Nuclear Tests: France's Unwelcome Export to the South Pacific

The island nations of the South Pacific have but limited natural resources and are remote from the centers of world power and population. One advantage that they do enjoy, however, is that, precisely because they are not heavily populated and industrialized, their environment is relatively free of pollution. Yet ever since World War II this advantage has been put at hazard by the intrusions of Western powers, as first one nuclear nation and then another has come halfway round the earth to test its new bombs. Since the mid-1960's the intruder has been France, and the agitation and resentment aroused by French nuclear testing has probably never been as great as it is today, on the eve of a new round of atmospheric detonations.

The new tests, to be conducted from Mururoa Atoll in French Polynesia, are regarded by many people in the South Pacific as a sardonic commentary on the quality of the international order. Consider these circumstances:

- The treaty banning nuclear tests in the atmosphere, under water, and in outer space—everywhere except the underground environment—was negotiated and signed by the major nuclear powers some 10 years ago. France and China have adamantly refused to accede to or observe the treaty despite repeated urging by the General Assembly of the United Nations that they do so. The UN Conference on the Human Environment, held in Stockholm in 1972, condemned all nuclear weapons tests, but especially those conducted in the atmosphere. This was in keeping with the view of the International Commission on Radiological Protection that *any* increase in radiation, however slight and from whatever source, is to be avoided unless the people exposed receive some compensating benefit.
- Protests by Australia, New Zealand, and many other nations of the Pacific basin against the French testing began long before the first test series in 1966 and have steadily intensified. Protests have come from South America as well as from the island nations, and, 2 years ago, such was the resentment in Peru that that country threatened to sever diplomatic relations with the French.
- On 22 June, the International Court of Justice at The Hague, in an interim ruling sought by Australia and New Zealand, decided that France should postpone its new test series pending a full hearing of the matter early this fall. France has responded by reiterating that the court lacks competence in matters involving its national defense.
- The sole purpose of the tests, it is evident, is to enable France to obtain information of a kind long since acquired by the United States through its own extensive program of testing in the atmosphere and underground. Neither France nor the United States has raised the possibility that, as allies, they should seek an agreement whereby France would receive some of the U.S. information. Pursuant to such an agreement, Great Britain has received U.S. nuclear information and has conducted, jointly with the United States, four underground tests at the Nevada Test Site.

Era of Reckless Testing

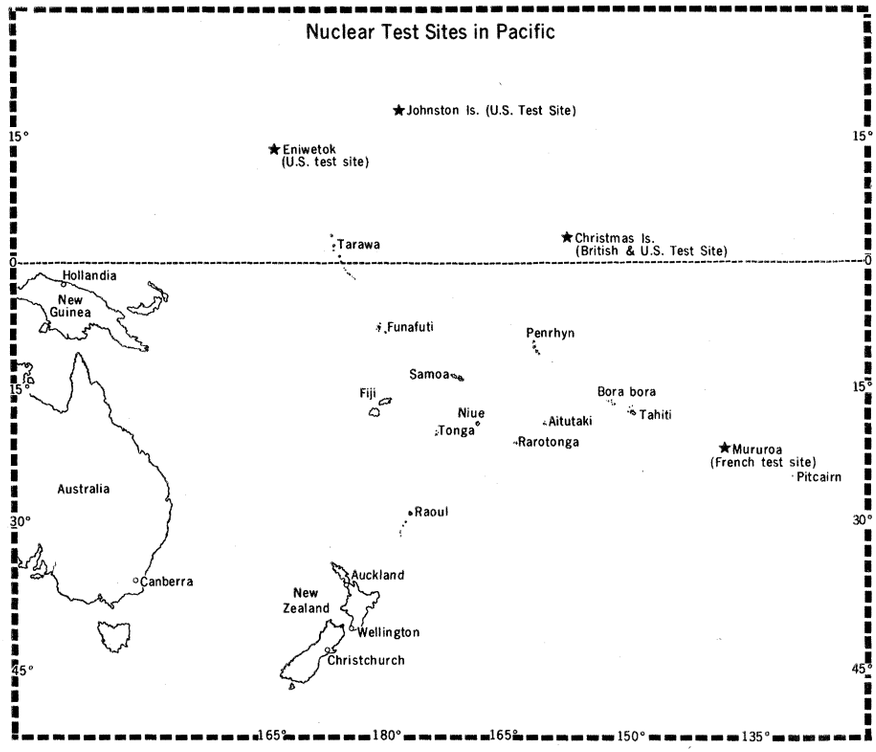
The first nuclear testing in the Pacific was the 20-kiloton blast set off by the United States at Bikini Atoll, in the Eniwetok Proving Grounds, on 1 July 1946. With this modest event began an era of nuclear experimentation which, from hindsight, seems reckless in the extreme. Powerful hydrogen bomb blasts detonated at ground surface drew huge quantities of material up into the mushroom clouds, subjecting areas for many miles downwind to short-term fallout from the troposphere, and subjecting the hemispheric and global environments to long-term stratospheric fallout.

The radiation sickness suffered by the hapless Japanese fishermen aboard the *Lucky Dragon*, caught in the fallout patterns of the immense (12- to 14-megaton) blast of 1 March 1954 at Bikini, was the symptom of a new nuclear technology out of control. Yet testing in the Pacific by the United States and Great Britain (the British testing began in the South Australian desert in 1953 but was moved 3 years later to Christmas Island) continued into 1957, the year the UN General Assembly first called for an end to testing by all nuclear powers. From 1958 to 1961 the United States, Great Britain, and the Soviet Union observed a moratorium on testing, and, after a new round of Soviet and U.S. testing in 1961 and 1962, the limited test ban treaty of 1963 was negotiated. The last bomb detonated by the United States in the Pacific was in a high-altitude, missile-launched test at Johnson Island in November 1962.

Meanwhile, Charles DeGaulle had come to power in France and was pressing on with plans for an independent French nuclear deterrent, or *force de frappe*. At the same time, France was being forced out of Algeria, where several nuclear tests had been conducted in the Sahara in the 1960–1962 period, the last one underground at In-Ekker. Not surprisingly, therefore, the French test program arrived in the South Pacific, at the farthest outpost of what remained of the French colonial empire, just as the American program was leaving.

The first French test at the Mururoa and Fangataufa atolls would not actually occur until 1966, some 2 years after the Chinese had detonated a bomb in the desert of western China. The reaction in the Pacific basin to this and subsequent Chinese tests seems to have been relatively mild by comparison with the resentment caused by the French tests, probably because the Chinese have been testing on their own national territory and not intruding directly into a region where other nations have immediate interests.

A "white paper" just issued by the Pompidou government points out that, of the some 392 nuclear tests conducted in the atmosphere by all nations up through 1971, France conducted only 30. The combined explosive yield of the French tests was 10 megatons, less than 2 percent of the total megatonage of all the atmospheric blasts conducted since the start of the nuclear era. Furthermore, the French note that all their tests in the Pacific have been detonated high in the air, and therefore have not caused the massive fallout associated with ground bursts. In fact, they contend that fallout from the tests has been negligible, even at places such as Pitcairn Island, only 620 miles leeward of Mururoa.



Even while acknowledging that the radioactivity measured in the South Pacific by its National Radiation Laboratory does not indicate an immediate health hazard, New Zealand regards the French tests as a cause of public anxiety and of potential harm. The fact that, prior to the 1971 tests, France declared a danger zone for aircraft of more than 1 million square miles is cited as compelling evidence that France is violating the rights and interests of other nations. Australia's Prime Minister Gough Whitlam has denounced France's pretensions as a nuclear power as "stupid" and derided its use of a colonial area for testing as an "anachronism."

The French tests also have been protested by the South Pacific Forum, an informal association of self-governing countries which includes (besides Australia and New Zealand) Fiji, Nauru, Tonga, Cook Islands, and Western Samoa. As a U.S. territory, American Samoa does not belong to the forum, but its Legislature has assailed the tests as hazardous and unnecessary. From French Tahiti come reports of Jean-Jacques Servan-Schreiber, of the Reform Party in France, leading 5000 Tahitians in a demonstration against the tests, with some participants bearing a sign proclaiming, "The Bomb is like the Maginot Line—it is useless."

However intense, the protests from the South Pacific appear unavailing, for, in terms of power politics, there is not much backing them up. Trade unions in Australia and New Zealand are imposing a boycott on trade between their countries and France, but this trade is not very significant. The Australian Rugby League will not invite a French team to tour Australia this year, but the French players whom this affects do not set France's nuclear policy. Great Britain and the United States possibly could dissuade the French from further testing if determined enough, but in neither country do the leaders seem concerned about a few more nuclear explosions a half-world away.

In a final gesture of protest, New Zealand is sending into the test area the frigate *Otago*, accompanied by the Australian oiler *Supply*. Representing the New Zealand Cabinet aboard the *Otago* is Fraser Colman, minister of immigration and mines, who won the trip on a drawing from a hat. If threatened by fallout, the *Otago* and the *Supply* are equipped to button up and wash down. As this is written, the French are warning ships and aircraft to keep clear of the test area, indicating that the first blast in the new test series could come as early as Friday, 13 July. According to unofficial reports, the explosion will be in the 1-megaton range and will involve the testing of a triggering device.—LUTHER J. CARTER

APPOINTMENTS

Richard W. Roberts, research and development manager of materials science and engineering, General Electric Research and Development center, to director, National Bureau of Standards, U.S. Department of Commerce. . . . **James M. Harrison**, senior assistant deputy minister, Canadian Department of Energy, Mines and Resources, to assistant director-general for science, United Nations Educational, Scientific and Cultural Organization. . . . **John J. Coffelt**, vice president for administrative affairs, Youngstown State University, to president of the university. . . . **James G. Miller**, vice president, Academy for Educational Development, to president, University of Louisville. . . . **Eugene R. Kennedy**, chairman, biology department, Catholic University of America, to dean, Graduate School of Arts and Sciences at the university. . . . **Merle Kling**, professor of political science, Washington University, to dean, School of Arts and Sciences at the university. . . . **John A. Morford, Jr.**, professor of education, John Carroll University, to dean of education, Seattle University. . . . **James Kelly, Jr.**, associate dean, School of Education, University of Pittsburgh, to dean of the school. . . . **Clifford G. Grulee**, dean, University of Cincinnati College of Medicine, to dean, Louisiana State University School of Medicine, Shreveport . . . . **Winslow R. Briggs**, professor of biology, Harvard University, to director, plant biology department, Carnegie Institution of Washington, California. . . . **James W. Patterson**, director, Pritzker Environmental Studies Center, Illinois Institute of Technology, to head, environmental engineering department at the institute.

Erratum: In "Evaluation of instruction" by Peter K. Gessner [11 May 1973, p. 569], sentence 4, paragraph 2, column 1, should read as follows: "It would seem likely that such an evaluative device would not differentiate between students able to solve the first problem presented to them and those who, although they may have been able to solve the fifth problem variant presented to them, failed to solve the first four."

Erratum: The name of the senior author of "Catecholamine uptake in cerebral cortex: an adaptive change induced by fighting" (8 June 1973, page 1050) was misspelled. It should be Edith D. Hendley and not Edith D. Henley.

Erratum: Due to a typographical error in the 15 June issue of *Science* (column 1, fourth line from the bottom, page 1152), the dates of the Mexican Revolution were incorrectly given as 1910–1970; the correct dates are 1910–1917. In the 21 June issue (column 1, paragraph 1, page 1263), the number of technicians and engineers Mexico intends to send abroad for training this year was given as 200; the correct number is 2000.