

## "DEFEAT IS INDIVISIBLE IN NUCLEAR WAR"

A LITTLE less than three months ago (March 24) a MANAS lead article began by asking: "How do humans make up their minds?" Interestingly, at that time stories in the newspapers gave one fairly complete answer. Two reports in the *Los Angeles Times* for March 3 made clear the gathering strength of the rejection by the American people of preparations for nuclear war. The evidence comes from the grass roots of the country, in emphatic expressions of opinion and in acts of local decision.

In Boulder, Colorado, after a hearing in which businessmen, professors, and students denounced the government's plan for evacuating the population of nearby Denver in the case of nuclear attack (Boulder would become responsible for more than a hundred thousand of those "at risk" in the Denver area), the Boulder Commissioners voted to reject the federal effort to develop evacuation plans, choosing, instead, to campaign against war. The *Times* writer, Bill Curry, remarks that many of the opponents of evacuation as a form of "civil defense" think such plans "make nuclear war more likely by furthering the belief that it can be survived."

In general, the writers seem to agree, and also their publishers—the headline, "Civil Defense Indefensible, Boulder Votes," being evidence enough.

What happened at the hearing in Boulder on March 1?

"Our only true hope for a secure future lies in multilateral nuclear disarmament," John Irwin, the president of a solar energy company who holds a doctoral degree in theoretical physics, told the Boulder commissioners. Irwin stunned nearly 1,000 persons at a public hearing with slides of Hiroshima and Nagasaki and a four-minute film clip of U.S. atomic bomb tests. As house after house evaporated in the test films, Irwin called out comparable

locations in Boulder: "28th and Broadway . . . 75th Street. . . ."

The audience learned what a nuclear attack would do to Boulder:

—Houses six miles from a detonation at the main crossroads would disintegrate.

—Unprotected residents would be vaporized, their remains left only as shadowy imprints on the ground.

—Nearby hospitals would be hopelessly inadequate to care for injured survivors, most of whom would soon join the dead.

Critics called the evacuation plan "a smokescreen," "an illusion," and "a grave joke." There were questions which no one could answer:

What if the missiles miss the "risk" area and hit the area where the evacuees have gathered? . . . "Which credit card should I take with me?" It [the plan] was called inadequate, insane and immoral. One man quoted philosophers. A woman demanded to know who would evacuate the ground squirrels and protect the junipers that make up the world she wants to live in.

After the testimony was in, one of the Boulder commissioners said:

Over and over, there is a big if: *if* there is a warning before the attack, *if* the weapon is fairly small, *if* your family members are available and ready to go—what if a child is hospitalized or at a pajama party or on a camping trip?—*if* you have transportation, *if* your automobile has gasoline, *if* the weather is good and the roads are open, *if* the host community will accept you, *if* there is adequate food and shelter in the host community, *if* the weapons aren't retargeted, *if* the computers are accurate and the weapons reach their intended targets, and on and on and on. . . .

And so the Boulder County Commissioners, as the reporter put it, "voted to prepare for war no more."

The voting of the people of Londonderry, Vermont, for a nuclear arms freeze is reported in

the other (March 3) *Los Angeles Times* story, which supplies this background:

The New England town meeting may seem like a relic of by-gone days, but the spirited debate here Tuesday [March 2 ] involved a proposal that is very current and gaining momentum in cities and states both large and small throughout the country: a petition calling on the President to propose to the Soviet Union a mutual freeze on the production, testing and deployment of nuclear weapons and the aircraft and missiles that deliver them.

Beginning as the brainchild of long-time disarmament advocates a year or so ago, the call for a nuclear weapons moratorium between the two superpowers has mushroomed into a national campaign. To its passionate and increasingly numerous supporters, at least, it is turning into an idea whose time has finally come.

The *Times* writing team (David Treadwell and Doyle McManus) notes that past efforts to slow down (by treaty) nuclear proliferation have had virtually no effect, while "improvement" and multiplication of the weapons have continued "pell-mell." They quote Randall Forsberg, director of the Institute for Defense and Disarmament Studies, who says: "The next generation of nuclear weapons will make nuclear war much more likely and decrease our security rather than increase it." The nuclear arms race, Forsberg declares, "has gone on long enough and it's time to stop it." Agreement with this view is showing up around the country. The *Times* story says:

In the last year, at least a dozen city councils in localities as diverse as Ashland, Ore., and St. Louis, Mo., have approved resolutions endorsing a freeze. State legislatures in Connecticut, Massachusetts, and Oregon have gone on record in favor of it. There are campaigns to put the freeze proposals to statewide referenda next November in California, Michigan, New Jersey, and Delaware.

The motion to approve the freeze was carried by the Londonderry Town Meeting, 104 to 38, and of the 160 other Vermont towns which voted on the same proposal, 133 towns adopted it. A retired teacher in Florida after collecting signatures endorsing a freeze in Sarasota said:

"There is no such thing as limited nuclear war," and an Iowa campaigner backing the freeze, Jacqueline Dickey, declared: "There is a growing recognition of the nuclear peril and how it crosses all boundaries and economic backgrounds." In California, Harold Willens, a Los Angeles businessman who organized the drive to get the freeze proposal on the ballot next November, told the *Times*: "Thermonuclear technology has made Siamese twins out of the Soviet Union and the United States."

Commenting on the spreading interest in the freeze proposal, an editorial in the *Christian Science Monitor* for March 9 called it symbolic of "a new broad-based American awakening to the need for preventing nuclear war as the only realistic defense against its catastrophic consequences." Boston physicians who have taken up this cause, the editorial says, could spend every evening talking to eager audiences which "range across the political and social spectrum." Other signs of interest are listed

The news item about an individual who has given up a present job to work full time for nuclear arms control. The woman who started a billboard campaign in her home town and saw it turn into a bandwagon. The Colorado city official on TV who describes her conversion to working for prevention. The California petition with more than enough signatures to put a nuclear freeze resolution on the November ballot. The recent passage of freeze resolutions by town meetings in 143 of Vermont's 246 cities and towns. Enactment of a resolution against nuclear weapons by residents of Ashland, N.H. The fact that some fifty more New Hampshire communities will consider a similar resolution later this month.

What, the editorial asks, "does all this say?"

Part of it is an increasing conviction that the rise of nuclear weapons has changed humanity's choice from peace or war to peace or suicide. . . . The adversarial approach of one side against the other has to give way to the modern negotiator's approach of both sides against the problem that divides them. This would mean, for instance, Moscow and Washington joining against the common problem of war itself.

Something over a generation—thirty-seven years—has passed since the atom bombing in 1945 of Hiroshima and Nagasaki, and during that time leading atomic scientists, essayists, artists, and citizens endowed with imagination have done what they could to arouse public opinion against preparation for nuclear war. No one can really tell how effective their work has been, yet there are interesting parallels between some of these efforts and the present state of mind. In *Level 7* (London: Allison and Busby, 1959), Mordecai Roshwald, a Polish-born novelist and professor of social and political philosophy (University of Minnesota), tells the unromantic story of an American trained by the military as a button-pusher in nuclear war. He lives out a utopia-in-reverse 4,400 feet underground. This narrator is an ordinary man, hardly affected by the prospect of being the one who will set off missiles that will destroy the world. He is proud of the fact that he has been chosen for this important duty, and gratified that he and his colleagues in universal destruction have been located at the deepest (safest) level of the subterranean military installation, to follow orders in an offensive war.

The order comes and he presses his button, and then comes the news that little is left alive on the surface of the earth. Slowly the meaning of this seeps into the class of button-pushers.

Radio broadcasts go on for a while. One spokesman for a neutral country—where people are dying like flies—announced:

"Libraries and museums, works of art, institutes of learning, houses, monuments, railways, roads, factories—all these are a thing of the past. What remains now and for the future is shelters, caves, bare minimal existence for the few survivors." Another one added: . . . "This is the suicide of civilization!"

This kind of talk is rather alien to my way of thinking. Perhaps I have become biased by living so long underground. Or perhaps the psychological treatment did something to make me immune to such appeals. . . . Who wants to visit a museum anyway? The traditions of centuries perished in a moment. Who cares about traditions? . . . For psychological

reasons, as well as for physical security, we had to be sent below if our performance was to be reliable.

Who knows?—if I had been able to see the world and the destruction I was causing, I might have recoiled from pushing the buttons, just as X-117 did when it came to A4, B4 and C4.

X-117 is a colleague—these specialists have numbers, no names—and the A, B, and C of the 4 series are the final buttons, releasing the most destructive missiles which reduce vast continental areas to dust. X-117 loses all balance. When the narrator's wife, known as P, asks X-117 how he felt—

He suddenly sat up in bed and shouted at us: "Thank you! I feel fine! I feel wonderful! I've succeeded in killing hundreds of millions of people, so I feel on top of the world. I'm the greatest hangman in history! Why shouldn't I feel well?" . . .

P tried to calm him. "You shouldn't feel that way," she said. "You just did your duty. Are you a soldier or aren't you?"

X-117 answered, tears rolling down his face: "Duty? Can there be a duty to kill humanity? To be mankind's hangman?"

"But you're not responsible for the killing," I told him. "Why call yourself a hangman? You just obeyed orders."

"So does the hangman," was his answer. "But at least he obeys an order given by a judge. I did what a robot told me to do!"

There is no consoling X-117, who soon goes mad and dies.

So does everyone else; that is, they die as the omnipresent radiation on the surface gradually penetrates the underground stronghold, executing first those on the upper levels, and finally Level 6, staffed by the "defensive" soldiers, goes bad. Then, unexpectedly, the Level 7 people, who felt so "safe," begin to die. Their nuclear reactor, on which they depended for power to keep their domestic operations going, had developed flaws and was leaking death-dealing rays. Now the last man alive on earth, the narrator, records his last note—to no one—in his journal:

It is strangely ironic that we, the PBX Command, should be killed by a gadget making a

peaceful use of atomic energy. It does not seem fair. Divine justice, I always thought, was eye for eye, tooth for tooth. It should be bomb for bomb. Instead we are being killed by a piece of faulty machinery. Not really a warrior's death.

Perhaps God intends it as a sort of joke. "You killed with bombs," He says. "You will be killed by peaceful radiation."

This book has had wide circulation, having been put into Dutch, French, German, Italian, Japanese, Portuguese, Rumanian, Spanish, Swedish and Yugoslav since 1959.

What of the men who made the atom bomb? A sidelight answer to this question is available in a film which came out last year, *The Day After Trinity*, helpfully subtitled "J Robert Oppenheimer and the Atomic Bomb." Robert Hatch in a *Nation* review (Feb. 14, 1981) said:

The scientists who appear on the screen smile and laugh a good deal; they testify to the enormous excitement of being members of "Oppie's" team, and of the dedication to, and exhilaration derived from, the tremendous project. . . . They state that they were willing to work on the bomb because of their fear that, if it were not made, Hitler would win the war and put civilization to the torch. But when Hitler lay dead in his bunker not a man resigned from Los Alamos.

A more recent viewer of this film remarks that one or two of the scientists seemed torn by remorse upon recognizing the horror of Hiroshima, although others showed no sign of regrets. Another film, *Eight Minutes to Midnight*, deals with the menace of nuclear wastes. Sponsored by Physicians for Social Responsibility on the campus of the University of Southern California, this film features Dr. Helen Caldicott, the Australian-born pediatrician who opposes nuclear weapons and also the poisons which may be released by accidents to reactors—which have in them "as much radiation as 1,000 Hiroshima bombs." After Dr. Caldicott had dramatized the lethal effect of this poison on earth, air, and water, and on human bodies, a medical student asked how she, a lone woman, could hope to put an end to so powerful a threat. She said that she cannot

give up or stop working against nuclear death and disaster. Each human being, she said, has a conscious choice between the continuation of life and its destruction. This is not, she said, a decision that can be left to governments. Government officials are either uninformed or suppose that they, somehow, will be able to outwit the laws of nature.

Europeans, as we know—the Dutch, West Germans, English, and French—are naturally more aroused than the Americans at the prospect of Europe being turned into a nuclear battlefield. One may see a sign of the times in an announcement made late in 1980 by a distinguished poetry press in London—

Until now, The Menard Press has published only literary texts, most of them poetry. Poetry is vital; but the prevention of a nuclear or other catastrophe has become the most pressing concern of all: each generation holds the world in trust for its children. The Menard Press, while continuing to publish literary texts, intends to participate in this essential work, without which there will be no poetry. Our first contribution is this pamphlet by Lord Zuckerman, a world authority on science policy and defence matters.

The author of the pamphlet, *Science Advisers, Scientific Advisers, and Nuclear Weapons*, is indeed an authority on his subject, since he was himself scientific adviser to a succession of British Prime Ministers and for a number of years head of the government's Scientific Civil Service. These remarks, which were also published in the *Proceedings of the American Philosophical Society* for August, 1980, are informing in many ways, but most of all in explaining why decisions about the use of nuclear weapons, as Dr. Caldicott says, cannot be left to governments. Lord Zuckerman points out that top scientific advisers in both the U.S. and Britain have been simply unable to slow down the arms race. These experts all know, he says, that there is no military reality in theatre or tactical nuclear warfare. "Once nuclear weapons come to be regarded as weapons that can be used, as opposed to instruments whose powers of

destruction deter all thought of war, they cease to have whatever strategic meaning their possession implies."

Why, then, do we go on making them? Because, he says, the technicians who design them say we must, and bemused politicians feel obliged to agree.

For it is the man in the laboratory—not the soldier or sailor or airman—who at the start proposes that for this or that arcane reason it would be useful to improve an old or to devise a new nuclear warhead and, if a new warhead, then a new missile; and, given a new missile, a new system which it has to fit. It is he, the technician, not the commander in the field, who starts the process of formulating the so-called military need. . . . The men in the nuclear weapons laboratories of both sides have succeeded in creating a world with an irrational foundation, on which a new set of political realities had to be built. They have become the alchemists of our times, working in secret ways which cannot be divulged, casting spells which embrace us all. They may never have been in a battle, they may never have experienced the devastation of war; but they know how to devise the means of destruction. And the more destructive power there is, so, one must assume they imagine, the greater the chance of military success.

But this is false, as top scientific advisers have understood, yet they were unable to persuade American presidents of the fact, since these leaders were under enormous pressure from other advisers who exaggerated the Soviet military threat. Lord Zuckerman cites Herbert F. York's *Race to Oblivion* at length to show that "the majority of the key individual promoters of the arms race derive a very large part of their self-esteem from their participation in what they believe to be an essential—even holy—cause." Some are "stimulated to match or exceed technological progress by the other side or even by a rival military service here at home, and victimized by rumors and phony intelligence." Moreover, the advocates of nuclear war know all the tricks of politics and propaganda, "how to respond to the mood of the country, how to capture the attention of the media, how to stir the hearts of generals." They know how to create

"the climate in which political chiefs have to operate."

It is this climate that must be changed, and only a grassroots uprising can do it. The arms race, Lord Zuckerman declares, cannot be "won." since it is a race "in which there is no finishing post. Defeat is indivisible in a war of nuclear weapons."

Once people generally recognize this, they will be able to find ways to free their leaders from the pressures that make for war. At present, science advisers who know the realities are helpless to change the policies of the nations because the political leaders whom they are supposed to advise—who are in office for only brief periods—"inevitably find themselves in situations that leave little room for maneuver—situations characterized by an inertia and resistance to change which is only to be expected when hundreds of thousands of the electors on whom they depend are making their living doing things which were promoted years before by their political predecessors."

## *REVIEW*

### TRIPS TO FARAWAY

AN item in the *Manchester Guardian Weekly* (Feb. 28) provides an introduction to two books we have for review. First, an editor says in a note:

Last year Victor Zorza, for long this newspaper's resident Kremlinologist, decided to go live in a remote Indian village. Instead of analysing the global intentions of the Soviet Union, he is going to write a column in the *Guardian* about rural life in the Himalayas, beginning this week.

When, the editor explains, after a by-pass heart operation that wasn't completely successful, Zorza's doctor told him "he might have only a few years to live," the journalist booked a flight to India. "If I had only a short time left," he said, "I wanted to do something really worthwhile with it." He wants to stimulate better understanding among Westerners of life in the Third World.

After some looking around he picked a mountain village with access across a river on a perilous cable car. It has taken time to get acquainted with the people. "At first," he says, "the villagers suspected that I had something to do with the Government." This attitude continued for weeks, but finally they began to trust him, and he was invited to stay. Then he began sending in his weekly column.

Zorza, we should say, born a Pole fifty years ago, lost his family to the Nazi invasion of his country. He found his way to refuge in Siberia, then came to England where, like Joseph Conrad, he mastered English and became an expert on foreign affairs. For years he did a weekly column for the *Washington Post*, sometimes outguessing other experts, including the CIA. Why did he quit all this and go to India?

I had put aside my work as a political columnist because my priorities had changed. I had come to believe that what was happening in the Third World was more important than the East-West crises and the Kremlin in-fighting that had preoccupied me for so many years. But to understand how three-quarters of the world's people live, and how their future might

affect ours, I felt that I first had to try and share their way of life.

It seems of some importance to take note of this decision on the part of a first-rate journalist. Only a few years ago the average Westerner regarded the inhabitants of such far-off places as "primitives" and spoke of them condescendingly. That has now begun to change. So far as India is concerned, the change came first in the scholars—men who recognized the depth and vitality of Indian philosophy. An example would be Heinrich Zimmer, who wrote about Indian thought as a *living* system. He was no antiquarian mining the past as a learned specialty. Today books about distant peoples seem written with a quiet awe, and no condescension at all. We are at last getting ready, it seems clear, to learn from simple and less confused humans even though they lack all our "advantages."

One attractive example of such books is *Nepali Aama* (Ross-Erickson, Santa Barbara, Calif., 1982, \$9.95), by Broughton Coburn—a Portrait of a Nepalese Hill Woman. The author had the job of teaching high-school science in a town in Nepal's middle hills and found quarters with this remarkable old lady, only a few miles from "the Annapurna and Dhaulagiri ranges of the Himalayas."

What was it like, living there?

Vishnu Maya is known to most Danda villagers as Aama, the Nepali respectful kinship term for mother. She performs all of the household chores herself with a relaxed, quiet decisiveness and singleness of purpose. At first she took no assistance from me, afraid to tarnish my caste-like "master-sah'b"—school teacher—dignity. But with work continually overflowing into the late night, she soon allowed me to carry her lighter loads and execute some of the repetitive, but surprisingly difficult, tasks. Fetching water, churning butter, policing chickens, splitting firewood and feeding the water buffalo were commonly my lot, since my attempts to thatch roofs, weave baskets and plow fields were embarrassing failures. My greatest value to Aama and the Danda villagers seemed to come from the comic diversion I yielded as the butt of good-natured jokes and mimicry. This teasing, however, was preferable to

the hopeless unmanageability of the sixty restless and screaming students that were assigned to me.

Each day my respect grew for Aama, her tribespeople and the middle hills of Nepal. Aama and the Gurung were poor and uneducated, but they seemed to possess an uncanny strength grounded in traditions, family, community and self-sufficiency.

This gives the spirit of the book. What else can we say? These villagers have something we've lost and need very badly to recover. And there is also the author's remark that the old lady's occasional reflections, "whether objective, humorous or philosophical, show a profound realization of her specific place in the universe—a universe in which she is only in a physical sense not well-travelled."

Well, tit for tat. If the villagers laughed at Broughton Coburn, he is able to make us laugh at them, along with various appreciations, by revealing their courtship customs. The way Nepal village boys and girls get married is probably as good as our own customless procedures—perhaps better—but certainly different! Aama relates:

At least one night each year our question and answer songs crisscrossed the village. The unmarried boys would gather on one side and the girls on the other side. . . . Each party would alternate singing verses of the songs we all knew, and then one boy would lead off with a challenging verse to a girl that he was serious about. He might sing, "If you are so beautiful and clever, then why do I see you spending your days digging in the earth and carrying dung?" All of us would sing the refrain, and then she might answer in rhyme, "With village boys all as ugly and lazy as you to choose from, I would rather carry dung at my parents' home than suffer the burden of your base desires." We would sing the refrain again and he might respond, "You are waiting for a wealthy army man to take you around the world, but where is he? Can you pull him from your goitre when you are an old woman?"

This questioning play would go on until sunrise, and each of them needed sharp wits to match the other. The rest of us coached our boy or girl, and if the girl couldn't respond to all of the boy's parries, she was obliged to marry him. One of my nieces found her husband this way, I think because she gave up

trying to match him. But she was more anxious to leave her parents' home than most of us young girls.

This book has lots of good photographs of the country and the people of Nepal—especially of the old lady.

Another book about the people of a far-off place is Howard Norman's *Where the Chill Came From* (Northpoint Press, 1982, paper, \$7.50), a collection of thirty-one stories told by the Swampy Cree Indians, who live in the subarctic forests and icy swamplands west of Hudson Bay in Canada. The subtitle is "Cree Windigo Tales and Journeys," and the "Windigos"—dreaded, murderous "spirits" with magical powers, as much feared by the Crees as we fear cancer, heart attack, and the depredations of the multinationals—figure in all the stories. Summer brings these Indians a brief reprieve from continuous snow and cold, for then various food animals become available. They hunt moose, caribou, deer, and now and then bear, and the women and young of both sexes snare hare and ptarmigan (grouse). Everyone fishes through chiseled holes in the ice. A main objective for the Cree is to avoid starvation, and their tribal wisdom and talk usually involve the skills of hunting food. The author-editor says

These discussions articulate the Cree's remarkable ecological perception. Yet they can, by the inherent limits of even their language, so finely tuned to their environment, represent only a part of what a Cree hunter carries in his head. As Job Walks (a Cree informant) said: "At those times, everything we know comes out in talk, but there may not be many words spoken altogether." Yet each discussion has the background of centuries of hunting knowledge.

Howard Norman repeats an anecdote confided to him by a Cree:

So we were joking with this man (a trapper from further south, who spoke very poor Cree), and we said to him, "Where are you going to hunt?" He said, "Well, I was going north. Walking." So we asked, "How many porcupines to the north are you going?" So that got everybody to laughing, because this man,

he didn't know . . . he didn't know about porcupines that way.

The author explains:

"How many porcupines to the north?" refers to the territoriality of that animal. While their boundaries may depend on terrain and availability of food bark, porcupines tend to maintain territories of roughly three to five square miles. Therefore, a walk of two porcupines to the north would be approximately six to ten miles. But something of that environment is also revealed in referring to porcupine territories: porcupines feed mainly on aspen and other barks. Fishers, wolverines, martens, and occasionally coyote, fox, and wolves prey on porcupines, so they too may be about.

The "superstitions" about Windigos and other "spirits" are all through the book. These invisible friends and enemies seem to have something like the role for the Crees that the wicked "germs of disease" and beneficent "vitamins" have for us. "Mechanistic Technologists" would be another category of our bad spirits. The evil Windigos upset the "old agreement" between food animals and humans, as one of the Indians explained:

It's an old agreement, the animals giving themselves to us. We hunt them. We try not to insult them. Even in the hardest winters I can recall, some animals would see we needed them, and give themselves up.

Telling about the animals is also part of the "agreement." "If we stop speaking of them," the Indian said, "they will leave." Their stories, Norman says, "contain astute observations of animal behavior."

There are no impressive psychic "revelations" in this book, but the reader feels a growing fondness and respect for these Indians of the north. This may be better than the disclosure of shamanistic wonders.



**COMMENTARY**  
**"EXPERT SCIENTIFIC ADVICE"**

The address of Menard Press is 8, The Oaks,  
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IN his preface to No. 11 of the *Self-Teaching Mini Series* (see page 5), John Jeavons says:

The efficiency, simplicity, and cost-effectiveness of a small-farms approach is becoming increasingly popular at all levels. It certainly appears to be one way to produce more food at the local level, thereby reducing the cost of food and increasing the accessibility of food in a resource-responsible way. A small farm can be a bountiful "lifeboat."

This seems a complete justification for Jeavons' claim that food culture should be an essential in school education—"food-raising should be second nature, before we need it!"

That neither "life-boats" nor any other refuge will exist in the event of nuclear war becomes clear from the contents of two other booklets issued by the Menard Press (see page 7), both published last year. One is *The Crucible of Despair* by Anthony Tucker and John Gleisner, the other, *Nuclear Weapons: the Way Ahead*, by Ronald Gaskell. In one place Gaskell says:

The objective of current American policy is apparently to recover nuclear superiority, at whatever cost in heightening a sense of insecurity in the Soviet Union. If, as seems likely, this aim proves unattainable, the White House will settle for a new, and probably more dangerous, balance of terror. And no amount of arms control talks, even if pressed with far more energy and conviction than we have seen so far, can prevent innovations in technology—unless these are halted—from making this an increasingly precarious balance: a balance that will sooner or later collapse.

The authors of *Crucible of Despair* says:

As President Eisenhower warned long ago in his farewell address to the nation, one important factor is the "military industrial complex" whose self-perpetuating weapons production and contract gathering role is backed by enormously powerful lobbies. There is, as Lord Zuckerman has pointed out with force and clarity, the powerful driving force of expert scientific advice to the military and to the inner circles of Government, detailing new and advantageous weapons options.

## CHILDREN ... and Ourselves ART AND SCIENCE

NOT long ago, in a *Frontiers* article, it was suggested that contemporary writers are beginning to make good use of history in relation to problems of agriculture and food supply. Material in No. 11 of the *Self-Teaching Mini-Series* issued by Ecology Action (2225 El Camino Real, Palo Alto, Calif. 94306, \$2.00) provides rich confirmation. The writers, John Jeavons and Mogador Griffin, go back in American history to the time when Abraham Lincoln was President, and Isaac Newton (!) was the first commissioner of Agriculture (the Department of Agriculture was established by Congress in 1862, to foster the nation's agriculture). The spirit of Newton's undertaking is reflected in his first report (in January, 1863) in which he said:

Agriculture is an art—man the artist. The soil is his laboratory; manures and seeds his raw material; animal strength (and tools) his power; air, heat, and moisture his agents; and grain, roots, fruits, and forage his products. Agriculture is also a science, teaching the artist the best modes of improving and fitting up his laboratory; instructing him in the properties and economical use of his raw material; teaching him how best to apply his power and profit by his agents, thereby enabling him greatly to abridge his labors and multiply his products. Art teaches the hand to do—science, what and how to do. Art belongs to the individual—science is the concentrated experience of ages and the labor of nations. It is, in short, classified knowledge illustrated in practice and confirmed by experience, and as certain and eternal as truth itself.

Present-day educators in agriculture—we mean by this the people at Ecology Action, Wes Jackson of the Land Institute in Kansas, The New Alchemists on Cape Cod, and Wendell Berry in Kentucky—are hard at work trying to restore agricultural science to a level which would justify what Isaac Newton claimed for it. In his report he said that more than three hundred thousand packets of seeds had been sent out during the first

six months of the Department's existence. The Ecology Action writers comment:

For a young, hopeful United States, it was very important to improve its agriculture and, thus, its people. As a nation of small farmers, the need to begin an effective network which shared knowledge among the people was foremost in the minds of those who began the Department of Agriculture. With the history of the downfall of the ancient Roman agricultural civilization to guide them, and the more recent examples of overcropping, excessive monocropping, soil depletion, and abuses of both the land and farmers in the United States, this historical knowledge was used to redirect their efforts and help a republic in the midst of a Civil War.

Some anticipation of Wendell Berry's thesis in *The Unsettling of America*—that culture has a foundation of agriculture—seems implied in Commissioner Newton's report:

There are, really, but two great sources of national wealth—the *soil* and the *mind* of a nation. Where do we find the most prosperous individuals, communities, and nations? Where the mind and the soil are most cultivated. If, then, the cultivation of these adds wealth, power, and prosperity to a nation, the lack of either, where it might abound, is so much waste of national capital. . . . But this culture of the mind in science, taste, and general reading, should be based on a higher consideration than that of mere moneyed profit. It should be sought for its own sake, and the pleasures (and benefits) which it brings.

Newton warned nineteenth-century American farmers of the danger of relying on only their personal experience, since it was largely limited to cultivating a primitive soil. They hardly realized they were in danger of "using it up." So the Commissioner of Agriculture told them what they were doing and drew on history to support his recommendations:

The labor and expense attending the accumulation and application of manures, with the necessity of *unlearning* old habits and theories, have made him [the farmer] tempt nature to the verge of exhaustion, and degrade a noble profession to one of mere routine. While Americans are ever disposed to boast of their inventive skill and teachable disposition, the elder nations, which we affect to despise, offer us some valuable lessons in agriculture.

The Chinese, by the use of every possible kind of manure, have made their lands yield undiminished products for thousands of years. . . . If China or Japan were to follow our methods of tillage famine and death would soon sweep millions into their graves.

Why, one wonders, did we have to wait for over a century to have the reality of what this wise and conscientious public servant advised brought home to us? Well, we can at least take pride in his insight, even if our immediate ancestors ignored it. The Ecology Action writers say:

As we look around us today, we see a world more concerned with economic return than sound agricultural practices which do not deplete the soil. Why not build a base of stability on simple-in-practice, sophisticated-in-function, sustainable agriculture? This is what we can do. Small farms can even bountifully transform entire areas when practiced by many people—each working in his or her own region.

The knowledge we already have can be applied. All or most of the pieces of information exist, but they may have to be rearranged somewhat to fit more equitably in today's world. It has long been known that it is easier to relate to a small parcel of land and that small farms are more productive than large ones—so why not utilize these advantages? The cultivation history of the world's soils and peoples can guide us toward a long-term approach which avoids the pitfalls of a more short-term focus.

This is the work in which Ecology Action has been engaged for more than eight years—showing "how it can be possible to transform the smallest area into a productive and bountiful piece of the planet." The self-teaching booklets are devoted to what has been learned and demonstrated in practice. In No. 11 of these booklets, the writers say in their preface:

It is becoming more and more apparent that new ways of looking at the world are needed to deal with the problems confronting us today. Seeing the world with product-oriented eyes without taking into account the processes with which products are made has given us many of our problems and nowhere is this more apparent than in the agricultural sectors of our societies.

The lower yields and excessive energy consumption of large farms; high prices required for

fuel, equipment, chemicals, and water; increased soil deterioration; and rising dependence on cash cropping and exports for farmers all around the world are jeopardizing the very base from which we all survive. There is more hunger and malnourishment in the world today than ever in the history of the human race.

One sees why John Jeavons says that food culture should be an essential in school education—"food-raising should be second-nature, before we need it!"

The booklet ends with a quotation from Abraham Lincoln, who said in 1859, in an address before the Wisconsin Agricultural Society:

The thought recurs that education, cultivated thought, can best be combined with agricultural labor, or any other labor on the principle of thorough work, and thorough work again renders sufficient the smallest quantity of ground to each man, and this again conforms to what must occur in a world less inclined to war, and more devoted to the arts of peace, than heretofore.

Population [will] increase rapidly, more rapidly than in former times, and ere long the most valuable of all-arts will be the art of deriving a comfortable subsistence from the smallest areas of soil.

No community whose every member possesses this art can ever be the victim of oppression in any of its forms. Such community will be alike independent of crowned kings, money kings and land kings.

## FRONTIERS

### Changes in Thought and Action

THERE is now a steady flow of printed material about the psycho-social changes going on—appearing in new magazines and books. Some of it is very good, dealing with underlying reform in attitudes and values, while some of it, as a *Nation* reviewer remarked early this year, provides little more than clever sayings "for cocktail party philosophers in 1982." This writer distinguishes between "service" journalism and real journalism, the one anticipating the audience's "needs and prejudices," the other seeking "authentic insight" and operating "with some notion of the public interest." Examples of writers who have contributed to the latter are De Tocqueville, Thorstein Veblen, Jules Henry, and C. Wright Mills. E. F. Schumacher might also have been named, although he was himself a protagonist of change as well as a writer of progress reports.

In a similar category is Catherine Roberts, a molecular biologist now teaching at the University of California in Berkeley. Best known for her book, *The Scientific Conscience* (1967), and her later work, *Science, Animals, and Evolution* (Greenwood Press, 1980), Dr. Roberts is advocate of a science which takes into consideration—or is founded on—the Platonic view "that wholeness means awareness of purpose and direction, of a world moving toward its spiritual source." Already in evidence, she suggests, are signs of an awakening and movement in this direction. "Most people," she says, "would agree that man now stands at the threshold of a new age." An immense change, Dr. Roberts feels, "is taking place which is especially evident in the West and the materialistic society it has created."

The claim of the supreme validity and indispensability of scientific knowledge is being questioned from many sides because it is obvious that, while its impressive achievements have revealed more of the truth about physical reality and have in many ways ameliorated the human condition, science is not

creating a biosphere of wise, noble, happy human beings living harmoniously with themselves and with the nonhuman constituents of their environment. So there has been a reaching out, particularly in the West, not only toward Eastern religions and ancient spiritual wisdom in the hope that the subjective, suprarational, the spiritual, and the transcendent will better reveal the whole truth that evolving man needs to fulfill his destiny.

Generalizing about such tendencies, Dr. Roberts says:

At this particular stage of evolution, there does seem to be available to mankind some kind of spiritual energy that is slowly liberating him from egoistic preoccupation and ethical apathy. His higher potentials seem to be coming to light. Biologists in general have not yet seen them because they are unaccustomed to seeing man in terms of his relation to the divine. They do not often look beyond the physical reality of life and what they call its associated mental epiphenomena. Nor do they admit that an individual life on earth is but an interval between the pre-existence and post-existence of an evolving spiritual being. They have even claimed that scientific advance has destroyed religion. Since this claim is patently false, it seems appropriate for biologists to open their minds to alternative views about the potentiality of life that transcends the undeniable laws of physics and chemistry and the indubitable facts of genetics, molecular biology, and biology, and biological evolution. . . .

The spiritualization of biology is only an extrapolation into what it must become: the ethical study of life by life to convert evolutionary potentiality into reality for the sake of the cosmic Good. (Winter 1982 *Perspectives in Biology and Medicine*.)

Dr. Roberts finds in Michael Polanyi's *Personal Knowledge* the term "ultra-biology" to describe this enlarged and transformed sort of science, and notes the affirmation by Schumacher that "there is no science without scientists, and that questions of good and evil, even if they lie outside the province of science, cannot be considered to lie outside the province of the scientist."

This reference to Schumacher serves as link to another sort of discussion of cultural change, an

article by Thomas Foster, of Ohio State University, on "Learning from the Amish—Simple Living for Hard Times," which appeared in the December 1981 *Futurist* (and was reprinted in the Winter 1982 *New Roots*). Speaking of certain small but decisive trends, this writer says:

Some scholars, and social scientists believe that what is happening in the United States is a reflection of a much larger historic shift in the values and goals of Western societies, and that the industrialized nations are gradually starting to move away from the materialistic, growth-oriented philosophies that have dominated their social, economic, and cultural institutions since the onset of the industrial revolution. . . . I Kimon] Valaskakis has described several possible models of conserver societies, the purest of which he believes would correspond to E.F. Schumacher's notion of the "frugal community."

But can Schumacher's ideal conserver society exist—for any significant length of time—in the midst of a mega-industrialized nation such as the U.S., or was Schumacher merely a utopian dreamer, as some of his critics claim?

In reality, a living example of Schumacher's frugal community already exists in modern America. Moreover, this society is no short-term utopian experiment but is a long-established religious and ethnic subculture that has existed on American soil for more than 240 years. . . .

The Old Order Amish, Foster says, during the transformation of American agriculture into huge, energy-wasting farms, "steadfastly continued to farm smaller acreages, successfully employing methods that are now called 'organic' and using energy-saving technologies of a type that Schumacher would term 'intermediate' and 'appropriate.'" The Amish in the U.S. number some 85,000, distributed over twenty states, with concentration in Pennsylvania and Ohio. They are pacifist followers of Jacob Amman, seventeenth-century Anabaptist leader. They lead simple, productive lives, accept no government subsidies or welfare, and are "probably the only group in the U.S. whose leaders have successfully petitioned Congress to exempt them from the Social Security system." To support their lives and carry on their work they use windpower, water power,

horsepower, solar power, woodstoves, and human labor. As Prof. Foster puts it: "Small scale, labor-intensive technologies greatly reduce capital investment and operating costs in agriculture and help to explain how Amish farmers in Ohio, for example, can earn profits on 75 to 150 acres of land at a time when Ohio's non-Amish farmers, who use diesel tractors and other costly modern technologies, have difficulty making money on acreages twice as large." In their "cottage industries" they make farm equipment (horse-drawn) that is widely purchased by non-Amish farmers. Foster's concluding comment is that the analogy between the Amish farmers and Schumacher's "frugal community" demonstrates "the feasibility of developing a limited number of small, conservation-centered communities within the boundaries of democratic, industrialized nations."

These prototypes, if organized along the theoretical lines recommended by Schumacher—and empirically demonstrated by the Amish—should, by their very nature, ensure a continuity of agricultural production and small-scale manufacturing even in the event of future energy and natural resource crises.