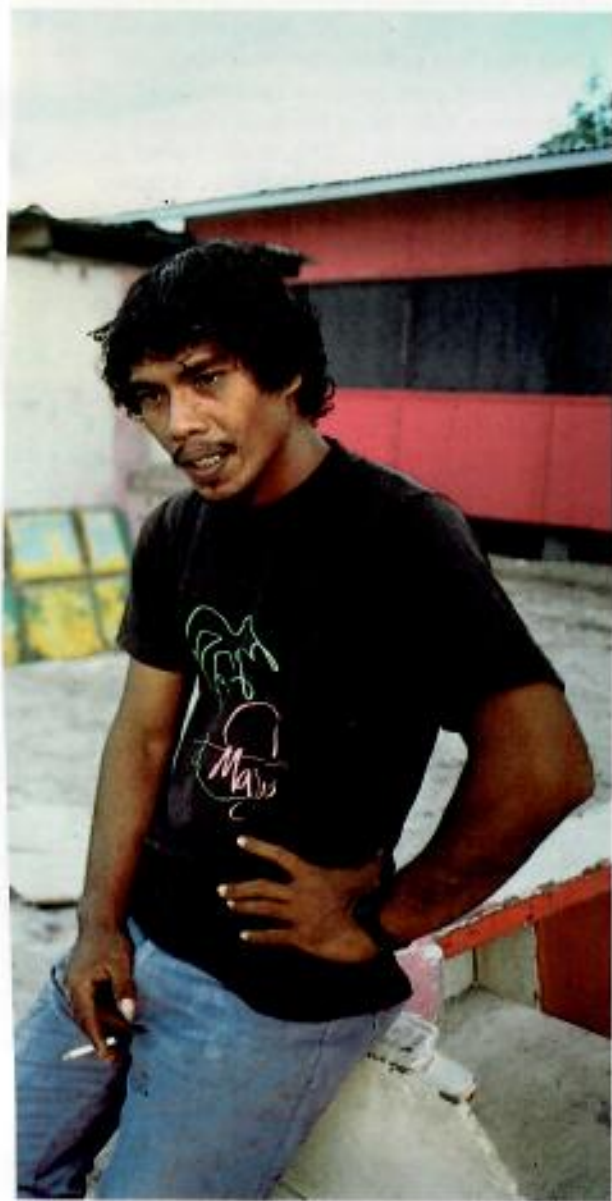


Time passes slowly on Kili, the 230-acre island (right) where many Bikinians have lived since 1948. Fed and housed by the U. S. government, even able-bodied young men (below) have little incentive to battle the island's pounding surf for fish. This leaves 650 Bikinians with nothing to do but watch for the supply plane or dream of being somewhere else. "All we can do is stay here and wait . . . wait," says one islander.



Although most of its islanders favored creation of a new Republic of the Marshall Islands, as it will be called, 89 percent of the Bikinians voted against it. They are reluctant to break their strong tie to the U. S. for fear the welfare will end.

"Without the government food my diet would be something like four crabs and a scoop of rice each day," said Tomaki Juda. "Also, we would not feel comfortable if the Marshallese government was put in charge of our money. There are now many programs beneficial to the Bikini people, but we have concerns that they may not continue under a compact of free association."



Bikini—A Way of Life Lost

While the future of the Bikinians hangs now in a dark limbo, their numbers have grown from the 161 who were taken from the island in 1946 to more than 1,260 today, of whom about half live on Kili. And they pass their days there waiting—the old men with faces like book bags, lumpy and strapped with wrinkles, the young girls with large combs in their black hair, the teenage boys surly with boredom—waiting for their flight from despair. They have reason enough to curse those errant Bravo winds.

Also because of their fallout:

- A man named Gene Curbow seeks redress from the government, claiming his health has suffered. As a weather specialist in the Air Force, he was one of 28 servicemen stationed on the island of Rongerik at the time of the blast. The government paid him \$53, the cost of the clothes he had to leave behind. He claims to have received 117 rem of external radiation in two days (200 times the maximum annual dose allowed by federal radiation standards) from those heavy, powdery flakes they called Bikini snow. He had three heart attacks by the time he was 42 and now has three clogged arteries in his body. He attributes all this to Bravo.

- The people of Rongelap, also caught in Bravo's poisonous dust, claim to be plagued with illnesses. They have developed a high number of thyroid tumors, some cancerous. The claim that their women give birth to grossly deformed babies is highly contested. Last year the people were taken by the Greenpeace organization to another island in the Marshalls.

- Roger Ray, a gentle and thoughtful man, struggles against the forces that would have him change his feelings of regret to those of guilt. As a physicist he was present at Bikini for Bravo. Subsequently, as the U. S. Department of Energy program manager for the Marshalls, Ray devoted the last 14 years of his career to exorcising the terrible legacy of the bomb from the lives of the islanders.

There are those who charge that the government, knowing that the winds had shifted, went ahead with the detonation of Bravo with the thought that those caught in the fallout would serve as guinea pigs for the study of the effects of radiation. Roger Ray disputes that, and so does Gene Curbow. "It was incompetence," Curbow told me.

"That's all you can flat outright say about it. If they set me up as a guinea pig, why haven't they been around to check on me?"

The people of Rongelap and Utirik caught in the fallout continue to have their health monitored and their illnesses treated by the Brookhaven National Laboratory of Long Island, New York, working as a subcontractor for the government. Dr. William Adams, who is in charge of the program, contends that there is no medical reason for the people to have left Rongelap last year.

"Obviously, there was fallout over these atolls, and some residual radiation in the soil. But the radiation the people received on Rongelap since they moved back there in 1957 is less than if they had lived in Denver all that time."

Adams and other physicians travel to the islands twice a year to examine and treat the people. There are thyroid problems among the population, he said, and two pituitary tumors have been diagnosed. "A great deal has been made about malignant disease and the radiation exposure," Adams said, "and while I do not want to make light of it at all, there are groups that magnify the horror of

what happened, and that has led to such things as this exodus of the Rongelapese from their ancestral homeland."

HAD THE TESTS of 1946 shown the naval fleet to be obsolete, useless as a war machine? Certainly there was nothing for the Navy to cheer about as five ships went to the bottom in just the first shot, while others burned with the hidden fires of radiation. But there were ships that survived, ships that steamed from the scene after taking a battering unequalled in the annals of fury at sea. Decision: too close to call.

There was widespread ignorance about nuclear weapons at the time of the testing. Thus, the errors, the miscalculations, the orders that had sailors scrubbing the woodwork of a ship to remove radiation while the brushes may have worked the poison deeper into the pores. The devices used to monitor radiation were inadequate in many cases; also the men sometimes took off their gloves in contaminated areas, necessitating removal of the outer layer of skin with acid.

Yet, at the time of the first two tests there was not a single recorded death or serious

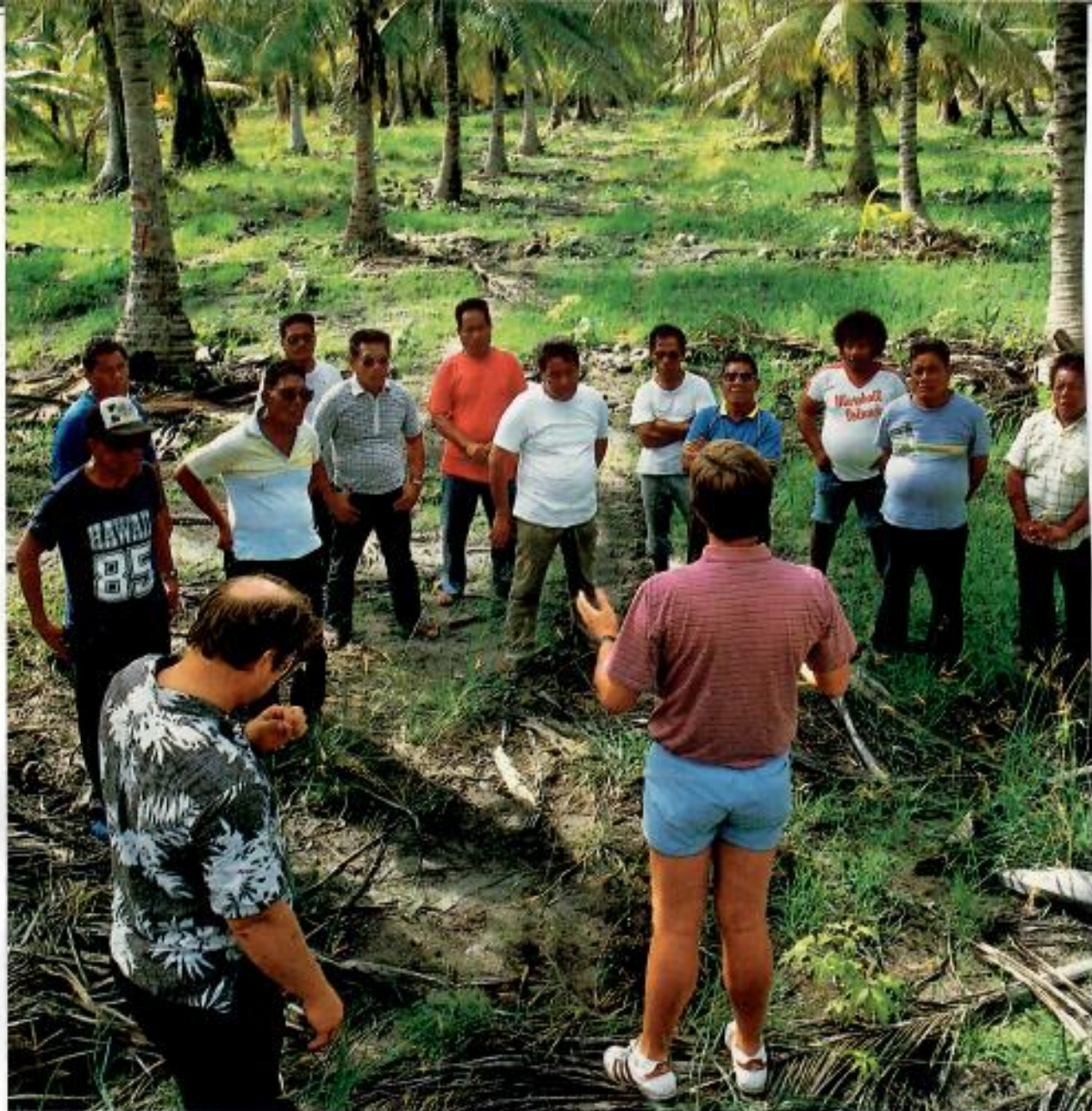




Paradise lost, the island of Bikini (below) has what Kili lacks—a sheltered lagoon and plenty of space. Several Bikini families moved back in 1971 after the U. S. pronounced it safe. By 1978 they had ingested, through their diet, unacceptable levels of radioactivity and were re-evacuated. In July 1985 members of the Bikini council returned (above) to observe current decontamination efforts.

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injury due to radiation among the more than 40,000 servicemen and others present at Bikini. The atoll was evacuated; the target ships were unmanned; test personnel were stationed safely upwind.

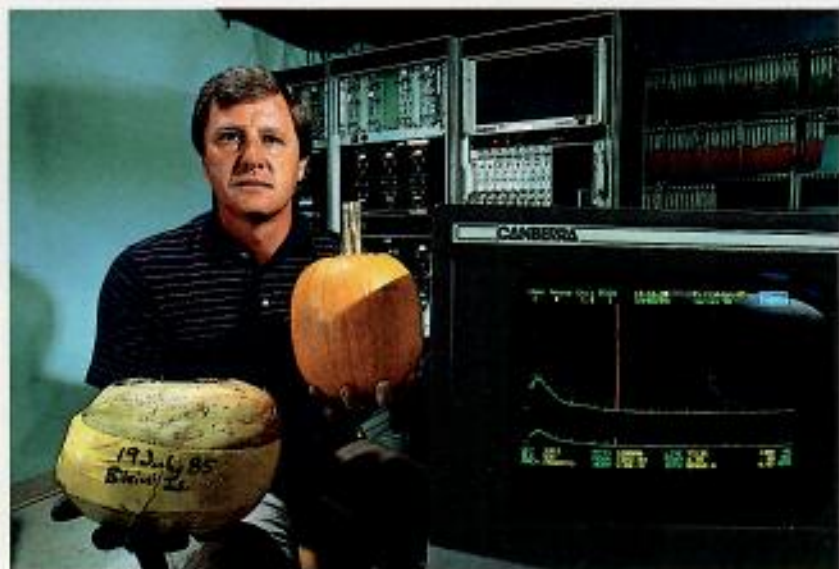
Still, it was messy.

ON THE EASTERN SIDE of Enewetak Atoll there is a small island called Runit, and on that island there is a massive concrete dome called Cactus Crater, under which lies buried the deadly garbage of radiation (pages 826-7).

The 43 explosions around the lagoon at

Enewetak left tons of hot debris and soil. It took three years to clean the atoll, at a cost of 120 million dollars, and the rug under which the dirt has been swept consists of 358 panels of concrete domed over a hole 30 feet deep and 350 feet wide. And still there remain loose on Runit 160 grams of plutonium oxides, a mere thimbleful, but enough of this toxic metal, in its elemental form, to wipe out an entire population.

Kunio Joseph worries about the plutonium, but he worries much more about his empty aspirin bottle. For the past six years he has held the job of medical assistant on



the island of Enewetak. "I have run out of supplies," he said. "I meet the plane every time it comes in, hoping there is something on it for me. I am down to one aspirin."

On Kili, Uraia Jibas complained that he was out of bandages. On a table there were bottles of pills, one of which was marked Worms, another Arthritis, and a third Scabies. Nothing was refrigerated. In all the 68 clinics in the outer islands of the Marshalls, there are fewer than a dozen refrigerators that work.

For want of a medicine costing 85 cents, a local paper reported, a child on an outer

Radioactivity will linger on Bikini unless its soil is decontaminated. That's the verdict delivered to the Bikini council by Dr. William L. Robison (left), director of the Bikini Atoll project of Lawrence Livermore National Laboratory in California. Foods grown on the island show high levels of radioactive cesium 137 (pink spike on screen, above). The contaminated fruit held in Dr. Robison's right hand shows reduced radiation; it was grown in an experimental pumpkin patch (top) where the top 15 inches of soil had been removed. High-potassium fertilizer or saltwater irrigation may further block the uptake of radioactivity.



"There are no words to express my depression," sang Lore Keasibuki (standing, foreground) when he left Bikini 40 years ago. His dream of returning burns brighter during a visit to the atoll, and he believes that those who ruined his home are still his best hope—"It is not impossible for the United States to do anything."

island died last year. The infant mortality rate in the outer Marshalls is at least three times as high as the United States average. More than 50 percent of the deaths last year were of children under five. Small Styrofoam caskets are neatly stacked on the floor of a store on Majuro, as if on display for a weekend special.

BUT THERE IS NO DEATH on this Sunday morning in Kili. Rather, someone is striking the empty steel oxygen cylinder that hangs from the old breadfruit tree in front of the church, striking it with a length of pipe to produce a sweet but muscled sound, like a requiem for a tsar.

It is the call to church, and soon the Bikinians are sending up their voices to Zion,

filling that small hall with a devotion in song. It is then that the outsider comes to know a certain truth about these people, a people at peace with their lives: There is great strength yet in their souls, and only when they sit in those wooden pews, fanning themselves and reaching deep for the pieces of voice that fit together in glorious harmony—only then does the strength come forth.

So on this Sunday morning they are not only singing and worshiping. They are once again sailing their outrigger canoes, and they are fishing and clawing in the sand for turtle eggs. They are fathers smiling as their sons make their first climb to the top of a coconut tree.

It is not the sea that they hear outside, pounding Kili's unprotected shores. It is the ghost of a lost culture calling out to them. □

