

## THE NIHILISM OF SOVEREIGNTY

IN 1967 Jonathan Schell wrote *The Village of Ben Suc* (Knopf), the story of the destruction by American military forces of a Vietnamese village, the home of 3,500 people. First, early that year, there was a bombing, followed by the evacuation of the villagers, after which bulldozers flattened the dwellings. Then there was another bombing, as though, Schell said, "we were now bent on annihilating every possible indication that the village of Ben Suc had ever existed." It was necessary to the American policy of "winning the hearts and minds of the people," it was said, to reduce them to apathy and despair. The *New Yorker* printed the story, taking up nearly an entire issue, before it appeared in book form.

Turning his attention from village to planet, Mr. Schell has now examined the logic, consequences, and justification of nuclear war. This much longer essay also appeared in the *New Yorker*—for Feb. 1, 8, and 15—with subsequent publications as a book titled *The Fate of the Earth*. Fortunately, the book is being widely reviewed and read. One might say that it should become the book to end all books on nuclear war—its scope and detail are sufficient for this—yet the life expectancy of even very good books is now so brief that there will have to be many other works along the same lines. Already some are coming out, and this is as it should be, since their cumulative influence may at last lead people everywhere to rise up and take back the right to decide between peace and war. If there is anything that Jonathan Schell makes clear, it is that government cannot be expected to give up war. This indeed, is the starting-point of thinking about nuclear weapons. The end-point will be either a radically transformed way of life, with transformed political arrangements, a transformed economy, and transformed relations among the

peoples of the world—or death for all, or a great many, by self-execution.

The first third of his discussion (*New Yorker*, Feb. 1) is devoted to what happens when nuclear bombs or missiles explode, to the futility of expecting that nuclear war can be "limited," and to the virtual impossibility of escape from immediate or wasting and agonizing death. While nationwide attacks of ten thousand megatons are to be expected—with forty thousand times the "yield" of the Hiroshima bomb—Schell describes for New Yorkers what would happen to their city if struck by a one-megaton bomb.

Burst some eighty-five hundred feet above the Empire State Building, a one-megaton bomb would gut or flatten almost every building between Battery Park and 125th Street, or within a radius of four and four-tenths miles, or in an area of sixty-one square miles, and would heavily damage buildings between the northern tip of Staten Island and the George Washington Bridge, or within a radius of about eight miles or in an area of about two hundred square miles. A conventional explosive delivers a swift shock, like a slap, to whatever it hits, but the blast wave of a sizable nuclear weapon endures for several seconds and "can surround and destroy whole buildings" (Glasstone). People, of course, would be picked up and hurled away from the blast along with the rest of the debris.

People two miles away from where the bomb exploded would be killed instantly by heat, with fires breaking out everywhere. The fires would become one great blaze. The site of the Empire State Building would be a crater three blocks wide and two hundred feet deep. Fallout would spread lethal radiation, leaving almost no one left alive. The spread of fallout by wind might kill millions of people in other parts of New York and neighboring states.

These are some—a few—of the results of a one megaton bomb exploded over the city, but

Schell says that "a weapon more likely to be used against New York is the twenty-megaton bomb, which has one thousand six hundred times the yield of the Hiroshima bomb." Then he tells what such a weapon (the Soviets have over a hundred of them, carried by bomber planes) would do to New York and the rest of the East. Given wind to spread the fallout to populated areas, "then this one bomb would probably doom upward of twenty million people, or almost ten per cent of the population of the United States." Schell briefly exposes the folly of supposing that there can be safety in bomb shelters:

If, in a nuclear holocaust, anyone hid himself deep enough under the earth and stayed there long enough to survive, he would emerge into a dying natural environment. The vulnerability of the environment is the last word in the argument against the usefulness of shelters: there is no hole big enough to hide all nature in.

Summing up this section of his analysis, Schell says that considering "the outright slaughter on all targeted continents of most human beings and other living things by the initial nuclear radiation, the fireballs, the thermal pulses, the blast waves, the mass fires, and the fallout from explosions; and considering that these consequences will all interact with one another in unguessable ways and, furthermore, are in all likelihood an incomplete list, which will be added to as our knowledge increases, one must conclude that a full-scale nuclear holocaust could lead to the extinction of mankind."

There is little wonder that last March, after listening to federal recommendations for evacuating nineteen million Californians from "high risk" regions like Los Angeles, the head of the state department of health services called the plan a fraud, and a state senator asked: "Have you gone insane?"

In the February 8 issue of the *New Yorker* Schell looks for the actual *meaning* of planetary destruction by nuclear war, finding it a difficult or futile search. Death, as part of the cycle of all living things, loses its function. It is no longer the

matrix of rebirth. The shock of this idea seems to release the writer from the casual materialism of the time. He muses about the destiny of souls, of the ranks of the unborn awaiting their time of life on earth. His wondering recalls Maeterlinck's *Blue Bird*, with its story of "The Kingdom of the Future," where countless children hope to be led to the door of birth, although Schell does not mention this tale.

"Where are they?" he asks.

Are they to be pictured lined up in a sort of fore-life, waiting to get into life? Or should we regard them as nothing more than a pinch of chemicals in our reproductive organs, toward which we need feel no special obligations? What standing should they have among us? How much should their needs count in competition with ours? How far should the living go in trying to secure their advantage, their happiness, their existence?

The musing continues:

The question of the worth of each individual human life, like the question of the worth of mankind, also poses the question of what life might be "for"—if, indeed, it is right to say that life is "for" anything—but with the crucial difference that while the individual can sacrifice his own life "for" others, mankind cannot do the same, since it includes all possible others within itself. . . . For the generations that now have to decide whether or not to risk the future of the species, the implication of our species' unique place in the order of things is that while things in the life of mankind have worth, we must never raise that worth above the life of mankind and above our respect for that life's existence. . . . Only a generation that believed itself to be in possession of final, absolute truth could ever conclude that it had reason to put an end to human life, and only generations that recognized the limits to their own wisdom and virtue would be likely to subordinate their interests and dreams to the as yet unformed interests and undreamed dreams of the future generations, and let human life go on. . . .

Of all the crimes against the future, extinction is the greatest. It is the murder of the future. And because this murder cancels all those who might recollect it even as it destroys its immediate victims the obligation to "never forget" is displaced back onto us, the living. It is we—the ones who will either commit this crime or prevent it—who must bear

witness, must remember, and must arrive at the judgment.

Who are the "we" that Schell speaks of so frequently? By "we" he means, quite plainly, each one of us. Can he mean the farmer in the field, the postman on his route, the bookkeeper at his desk, the miner beneath the earth and the fisherman at sea? He means them and everyone else. He is regarding an act that will involve us all, so all, in a sense, take part. All, even in passive acquiescence, take part. "We," then, is the legitimate rhetoric of one trying to speak for all mankind, and it must be allowed, if indeed, we are parts of one another—if in any sense at all, mankind is one. Mr. Schell is saying that when we let others act for us, *we* act through them. He is suggesting that there is no escape from individual human responsibility for nuclear war. If the political states to which we abstractly belong invoke the *raison d'état* for making nuclear war, then we who stand by invoke it, too. We participate in "crimes so great that they overwhelm the capacity of every existing system of jurisprudence, or other organized human response, to deal with them adequately."

When crimes are of a certain magnitude and character, they nullify our power to respond to them adequately because they smash the human context in which human losses normally acquire their meaning for us. When an entire community or an entire people is destroyed, most of those who would mourn the victims, or bring the perpetrators to justice, or forgive them, or simply remember what occurred, are themselves destroyed. When that community is all mankind, the loss of the human context is total, and no one is left to respond. In facing this deed, we will either respond to it before it is done, and thus avoid doing it, or lose any chance to respond, and pass into oblivion.

What is the state of mind of those who are preparing to become both the designers and the victims of extinction?

Like all those who are inclined to suicide, we approach the action in two capacities: the capacity of the one who would kill and that of the one who would be killed. As when we dream, we are both the authors and the sufferers of our fate. Therefore, when

we hide from ourselves the immense preparations that we have made for our self-extermination, we do so for two compelling reasons. First, we don't want to recognize that at any moment our lives may be taken away from us and our world blasted to dust, and, second, we don't want to face the fact that we are potential mass killers. The moral cost of nuclear armament is that it makes us underwriters of the slaughter of hundreds of millions of people and of the cancellation of the future generations—an action whose utter indefensibility is not altered in the slightest degree by the fact that each side contemplates it only in "retaliation."

In his third installment (February 15) Schell gets to the core issue of "justification" of nuclear war. The world, he says, seems willing to pay the price of extinction, not for either "safety" or "survival," but for "its insistence on continuing to divide itself up into sovereign nations." The plain fact is "that the nuclear powers put a higher value on national sovereignty than they do on human survival, and that, while they would naturally prefer to have both, they are ultimately prepared to bring an end to mankind in their attempt to protect their own countries."

The terms of the deal that the world has now struck with itself must be made clear. On the one side stand human life and the terrestrial creation. On the other side stands a particular organization of human life—the system of independent, sovereign nation-states. Our choice so far has been to preserve that political organization of human life at the cost of risking all human life. We are told that "realism" compels us to preserve the system of sovereignty. But that political realism is not biological realism; it is biological nihilism—and for that reason is, of course, political nihilism, too. Indeed, it is nihilism in every conceivable sense of the word.

But what we want to "save" by this wholly irrational means is no more than "the debris of history"—a way of conducting our affairs, a way of life that, scheming to perpetuate itself, chooses a way of death.

How can we call our present social or national arrangements the debris of history? The term is correct because the managers of these arrangements have lost even the last vestiges of Promethean foresight—that quality which makes

human beings more than animals. The present policies of nations are visionless, lacking in awareness of the law of cause and effect. They initiate causes in behalf of imagined effects which cannot result. Such management is indeed insane, and those who, although powerless, have some of their Promethean vision left point to the consequences of what the nations are planning. It is time, they say, to make other arrangements. As Schell declares:

"The "realistic" school of political thinking, on which the present system of deterrence is based, teaches that men, on the whole, pursue their own interests and act according to a law of fear. The "idealistic" school looks on human ability to show regard for others as fundamental, and as based on what Gandhi called the law of love. . . . Historically, a belief in the necessity of violence has been the hallmark of the credo of the "realist"; however, if one consistently and thoroughly applies the law of fear in nuclear times one is given not to rely on violence but to banish it altogether.

In his conclusion Schell quotes Gandhi, who said: "In the dictionary of nonviolent action, there is no such thing as an 'external enemy'." Schell then says:

If our aim is to save humanity, we must respect the humanity of every person. For who would be the enemy? Certainly not the world's political leaders, who, though now they menace the world with nuclear weapons, do so only with our permission, and even at our bidding. . . . Just as inertia produces despair—a despair often so deep that it does not even know itself as despair—arousal and action would give us access to hope, and life would start to mend: not just life in its entirety but daily life, every individual life. At that point, we would begin to withdraw from our role as both the victims and the perpetrators of mass murder. We would no longer be the destroyer of mankind but, rather the gateway through which the future generations would enter the world.

Generations wiser than their fathers.

Turning to another writer, E. P. Thompson, a British historian, and founder of the movement called European Nuclear Disarmament, we find that "deterrence" was really an after-thought in

national policy. In an article in *Resurgence* for January/February Thompson said:

The first atomic weapons were not developed because some theorist invented deterrence, and *then* scientists were commissioned to invent a bomb. The bombs were invented to blast the German and Japanese antagonists into submission. Thermo-nuclear weapons were not developed to deter anyone, but to demonstrate United States military superiority. . . . It was only *after* the Soviet Union developed thermonuclear weapons that the theory of deterrence came into vogue, and on both sides. But if the theory had been operative instead of cosmetic, that is where the development of such weaponry would have come to a fixed point of rest. Of course it did not.

Deterrence theory has become the ideological lubricant of the arms race. Its theories can be turned to use by the arms manufacturers or by military lobbies; or they can be brought in afterwards to justify anything.

Prof. Thompson recalls the late Gregory Bateson's appeal to the Regents of the University of California to renounce all nuclear weapons research and development:

Employing analogies from biological systems as transferred to social psychology, he argued that "the short-time deterrent effect is achieved at the expense of a long-time cumulative change. The actions which today postpone disaster result in an increase in strength on *both* sides of the competitive system to ensure a greater instability and greater destruction if and when the explosion occurs. It is this fact of cumulative change from one act of threat to the next that gives the system the quality of *addiction*."

Thompson concludes: "What should properly command our attention today is not the theory of deterrence but the social and political *consequences* of its working over two decades." "It is not" he adds, "just that we are preparing for war; we are preparing ourselves to be *the kind of societies* which go to war." This is a way of pointing out that deterrence makes nuclear war very nearly inevitable.

One more comment, this one on the psychology of Americans in relation to the nuclear threat, by Richard J. Barnet in the April *Progressive*:

Americans find it especially difficult to think realistically about nuclear weapons because for about twenty years after they were first devised, this country alone derived power and influence from them. President Eisenhower was able to threaten the Chinese with use of the atomic bomb to end the Korean war. The shadow of nuclear weapons hung over the Berlin crisis of 1961 and the Cuban Missile Crisis of 1962. But by the time the last explicit nuclear war threat was made—President Carter's "Doctrine" that called for using nuclear arms to keep the Russians in check in the Persian Gulf—it was no longer credible; the U.S. near-monopoly that made earlier threats look serious had been lost. It is the growing recognition of this reality in Europe and now, increasingly, in the United States that is fostering a new peace movement and a revived search for an alternative security system.

A real security policy would begin with some fundamental questions—not about the Russians, the Chinese, much less the Libyans, but about ourselves. What are we trying to protect? How much protection is possible in the nuclear age? How much can we do by ourselves? What should we ask of other nations?

This appeal has its persuasions; it has its place; it precipitates the questions asked by self-interest—we might even say "enlightened" self-interest—yet unless Americans are able to move from self-interest to concern for the welfare of all, to think somewhat as Gandhi thought, and to recognize that violence has literally outlawed itself, the moral strength needed to put an end to war may not be available.

The question is not so much whether we live or die—death eventually comes to every one—but what kind of people we are, and if, on earth, for as long as we are here, we have duties to perform. If the psychological transformations now proceeding have the power to raise this question, and raise it insistently, it may become possible to secure the future peace of the world.

## REVIEW

### A PROMETHEAN SPIRIT

SIMONE WEIL'S posthumously published *Oppression and Liberty*, a book (made up of articles) first issued in 1955 in French by Gallimard, and put into English by Routledge & Kegan Paul in 1958, has been available in an American edition since 1973 (University of Massachusetts Press, \$5.50 paperback). Material from the introduction by F. C. Ellert provides some of the reasons why we return to this writer again and again. She was born in Paris in 1909 and died in England in 1943, leaving immeasurable impact on her contemporaries:

Simone Weil is one of the most selfless and courageous figures of our time. Her life, though very brief, was an action-crowded life and a many-sided one, involving matters intellectual, creative, social, philosophical, scientific, moral, religious and, by no means least of all, physical—physical in the sense of moving actionally, often directly and decisively, for example, into the affairs of the working-classes. It was a life that moved suspensefully from the search for simple justice and humaneness in the world to periodic disappointments that came close to disillusionment and despair; from enervating chronic illness to spiritual forlornness to suicidal urges; from political theorizing to radical, leftist involvement; from pacifism to belligerency and return to pacifism and then toward what she might have termed "the peace . . . which passeth all understanding"; from deep and active concern for the poor and oppressed to the almost fatal encounter in Barcelona during the Popular Front in the Spanish Civil War, from mythical folklore to mysticism, "from atheism through affliction to God," that is to say, from non-belief through self-sacrifice toward purification.

What Mr. Ellert means by "purification" may be illustrated by the way in which Simone Weil spoke of "grace" and "the supernatural" at the end of her life. She calls Grace a light, saying:

When man turns from this light, a slow, progressive, but relentless decomposition finally subjects him altogether right in the very depths of his soul, to the sway of force. As far as it is possible for a thinking creature, he becomes matter. In the same

way a plant deprived of light is gradually changed into something inert.

Those who think that the supernatural, by definition, operates in an arbitrary fashion, incapable of being studied, are as wrong about it as those who deny its reality. . . .

Today, after being bemused for several centuries with pride in technical achievement, we have forgotten the existence of a divine order of the universe. We do not realize that labour, art and science are only different ways of entering into contact with it.

If the humiliation produced by unhappiness were to rouse us, if we were to re-discover this great truth, we should be able to put an end to what constitutes the scandal of modern thought, the hostility between religion and science.

At twenty-two, armed with a thorough education in the classics (in Greek and Latin) and mathematics, she began teaching philosophy. At the same time she was drawn to enter the life of the working classes, working during vacation times and on a leave of absence in factories and the field. She was unable to hold herself, as an intellectual, apart from the common lot. She was one of those rare souls who, when they find a true idea, feel compelled to act on it. The twelve years of her active life in the world are a record of how she was led by this conviction. That she was ill-equipped for some of the things she attempted was simply irrelevant—they had to be done.

The clarity of her prose is no doubt the result of a naturally brilliant and well-trained mind, but the intensity—its commanding intensity—grew out of her determination to make her life consistent with her thinking. This is a meaning of purification. (For a study of her life, the reader is referred to *Simone Weil*, Pantheon, 1976, by Simone Pétrement, her schoolmate and lifelong friend.)

Simone Weil's concern with social issues—which never left her—began with her personal experience as a laborer, and at that time, the early 30s, it was natural for her to see through Marxist eyes. She never ceased to admire Marx for his

devotion to justice, but in 1943 she pointed to what seemed to her his great mistake. It was his identification as just and good "solely that which could hasten the appearance of a society without lies . . . everything which is effective, without exception, is perfectly just and good, not in itself, but relatively to the final goal."

Thus in the end Marx fell back into that group morality which revolted him to the point of making him hate society. Like the feudal magnates of old, like the business men of his own day, he had built for himself a morality which placed above good and evil the activity of the social group to which he belonged, that of professional revolutionaries.

This is what always happens. The type of moral failing that we most hate and fear, that fills us with the greatest horror is invariably the one into which we fall, when we do not seek the source of the good in the place where it dwells. It is the snare perpetually laid for each man, and against which there is but one protection.

Marx, she says, imagined that force could produce paradise. "Marx's revolutionary materialism consists in positing, on the one hand that everything is exclusively regulated by force, and on the other that a day will suddenly come when force will be on the side of the weak."

Not that certain ones who were weak will become strong—a change that has always taken place; but that the entire mass of the weak, while continuing to be such, will have force on its side.

If the absurdity of this does not immediately strike us, it is because we think that number is a force. But number is a force in the hands of him who disposes of it, not in the hands of those who make it up.

This comes toward the end of a manuscript written in 1943, never finished. In an analysis written in 1934, reflecting, doubtless, her days on the assembly line, she said:

The present social system provides no means of action other than machines for crushing humanity, whatever may be the intentions of those who use them, these machines crush and will continue to crush as long as they exist. With the industrial convict prisons constituted by the big factories, one can only produce slaves and not free workers, still

less workers who would form a dominant class. With guns, aeroplanes, bombs, you can spread death, terror, oppression, but not life and liberty. With gas masks, air-raid shelters and air-raid warnings, you can create wretched masses of panic-stricken human beings, ready to succumb to the most senseless forms of terror and to welcome with gratitude the most humiliating forms of tyranny, but not citizens. With the popular press and the wireless, you can make a whole people swallow with their breakfast or their supper a series of ready-made and, by the same token, absurd opinions—for even sensible views become deformed and falsified in minds which accept them unthinkingly; but you cannot with the aid of these things arouse so much as a gleam of thought. . . . Each time that the oppressed have tried to set up groups able to exercise a real influence, such groups, whether they went by the name of parties or unions, have reproduced in full within themselves all the vices of the system which they claimed to reform or abolish, namely, bureaucratic organization, reversal of the relationship between means and ends, contempt for the individual, separation between thought and action, the mechanization of thought itself, the exploitation of stupidity and lies as means of propaganda, and so on.

Simone Weil was unable to feel optimism about the future. Yet she wrote freely on a "Theoretical Picture of a Free Society." Of the means to move in that direction, she said:

The only possibility of salvation would lie in a methodical cooperation between all, strong and weak, with a view to accomplishing a progressive decentralization of social life; but the absurdity of such an idea strikes one immediately. Such a form of cooperation is impossible to imagine, even in dreams, in a civilization that is based on competition, on struggle, on war. Apart from some such cooperation, there is no means of stopping the blind trend of the social machine towards an increasing centralization, until the machine itself suddenly jams and flies to pieces. . . .

In such a situation, what can those do who still persist against all eventualities, in honouring human dignity both in themselves and in others? Nothing, except to introduce a little play into the cogs of the machine that is grinding us down; seize every opportunity of awakening a little thought wherever they are able; encourage whatever is capable, in the sphere of politics, economics or technique, of leaving the individual here and there a certain freedom of

movement amid the trammels cast around him by social organization.

Yet she gave full play to her imagination:

Who knows whether an industry split up into innumerable small undertakings would not bring about an inverse development of the machine-tool, and, at the same time, types of work calling for a yet greater consciousness and ingenuity than the most highly skilled work in modern factories? We are all the more justified in entertaining such hopes in that electricity supplies the form of energy suitable for such a type of industrial organization.

This, written in 1934, illustrates Simone Weil's awareness of the possibilities of an intermediate technology. Her mind moved flexibly from the subtleties of sublime metaphysics to practical issues. She was indeed a promethean spirit, both visionary and uncompromising to the last. In addition, her thinking was always her own. There is seldom if ever in her work an echo of the mental processes of others. While she engaged her mind with the great questions that have puzzled and frustrated thinkers across the centuries, what she set down on paper were ideas she had made entirely her own. Hence the freshness of her expression. An obvious truth acquires in her work the vivid character of a new discovery, revealing unsuspected facets and opening up paths of fresh inquiry. Simone Weil was one of the few in our century who have described the actual leverage through which deliberated human change takes place.

*COMMENTARY*  
**THE MADNESS OF POWER-SEEKING**

IN a section of her book called "Analysis of Oppression" (see Review), Simone Weil discusses the issue of power, showing that it is mindless lust for power, much more than its use, which makes power an evil thing. She says:

The common run of moralists complain that man is moved by his private interest: would to heaven it were so! Private interest is a self-centered principle of action, but at the same time restricted, reasonable and incapable of giving rise to unlimited evils. Whereas, on the other hand, the law of all activities governing social life, except in the case of primitive communities, is that here each one sacrifices human life—in himself and others—to things which are only means to a better way of living. This sacrifice takes on various forms, but it all comes back to the question of power. Power, by definition, is only a means; or to put it better, to possess a power is simply to possess means of action which exceed the very limited force that a single individual has at his disposal. But power-seeking, owing to its essential incapacity to seize hold of its object, rules out all consideration of an end, and finally comes, through an inevitable reversal, to take the place of all ends. It is this reversal of the relationship between means and end, it is this fundamental folly that accounts for all that is senseless and bloody all through history. Human history is simply the history of the servitude which makes men—oppressors and oppressed alike—the plaything of the instruments of domination they themselves have manufactured, and thus reduces living humanity to being the chattel of inanimate chattels.

Thus it is things, not men, that prescribes the limits and laws governing this giddy race for power.

With hardly any revision, this analysis, written by Simone Weil in 1934, could be applied to the mindless motives of preparation for nuclear war. Nuclear war will not achieve ends, but destroy them.

## CHILDREN

### ... and Ourselves

#### MISCELLANY

IN the March *Country Journal*, a graduate student at Princeton, Richard Preston, writes about a Princeton junior, Betsy Bryenton, a young woman from Ohio, born of parents with farming ancestry, who has originated a fertilizer by combining twelve types of algae—blue-green and green—which is said (on evidence) to do "everything that synthetic fertilizers do, only naturally and at a fraction of the cost." With this sort of report about her biological invention, Betsy is pursued by top executives of major corporations who would like to get in on the rights of her "algal soil inoculant," which works well in many kinds of soils. She developed the fertilizer while in her hometown (Fairview Park) high school.

The furor of interest in its commercial possibilities—which Betsy has not yet responded to—her major is now psychology—is not our subject here. Nor is the extraordinary promise of her fertilizer, which Preston describes at length, noting the fact that a jury of sixty scientists awarded her the grand prize of the International Science Fair held in Texas in 1979. Our interest is in a teacher she had in high school.

Betsy's father, a lawyer, often stayed home weekends turning his backyard into a large garden which crossed a ravine and went up a forested hill beyond. Betsy and her younger sister helped him garden. "That," Preston says, "was the beginning of Betsy's interest in plants." He goes on:

But the moment of her true germination as a botanist came when she took a biology class in the tenth grade at Fairview High from Mrs. Josephine Chrysler. Mrs. Chrysler had been teaching at Fairview for twenty years and had strong opinions on the dissemination of knowledge. Every day in the laboratory (she disapproved of classroom lectures), it was Mrs. Chrysler's custom to assign her class mimeographed handouts to read—sometimes 50 or 100 pages apiece, according to Betsy. Every year, Mrs. Chrysler had to put in urgent requests to the

board of education for extra paper. She created biological crossword puzzles for her students, and she assigned each of her tenth-graders a fifty-page research paper. She says: "I have always wanted my students to learn for themselves, by their own discovery, what a fascinating world it is."

"Mrs. Chrysler," Betsy said, "figured that somehow she was going to hit our kids with something interesting." In Betsy's case, what hit was plant nutrition, especially a plant's need for nitrogen, an element crucial to its growth.

"Betsy caught my eye as a sophomore," Mrs. Chrysler said. "I saw early that she had great potential as a researcher. I never saw anyone compile so many notes."

Betsy had been reading in college libraries for years already, and in eleventh grade, still taking classes from Mrs. Chrysler, she came across an old article in the library at Case Western Reserve University in which the author speculated that algae might play a larger role in nitrogen fixation than anyone ever expected. Would it be possible, Betsy wondered, to pack the soil with algae? She thought of blue-green algae first.

That is the end of our story, but for the record we add background provided by Richard Preston:

Blue-green algae are a primitive, borderline form of plant life, lowly peasants dwelling on the frontiers of the vegetable kingdom. "Blue-green" is actually a misnomer, because they come in as many colors as Italian spumone: yellow, red, purple, brown, black, emerald green, and clear as glass. . . . Blue-green algae cells are photosynthetic—that is, they need sunlight to live—and most of the 2000 or so known species cluster in filamentous mats which can sometimes be seen growing in water or fuzzing the soil. They are the hardiest form of life on earth.

These tiny plants, which 'resemble bacteria more than anything else," are much simpler than "the much more highly evolved true green algae"—which make the quite visible green slime which sometimes pervades the stagnant water of ponds and streams.

Newsnote: The experiences of Ron Jones with five young patients in the care of a San Francisco psychiatric hospital care unit, reviewed here in "Children" for May 23, 1979, under

another title, are now available in a Bantam paperback (\$1.95), *Kids Called Crazy*. (Jones is physical education director at San Francisco's Recreation Center of the Handicapped, where he works with 1,200 physically and mentally disabled children and adults.) He introduces his report on his job with the hospital:

This was my second chance. Maybe my last chance to teach school. It had been three years since I had taught high school history and worked as a coach. And been fired for "getting too close to students." I told myself it didn't matter; that I was a good teacher. But there was still the doubt and the pain of being fired. It followed me. I wondered if it showed. And what I would do with this second chance.

He did quite a lot, and it makes good reading, although sometimes bitterly saddening, sometimes filled with delight.

Another note: Paul Hawken, importer, designer, and purveyor of fine garden tools, is becoming known as a naturalizer and maker of fine thoughts, many of them included in his distillation of a book, *Seven Tomorrows* (Bantam, \$8.20, postpaid), which he wrote with Jay Ogilvy and Peter Schwartz. He says things which need saying to children (in some way or another) and ourselves. He begins his "review" in the Spring *CoEvolution Quarterly*:

The major determinant of our lives over the next decades will be values, a factor which has been completely overlooked by futurists but over which we as individuals have the most control. . . . [Most] futurist books rely upon the projection of existing events and trends and assume that during our darkest or brightest days we will remain firmly rooted in extant value systems. Unstated but implicit in all such futures is the assumption that individual actions have little consequence in history.

The ordinary futurist books don't ask or expect anyone to do anything important; events are no more than accents in the drift of history. The *good* scenarios try to frame future events as they might be shaped by human decision, showing what leads in one direction or another and what

leads nowhere at all—that is, to more of what we have now.

Seven such possibilities make the book under discussion.

Hawken says in one of these explorations:

If an event should occur that shatters the expectation of [an idyllic] future, values could either skew in two directions simultaneously or skew dominantly to one side or the other. One direction is toward Survival values, a movement which already has strong impetus. Survival values are created when Achievers think they won't get their cookies. Their love of the system turns to loathing, and in their attempt to escape the collapse of industrial society, they create an even more virulent form of its absurdities—heavily armed and well-stocked encampments of dead food and fearful people. . . .

A different response to a world that changes more quickly and radically than dogma predicts would be an Adaptive value system, where the populace tries to recreate modes of living and interchange that will simply work. Adaptive values also have strong impetus in our culture, but they are seen as weakness since they are more reflective, feminine, naturalistic, and decentralist.

Abstract, perhaps, but true down to every concrete particular.

## *FRONTIERS* A Perennial Solution

DURING a symposium on sustainable agriculture, early in April, on the campus of Southern California's Pomona College, Wes Jackson, one of the speakers, was asked what could be done about the possibility that the tycoons of agribusiness, the multinationals and their kin and ilk, would move in on his program of developing specially bred soil-conserving perennial seeds for food—to be harvested twenty, thirty, fifty years from now. They might easily adopt the techniques he is discovering, it was said, and reap the benefits on a large scale to the exclusion of the small farmer.

It was a hard question, but Jackson had an answer. It was something like this:

While political manipulators and economic exploiters, like the poor, will probably always be with us, there is something about working with the soil and the elements in the right way that has a psychological effect on the people doing it. Our idea at the Land Institute (Salina, Kansas) is to apply in agriculture what we've learned from nature about conservation. Before the settlers came West, the prairie soil was held together by perennial root structures that remained in the ground year after year. Then the "pioneers" came and plowed the land, cutting through its tough doormat-like cover and converting what had been a self-perpetuating web of life into loose dirt. When it rains, the dirt washes away—a lot of it, that is—on toward the ocean. On the average farmers in our area lose nine tons (an educated guess) of top soil per acre every year.

We are working with grasses, legumes, and members of the sunflower family now, though we may expand to other families if something promising shows up. One of our many experiments includes the development of a three-way hybrid involving Eastern Gama Grass (a perennial), domestic corn, and the recently discovered perennial corn from Mexico. Our optimism is guarded but we are hopeful. The

protein content of the Gama Grass is 27%, twice that of wheat, but we don't know the protein content of the three-way hybrid.

Maybe, five or ten years from now, we'll have seed for others to try. These perennials come up from their roots every year, and would not need to be planted more than every third or fifth year. But we won't monocrop. We hope to grow *communities* of food plants—the best we can find among those on the prairies—and develop for harvesting a diverse crop of grains. Instant granola, someone has called it!

All this will take time—lots of time. It is even possible that the multinationals won't be around when we're ready, but if a few of them have survived various troubles—such as peasant revolutions in Latin America and elsewhere—there is this to consider: To practice truly sustainable agriculture, patience and close observation of nature are required. The grower gets to know something of the laws of life and the subtlety of their operation. Skill in the use of machines is not good background for this sort of learning. People who learn methods and techniques which have been developed by collaboration with organic processes can't help but be somewhat altered by what they find out. Living things have an ambience, even a radiance of a sort, and it is difficult to participate in the "morality" of nature without taking on some of its influence. In any event, such expectations seem a lot more promising than the track of regulatory agencies—such as, say, the Food and Drug Administration. We'd rather trust the curriculum provided by nature than decrees of State to make people behave.

Asked how he thought changes in agriculture on a large scale might begin in this country, Wes Jackson said that the big farmers, who already have problems, might experiment with a few acres here and there, to find out for themselves. This recalls E. F. Schumacher's suggestion to industrialists. They could easily, he said, allocate about five per cent of their research and

development effort to various forms of intermediate technology, in behalf of the future.

In a not unrelated report, Paul Relis of the Community Environmental Council of Santa Barbara, Calif., tells of his visit to Control Data Corporation, a four-billion dollar computer firm with headquarters in Minneapolis. CDC has entered the appropriate technology field because of the interest of its chairman, William Norris. Relis calls Norris "a corporate maverick who has repeatedly challenged big business to play an active role in solving the nation's employment problems, rebuilding our cities and putting people to work on the land." Having heard that CDC was seeking "a monopoly of information on small farming systems and renewable energy projects," Relis went to see for himself. He says:

Not only was Control Data interested in AT but they were deep in the development, application and marketing of concepts and products which I thought were still the sole domain of practitioners scattered around the country.

In 1978 Control Data built the largest solar water heating system in North America atop its six-acre World Distribution Center near downtown Minneapolis. I toured this facility which was earth-bermed nearly to the roof line with the surrounding thirteen-acre landscape planted in fruit trees, berries and other food-producing crops. Even the sizeable rooftop is planted in the summer with vegetables. . . . I saw an experimental earth-sheltered, passive, solar-heated work/living habitat for cold climates and learned about a Control Data-sponsored project in Princeton, N.J., where AT and computer-based farm information and management systems are being used to test the feasibility of 100-150 acre farms. I saw greenhouses atop Control Data buildings used for commercial vegetable production and plant research heated by co-generation; I studied plans to integrate urban agricultural, recycling, and solar energy in community development projects designed to generate small business employment in economically distressed inner cities.

In all, I was exposed to a galaxy of ideas and applications for AT and a bold plan of marketing these concepts in cities and rural areas around the country. Presently, the farms are still in the test stage with their state-of-the-art solar and information

technologies, and the urban development schemes are still largely on the drawing boards, although Control Data has put in place four business technology centers. . . .

"How ironic," exclaims Relis, to find a close representation of ecological vision "in a huge corporation in Minneapolis." The idea is a bit bewildering. But perhaps, in a time when bigness is the order of the day, it is natural for at least a few of those successful in this way to see the point of some of the goals declared by "small is beautiful" advocates and to use their power in these directions. The goals are fine, but the "power" needs redistribution, and how will that be accomplished? We shall have to wait and see. Years ago the owner of an enormous California farm, arguing with advocates of the 160-acre limitation, said: Okay, divide me up (he meant his 25,000 acres of productive land), but first divide up R. H. Macy." He had a point; but the real point is that effective decentralization of power can take place only after large numbers of citizens recognize that *their* economic health lies in giving tangible support to a multiplicity of small, responsible enterprises in every area—agriculture, industry, and distribution.