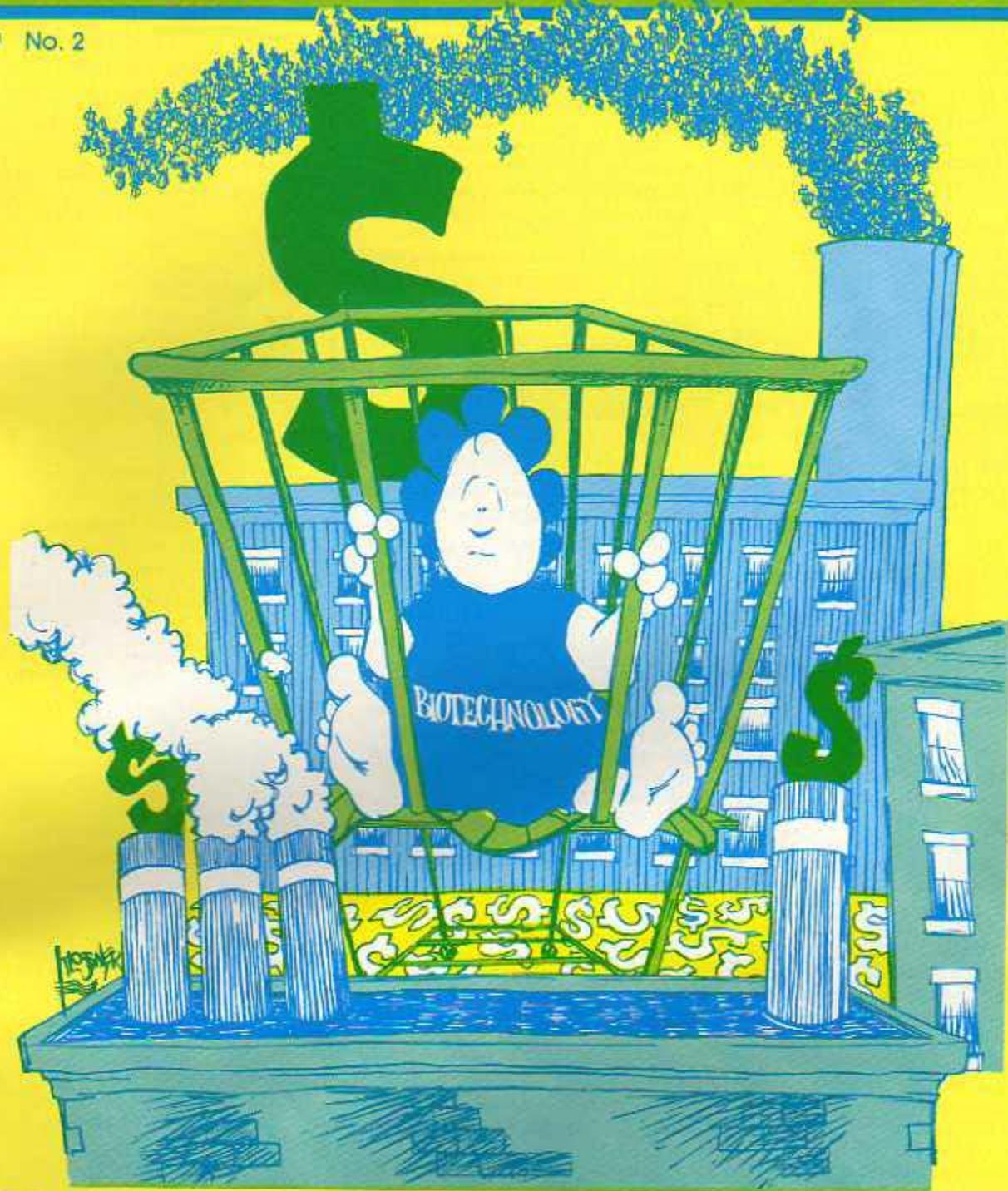


A Psychiatric Holocaust • Nuclear Cleanup at Weapons Sites

# SCIENCE FOR THE PEOPLE

Vol. 19 No. 2

\$2.50



## Bringing Up Biotech

Influencing the Development  
of an Industry

## Illuminating Illness

Dear SftP:

After so very many mind-opening realizations in a lifetime, one begins to expect that no new light bulbs can possibly go on, but your article "Ecology and Immunology" by Paul Epstein and Randall Packard (Jan/Feb 1987) has given me a whole new way of thinking about human illness and imperialist behavior. It is brilliant—and depressing. I am throwing my hands up at this point and thinking we should all just return to our ancestral lands. But where should I go? Scotland? France? Germany? Belgium? Or Cleveland?

—Chellis Glendinning  
Tesuque, New Mexico

## Out of Touch, Out of Time

Dear SftP:

About a year ago, good friends sent me a gift subscription to SftP, and now that I've read over several issues, I feel prompted to write you concerning several points.

The usefulness of your magazine is very hampered by the incompleteness of its *raison d'être*. I'm astonished to see a publication in this day and age using the obsolete romantic philosophies of dialectical materialism and Marxism as its bases, to the virtual exclusion of all points of view at variance with such perspectives. Because these value systems color the prose of very article in SftP, their informative value is lost. The writers, all of like mind, see no necessity in providing literary citations or "objective" evidence, since such philosophies discount the possibility of objectivity.

I suggest that the editors and writers of SftP should become much more acquainted with the *current* debate over epistemology and human values in science, as Marxism has proven an ineffective model for scientific inquiry in the past fifty years (I refer you to Lysenkoism, for example). Works by Thomas Kuhn, Michael Polanyi, Arthur Peacocke, Loren Eiseley, and publications of the "Man and Beast Revisited" symposia

series at the Smithsonian would all be helpful. With this sort of background, the point of view of SftP would be considerably updated.

Certainly there is a place for a radical, alternative view in the selection of science publications currently available, but such a role would best be filled by a well-informed, open-minded, and scholastically sound magazine. D.E. Thomsen wrote recently in *Science News*, "We need a dialogue, and the kind of dialogue that alters peoples' opinions, not mere throwing of snowballs from previously frozen opinions." The future of science will not be well served by any form of "ism", whether conservatism or communism, feminism or sexism.

—James M. Bryant  
Dallas, Texas

## New Technologies Conference

Dear SftP:

A jointly sponsored conference, "New Technologies: Responding to Future Risks," will be held May 28-29, 1987 at Worcester Polytechnic Institute in Worcester, Massachusetts. Representatives of industry, government, labor, and academia will address occupational and environmental hazards associated with new technologies. The conference will focus on four aspects—identification, assessment, management, and prevention—of such hazards.

Session topics include trends in new technologies, risks of biotechnology, advanced materials and microelectronics, hazards in high technology, new approaches to new kinds of risks, liability and insurance, public policy and regulation, and public perception.

The conference is sponsored by the New Technologies Safety and Health Institute, with the participation of Clark University, UMass Medical School, and Worcester Polytechnic. For further information and registration, contact Barbara Guthrie, Worcester Consortium for Higher Education, 37 Fruit St., Worcester, MA 01609, (617) 754-6829.

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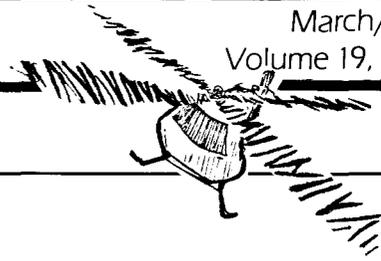
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by Barry Commoner

"A fundamental question that any of us concerned with biotechnology have to deal with is how to govern the development of a new industry. If you're interested in regulation, I don't see any way of working on that without dealing with the decisions that determine what the industry produces and how it produces it. This introduces the whole question of social intervention in the infant industry itself."

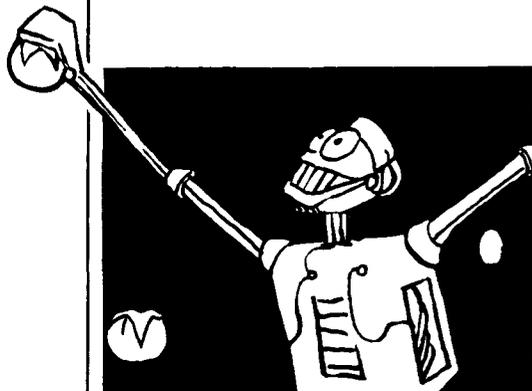
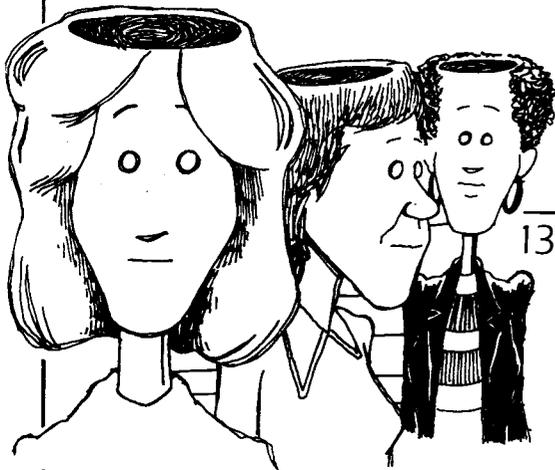
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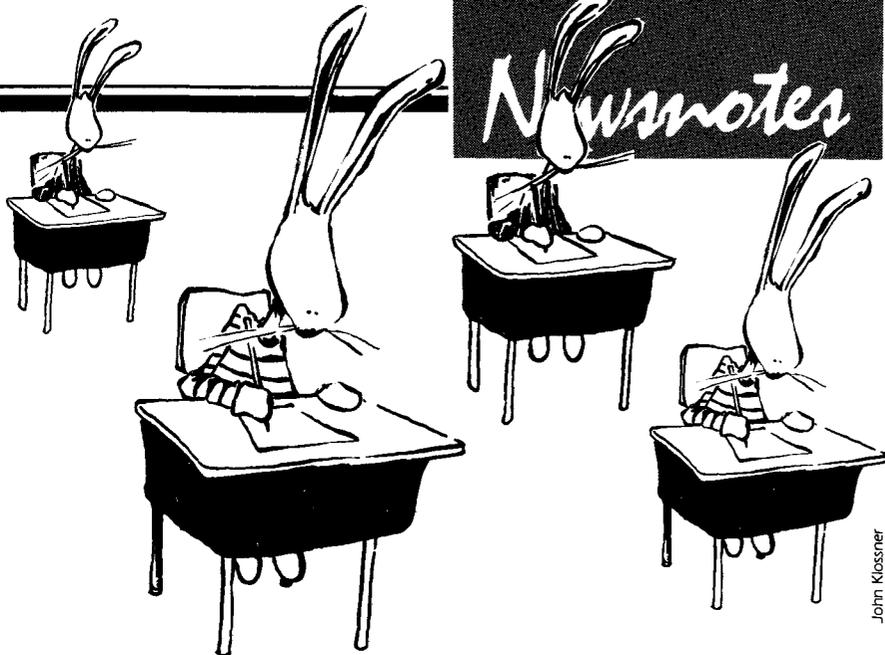
by Don Weitz

The Canadian government collaborated with the U.S. Central Intelligence Agency in funding covert mind-control and brainwashing experiments over thirty years ago. Many of their Canadian and American victims who are still living continue to suffer permanent brain damage, amnesia, insomnia, and a variety of physical and mental disabilities. The son of one victim describes his father as "a broken man...with no memory, no life. He lost everything."

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John Klossner

## CAMBRIDGE DEBATES ANIMAL TESTING ORDINANCE

**M**ore public hearings are expected soon before the Cambridge, Massachusetts City Council on an ordinance that would require public review of academic and commercial laboratory research using animals. And while two specific reports are awaited from the City Health Commissioner and from the Animal Commission on the issue, the ordinance has already caused vociferous debate.

A preliminary study by the city's Animal Commission concluded that there was a need for greater public information on this subject, partially because of the large amount of academic research using laboratory animals for toxicity tests and other research conducted there. In addition to Harvard and MIT, this preliminary report cited eight commercial labs doing animal testing, and estimated that some 50,000 animals per year were sacrificed to research in Cambridge.

While researchers at Harvard and MIT have for the most part bristled at the prospect of having their research involving animal testing reviewed by a city board, political watchers say that the ordinance has a fair chance of passage after the next round of reports and public debate expected soon.

The ordinance was proposed by Councillor Al Vellucci, former Cambridge Mayor and key proponent of an earlier landmark ordinance requiring a public review board for recombinant DNA research conducted within city limits. Vellucci stresses that the bill does not seek to stop all research on animals, only

to try to curb what he terms "irresponsible research" where researchers have other alternatives for testing. He says that in many ways the current animal rights ordinance recalls the earlier DNA debate: "the call for reports, the scientists disagreeing with each other, are all very reminiscent." But he notes, "I think the lesson learned from the debate over public review of DNA is that researchers should realize that if they are responsible, they can work with the ordinance in place."

—Seth Shulman

## GENDER CHOICE & GENOCIDE

**F**emale infanticide has long been a problem in India, where 935 baby girls are registered for every 1,000 baby boys. Now technology is helping Indian parents determine the gender of their children-to-be so that abortion can replace infanticide as the preferred method of disposing of unwanted female children. Female feticide now ensures India of even fewer baby girls.

According to *New Scientist*, a recent report on *Sex Determination Tests and Female Feticide in Greater Bombay* found that most doctors in Bombay perform amniocentesis, a procedure which removes amniotic fluid from a pregnant woman's uterus, to determine a fetus's gender. Amniocentesis detects chromosomal defects and fetal abnormalities, such as Downs Syndrome and spina bifida, as well as revealing the sex of a fetus. The survey, conducted by Sanjeev Kulkarni of the Foundation for Research in Community Health, estimated that 16,000 such tests are conducted in Bombay each year.

If all tests indicating that the fetus was female were followed by an abortion, at

least 8,000 female feticides would be performed yearly in Bombay. Such an assumption is hardly far-fetched—one politician who favors banning amniocentesis claims that past studies have found that all but one of 8,000 abortions recently performed were on female fetuses.

Of the 50 doctors surveyed, 42 admitted to performing a total of 269 sex-determination tests per month. The survey also found that women were pressured to have amniocentesis for sex identification purposes. One-quarter of the doctors who admitted to performing amniocentesis said that they had suggested the test to their pregnant patients. One-third said that some women were forced to have the test by their husbands or in-laws.

Amniocentesis may be behind an alleged rise in sex-based abortions in Britain, as well. Michael Ridler, of the Kennedy Galton Centre, which analyzes amniocentesis test results, claims that evidence has accumulated gradually of women who seek abortions after learning the sex of their fetus. Several British amniocentesis test facilities have instituted policies of withholding sex information unless doctors ask for it, and some doctors refuse to tell patients the fetus's sex, to prevent feticide. The problem, according to several obstetricians, is most prevalent among Muslims with strong cultural pressures to bear boys.

Back in the U.S., prospective parents are trying to affect their baby's sex prior to conception by using ProCare's Gender Choice Kit. Fifty thousand kits were sold during the product's first three months on the market in late 1986, as reported in the *New York Times*. The kits contain disposable thermometers and materials for sampling vaginal mucus so that women can monitor temperature changes in ovulation and changes in the pH of vaginal mucus.

But the Food and Drug Administration has found that the company's claims for the Gender Choice Kit constitute a "gross deception of the the consumer." The kit operates on the theory that female-producing sperm are more likely to reach the egg successfully just as ovulation occurs and the vaginal mucus is more acidic, while male-producing sperm do better shortly after ovulation when the mucus is more alkaline. The FDA, however, maintains that there is inadequate scientific data to support this theory. But ProCare still stands by its claims: it offers to refund the \$49.95 purchase price if customers are blessed with a baby of the opposite sex than they were trying for.

—Stephanie Pollack

## CHARLES HYDER'S FAST FOR PEACE

Charles Hyder is close to death as we go to press, but he says that he is convinced that if the arms race is not turned around the world will perish in a nuclear holocaust. "This problem," he says, "needs to be changed in advance."

Hyder, a 56-year-old astrophysicist and former staff scientist at NASA, spends most of his time in Lafayette Park, directly across the street from the White House. To date, he has been fasting for over three months—the longest known fast ever undertaken—and vows to continue to his death if the U.S. government fails to meet his demands.

Specifically, Hyder seeks a "binding commitment" from the Reagan administration to dismantle all nuclear warheads by the year 2000 and not to use or support violent offensive military operations against other nations as an option in international relations. He demands further that the U.S. "pursue an aggressive good faith effort" to get the Soviet Union and the other nations of the world to join the U.S. in these commitments. Countering any criticism that his demands are "utopian," Hyder insists that it is the arms race which is not realistic. "My demands," he says, "are what is necessary if the world is to survive. And if the people insist, the government must abide."

While many of Hyder's colleagues disagree with his approach, his efforts have gained much notice and support. Two dozen physicists and astrophysicists, mostly from Harvard and MIT, fasted for one day late last year as a gesture of solidarity with Hyder, urging the government to end the arms race. A group of scientists in Cambridge, Massachusetts has continued to meet regularly to help Hyder's cause, and others from around the world have expressed their support and concern for his cause. According to Hyder, three people have volunteered to continue his fast after his death if his demands aren't met.

"Our system responds to dead bodies," Hyder says, "but somehow people think that it is okay to die in war but not to die to stop war. My intent is not to kill myself but to rid the world of the threat of nuclear holocaust. However, toward that end, I sincerely believe that my action can be a pebble which will start an avalanche." While he says he is fasting

as a citizen and not as a scientist, Hyder does say that his life as a scientist supported his belief that "there is no such thing as a problem that can't be solved."

Hyder's five children are mixed in their response to his actions, as are his colleagues. Many have been to Washington to try to dissuade him from sacrificing his life. But he will not be deterred. Calm, serene, and surprisingly lucid considering his lack of food, Hyder says he feels "blissful knowing that I will be more

powerful in death than I have been in life."

We at SftP wish we would not face the prospect of losing one of the precious few who struggle so vehemently for peace. But we, too, must express our solidarity with a strong-willed activist's demands. We look to his strength and commitment as a harsh reminder of the determination we all will need to reverse the arms race.

—Seth Shulman

## NO-SMOKING ZONES

Everett Koop, the U.S. surgeon general, issued a report in December with evidence that the effects of sidestream tobacco smoke are harmful to everyone. He called for immediate restrictions on smoking in public places and a "smoke-free society" by the year 2000.

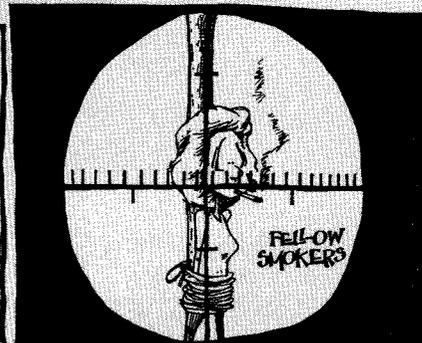
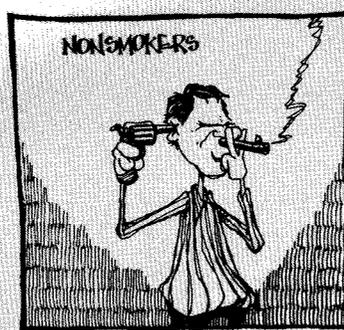
In the U.S., about 115,000 people die each year of lung cancer caused by smoking, and government health officials estimate that two to five percent of those deaths are to victims who inhale the smoke passively as bystanders to smokers. This sidestream smoke—produced from the burning end of cigarettes, cigars, and pipes—is qualitatively the same as the smoke that reaches a

smoker's lungs. Studies have shown that sidestream smoke is absorbed into the lungs of bystanders, and that these passive smokers suffer higher rates of lung cancer than people who are not exposed to smokers.

The surgeon general also claimed that breathing sidestream smoke can raise the risk of bronchitis and pneumonia. Eye, nose, and throat irritation are the most common effects of exposure to smoke. Infants and children under two years old who are exposed to smokers are at special risk. Studies have shown that these children are admitted more frequently to hospitals suffering from respiratory illness and that they show a lower development in lung function. "I strongly urge parents to refrain from smoking in the presence of children," Koop warned.

—information from *New Scientist*

### THE SMOKER AS SEEN BY:



John Kossner

## FROM OUR BEVERAGE MENU

**W**ould you like a drink? On our beverage menu we have a selection of wines and liquors containing carcinogenic urethane, and for teetotalers we have a variety of diet beverages sweetened with NutraSweet, suspected of causing epileptic seizures and eye damage. Lost your appetite? No need to fear: the Food and Drug Administration says that our poisoned drinks are safe.

A recent petition by lawyer James



Turner of the Consumer Nutrition Institute called on the FDA to ban NutraSweet—added to many diet drinks and known generically as aspartame—as an “imminent hazard to the public health.” To back up his petition, Turner cited 80 NutraSweet users who had suffered epileptic seizures and 60 who reported eye damage. But the FDA rejected the petition, claiming that “the evidence submitted is not the type that...established a link between aspartame consumption and possible harm to the public health.”

FDA also denied a petition by the Center for Science in the Public Interest (CSPI), asking the agency to recall and prohibit future sales of wines and liquors that have been found to contain dangerous levels of urethane—a suspected human carcinogen. Citing studies by the Canadian government and the FDA itself, CSPI claims that an average-sized man who consumes three ounces of whisky or three glasses of wine

contaminated with urethane daily has a risk of cancer between 32 and 4,700 times that of teetotalers.

Canada set standards for urethane, which is produced naturally in the distilling or fermenting of alcoholic beverages, in 1985. But, according to FDA commissioner Frank E. Young, the agency does not “think this is an absolute emergency.” Among the beverages found by U.S. inspectors to have urethane levels in excess of Canadian standards are Almaden Vineyard’s Cabernet Sauvignon, Gallo Vineyard’s Cream Sherry of California, Christian Brothers’ California Treasure Port, Kentucky Gentleman Bourbon, Bols Kirshwasser Cherry Brandy, and R. Jelinek Slivovitz Plum Brandy.

So, if you’re thirsty, relax and have a drink. Epilepsy and cancer are on the house!

—Dan Grossman

## NOT ONLY STICKS & STONES, BUT NAMES WILL ALSO HURT YOU

**I**n its closing days before the rush to return home and campaign, Congress passed the Intelligence Authorization Bill for 1987. With little fanfare, two provisions wound their way into the spending law which give the FBI access to people’s bank records and telephone toll logs. Passed in the spy fever engendered by the U.S.-U.S.S.R. Daniloff and Zakharov affair, the two provisions ostensibly target individuals suspected of espionage by the federal government.

As detailed in *The National Reporter* (Fall/Winter 1986), beyond the ability it grants the FBI to obtain the records of people it’s investigating, the new law includes three other causes for worry. First, the law eliminates a provision of the 1978 Right to Financial Privacy Act which stipulated that to obtain information, a federal agency must notify a person that his or her bank record was being sought, and that the bank involved had the option of notifying the customer of such a request. Now the individual will receive no notification and, in addition, the bank involved is forbidden from informing them that such a request has been made. The result is that individuals may never

## POURING MONEY DOWN THE DRAIN

**A**n Environmental Protection Agency study on the costs and benefits of reducing lead levels in drinking water garnered quite a bit of attention at the end of 1986, in part because the study was released only after being leaked to the press. It found that 42 million Americans may be drinking water which contains unsafe levels (20 parts per billion or more) of lead. By using corrosion control to reduce lead levels in drinking water, the EPA concluded, it could prevent organic brain damage in at least 143,000 children and hypertension in at least 118,000 adult males, producing net benefits of \$800 million annually.

Environmentalists were understandably disappointed when the EPA responded

know that their bank records have been obtained for use by a government agency.

Further, the law allows the FBI to obtain the telephone records not only of the person it is investigating, but also of any other individuals whose phones the person may be using. And finally, the new provisions allow the FBI to share the information it has acquired with any other government agency which it believes has a relevant interest in such data.

Various government agencies—like the IRS, CIA, FBI, and Health and Human Services—have been involved in such information sharing for quite some time. For example, the IRS used to share tax records with the FBI of people who were politically active in the 1960s. The new law, in effect, legalizes such practices.

The government has claimed that these new provisions are innocuous and that they are only concerned with people working in the service of foreign governments or groups which oppose U.S. “interests” or “national security”. However, with the Reagan administration leading the way in trying to label anyone who disagrees with it as communist or terrorist (to justify the repression of such individuals or organizations), can another label—an “agent of a foreign power”—be far behind?

—Joseph Regna

to its own study by refusing to speed up the process of adopting 20 ppb as an enforceable standard for lead in drinking water. Instead, the agency has been telling worried consumers to run their water for three to five minutes in the morning to flush out the lead, which accumulates when corrosive water sits undisturbed in lead pipes or pipes held together with lead solder.

Ralph Nader has responded with his own cost/benefit analysis. In an address to the American Water Works Association, Nader announced that he had calculated the value of the water wasted by having all of the exposed people run their water for five minutes each day. The resulting cost to consumers was \$255 million—more than the cost of corrosion control as estimated by the EPA.

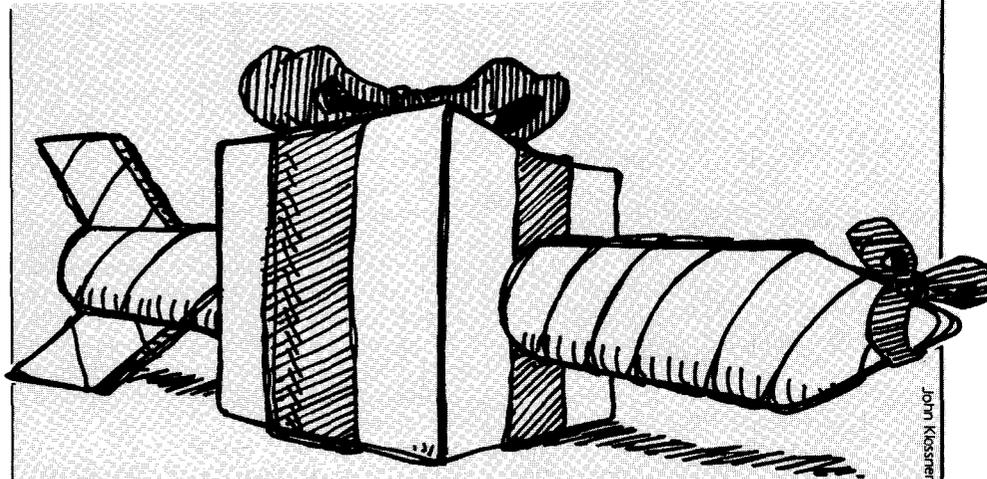
—Stephanie Pollack

## DALKON SHIELD SURVIVORS

**W**hen the A.H. Robins company peddled the best-selling intrauterine device on the market to millions of women around the world, it put profits before the lives and reproductive health of its customers. Instead of providing a safe method of birth control, the Dalkon Shield caused infections, septic abortions, ectopic pregnancies, and infertility in many users. Now the company is in the midst of U.S. Bankruptcy Court litigation for the injuries and deaths caused by the Dalkon Shield.

In the United States, a network of Dalkon Shield survivors has formed to reach other victims, to keep the Dalkon Shield issue alive, and to develop some unity among survivors. This January, they published the first issue of the *Dalkon Shield Information Network*, a newsletter that will report on new developments in Robins's bankruptcy and reorganization plan proceedings, cover medical issues, and provide emotional support and information to survivors.

"There were two million American women and a total of four million women worldwide who used this birth control device," writes Karen Hicks, the newsletter's publisher. "Through this newsletter, we hope to keep the issue alive and vital during the lengthy court proceedings." Send subscriptions (\$10 or more per year) and inquiries to Karen Hicks at 626 Center St., Bethlehem, PA 18018.



John Kasser

## GIVING AWAY THE HIGH FRONTIER

**I**n light of the evidence and with some sense of history, you probably thought that the Reagan administration's Star Wars project was merely an adjunct to a first-strike capability, a welfare program for U.S. corporations, and an escalation of the arms buildup—not to mention a dangerous idea and an enormous waste of resources. But, oh, how wrong one can be. What's the real scoop behind the Strategic Defense Initiative? "Our children and grandchildren are the reason we must have SDI." Incredible, you say? Not so to the mindset of fear, ignorance, and suspicion prevalent on the right.

In her November 1986 fundraising letter for High Frontier, the private organization promoting Star Wars, Ruth Graham, wife of High Frontier's head, retired Lieutenant General Daniel Graham, made just such a claim and implored readers to think of their families when deciding whether to throw \$25 High Frontier's way. And to broaden the metaphor which equates care for one's family with support for Star Wars (Q: Does lack of support for SDI mean one doesn't care? A: Of course!), Ruth Graham urged readers to send her a picture of "you with your closest family or friends—your children, grandchildren, nieces, or nephews." Why? She wanted to place all the pictures she received into the High Frontier Photograph Album and give it to husband Dan at Christmas.

Later in the letter, wife Ruth gave a clue as to the fear the Grahams and their ilk are experiencing: "Dan tells me that because the Senate is now controlled by liberals, there will be incredible pressure

on President Reagan to make an arms control deal with the Soviets." What I take from this is that the Grahams have given a fresh meaning to the term "nuclear family."

The letter ran in the December 21, 1986 *Washington Post* under the headline "Your Photo and \$25 Can Help Make the General's Season Glow." What made our season glow at SftP was news about people like Mark Swaney. Florida-resident Swaney worked for six-and-one-half years as a mechanical engineer. Employed by two military contractors, Swaney's job was to develop guidance systems for missiles and antiballistic missile systems. On October 16, 1986 (as reported in the November 12, 1986 *Guardian*), Swaney, 33, called a press conference to announce he was quitting his job at his then-current employer, Martin Marietta.

The reason Swaney left his lucrative military-funded position was to protest the refusal of the United States to abandon the Star Wars program. Coming on the heels of the failed Reykjavik summit, Swaney's decision, apparently gestating for some time, was solidified by the obstacle to a momentous agreement on nuclear weapons reductions that Star Wars presented at the summit.

"I feel this project is the greatest threat to peace since the atomic bomb," Swaney remarked about the Star Wars program. Calling U.S. nuclear policy a "cruel hoax," Swaney said that he would now devote his talents and energies to work that was "economically sound and of use to people"—work that SftP would call the real "high frontier" of science. "I hope," said Swaney, "my decision might encourage some people who are already teetering on the edge to go ahead and make that decision." We do, too.

—Joseph Regna

# Workers and Community Clean Up

BY ROBERT ALVAREZ

Over the past five years, a growing political movement has emerged to challenge conventional wisdom on how people can come to grips with the nuclear arms race. Operating in regions where peace and arms control groups have made few inroads, these activists have a unique understanding of the realities of government nuclear policies. This is because they live near or work in government nuclear weapons factories.

While nuclear arms control talks continue to bog down over issues like the admittedly unreal Strategic Defense Initiative, people living in the shadow of U.S. nuclear arms facilities are taking their own very real initiatives. One of these little-known success stories is unfolding in a small rural Ohio community 20 miles northwest of Cincinnati, where the U.S. Department of Energy (DOE) processes uranium for use in nuclear reactors and nuclear weapons.

Quite literally, the DOE's Feed Material Production Center (FMPC) at Fernald, Ohio is the starting gate for the U.S. nuclear arms race. At the FMPC, uranium, the basic ingredient necessary to produce plutonium for warheads, is chemically processed, smelted, and machined as weapons reactor fuel. Since 1952 this facility helped make it possible for the U.S. government to generate enough plutonium for the equivalent of 26,000 nuclear warheads.

In doing so, the Fernald facility also created an enormous radioactive and toxic legacy that united nearby communities, public interest groups, the Ohio state government, and the Ohio congressional delegation. This coalition supported a

*Robert Alvarez is director of the Nuclear Project at the Environmental Policy Institute in Washington, D.C. He wrote about health hazards to radiation workers in the March/April 1986 issue of Science for the People and is the coauthor of Killing Our Own: America's Disastrous Experience with Atomic Radiation.*

# A WIN AT THE N

health and safety strike by the Fernald unions that closed down the plant until the DOE agreed to sweeping improvements. (See the September/October 1985 issue of *SftP*: "Fighting Radiation Hazards in Fernald, Ohio," by Scott Schneider.) The impact of this important joint effort is affecting not only the human environment near nuclear weapons plants, but also the size and scope of the nuclear arms race over the next decade.

The Fernald controversy reached a critical stage in the summer of 1984. That's when Al O'Connor, president of District 34 of the International Association of Machinists (IAM), hosted a meeting in Cincinnati of local union leaders representing DOE nuclear workers from around the country to discuss health and safety problems at the nuclear plants. At the meeting, environmentalists revealed that eleven different DOE-sponsored health studies at several government nuclear weapons sites, including Fernald, were showing an alarming excess of cancers and non-malignant respiratory diseases among plant workers.

This revelation came as a shock for many people at that meeting, since they were being told something quite different by DOE and the contractors who run the plants. An official publication of DOE's Oak Ridge nuclear operations, which supervises the Fernald facility, went so far as to proclaim that "our operations do not threaten the health of people." In fact, DOE researchers had found excess deaths from lung disease among Fernald workers linked directly to uranium dust exposure.

This meeting served as a catalyst, prompting the Machinists, International Chemical Workers, and Carpenters Union—representing Fernald workers—to launch a campaign to publicize working conditions at the facility. They timed this campaign to coincide with the expiration of their contract with the National Lead of Ohio Company (NLO), the facility's contractor, as a way to make health and safety a key element in contract renegotiations the following year.

Local and national public interest groups joined with the Fernald unions to help develop media strategies and involve the state government and the Ohio congressional delegation in the campaign. What followed was a series of disclosures that shocked the normally conservative region of southwest Ohio out of its complacency over the government's nuclear presence there:

- Since 1952, the Fernald facility has released about 170 tons of uranium into the environment, possibly exposing nearby residents in the 1950s and 1960s to the equivalent of hundreds of chest X rays each year. Another 337 tons of uranium are unaccounted for. The Environmental Protection Agency found the FMPC to be the worst emitter of uranium in the nation.

- Although government officials knew that health and safety standards were constantly being violated since 1952, no efforts were ever made to improve working conditions. Moreover, significant amounts of cancer-causing radium and plutonium were cycled through the plant for over twenty years without the workers' knowledge and without special safety precautions.

- As a result of dumping massive amounts of radioactive and toxic chemicals, offsite drinking water wells were contaminated at several hundred times above natural levels—something the DOE knew for several years without informing nearby residents.

- Ultrahazardous chemicals, like anhydrous ammonia, which pose catastrophic dangers were being stored in aging tanks onsite with outdated safety controls, even by weak 1950s' standards. Over a billion pounds of radioactive and toxic wastes are currently being stored at the site in leaking silos and shallow pits.

By October 3, 1985, the Fernald workers were out on strike over health and safety issues—despite an offer for a hefty pay hike. Gene Branham, president of the Fernald Atomic Trade and Labor Council who negotiated the contract with NLO, found himself under FBI surveillance, coupled with threats by the DOE that he stood to have his security clearance revoked—which is tantamount to being fired. With the help of the Government Accountability Project in Washington, D.C., the DOE and the FBI were forced to back off.

At the same time, the state of Ohio began to take legal action against DOE for its violations of federal toxic waste laws. In addition, the Congressional delegation, spearheaded by Senator John Glenn (D-Ohio) and Representative Tom Luken, a Democrat from Cincinnati, proceeded to hold public hearings about the abuses at Fernald and called for legislation to end the DOE's self-regulation.

# NUCLEAR STARTING GATE

The strike was settled by October 23, and the workers had won some important concessions, including the right to refuse dangerous work, an agreement to have the plant meet current health and safety standards, and a formal commitment to clean up the site. Moreover, NLO, the operator of the plant since the very beginning, stepped down and was replaced by the Westinghouse Corporation.

As a measure of the effectiveness of this effort, the DOE is planning to spend about \$350 million to clean up the plant over the next few years—more environmental protection money than any other DOE bomb plant in the country has ever received. DOE officials reluctantly admit that this is only the beginning of the funding commitment to meet their agreement with the unions. In the long run the Fernald workers will be guaranteed employment throughout the enormous

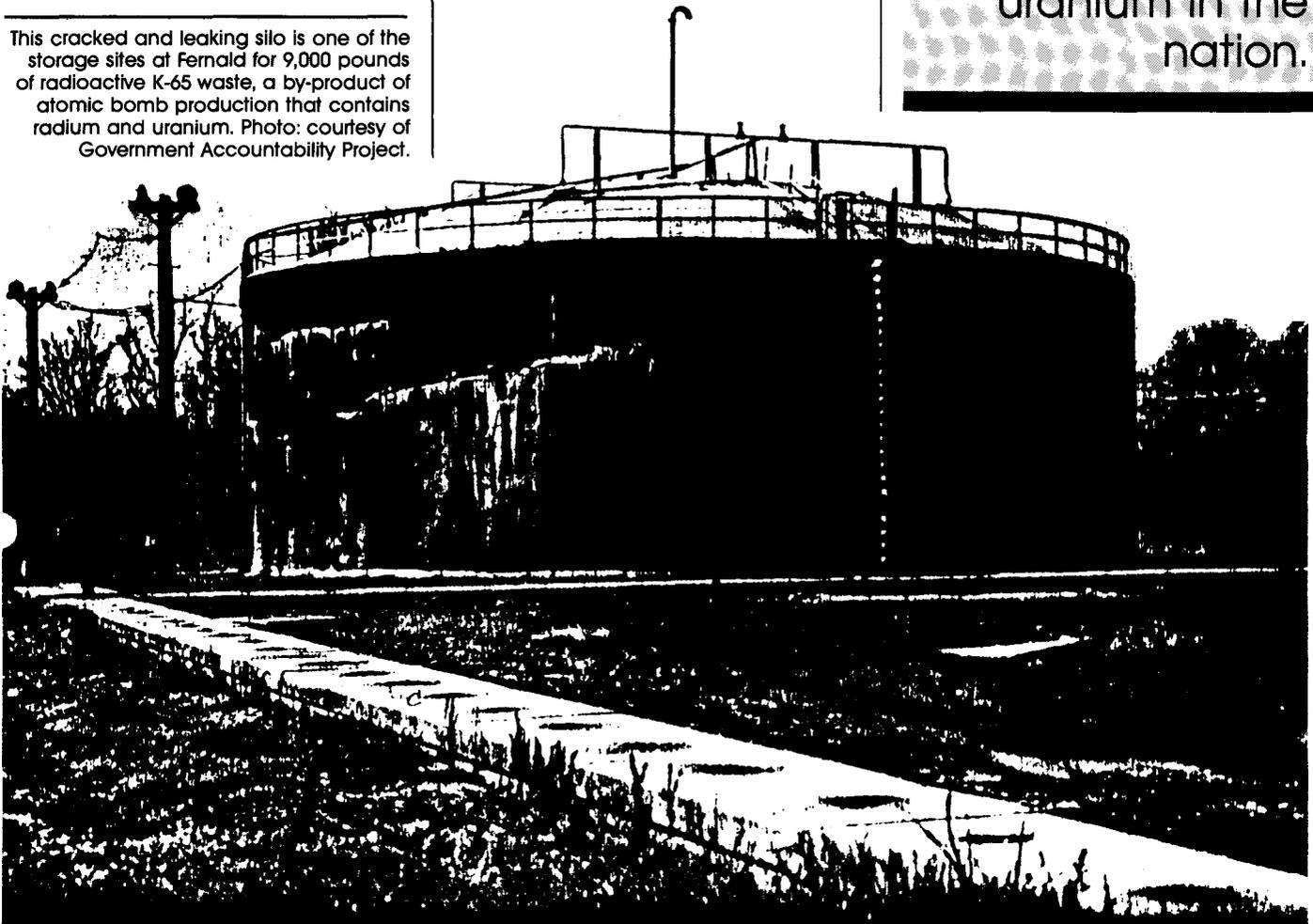
cleanup task ahead, whether or not another single nuclear weapon is built.

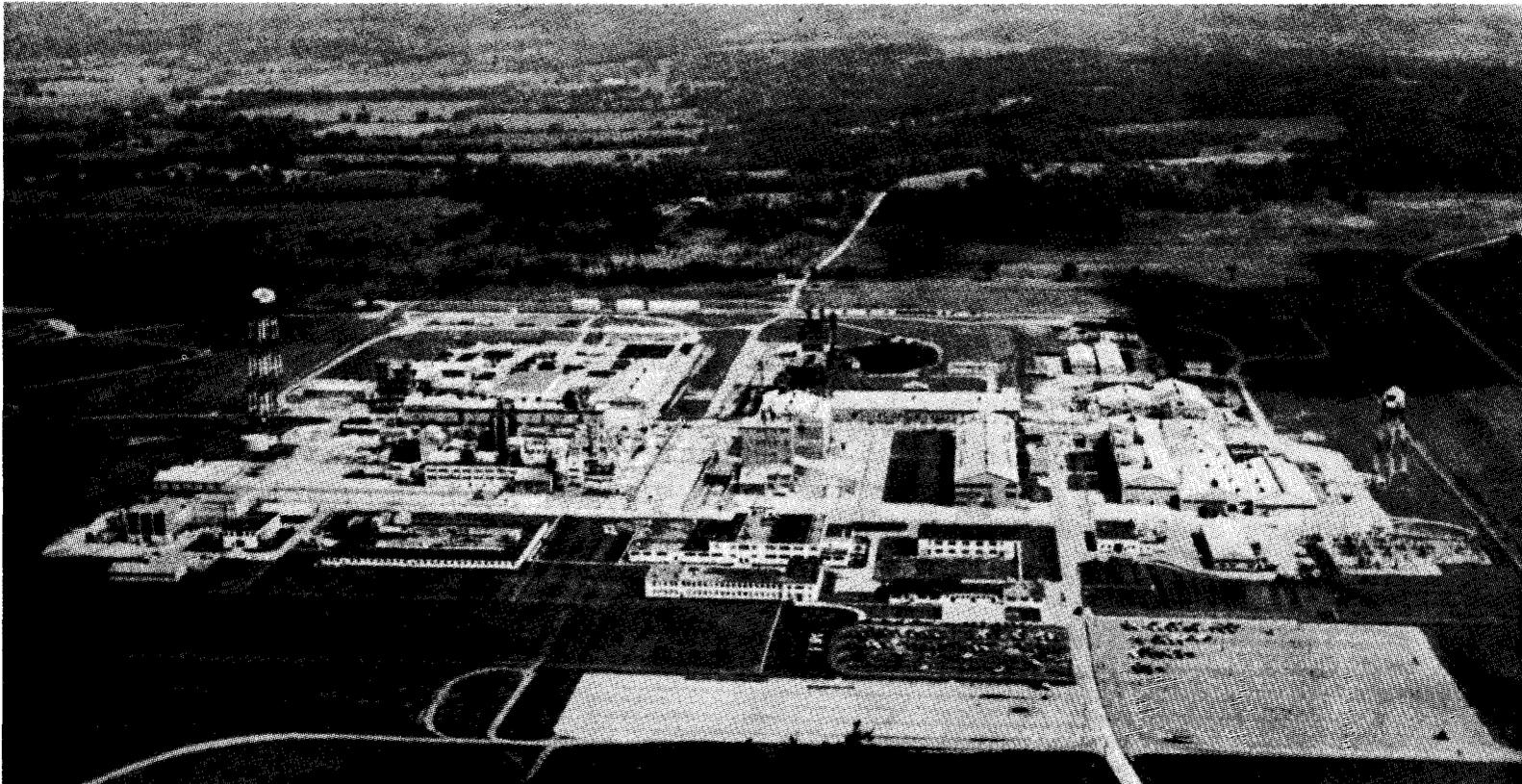
The situation at Fernald is a microcosm of a crisis that stems from the technological obsolescence of nuclear weapons manufacturing, and is starting to impact the DOE's entire nuclear weapons industry. Because all major DOE weapons production facilities are over 25 years old and have never bothered to change working conditions or their radioactive and toxic waste dumping practices, major pressures are mounting in communities near these facilities to come to grips with their environmental and occupational health legacies. In DOE's fiscal year 1987 budget request, citizen pressure helped allocate about \$870 million for compliance with environmental laws.

The internalization of nuclear waste cleanup costs is having a dramatic impact on the economic equation of nuclear

Since 1952, the Fernald facility has released about 170 tons of uranium into the environment. The EPA found the Fernald plant to be the worst emitter of uranium in the nation.

This cracked and leaking silo is one of the storage sites at Fernald for 9,000 pounds of radioactive K-65 waste, a by-product of atomic bomb production that contains radium and uranium. Photo: courtesy of Government Accountability Project.





U.S. Department of Energy

**Aerial view of the Feed Materials Production Center near Fernald, Ohio. The plant produces uranium for nuclear weapons and power generation. Over one billion pounds of radioactive and toxic waste are stored at the site in leaking silos, pits, and barrels.**

weapons development. For instance, the DOE estimates that costs for nuclear waste cleanup at the Hanford nuclear reservation in Washington state will be about \$11 billion. By comparison, the cleanup of 357 of the nation's worst privately owned toxic waste sites under the recent renewal of the federal Superfund law is estimated to cost \$9 billion. About \$700 million is going for nuclear waste cleanup in fiscal year 1987—roughly one third of the current total cost for producing nuclear explosives.

This shift in the economics of nuclear weapons production is not being lost on the corporations that work for the DOE. According to the *Engineering News Record*, a construction industry magazine widely read by government contractors, the effort to “defuse the environmental time bomb that is ticking in the soil around the federal government’s weapons plants” could bring about a “major redirection of the nuclear weapons program in the United States.”

For the DOE and its contractors, the implications of worker and community pressures are clear: as major commitments are made for nuclear waste cleanup and environmental protection, less money will be available for nuclear weapons production.

In fact, for the first time since the current nuclear arms buildup was initiated in 1980, the U.S. Congress, in response to citizen pressure, actually cut DOE’s nuclear weapons production budget for fiscal year 1987 in order to beef up environmental protection and nuclear waste cleanup at DOE weapons sites.

“There’s no doubt that the cost of cleaning up these plants will be high, but the cost of doing nothing will be higher,” says Senator John Glenn. “After all, what good does it do to protect ourselves from the Soviets by building nuclear weapons if we poison ourselves in the process?”

While initiatives to encourage Comprehensive Test Ban talks and compliance with SALT II limits did not pass the Congress last year because of President Reagan’s hollow promises to bargain in good faith at the arms control summit in Iceland, concern over the environment, health, and safety led to the only significant restraints on the nuclear arms race in 1986. In addition to a Congressional cut in nuclear weapons production, plutonium production at the DOE’s Hanford nuclear reservation was halted for health and safety reasons. Hanford is estimated to be providing about half of the annual U.S. supply of nuclear warhead-grade plutonium.

The struggle is far from over at Fernald as the unions and the community fight to hold DOE to its agreement. The Fernald experience can serve as an important organizing model, not only for making the nuclear industry accountable for its abuses, but also for workers and communities

dealing with other hazardous industries in their backyards.

Most significantly, the situation at Fernald and other DOE sites tells us that the nuclear arms race has reached a historic crossroads. Over the next few years, the U.S. government, by virtue of the decrepit state of the DOE nuclear weapons complex, will decide whether or not our nation will continue to produce nuclear warhead materials for another three to four decades.

In making this decision, we most certainly will have to reevaluate the actual military need for more plutonium, given the fact that such a massive amount is already available. Moreover, we will have to reconsider the implied consensus between the nuclear weapons industry and arms control advocates which has shaped much of the nuclear arms debate of the 1980s—namely, that the dangers to the human environment from nuclear weapons are negligible and should not be linked to arms control objectives.

For what the record shows, we may be on the threshold of a new “unthinkable” of the nuclear age. In making the very weapons that are supposed to protect us, we may be destroying large areas of our homeland and possibly creating a legacy of human health damage of major proportions. If this is the price we will have to pay for the current nuclear weapons stockpile, can we afford to make more? The struggle at Fernald tells us that we cannot afford to wait another thirty years to find the answer.

# BRINGING UP BIOTECHNOLOGY

BY BARRY COMMONER

**A** fundamental question that any of us concerned with biotechnology have to deal with is the problem of governing the development of a new industry. I'm not talking about regulating its impact on the environment. I'm talking about the social governance of the means of production. That's the fundamental issue. There's no way of working on the industry's regulation without dealing with the decisions that determine what the industry produces and how it produces it. This introduces the whole question of social intervention in the infant industry itself.

Since this is such a taboo subject, I need to mention two justifications for raising it. The first is a very simple one. Most of the basic research information comes from the public domain. We paid for it. I will remember the debate years ago on the structure of the National Science Foundation when practically every senator said, "You know, if we pay for this work, the results should be owned by the people and there should be no way of making private profits out of any research sponsored by the NSF." Well, you know what happened to that idea, but I remember very well when this was a serious issue to debate. Now if ever there was a new industry created by public money, biotechnology is it. So it's worth thinking about public control of publicly funded research in this industry.

The other reason is that we have before us the example of the petrochemical industry which, in an amazing way, foreshadows what is happening in the biotechnology industry. The lesson from the petrochemical industry is that environmental regulation has become essentially

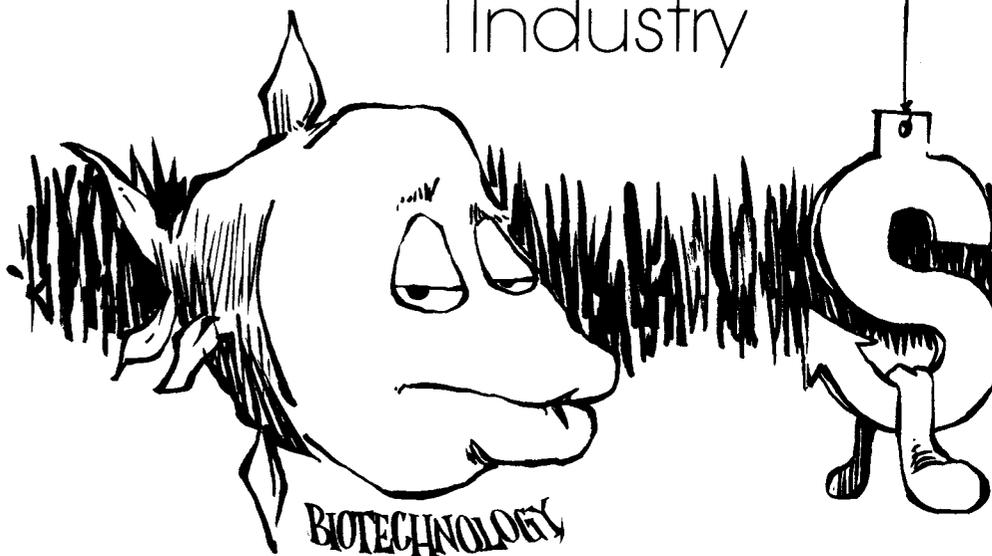
*Barry Commoner directs the Center for the Biology of Natural Systems at Queens College, CUNY. He has written extensively about the social and environmental impacts of new technologies. In 1984, Dr. Commoner ran for president of the United States through the Citizens Party. This article was adapted from a talk he gave at the Committee for Responsible Genetics' conference, "Creating a Public Agenda for Biotechnology," on November 14, 1986.*

impossible. The only thing you can do is to roll back the industry if you're concerned with its impact on the environment.

The problem with regulating the petrochemical industry is that 99 percent of its toxic wastes are now put into the environment, half of them into underground wells and the rest on the surface. In other words, the waste is not destroyed.

There is a method for destroying toxic

Influencing  
a  
Developing  
Industry



John Klassner

waste that's not terribly good, but the best one we have: incinerating it. The cost of incinerating the present annual output of toxic waste from the petrochemical industry would be ten billion dollars a year. That is three times the total profit of the petrochemical industry. Very simply put, if you required the petrochemical industry to really regulate its toxic output, you would essentially wipe out its competitive position.

The petrochemical industry is very much like biotechnology. It was also a rapid conversion of academic research into commercial use: what the organic chemists learned was converted into chemical engineering. Previously, organic carbon compounds on the earth occurred only in living things or in their products. Along came an industry that produced enormous amounts of man-made organic compounds, nearly all of which do not occur in living

organisms. Just to give you one example, the amount of vinyl chloride (a powerful carcinogen) produced annually in the United States is roughly equivalent to the dry weight of the fruits and vegetables produced.

There's a marvelous paper written by Walter Elsasser, a physicist, in which he asks the following question: Take a 200-unit protein, with twenty possible different amino acids in any sequence, and ask, "What is the total weight if we produce one of each possible molecule?" — in other words, one molecule of each of the various possible sequences of amino acids. The answer is, it's larger than the total weight of the known universe. What does that tell us? It tells us that the proteins that are produced represent an enormously narrow selection of the proteins that could be produced.

The basic point is that, during the course

of evolution, organic chemistry has been restricted to a narrow range of possible compounds. What the petrochemical industry did was to break out of those limits. For example, there are almost no organic compounds found in living things in which chlorine is attached to a carbon. Chloromycetin is one, but they are very, very rare. There's lots of chlorine around, and lots of carbon, but living things don't attach chlorine to carbons. Yet that is probably the predominant configuration in the petrochemical industry, and most of the compounds are toxic.

So, organic chemistry in life is the outcome of a very long evolution, and it represents a highly restricted assemblage of compounds; incompatible compounds have been eliminated. In my opinion, an organic compound which does not now occur in living things has to be regarded as an evolutionary reject.

Simply put, somewhere down the line a few billion years ago, perhaps some living cell got it into it's head to synthesize dioxin and has never been heard from since. You need to regard the products of the petrochemical industry as evolutionary misfits and therefore very likely to be incompatible with the chemistry of living things. The failure to understand this basic fact has caused the whole problem in chemical pollution. We keep being surprised that chemicals which were perfectly nice and simple to make turn out to have very serious biological consequences.

Another aspect of the petrochemical industry is that it's a system for displacing existing materials. For example, you're sitting on a plastic chair. Well, I remember a time when there were chairs but no plastic; clearly chairs don't depend on plastic. Cleaning clothes doesn't depend on detergents; we used to have soap. In other words, the petrochemical industry has come in and displaced previous, usually natural, materials with a huge production of new kinds of materials. The reason why these things have been produced is not through need but through economic



pressure.

This is a statement from Hooker Chemical, a leader of the petrochemical industry: "Rather than manufacturing known products by a known method for a known market, the research department is free to develop any product that looks promising. If there is not a market for something, the sales development group seeks to create it." And that's why we have plastic nooses on six-packs and all of the unnecessary plastic geegaws.

So what we have is a new industry which forces its way into the productive system, even though it is not needed. Why? Because it is more profitable than the industries it displaces. The outcome is that we have an industry which is deliberately designed not to meet social needs but to meet the need of the people who own the capital to maximize their returns.

Proctor and Gamble switched from making soap to detergents for the simple reason that the detergent process was more profitable than making soap. The introduction of detergents then forced a new structure on the rest of the industry. For example, old washing machines used soap and had two tubs, and you would take the dirty clothes out of one tub and put them in the clean water tub. Modern washing machines are made so that they can only be used with detergents, and the dirty water is filtered through the clothes—not really a good idea.

Detergents allowed this change, because the suspended dirt is not particulate and readily flows through the clothes. Now washing machines can't be used with soap, because the particulate material produced by the action of soap would be caught in the clothes as the dirty water is drained through them. In other words, petrochemicals have produced an invasive industry, an industry which changes the structure of many other industries, and does so without regard for social value.

Now let's look at biotechnology. My first point is that you have to regard the bioengineered organisms as evolutionary rejects. By that I mean—in parallel with my argument about petrochemical products which do not occur in living things—that the new organisms created by genetic engineering are likely to contain genetic combinations that were, so to speak, once tried out during the course of evolution and rejected. Such a rejected genotype should, I believe, be regarded as inherently dangerous to existing organisms.

Consider, for example, the appearance during the course of evolution of a pathogenic bacterial genotype which is so virulent that it completely wipes out a host species—thus eliminating the bacterium itself from the evolutionary stream. If this organism were to be reinvented by the biotechnology industry, it would be likely to cause considerable damage, especially if the host species has itself evolved in such a

way as to facilitate the ongoing propagation of the disease.

I realize that the industry has often argued that its new organisms ought to be regarded as harmless because all of the genetic combinations have been tried out in the evolutionary past and, in that sense, the industry's creations are not really "new". But that approach fails to take into account—in keeping with the foregoing example—that the reinvented organism now enters into a greatly changed biosphere.

Does that mean we shouldn't use genetically engineered organisms? No; I think you have to ask whether the value of using an organism or a product is so great as to override the inherent dangers. Unfortunately, that is not the way the industry has decided what to produce.

Let me give you a couple of examples: Human insulin was the first genetically engineered product, at least in this country. Genentech developed it, and then made a deal with Eli Lilly, which has an 85 percent monopoly on pig insulin, giving Lilly the exclusive right to human insulin production in the United States.

What's the purpose of producing human insulin? At first it was thought that it would be less immunologically reactive than pig insulin. In fact, both pig and human insulin have about the same positive and deleterious effects, so there is no medical value in human insulin. Eli Lilly's ads say that the purpose of producing human insulin is to be prepared for a shortage of pig insulin. Under what circumstances would that happen? I suppose if religious objectors to pigs take over the world, then we'll be short of pigs. When that happens, we'll need human insulin.

In reality, human insulin has been produced for a very simple purpose: to maintain Eli Lilly's monopoly on insulin.



Suppose some other company got the Genentech contract. Eli Lilly would suddenly have a competitor in producing insulin. I have to conclude that this arrangement was not governed by the social need for human insulin; it was governed by the age-old notion of maintaining a monopoly.

Now let's look at human growth hormone. The supply of growth hormone from the human pituitary, as far as I can tell, comes totally from a Swedish company. That company owns fifty percent of another Swedish company. The second firm has the exclusive world contract, outside of the United States, for using Genentech's genetically engineered process for making synthetic bacterial human growth hormone. In other words, this is a system for controlling the market rather than for producing something for human needs.

Everyone agrees that the most important use of genetic engineering would be to produce vaccines, particularly for malaria. The World Health Organization supported this research at New York University. They got to the point of producing the sporozoite vaccine, and said to Genentech, "OK, how about you making it?" Genentech said, "Well, we want exclusive rights." So the World Health Organization, being a very old-fashioned and unAmerican organization, said, "We don't work that way. We want this vaccine widely available." And Genentech said, "No thanks."

Here was something really needed, unlike human insulin, and it wasn't



produced. Quoting from one of the vice presidents of Genentech, "We are forced at this stage in our corporate development to compare vaccines with other opportunities. The company does not have resources such that it can afford to take extraordinary risks. Thus it seems apparent that the development of a malaria vaccine would not be compatible with Genentech business strategy." It is not sufficiently profitable to give them the income they need, and for *that reason* they won't produce it.

Among the products of the biotechnology industry, pharmaceutical products outweigh all others. Sixty-two percent of the companies involved produce pharmaceutical products, and the majority are for diagnosis rather than treatment. What's so important about diagnosis? Did the medical profession hold a meeting and say, "You know, we're short of diagnostic techniques, so please work on that?" The reason is very simple: only sick people get treated, but a lot of healthy people get diagnosed. In other words, the market for diagnostic products is inherently much larger than the market for treatment products because people as a whole, sick and well, outnumber sick people.

In the commodity chemicals sector, most of the chemicals that are being produced by genetic engineering are flavors and perfumes. That's because they're much more expensive than a chemical like ethyl alcohol, which would have a much greater social value as a solar fuel. In pesticides, genetic engineering could be used to introduce pest resistance in plants, but it isn't. Instead, they are working on introducing resistance to herbicides, so that plants could be exposed to more and more herbicides without suffering.

This brings us to the question of the control of the development of the biotechnology industry itself. The biotechnology industry has repeated, step for step, what has happened in the petrochemical industry. If it is allowed to go much further, like the petrochemical industry, it will become invulnerable to control. For example, fifteen million pounds of vinyl chloride—a powerful carcinogen—are produced in the United States today, chiefly to make polyvinyl chloride. Suppose you say, "This is just too risky. Let's stop making polyvinyl chloride." By this time, it has become so embedded in the industry and represents such a large investment and so many workers' jobs that it becomes socially impossible to quit making polyvinyl chloride. That's why we ought to focus on the industry's structure.

Now, at this early stage (if, in fact, it is not already too late) we need to control what the biotechnology industry produces. A major test is to show that the product is so socially important as to outweigh the

inherent risks. This means that a trivial product—with no social value at all—is worth no risk at all and simply should not be produced. The most trivial research I know of comes from Frito-Lay, which makes potato chips. They wanted to genetically engineer a potato that had much less water, so it wouldn't cost as much to ship the potato. I don't know how that would affect potatoes or the viruses in potatoes, or what other impacts there might be. But the point is that biotechnology is an inherently dangerous industry and therefore should not make products which are trivial and have no real social purpose.

The only way to make a proper balance between risks and benefits is to have some say about what is produced, so that at the very least it will maximize the benefits to society. That introduces the question of social control of the choices made by the industry and social governance of the means of production.

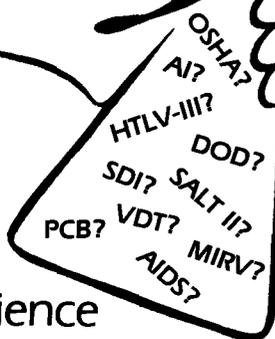
In the Office of Technology Assessment's book *Commercial Biotechnology: An International Analysis*, there's a very



John Klossner

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interesting comparison between the semiconductor chip industry and biotechnology. It points out very clearly that the structure of the semiconductor industry in the United States was dictated by the U.S. government. The Department of Defense insisted on having a system of production that met their needs, since defense is a social need. As a result, legal steps were taken, tax incentives were put in place, and a



production system was developed which determined what the new industry produced.

This example shows that it is possible, within our political framework, for the government to intervene in establishing the structure of an industry and its choice of products. Returning to the malaria example, I don't know why the National Institutes for Health couldn't be ordered by the President to set up a laboratory to develop an effective way of producing a malaria vaccine and, when that is done, to find a commercial company which will produce it, under a subsidy if necessary.

There is a legal mechanism built into the Environmental Protection Act, Section 102, which deals with environmental impact statements. That section says that whenever there is a process that has a hazardous environmental impact that can't be avoided, then alternative processes must be considered.

For example, in theory you could hold a hearing on plastic chairs, and toxicologists could come in and say that the phthalate emitted from the plasticizer is toxic. Or they might say that a fire in this room would poison everybody before they had a chance to get out; that's an unavoidable hazard of this kind of upholstery. Then a manufacturer of wooden chairs might testify that the function of a chair is for somebody to sit on it, and that their firm can make a chair that avoids the toxic

hazards inherent in plastic chairs. Instead of saying, "This plastic is terrible; get rid of it," we have to say, "We want to intervene in the decisions about how chairs are made."

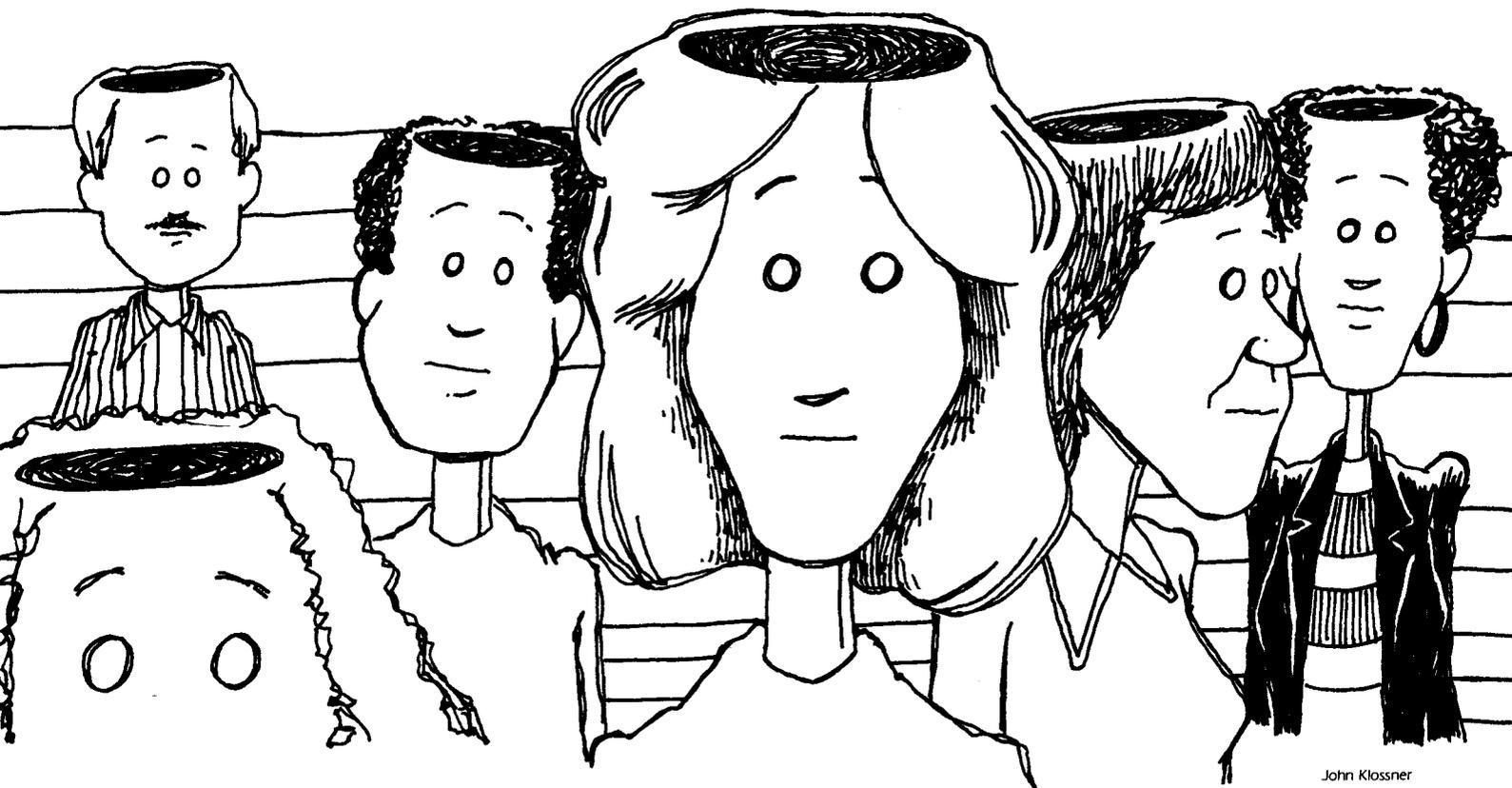
Let's consider Frostban, the bacteria manufactured to protect strawberry plants from frost at lower temperatures. I believe that ice-minus bacteria actually exist as a natural mutant. This raises a very interesting question: why do we have to do the genetic engineering at all? Or let's say someone shows that instead of making a genetically engineered nitrogen-fixing corn plant, there is a way of culturing Azotobacter and giving it enough mannitol so that it works very effectively in increasing the nitrogen content of soil. You can then debate whether this particular piece of genetic engineering is necessary or not. With respect to manufactured insulin, there should have been a debate as to whether genetic engineering should be used to produce insulin when pig insulin is perfectly satisfactory.

We simply have to face an ideological issue which, in this country, is politically taboo. One doesn't raise the issue of society determining what the owners of capital can do. The Catholic bishops' letter on the economy bucked that taboo by saying, "No one can own capital resources completely or control their use without regard for others and society as a whole." They were paraphrasing the Pope, who said in a recent encyclical that capital is created by workers and by the rest of society, and society ought to have the right to determine what is done with that capital. I don't know of a single American politician, not even a Catholic politician, who has ever referred publicly to the Pope's ideas about social governance of the use of capital. That's the extent of the taboo.

We have to ask ourselves about the morality of allowing publicly produced knowledge to be taken over by the owners of capital. Or, in the case of our fellow scientists who have become entrepreneurs, they must consider the morality of using their knowledge to create a huge, new, and growing industry which is governed not by the needs of the society which has supported them, but by the principle of maximizing private profit. If every time Genentech makes a decision it is done in their own profit-maximizing interest, it would be a miracle if some of those decisions were also in the social interest. This is exactly what has happened in the petrochemical industry.

We have to raise these moral and political questions and break the taboo. If the Catholic bishops could do it, we can too. Otherwise, we're going to see very quickly an industry which is too large and powerful, and economically entrenched, to be controlled in the interest of the people.

# A PSYCHIATRIC HOLOCAUST



BY DON WEITZ

Since 1977, when the *New York Times* revealed that the Central Intelligence Agency had funded the brainwashing experiments of Dr. Ewen Cameron in Montreal, the public and the media have been under the mistaken impression that the CIA alone

*Don Weitz is a former psychiatric inmate and psychologist, and cofounder of On Our Own (a self-help group of psychiatric inmates and ex-inmates) and its antipsychiatry magazine, Phoenix Rising. He is a freelance researcher and writer, and a strong inmates' rights advocate. This article was published in the June 1986 issue of Phoenix Rising.*

provided financial support for these psychiatric atrocities of the 1950s and 1960s.

Indeed, the CIA connection was paramount, as former CIA agent John Marks reveals in his 1979 expose, *The CIA and Mind Control*, which documents some of the agency's covert operations—with such code names as “ARTICHOKE,” “BLUEBIRD,” and “MK-ULTRA”—involving mind-control experiments that drove many of its Canadian and American victims to madness, even suicide.

But what is only coming to light now is that the Canadian government also secretly supported and funded many of these psychological and psychiatric abuses, under labels like “psychological warfare”

and “national defense.” From 1950 to 1964, the Department of Health and Welfare and the Defense Research Board awarded several grants to Cameron and other psychiatrists and psychologists working at the Allan Memorial Institute and McGill University in Montreal.

## The Ottawa-CIA Connection

During the Cold War, in the late 1940s and 1950s, the CIA was obsessed with finding and using methods to combat Soviet espionage: If the Soviets could brainwash spies and defectors to extract confessions from them, why couldn't the Americans do the same? Under the directorship of Allan Dulles and Richard

## Canadian and CIA-sponsored Brainwashing Experiments

Helms, the CIA set up several secret projects—including “ARTICHOKE,” “BLUEBIRD,” “MK-DELTA,” and “MK-ULTRA”—all involving mind-control and brainwashing techniques, strategies, and experiments.

“BLUEBIRD,” which began in April 1950, and “ARTICHOKE,” which began in August 1951, were discussed during at least two secret meetings

Canada was to be a major brainwashing and mind-control research center for the CIA, with research carried out under the cover of the Canadian military.

between the CIA and scientists in the spring and summer of 1951. Three prominent Canadian scientists attended the June 1 meeting in Montreal’s Ritz-Carlton Hotel: psychologist Dr. N.W. Morton, director of Operational Research for the Defense Research Board (DRB) in Ottawa and past president of the Canadian Psychological Association; Dr. Omond M. Solandt, a former research scientist, chairman of the DRB and Deputy Minister of National Defense; and Professor Donald O. Hebb, a research neuropsychologist and chairman of McGill University’s Psychology Department.

During the meeting, CIA officials expressed keen interest in mind-control experiments and asked for active support from the Canadian and American scientists. These excerpts from notes taken during the discussion show the extent of the Canadian involvement—both governmental and scientific—despite the deletion of the names of many of the officials. (In quoting from notes, reports, and other documents, all italics are mine.)

The Canadian representatives had obviously discussed several programs which they were anxious to explore...

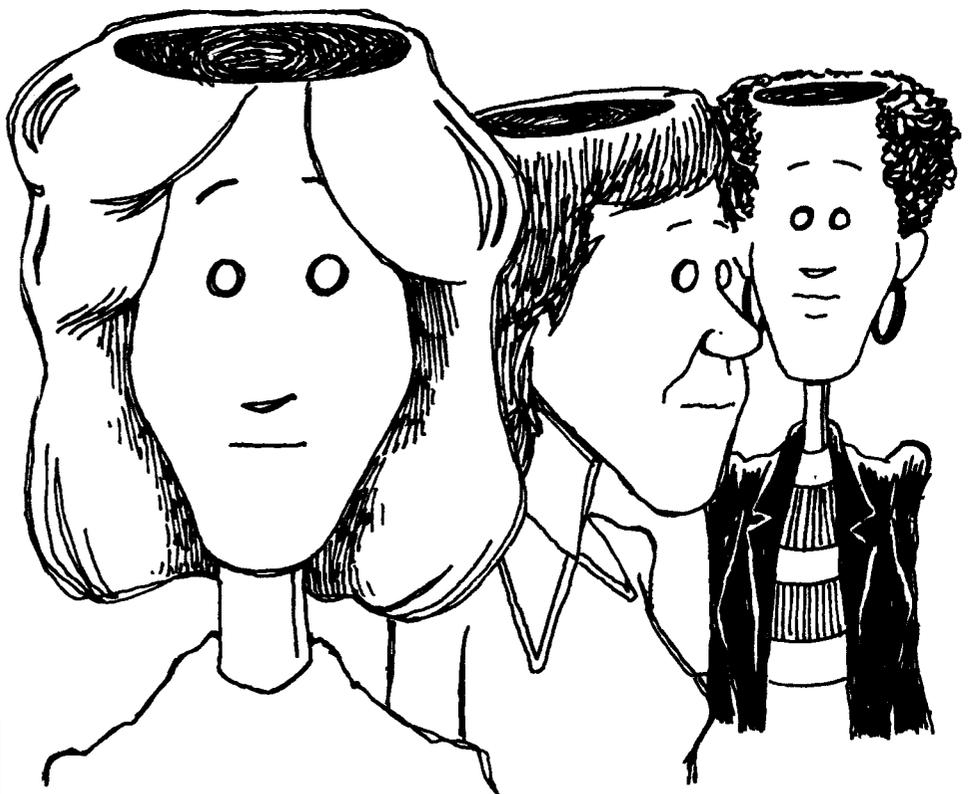
**POLITICAL WARFARE:** Research into the psychological factors causing the human mind to accept certain political beliefs aimed at determining means for combatting communism and “selling” democracy. This program was suggested by (name deleted), a

consulting psychologist.

**CONTROL OF THE INDIVIDUAL HUMAN MIND:** Research into the means whereby an individual may be brought temporarily or perhaps permanently under the control of another. This project was suggested by (name deleted), who is prepared to undertake it immediately should it be approved. (Name deleted) has had previous experience in this type of research and *expects a grant from the DRB* in the near

military, specifically the DRB or the Defense Department.

To ensure secrecy, the CIA would set up two distinct but related mind-control projects: “BLUEBIRD” (or “ARTICHOKE”) and “MK-ULTRA.” The need for such strict secrecy was discussed at length, as well as the possibility of cooperation with other foreign intelligence agencies.



future... While this grant will not permit *human experimentation* he feels that such experimentation can be tied in... both of the projects will be written up for *consideration by the DRB* and will probably be approved... *The Canadian DRB programs are relatively firm, and will undoubtedly go forward... The U.S. programs...can be tied in where they are of mutual interest.*

**CONCLUSIONS AND RECOMMENDATIONS:** The Canadian representatives were fully acquainted with the problems and were carefully selected to provide a balance of scientific competence to the discussions. (Name deleted) in particular, indicated a keen understanding of the “Bluebird” problem, and was obviously interested in conducting research programs in connection with it. With the backing of DRB, (names of institutions deleted) should provide a *center of interest and activity which will be of utmost value in the testing of various hypotheses as to control of the human mind... U.S. interests can best be served by channeling our contact through the DRB...<sup>1</sup>*

These notes make it clear that Canada was to be a major brainwashing and mind-control research center for the CIA, and that the Canadian research was to be carried out under the cover of the Canadian

Less than two months later, on July 23, 1951, another secret meeting was held; names, as well as other identifying information, were deleted or barely legible in the notes. But the goals and objectives of the projects were beginning to come into focus, including studies of “the availability of the individual and the detection of an amenable type,” and the “physiological and psychological reactions” to the “interrogation.” Techniques—specifically, **drugs and hypnosis**—were also discussed.

And the notes from that meeting reiterate the Canadian commitment to CIA research and secrecy: “There is no existing program in Canada at the present time. There will be one. We may expect inquiries from the Canadians as to our progress...any connection with CIA is not revealed.”

Yet another secret meeting on “ARTICHOKE” was held on Dec. 3, 1951. Again, all names and other identifying information were deleted, and it’s doubtful that any Canadians attended. However, the use of electroshock as a significant technique in brainwashing was discussed extensively, and an unnamed shock

expert—a “psychiatrist of considerable note...a fully cleared Agency consultant”—was mentioned:

The writer asked whether or not in the “groggy” condition following a convulsion by the electro-shock machine anyone had attempted to obtain hypnotic control over the patients, since it could be a good time to obtain hypnotic control.... (Doctor’s name deleted) stated...it had never been done, but he could make this attempt in the near future at the (name of institution deleted) and see whether or not this could be done. It was (name deleted’s) opinion that an individual could be gradually reduced through the use of electro-shock treatment to the vegetable level...amnesia could be guaranteed....

This insensitive hypothesis was soon tested by Cameron and his psychiatric colleagues, who reduced many psychiatric inmates to this “vegetable level” by using electroshock and other brainwashing techniques. But first, let us turn our attention to Hebb and his experiments at McGill University.

### Hebb and the Sensory Deprivation Experiments

Shortly after he returned from the CIA meeting of June 1, 1951, Hebb submitted one of several grant applications to the Department of National Defense; specifically, to the DRB. Hebb’s name did not appear on the first application; instead, the research project was simply assigned to McGill.

The sensory deprivation research he undertook was always classified as “psychological warfare” and “Human Resources and Military Psychology,” but his 1951 application to the DRB, innocently titled, “Conditions of Attitude Change in Individuals,” covered what were the first brainwashing studies conducted at McGill.

In this application, Hebb requested a one-year grant of \$5,000 “to determine the specific conditions of limitation of subject’s field of perception and action which when coupled with subsequent suggestion will effect persistent changes in attitudes of some fundamental importance.” To make sure the DRB also believed this research was “of some fundamental importance,” he wrote, under the heading of Requirement: “A hostile power may attempt conversion of attitudes, together with behaviour appropriate to these, of our nationals who fall into their hands. This may include the use of psychological, as opposed to essentially physical, means. It is desirable to determine the feasibility of such attempts, with a view to ascertaining what defensive action would be taken.”

In this exploratory study, animals and “paid human subjects” (McGill student volunteers) would be subjected to a prolonged, monotonous environment—“comparable to ‘White Noise’”—for up to

three or four days at a time. The DRB quickly approved the application.

In his December 1952 progress report to the DRB, Hebb reported on his initial results: “Experimentation to date has been exploratory. Tolerance for the conditions of perceptual isolation varies in subjects...from 0-60 hours. *The motivational disturbance is great and the intellectual efficiency is impaired.*” Despite these disturbing preliminary findings, the DRB approved Hebb’s request for an additional \$10,000 to continue his research—and no questions were asked.

A year later, in his December 1953 progress report, Hebb reported even more disturbing results: “One study demonstrated (i) the incapacity of college students to tolerate a severe perceptual limitation, and, as a result, their eagerness to listen to almost any verbal material offered them, and (ii) that propaganda for an absurd point of view becomes significantly more effective under these circumstances than for control subjects. Another effect was a significant lowering of intellectual efficiency during and immediately after the period of perceptual deprivation, and that during the deprivation period, the subject developed hallucinations.”

In short, the sensory deprivation experiments were causing many healthy students to break down or hallucinate; under this stress, they were becoming amenable to the researchers’ suggestions. Except for the hallucinations—which interfered with the process—the brainwashing was proving effective.

Over the following two years, Hebb was awarded \$18,000 in grants. By the time he submitted his final report, in December 1955, Hebb had completed two major experiments, which he described: “...the experimental subjects show a deterioration in problem solving ability both during the...isolation, and for several hours after emergence...when the tests actually were presented, the subjects would frequently not try very hard to get the correct answer, and complain about having to do them. Again, after a few days in isolation...there was some disturbance of normal motivational patterns.”

After completing 48 to 72 hours of isolation, five of the 65 students experienced “attacks of acute anxiety.” One became hysterical. One suffered an epileptic attack. And a majority of these students, and the others, described the experience as “a form of torture.”<sup>2</sup> Few of the young people could tolerate the isolation for more than three or four days, despite the fact that they were being paid \$20 a day—a considerable sum in the mid-1950s.

The details of these experiments were first published in 1954 in a scientific report by three psychologists working for Hebb in the psychology department at McGill. A similar study, published in 1956, confirmed all the major results of the 1954

study.

During the experiments, the students spent 24 hours a day alone on a comfortable bed in a soundproof cubicle; meals and trips to the toilet were the only respite. Their vision, hearing, and touch were severely restricted; for example, they wore goggles eliminating pattern vision and special gloves which covered their arms and hands. As well, they listened to a

An individual could be gradually reduced through the use of electroshock treatment to the vegetable level; amnesia could be guaranteed.

continuous hum, or “white noise,” through earphones imbedded in a pillow. And to increase their sense of isolation, researchers rarely talked to them.

In a 1961 summary of these experiments, psychologist Woodburn Heron reported that almost all 29 students in one study group suffered some serious sensory, emotional, and intellectual disturbances within the first two days of isolation. The disturbances were temporary, but the experience proved so overwhelming that within the first two days, a majority of the students experienced vivid visual, auditory, and tactile hallucinations, as well as difficulties in concentration and problem solving. During and immediately after the isolation, many of them also complained of dizziness, confusion, nausea, fatigue, headaches, and, because of the terrifying nature of the hallucinations, insomnia.

A sub-study involving twelve of these students also revealed a marked slowing in Alpha-wave activity—the brain’s arousal system—for as many as three days after isolation. This neurological disturbance formed an ideal base for brainwashing: since the students’ brains weren’t receiving enough sensory stimulation, their faculties of judgment were impaired, drastically raising their level of suggestibility. As a result, when they were subjected to a series of 90-minute recorded messages about ghosts, poltergeists, and other extrasensory

# Canadian Brainwashing Victims' \$9-million Lawsuit Against the CIA

It's been almost six years since the nine Canadian victims of Dr. Ewen Cameron's brainwashing experiments launched their multi-million dollar lawsuit against the CIA. These Canadians are still trying to sue the CIA for \$1,000,000 each, but they have yet to receive one cent of financial compensation for the massive and permanent damages and suffering caused by Dr. Cameron's "treatment" at the Allan Memorial Institute in the 1950s and 1960s—funded by both the CIA and the Canadian government.

The Canadian victims in the lawsuit are Velma Orlikow (wife of former member of parliament David Orlikow), Rita Zimmerman, the late Florence Langleben, Jean-Charles Page, Robert K. Logie, Jeanine Huard, Lyvia Stadler, Dr. Mary Morrow (a psychiatrist), and Louis Weinstein.

In their civil action against the CIA, first filed in a U.S. District Court in Washington, D.C. in 1980, the Canadians claim that the CIA was negligent in failing to control or supervise Dr. Cameron's brainwashing experiments, disguised as "medical treatment" and inflicted upon them without their knowledge or consent; that the agency was "negligent and reckless" in providing some \$64,000 in funding for experiments; and that the agency is liable for funding the "medical malpractice" performed by Dr. Cameron in the Allan Memorial in Montreal in the 1950s and 1960s, particularly 1957 to 1960.

In January 1985, Joseph Rauh, the lawyer for the victims, asked the U.S. District Court to allow CIA agents Stacy B. Hulse, Jr. and John Kenneth Knaus to testify about the CIA involvement in the case. Hulse was the CIA Chief of Station in Canada from 1975 to 1977, and Knaus succeeded Hulse in the late 1970s. In 1984, Hulse and Knaus formally apologized to Canadian government officials in the Department of External Affairs, according to Rauh, "for the CIA's violation of Canadian sovereignty on plaintiffs and assured that such action would not be repeated." Hulse, Knaus and/or other CIA agents also apologized on four previous occasions between 1977 and 1979, according to former External Affairs Minister Allan MacEachern.

However, Rauh said, top-ranking CIA officials "unlawfully directed" these agents not to testify. In May 1985, the CIA argued in court that it had the "right to keep secret" the names and activities of the CIA agents involved in the case—to protect the CIA's sources of information and U.S. "national security."



In May 1985, Rauh wrote to Abraham Sofaer, Legal Advisor to U.S. Secretary of State George Shultz, asking for a meeting to discuss the case and the CIA's stonewalling tactics. Sofaer refused to meet Rauh.

On December 19, 1985, Judge John Penn upheld the CIA's right to secrecy in ruling that CIA agents Hulse and Knaus were forbidden to testify about what they knew.

In February of 1986, Prime Minister Mulroney allowed External Affairs liaison officer John Hawden to testify in the case. Hawden, who had received a formal "expression of regret" from CIA agents a few years ago, gave a pre-trial deposition in Ottawa on March 27, but Rauh called the testimony "almost useless," mainly because the court ruled that Hawden was forbidden to name the CIA agent or agents who gave the statement of regret.

Despite Rauh's many appeals to External Affairs Minister Joe Clark and Prime Minister Mulroney, the government refuses to release information to the victims to support their case against the CIA.

In May 1986, the Canadian government issued a report to determine if the government was aware of Cameron's experiments and responsible for the injuries they inflicted. The report absolved the government from legal and moral responsibility. George Cooper, the former MP who commissioned the report, claimed that Cameron's work was acceptable treatment in the 1950s, even though his psychic driving, depatterning,

and combination of electroshock with drugs like LSD weren't used elsewhere in North America. "Perhaps the conclusion that comes closest to the truth is that he acted incautiously, but not irresponsibly," states the Canadian report, exonerating Cameron as well.

But there is no acquittal for the permanent brain damage caused by Dr. Cameron's experiments. Velma Orlikow was suffering from depression after the birth of her daughter. She was shut in an empty room, given LSD fourteen times, and forced to listen to painful taped messages for hours at a time. By the time she refused further "treatment" from Cameron, she was undergoing psychic driving for six hours a day. She continues to suffer from chronic depression, can no longer read, and has to take drugs to sleep. "I can't read," she said. "Reading used to be a great pastime, but now I still cannot understand even half a newspaper article at one time."

Louis Weinstein spent two months enduring psychic driving for sixteen hours a day while under the influence of drugs. His son says that today, "my father is a broken man...with no memory, no life. He lost everything. I defy (anyone) to point to another institution in the world that was at that time carrying out the systematic destruction of the human mind that was taking place in Montreal." Most of Cameron's victims now suffer from amnesia, insomnia, the inability to read, and other mental and physical disabilities. One woman couldn't remember people's faces for ten years after her experiences with Dr. Cameron.

These Canadian victims have said they'll accept \$175,000 each as an out-of-court settlement, but the CIA has rejected this offer. And if some settlement isn't reached soon, more victims, like Florence Langleben, may die because of poor health.

Readers are encouraged to write to Canadian External Affairs Minister Joe Clark, demanding more pressure on the U.S. government to settle the case and compensate the victims, and the release of all relevant Canadian government documents about Cameron's brainwashing experiments to Joseph Rauh, the victims' lawyer. Please mail your letters to: The Honourable Joe Clark, Minister of External Affairs, House of Commons, Ottawa, Ontario K1A 0A6. And please send a copy to: Mr. Joseph Rauh, Rauh, Lichtman, Levy & Turner, 1001 Connecticut Ave. N.W., Washington, DC 20036-5543.

phenomena, their tendency to blindly accept the data as fact was markedly increased.

Heron compared the effects of prolonged isolation to those of brain damage: "a general disorganization of brain function similar to that produced by anoxia, by large brain tumors, or by...certain drugs."<sup>3</sup> As well, he concluded: "A changing sensory environment seems essential for human beings. Without it, the brain ceases to function in an adequate way, and abnormalities develop."<sup>4</sup>

The McGill students quickly discovered this painful truth. Many of Cameron's patients at McGill's Allan Memorial Institute would also discover it. The DRB and the CIA already knew it. Yet the funding, for these and other brainwashing experiments, continued.

## The Cameron Experiments

### Isolation

From 1950 to 1954, the federal Department of National Health and Welfare gave Cameron \$17,875 to support his "Behavioural Laboratory" in the Allan Memorial Institute. This grant funded several of his brainwashing studies, including sensory deprivation, psychic driving, electroshock, and the use of the male hormone testosterone on women patients.

He was unable to find patients who would agree to undergo the Hebb/McGill isolation procedure, but he did use a modified version of "the isolation technique of Dr. Hebb" on some patients to lower their resistance to his psychic driving experiments.

As early as 1952, there was evidence—Hebb's report to the DRB, for example—of the serious psychological effects of McGill's sensory deprivation procedure. And in 1956, two years after the first publication of the McGill sensory deprivation studies, psychologist Fern Cramer and Dr. Hassan Azima, a colleague of Cameron and a psychiatrist interested in "regression," published the results of a study using the McGill technique on several patients at the Allan. Two similar versions of the Azima-Cramer study were published simultaneously in 1956; one, abstractly titled "Effects of the Decrease in Sensory Variability on Body Scheme," was published in the *Canadian Psychiatric Association Journal*, and the other appeared in *Diseases of the Nervous System*.

He failed to mention a maximum time period for psychic driving; or, in his words, an "optimum amount." But he did refer to his patients' "defences against psychic driving itself" as "running away from the situation"—bolting out of his office or trying to escape from the institution.

On Dec. 14, 1954, Dr. Jean Gregoire,

Deputy Minister of Health for Quebec, sent a copy of Cameron's final report to Dr. Gordon E. Wride, Principal Medical Officer for Health Insurance Studies in the Health and Welfare department. On Dec. 21, Wride answered, thanking Gregoire. There were apparently no other comments, either about the report or about the experiments themselves.

In 1956, Cameron published a major article on psychic driving in the *American Journal of Psychiatry*, the official publication of the American Psychiatric Association, of which he was once president. In the article, based on his government-funded research at the Allan, he described his technique as a new "therapeutic" method, claiming that "driving" patients with "verbal cues" would help "reorganize" their personalities.

"Reorganization" was also mentioned in the Azima-Cramer study. As a footnote, Azima and Cramer expressed their "deep gratitude to Dr. D.E. Cameron for his guidance and his continuous encouragement in this project...."

Most of the fifteen patients who were involved in the study were diagnosed "neurotic," and all but one were women in their thirties and forties. The Allan technique, almost identical to the one used at McGill, consisted of severe restrictions of vision, hearing, and touch. Talking was limited to two brief interviews a day with the researchers, and nurses were ordered not to talk to the patients. But, unlike the McGill students, the patients at the Allan were forcibly isolated, and for longer periods—four, five, and as many as six days in a row.

Within the first 48 hours of isolation, most of the patients became disturbed, or "regressed," and more than half of them started hallucinating and experiencing intense "depersonalization." Two became overtly "psychotic" and were then subjected to electroshock to erase their "paranoid" or "obsessional" reactions.

One patient, a 25-year-old man, began to panic on the fifth day of isolation: "I feel I am not here.... I am scared. I am in another world.... I am afraid I am not going to come back.... I feel like I am going out of this world.... I don't feel real."

A 41-year-old woman became so upset that she stopped the "treatment" on the fifth day; nevertheless, she was one of two patients whom Azima and Cramer claimed as proof of "lasting improvement." (This so-called permanent improvement lasted four days.)

In their summary, Azima and Cramer made this telling—almost prophetic—statement: "The imposition of some action tendencies during the disorganization state may lead to reorganization according to planned patterns, and this may be useful in clarifying the problem of 'brainwashing,' etc. Further research along the lines

described here seems warranted."

This 1956 study gave Cameron even more encouragement to continue using this isolation technique on many of his patients in his psychic driving and depatterning experiments, many of which were funded

"I feel I  
am not here.  
I am scared.  
I am in  
another world.  
I am afraid  
I am not  
going to  
come back.  
I don't  
feel real."

by the CIA and Health and Welfare.

### Psychic Driving

In his final report to Health and Welfare in 1954, Cameron described his psychic driving procedure: "The dynamic implant may be set up either by autopsychic or heteropsychic driving. The first consists in the repeated playing of a key statement by the patient. The second is the playing of a statement devised by the therapist from his knowledge of the patient's dynamics."

Cameron added that he usually played the patients' statements for ten to thirty minutes at a time and the therapists' statements for as long as "ten consecutive days of sixteen hours each if the patient is kept under modified sleep treatment during this period."

Some of these cues, usually selected by Cameron during therapy sessions, were arranged in a "loop," which he played back to the patients for ten to fifteen hours a day, sometimes for weeks on end. Through this technique, he speculated, the patients would be forced to respond to hidden or repressed experiences triggered by the psychic driving; some of the cues, he further hypothesized, would be embedded in their minds and eventually change their behavior.

In the article, Cameron also described the way he dealt with seven of his women patients who suffered from depression or "feelings of inadequacy" while being treated in the Allan. They were all subjected to intense psychic driving, for

hours, and without their consent. One "highly defensive" woman, for example, became very upset after she was forced to hear her own statements repeated thirty to 45 times.

Another woman, who felt "intensely rejected by her husband," was forced to listen to this sequence: "I hate to hear that—it upsets me; look at me shaking." (Nineteen repetitions) "It upsets me

**"He lives in the immediate present. All schizophrenic symptoms have disappeared. There is complete amnesia for all events in his life."**

enough.... I can't count on my husband and my mother." (21 repetitions)

At this point, Cameron comments, "the patient became red, restless and began to breathe heavily." Nevertheless, he continued the barrage: "It makes me mad when I think of my past, when I was so lonely.... I am so lonely." (45 repetitions) At this point, Cameron said he stopped the psychic driving because his patient "continued to shake."<sup>5</sup>

Another woman was so upset by the procedure, which triggered painful memories of incest with her father, that she ran out of the building; Cameron drily noted that he later had her committed. And yet another woman was subjected to 25 hours of psychic driving, "part of it with her thinking disorganized under LSD-25."

In the same article, Cameron proposed using even more drastic methods, including "prolonged sleep" with sodium amylal, combined with ten to fifteen days, ten to twenty hours a day, of psychic driving; the McGill "psychological isolation" procedure, and hypnosis under the drug Desoxyn, an experimental amphetamine later taken off the market.

The experiments Cameron carried out in the 1950s were published in Canadian and American medical journals between 1958 and 1961. Nevertheless, Health and Welfare continued to support the research:

from 1961 to 1964, a second grant of \$57,750 was awarded for more research into psychic driving.

The final report of his project, "A Study of Factors Which Promote or Retard Personality Change in Individuals Exposed to Prolonged Repetition of Verbal Signals," was submitted in 1965, and officially received and signed by various government officials, including Wride and Dr. J.A. Dupont of Health and Welfare and Denis Lazure, Assistant Deputy Health Minister in Quebec.

In the report, Cameron described 61 tests on fifty patients at the Allan, and an "intensive study" of eighteen of these patients during a two-year follow-up period. He claimed recovery for as long as five years, including three years of "ambulatory" (outpatient) driving for three to six hours a week. Several of these people, he wrote, broke down or "decompensated;" his "treatment" for this reaction consisted of more driving, drugs, electroshock, or a combination of all three. Once again, the vast majority of his human guinea pigs were "psychoneurotic" women.

The results of this government-funded research were later published in 1956 in the *Canadian Psychiatric Association Journal*. The article, titled "The Effects of Long-Term Repetition of Verbal Signals," was co-written by Cameron, Leonard Levy, Thomas Ban and Leonard Rubinstein, all staff members at the Allan or McGill.

### Depatterning

On Jan. 21, 1957, Cameron applied to the New York-based Society for the Study of Human Ecology (a known CIA front) for further funding of his psychic driving experiments. The research project had an innocuous title: "To Study the Effects upon Human Behaviour of the Repetition of Verbal Signals." Cameron was eager to refine his depatterning procedure to ensure that the "dynamic implant" would lead to permanent behavioral changes in his patients.

In the application, he succinctly outlined a four-step brainwashing procedure which he inflicted on approximately eighty patients at the Allan Memorial Institute:

- The breaking down of ongoing patterns of the patient's behavior by...particularly intensive electroshock (depatterning).
- The intensive repetition (sixteen hours a day for six or seven days) of the prearranged verbal signal.
- During the period of intensive repetition the patient is kept in partial sensory isolation.
- Repression of the driving period is carried out by putting the patient, after the conclusion of the period, into continuous sleep for seven to ten days.

Cameron also said he was still looking for more efficient ways to immobilize or inactivate his patients during psychic driving, including such powerful drugs (used either singly or in combination) as Artane, Anectine, Bulbocapnine, Curare and LSD-25.

From April 1957 to June 1960, the CIA (through its front) gave Cameron \$59,475.54 to conduct his depatterning experiments on many patients at the Allan—most of them women—and a further \$4,775 to continue his psychic driving research. The funding was officially approved by Colonel James L. Monroe, a CIA employee or agent, who signed all grant approvals as "Executive Secretary" for the New York organization. The project was also approved by Dr. Sidney Gottlieb, a psychologist and chief of the CIA's Chemical Division of Technical Services Staff.<sup>6</sup>

The first published report of the depatterning procedure appeared in a 1958 issue of the *Canadian Medical Association Journal*, under the clinically titled heading, "Treatment of the Chronic Paranoid Schizophrenic Patient." In the article, Cameron and colleague S.K. Pande described their depatterning-brainwashing technique in chilling detail: "...frequently severe although transient disturbance of the brain function is an important factor in the favorable results. This disturbance is shown in terms of severe recent memory deficit, disorientation and impairment of judgement. Similar changes can readily be produced by a combination of sleep and electroshock treatment."

This time, Cameron's victims were 26 "paranoid schizophrenic" patients incarcerated in the Allan. Twenty-one were women. The basic procedure of depatterning and brainwashing consisted of prolonged sleep (twenty to 22 hours a day) under daily doses of Thorazine and the barbiturates Seconal, Nembutal, and Veronal. This was accompanied by intensive electroshock, using the Page-Russell technique, which involved five to six shocks within two to three minutes.

The objective of this massive electroshock was "to produce in combination with sleep...confusion which we term 'depatterning.'" Each patient was subjected to at least thirty shocks within one to two months, and some were shocked as many as sixty to 65 times within two months—to achieve "complete depatterning."

After thirty shocks and five days, patients showed "severe memory deficits." Their "delusions" were still present. Ten to twenty days later, they demonstrated serious temporal-spatial disorientation: "Who am I?" they asked. "How did I get here?" And all "delusions" were "broken up." Wrote Cameron: "He lives in the immediate present. All schizophrenic symptoms have disappeared. There is complete amnesia for all events in his life."

After thirty to sixty shocks, the typical victim was completely disoriented: As Cameron expressed it, one patient "...does not recognize anyone, has no idea where he is and is not troubled by that fact....urinary incontinence and has difficulty in performing simple motor skills." Nor was there any remaining evidence of "schizophrenic" behavior.

Scientific documentation of the permanent brain damage caused by the deprogramming procedure, particularly the electroshock, was finally revealed in 1967—the year Cameron died, and three years after the Canadian government stopped funding his psychic driving experiments.

In a ten-year follow-up study of 79 of Cameron's "deprogrammed" patients, psychologist A.E. Schwartzman and psychiatrist P.E. Termansen discovered that 63 percent of 27 shocked and deprogrammed patients showed permanent memory loss, and that in sixty percent of these memory losses, anywhere from six months to ten years of experience was erased.<sup>7</sup>

These researchers recommended that intensive electroshock be stopped. It wasn't.

## The Response of Psychiatry

Before his death in 1967, Dr. D. Ewen

Cameron was President of the Canadian Psychiatric Association, the American Psychiatric Association, the Quebec Psychiatric Association, and the World Psychiatric Association. He was also the founder and first director of the Allan Memorial Institute. He received many honors and awards, including the Mental Hygiene Institute of Montreal's "Mental Health Award" for "outstanding contributions to the mental health of the Canadian people" in 1966.

In 1965 the Canadian Psychiatric Association made him a lifetime Honorary Member. In its citation to Dr. Cameron, the CPA expressed "its profound appreciation of (his) outstanding contribution made to the development of psychiatry in Canada." It also praised Dr. Cameron for contributing to "far-reaching advances in the fields of treatment-education-research."

A month after Dr. Cameron died, these editorial statements were published in the *Canadian Psychiatric Association Journal*: "As a diligent seeker after knowledge, a gifted author, a renowned administrator and

inspiring teacher he brought...a wider and deeper understanding of the importance and significance of the emotional life of man."

Nineteen years later, the psychiatric profession in Canada and the United States is still silent, and still refuses to acknowledge that one of its leaders planned and conducted some of the most unethical, dehumanizing, and destructive experiments, which can only be compared to the medical torture carried out in the concentration camps of Nazi Germany.

## NOTES

1. Report of Special Meeting, June 1, 1951. Matters relating to CIA project "Bluebird." Unpublished. Also see "Ottawa paid for '50s brainwashing experiments, files show," *The Toronto Star*, April 14, 1986. The *Star* article also states that in addition to Drs. Hebb, Solandt, Morton, and Tizzard, "officials named Haskins, Dancy, Tyhurst and a Commander Williams" also attended this secret CIA meeting. Dr. James S. Tyhurst is a Canadian psychiatrist, and Sir Henry Tizzard (now dead) was chairman of the British Defence Research Policy Committee, and both Dr. Caryl Haskins and Commander R.J. Williams were "the CIA representatives at the meeting."

2. D.O. Hebb and Woodburn Heron. "Effects of Radical Isolation Upon Intellectual Function and the Manipulation of Attitudes: Terminal Report to DRB on Contract X-38, 'Conditions of Attitude Change in Individuals.'" Report No. HR 63. Ottawa: Defence Research Board, Department of National Defence, October 1955, p. 5. Hebb's final report on they sensory deprivation/brainwashing experiments, which the DRB kept secret and never published.

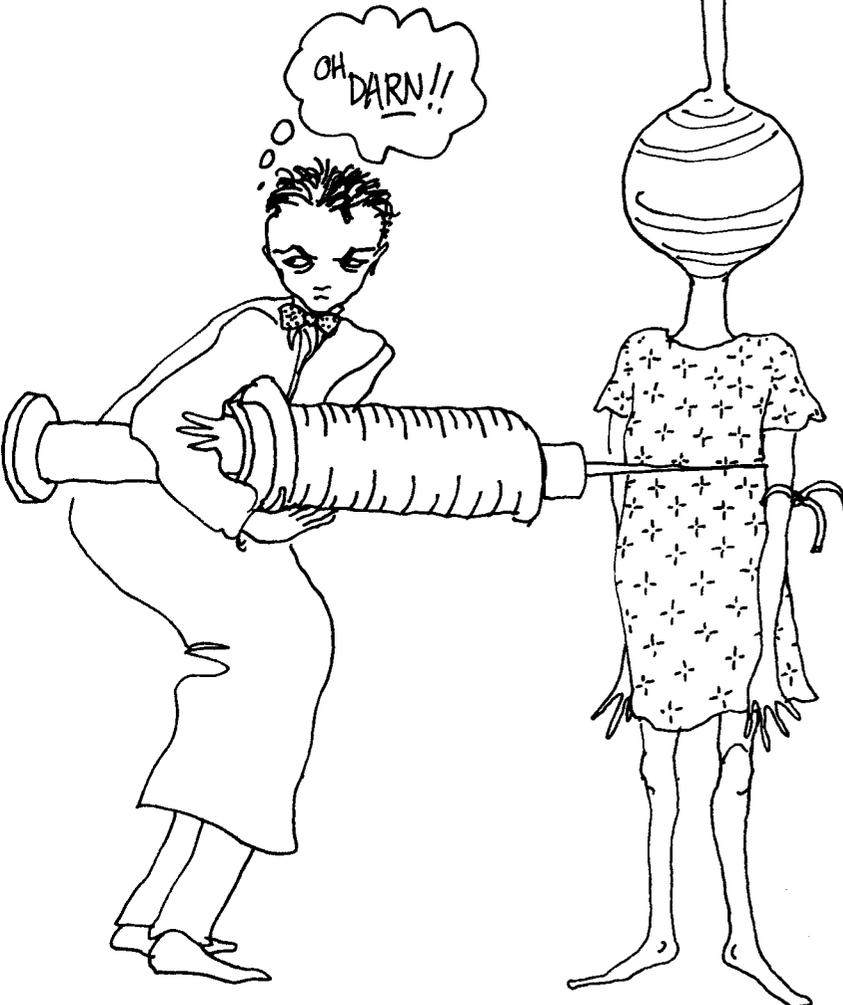
3. Woodburn Heron. "Cognitive and Physiological Effects of Perceptual Isolation" (Introduction by D.O. Hebb), in P. Solomon, ed., *Sensory Deprivation*. Cambridge, MA: Harvard University Press, 1961, p. 27.

4. Woodburn Heron. "The Pathology of Boredom." *Scientific American*, Vol. 196, No. 1, January 1957, pp. 52-56.

5. D. Ewen Cameron. "Psychic Driving." *American Journal of Psychiatry*, Vol. 112, January 1956, pp. 502-509.

6. CIA "Memorandum for the Record," March 1957. In a copy of this memorandum, it is clear that Dr. Cameron's application was funded under the CIA's "MK-ULTRA Subproject 68." Part of this memorandum states that this research "will be under the direction of Dr. D. Ewen Cameron, that psychic driving and powerful experimental drugs including LSD will be used to break down and inactivate the person." The CIA initially approved a two-year grant of \$38,180 to Dr. Cameron, which was approved and signed by Dr. Sidney Gottlieb, chief of the CIA's Chemical Division of the Technical Services Staff, and Colonel James L. Munroe, "Executive Secretary," who monitored Dr. Cameron's research for the Society for the Study of Human Ecology. Further funding was approved.

7. A.E. Schwartzman and P.E. Termansen, "Intensive Electroconvulsive Therapy: A Follow-Up Study." *Canadian Psychiatric Association Journal*, Vol. 12, No. 2, 1967, pp. 217-218.



# COMING TO TERMS

## Some Notes on Politico-Scientific Categories

BY JOHN VANDERMEER

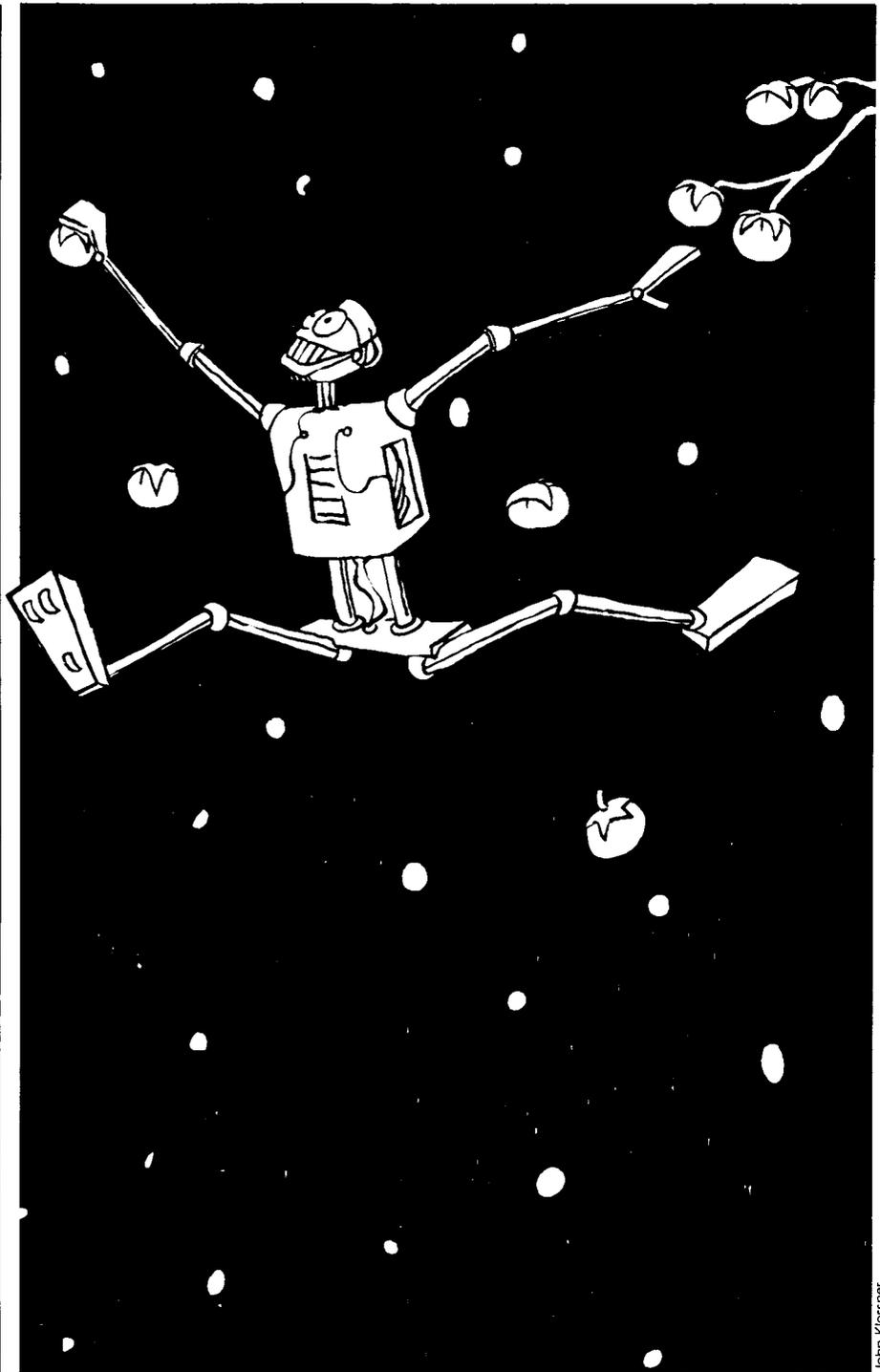
There are those whose unremitting faith in the ability of technology to solve any and all problems moves them to label every attempt to analyze the motivating forces and ultimate consequences of technology as kooks, crazies, and worst of all, Luddites. There are others who, having seen the light of Three Mile Island and mechanical harvesters, regard new technology of any sort as potentially becoming an ice-nine, and therefore something to be opposed as vigorously as others defend it. These two categories are extreme. Another two fall somewhere in between.

The use-abuse school, pioneered by British physicist John Bernal, holds that the obviously negative consequences of certain technologies are not products of the technologies themselves, but rather a product of the sociopolitical system that adopts them—nuclear power plants would be good under socialism but are bad under capitalism. The “technology is politics” school (I cannot think of a better phrase) holds that the development and implementation of particular technologies has political content and is both affected by and exerts an effect on the prevailing political climate—mechanical tomato harvesters were developed specifically to deal with a recalcitrant labor force and created the opportunity for dramatically unequal capital accumulation. (Bob Young’s “science is social relations” would fall into this category, as would the earlier work of Lanclot Hogben and Hyman Levey, I suspect.)

Thus Jonathan Beckwith categorizes the four main tendencies of the politics of science and technology: technology is

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*John Vandermeer teaches biology at the University of Michigan and is currently on leave at the Higher Institute of Agricultural Sciences in Managua, Nicaragua. He is a long-time SftP activist and a member of the New World Agriculture Group. This article is a response to an earlier opinion by Jonathan Beckwith, “New Analysis for New Technology,” published in our May/June 1986 issue.*



John Klossner

good, use and abuse, technology is politics, and technology is bad.

Jonathan feels that Science for the People has wrongfully embraced some aspects of the technology-is-bad school. He is right on that issue. He also feels that we have put too strong an emphasis on the technology-is-politics school. I think he is dead wrong on that issue.

As I see it, we have been fortunate in having very little of either of the extreme points of view in our ranks. We have certainly never said that all technology is good, and we have only rarely lapsed into the all-technology-is-bad framework. Both views should be accorded the lunatic status they deserve. But the technology-is-politics school cannot be overemphasized. It is, in my view, a dramatic improvement over the use-abuse school.

Of course it is true that technology can be used to benefit. No one would argue with the benefits of the Salk vaccine. It is also obvious that technology can be abused. None of us would suggest that it was proper to use the mechanical tomato harvester to break the potential power of the United Farmworkers of America. But the simple fact that technologies actually are used beneficially and abused detrimentally is not support for the use-abuse school. Nor does the fact that the same technology is good under one set of circumstances but bad under another challenge the technology-is-politics school.

Take the mechanical tomato harvester as an example. The engineers who originally developed the tomato harvester did so because (according to their own testimony) they anticipated the "labor problems" which were to be inevitable with the elimination of the Bracero Program. Their intent was clearly to undercut the expected organizing activities of farmworkers. I doubt anyone would argue that there was no political content in the development of the technology.

When it was implemented, smaller farmers predictably could not afford the machines, and a labor force that got mechanized out of existence before it ever coalesced was not organizable. Consequently the balance of land tenure shifted towards big producers, and organized labor was effectively excluded from the productive process. Similar to its original development, its implementation had enormous political consequences.

On the other hand, Cuba currently has been experiencing severe labor shortages in their own tomato harvest. Despite offering exorbitant wages to anyone who

is willing to travel to the countryside to pick, the Cubans today seem reluctant to leave their generally secure and adequate regular jobs to take on the task of picking tomatoes, which no one has ever suggested was pleasant.

Thus the desires of Cuban technicians and the Cuban government are stifled in their attempts to expand tomato production, which was originally promoted so as to make more vegetables available in the Cuban diet, hardly a bad political goal. Consequently, Cuban agricultural technicians are rightfully anxious to get their hands on either the U.S. harvesters, or the Hungarian harvesters (and that's another story), or to develop their own. No argument here either. Clearly it is a technology whose implementation can be anticipated to have mainly good consequences.

Therefore, the same technology seems to be bad in one circumstance (California) but good in another (Cuba), thus apparently supporting the use-abuse school. The technology itself, so this school's supporters would argue, is neutral, as evidenced by its beneficial use in one political context (Cuba) and its abuse in another (California). While such a conclusion seems to flow inevitably from the facts, upon closer examination the use-abuse model not only does not apply very well, but would be stifling in its impact on the movement to develop more social responsibility amongst scientists and technologists themselves.

Those who argue for the use-abuse interpretation of the mechanical tomato harvester begin from a position that I will characterize as the "technology-in-space" point of view. The argument is something like the following: Given a mechanical tomato harvester floating in space, if we bring it down to earth and stick it in the Sacramento Valley, that would be bad. But if we brought it down and stuck it in the countryside of Havana Province, that would be good. Since one use is obviously good and the other obviously bad, they would argue, the technology clearly fits into the use-abuse school.

But their conclusion really flows not from the empirical data that use and abuse occur with the same machine, but rather from their initial implicit assumption: "given a mechanical harvester in space." Of course a harvesting machine in space is neutral, and it is not surprising to begin the argument with this assumption and conclude with what amounts to the same assumption. The whole structure of the argument is tautological.

If I am to ignore the rich history of

human relations that went into the development and implementation of the tomato harvester to begin with, it isn't surprising to come to a conclusion that likewise ignores it. Viewed in this light, it seems to me that the use-abuse school begins to look much like the technology-is-good school. If we're just going to let our machines float around in space, it doesn't much matter what might be the social relations involved.

The technology-is-politics school differs from the use-abuse school in its insistence on the recognition of the historical content of technology, the nature of planning (purposeful or implicit) for its development, and the forces at work in its implementation. We begin with the recognition that human social relations are not static and that

The technology-is-politics school holds that the development and implementation of particular technologies has political content and is both affected by and exerts an effect on the prevailing political climate.

sociopolitical systems are constantly in a state of transition. While that transition may be occurring at a micro level (the establishment of trade unions for farmworkers in the Midwest) or at a macro level (the transformation of the world capitalist system into a socialist one), it is nevertheless usually possible to identify aspects of a transition that are progressive.

Technological developments, either potential or real, will serve either to accelerate that process of transition,

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Grassroots International

Weeding this rice field in the Philippines, the twenty-seven families who farm this land demonstrate that local technologies often produce greater yields than those provided by Western science.

by Les Levidow

**H**ow should Third World countries deal with the conflict between Western science and their people's basic needs? Could "development" mean something other than subordination to multinational corporations? Such questions were the focus for debate among over one hundred delegates who gathered in Penang, Malaysia last November 21 for a six-day conference entitled "The Crisis in Modern Science." Organized by the Consumers Association of Penang (CAP) and the Third World Network, the event brought together scientists, environmentalists, journalists, and teachers from all over the world, especially Asia.

*Les Levidow is an un-American who moved to London in 1976. He is an editor of the Radical Science Series at Free Association Books, and teaches the politics of science at Middlesex Polytechnic.*

*The document produced from this conference is available from the Consumers Association of Penang, 87 Cantonment Road, Penang, Malaysia. CAP also publishes a newspaper, Utusan Konsumer (Consumer Messenger).*

## THE CRISIS IN MODERN SCIENCE

Third World  
Scientists  
Confer

The starting point of the conference was the specter of devastation wreaked on the Third World by Western science and technology. Beyond extreme cases, such as the U.S. military's defoliation campaign during the Vietnam War or the Bhopal disaster, speakers took up the more general case of economic "aid" and "development" itself, which continues to impoverish and literally poison Third World populations. Condemnation was directed at multinational corporations dealing in microelectronics, chemicals, drugs, and seeds, and at the Third World ruling elites who benefit from such foreign-dominated development. Speakers also presented examples of how imported technology tended to preclude their own research efforts that could better meet people's basic needs.

The sweeping denunciations of imported technology led some of the Western delegates to resent a "Western bashing" that denied any indigenous sources of the Third World's problems. Yet the major disagreements that arose did not divide the minority of Western delegates from the Third World ones. While there was little disagreement about the destructive, inhuman effects of

modern Western science and technology, there was little consensus about the precise reasons for them, and therefore whether or how something benign could be salvaged. For example, was the problem inherent in science, or specific to the use of science for maximizing profits and dominating people? And did traditional practices avoid all such problems?

## The Role of Non-Western Science

Although there were no factional divisions among the delegates, their views tended to follow one of three broad approaches:

- Western science should be adapted to Third World needs by incorporating different social priorities.
- The totality of Western science and "development" should be rejected in favor of purely indigenous knowledge and practices (though these were not assumed to be ready-made options).
- Western science should be replaced by the ethical values of traditional systems, such as Islam.

The rejectionism took many forms, such as the proposal to abandon the notion of development altogether, in favor of "survival with dignity." In general, the rejectionist approaches were disturbing to the many Third World delegates who still identify and work with aspects of Western science and technology. One of these, Dr. Dinesh Mohan of the Indian Institute of Technology at New Delhi, posed the question of what we should do with our growing appreciation of the Third World's indigenous practices. Shall we make it simply the basis of a new self-confidence? Shall we use it to replace modern science entirely? Or shall we integrate it into modern science?

The notion of modernity itself became a debated issue. Many speakers gave examples of how Western values and control have been imposed upon Third World countries in the name of modernizing them. Professor D. Sinha, of the Institute of Social Sciences at Patna, generalized the issues when he argued that the Third World's indigenous science and technology was already modern in its own way. The conflict, then, should be seen as one "not between traditional versus modern science, but between indigenous versus Western science." Unfortunately, he said, instead of adapting Western science to their conditions and needs, Third

World countries were allowing it to replace their indigenous science.

## The Green Revolution

Illustrating that problem was a guest of honor, the Indian scientist Dr. R. H. Riccharia, who described how his Central Rice Research Institute had been researching high-yield varieties based on local germplasm in the 1960s. Then the International Rice Research Institute—set up by the Rockefeller and Ford Foundations and backed by the Indian government—made a takeover bid, subordinating his projects to their own, which used hybrid material from abroad. When Riccharia demanded that IRRI's material be quarantined, to protect the Indian varieties from pests and diseases, he was fired. Since then, his personal tragedy has been compounded by his son's death and then his own nearly fatal injury during the Bhopal disaster, where he had been continuing his research alone on a nearby farm.

IRRI's triumph resulted in the disaster known as the Green Revolution, as described by Dr. J. K. Bajaj of the *Indian Express*. India's agriculture has become dependent upon hybrid varieties controlled by foreign experts, and has actually suffered a decline in the growth rate of most crops, especially rice. Although wheat production has risen markedly, it previously had little importance in the Indian diet. Now high-tech production makes wheat too expensive for many people to buy, so unsold stocks accumulate in warehouses. Meanwhile, pulses and oil seeds have become scarce, so that "the poor simply go without edible oils."

Dr. Bajaj went on to quote an adult literacy primer: "Eating just rice has a bad effect on health. Eat eggs to make up for protein deficiency." Published by the Literacy House, in turn funded by the World Bank and the U.S. Agency for International Development, this book takes for granted the decline of vegetarian proteins. Bajaj mocked its implicit message: "So, Indians were malnourished because they had the silly habit of being vegetarians."

Furthermore, he said, Indian farmers now felt trapped. Many of them commit suicide after a bad harvest because they cannot pay their debts for all of the chemicals, pesticides, and seeds (which, as hybrids, must be purchased anew for each planting). Despite all of those problems, farmers continue using the high-yield hybrids because they can no longer easily get seeds for the old

varieties. Adding to the irony was Dr. Riccharia's discovery, on a recent trip to the U.S., that a plant breeding project there held stocks of the Indian indigenous high-yield varieties that he had been developing in the 1960s.

The only dissent from that negative verdict on the Western model of development came from Dr. Ram Iyengar, of India's Centre for Scientific and Industrial Research. Responsible for managing 42 research labs in India, he described himself as a simple man who didn't understand the fancy language used by conference speakers. His frequent objections to criticism of his government's science policies were greeted with a mixture of annoyance and mirth. "You are being misled by Indian radicals," he warned me afterwards.

## Magic Pills

The Philippines provided more examples of the choices facing Third World countries. Dr. Norman Quimpo, a mathematics lecturer in Manila, described his new organization, Local Initiatives in Science and Technology (LIST). It was one of many projects begun after "the Aquino assassination in August 1983 threw large sections of the populace, particularly the middle class, into a frenzy of soul-searching and a rethinking of basic societal assumptions."

Distressed to see their country's industry "brought to its knees by an inability to import raw materials and equipment," LIST represented scientists' hopes for shaping a new society beyond the limits of the Marcos regime. Their efforts were now being hampered, he said, by the Aquino government's "retreat from sweeping land reform and national resources conservation policies."

So far, the main success of a Filipino popular science movement has been in rural health. Although rural areas have almost no health services, neither have they been invaded by advertising and marketing of Western brand-name drugs. Many rural people still look to the herbolaro, a traditional practitioner who combines herbal remedies with incantations. "Barefoot doctors" from the cities have been able to work with some of those local figures in teaching sanitation and health.

However, there still remains the more difficult task of breaking the magic spell of brand-name drugs in urban areas, where people seek a pill for every ill. Meanwhile, foreign drug companies have begun testing and selecting herbs with a view towards manufacturing yet more magic pills. If successfully marketed, the

pills' brand names would obscure the indigenous origin of their ingredients.

Another country's approach to drugs was illustrated in a slide show by Dr. Z. Chowdhury of Bangladesh, where he had set up the People's Health Clinic in 1962. He went on to campaign for his country to implement the World Health Organization's recommendations to import only essential generic-name drugs, since brand-name drugs were unnecessarily expensive and often harmful to health. He told us the story of how, when his government finally took this step in 1982, the drug companies refused to cooperate. We learned from a Sri Lankan delegate how drug companies there had cited Bangladesh's difficult experience in order to dissuade his government from taking a similar step.

## Appropriate Technology?

The broader question of industrialization was taken up by Dr. A. Reddy of the Indian Institute of Science at Bangalore. Arguing that it was neither moral nor feasible for Third World countries to imitate the Western model, he proposed that appropriate technology "must be

fashioned to achieve the purpose for which it is intended." And the purpose of "development", he argued, must be redefined—it shouldn't be used for maximizing Gross National Product, but for satisfying people's basic human needs, their aspirations for participation and democratic control, as well as ecological soundness. This would mean appropriating whatever was useful from both traditional and modern technologies. "High tech should be defined by high thinking," he said.

A proposal for high tech in both senses of the term came from John Sayer of the Asia Monitor Resource Group in Hong Kong, and the only Western delegate politically involved in a Third World country. Acknowledging that telecommunications have been developed by the multinationals for global domination, he proposed that the technology be appropriated by social action groups. By connecting it to any telephone, such groups could use the technology to bypass overt state obstruction, while demanding the right to free communications.

Furthermore, he added later, critiques of Western technology must be sensitive to the aspirations of urban workers in the

Newly Industrialized Countries (NICs), such as Hong Kong, who look to industry for employment and the income to buy modern consumer items. Throughout the conference, virtually no one else referred to the specific situation of the Third World's urban working class.

The struggles of India's rural dwellers over natural resources were cited as an opportunity for promoting a "public interest science." As one example, Jayanta Bandyopadhyay and Vandana Shiva described the damaging effects of the misleadingly named "social forestry" program, which treats forests as a commercial investment for timber sales. This reduces the forests' potential for local people to grow food, as well as for soil and water conservation.

Tribal peoples (as in the Chipko movement) have responded to the threat by demanding continued access to the forests and the planting of those trees best suited to their needs—indeed, to their sheer survival. In alliance with them, the intervention of "deprofessionalized intellectuals" has demonstrated the politically partisan character of a forestry science that measures productivity in solely monetary terms.

# ACADEMIC HOPES IN ARGENTINA

## Frustration Replaces Freedom

BY MAURICIO SCHOIJET

**A**cademic freedom in Argentina reached its limits in 1985, when police beat and wounded four students at the National University of Buenos Aires. The students were being evicted from a meeting of the university's Higher Council. They, among others, had opposed the election of a right-wing candidate as rector of the university.

When Raúl Alfonsín was elected as President of Argentina in 1983, people hoped that Argentinian universities

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would return to a level of academic freedom and competence that had been repressed since 1974. Some of those hopes were justified. Nothing, after all, could have been as bad as what existed after the 1976 coup d'etat. At that time universities suffered mass dismissals, kidnappings, and disappearances of left-wing and liberal professors, staff, and students. Thousands of "subversive" books were seized and publicly burned on TV, and police and troops patrolled university corridors. Professors were imprisoned for the crime of "ideological infiltration." Thousands fled the country, while others could only work clandestinely, or in working class jobs. Those who survived often did so for political reasons or through nepotism.

Scientific research declined precipitously; the number of scientific papers from

Argentina in 1978 was less than half the number for 1973. Research in the social sciences almost disappeared. One-fourth of the membership of the Argentina Physical Society disappeared or left the country. The society itself stopped functioning for several years.

In 1983, Alfonsín promised that the autonomy of the universities would be reestablished. He appointed provisional rectors to supervise the election of autonomous authorities. In addition, they were supposed to examine the validity of appointments made under the dictatorship, and help faculty and staff who had been dismissed or exiled to return. Congress enacted a law providing for reinstatement of any former member of a public university who was fired for political reasons and who wished to return.

The extent to which this was carried out depended on the political situation at each university. Alfonsín's appointees generally allied themselves with the fascistic and conservative groups that had dominated the universities under the juntas. They were prepared to live with meager budgets and government ideological constraints. Some of the smaller schools, like the National University of Luján and universities at Rosario, Rio Cuarto, Tandil, and Cuyo did rehire a reasonable

Despite many illuminating papers, the conference delegates remained divided over what, if anything, the Third World should accept from modern Western science. Certainly the debates among conventional scientists were considered irrelevant, as "the Third World critique of science is generated not by issues in science but by its lack of credibility," said Claude Alvares, an Indian journalist. In that sense, it was suggested that we were really discussing a crisis of (rather than in) science—that is, a challenge to its legitimacy from the outside.

When we saw Alvares's video about Indian farmers protesting against a chemical firm polluting their land, the screening coincided with the news of yet more chemical dumping into the Rhine. The disastrous results of "development" in the Third world, including three Development Decades, were now coming full circle back to the countries responsible for impoverishing and polluting the Third World.

That connection strengthened suggestions that modern Western science was inherently violent, inhuman, and destructive—and therefore to be rejected. While most delegates agreed on the negative effects,

various causes were identified: domination over nature and therefore over people, as exemplified by Francis Bacon's motto, "Knowledge is power;" the imperative (or pretense) of separating facts from values; and the capitalist drive to maximize profitability.

## Traditional Systems

Some speakers advocated value systems that conflict with the fundamentals of Western science. Dr. A. Ghazali, of the Health Centre at the University Sains Malaysia, presented a theory of traditional Malay medicine which operates beyond the realm of the five senses. Dr. M. D. Srinivas, of the Department of Theoretical Physics at the University of Madras, demonstrated the different criteria of logic held by traditional Indian science as compared to Western science.

For some speakers, the Islamic tradition provided a reference point for their critique of modern Western science. Professor S. A. Ashraf, of the Islamic Academy in Cambridge, England, denounced Darwinism by contrasting traditional Islamic values with the selfishness, greed, and aggressiveness

"which Darwin preached as the essence of evolution." Dr. A. Anees, of Chicago's East-West University, expressed fears about the new reproductive technologies: that the family may not remain intact, and that human lineage may not remain clear.

Despite overt disputes over both Islam and Marxism, the conference was able to conclude with the acceptance of a lengthy document outlining the problems with modern Western science and proposed alternatives. This document was possible only because delegates had helped to write it in workshops the previous afternoon, an editing team had gone through it in the evening, and then CAP staff duplicated it throughout the night.

On that final day, Dr. Quimpo spoke for many when he described his experience of having been "in the presence of many wise people and some wise guys." The conference certainly helped to clarify the choices faced by the Third World: either work within the Western framework, find Third World roots instead, or make some hybrid of the two.



number of exiles. Other exiles were given fellowships and appointments by the National Council of Scientific and Technical Investigations, although some of these were effectively rescinded by government budget cuts.

However, at the National University of Cordoba, located in a province ruled by the extreme right, no one was reinstated, and all the appointments of the dictatorship were confirmed. Similarly, very few exiles came back at the Universities of Buenos Aires and La Plata. In 1985, the Supreme Court ordered the National University of the South to reinstate several dozen professors fired in 1975 with back pay. The University claimed lack of funds and delayed payment of compensation. Very few of the plaintiffs were actually reinstated. One who was hired back resigned after a few months when she was denied a promotion on the strength of work she had done in exile.

The issue of reinstatement of exiles and political reform of the universities led to a major struggle between a conservative rector and an activist dean at the National University of Buenos Aires. The provisional rector, Francisco Delich, had appointed Gregorio Klimovsky as dean of the School of Exact and Natural Sciences. Klimovsky was a member of

the group that led the academic revival after 1956. He had been fired in 1974.

The new dean encouraged exiled professors to apply for new positions in the school and waived the requirement of an oral presentation for exiled candidates. He brought Hector Maldonado back from exile in Venezuela and appointed him head of the Biology Department. Maldonado, in turn, introduced a course in molecular biology and encouraged student input on the quality of courses, over the objections of anti-Darwinian and other traditional members of the faculty. Klimovsky also demanded an academic trial of Raul Zardini, a chemistry professor, who was a notorious fascist and anti-Semite and had collaborated with the juntas.

In November 1985, Delich fired Klimovsky and appointed Cesar Vallana as dean. Vallana nullified 35 new appointments, removed several department chairpersons (including Maldonado) and called a secret meeting to confirm most of the appointments from the dictatorship. Professors, students, and graduates who might have disagreed were not invited.

Delich then proposed Oscar Shuberoff as permanent rector of the university and Hugo Prigollini as vice-rector. Shuberoff and Prigollini were clearly candidates of Alfonsin's party apparatus. Shuberoff

had never held a permanent academic appointment and had taught for only one or two years after 1974. Prigollini was only able to get a permanent appointment in 1982, after thirty years of teaching. Candidates with better qualifications to be rector, such as philosopher Eduardo Rabossi, economist Aldo Ferrer, or human rights leader Emilio Mignone, were rejected.

The election required several sessions of the Higher Council. Shuberoff failed three times to get the established minimum number of votes. It was at this point that Delich had to call the police to evict students who opposed his candidate. Ultimately Shuberoff and Prigollini were elected.

Democratization has thus stopped short in Argentinian universities. Most of the faculties that survived and collaborated with the juntas are still in place. Most of the exiles have yet to regain their positions. The universities are under the control of a conservative government. It will not allow them to deal with the issues of recovery from the dictatorship; they are not at liberty to develop any intellectual or political weight of their own. Academic freedom is still far away.



## GATLING GUNS TO EL SALVADOR



### Berkeley Students Protest General Electric

BY NEIL KOBLITZ

I believe that a key task for the movement against the war in Central America is to create a credible threat of civil disorder in the event of a massive U.S. invasion. If, as many expect, the war escalates into another Vietnam, we must create "another Vietnam" in the U.S. But this time, in response to heightened U.S. aggression, we should be escalating the level of protest more quickly than in the 1960s, perhaps thereby preventing such an invasion.

It is natural for students to play a central role in the militant wing of the protest movement. Thus, the intensification of protest against CIA recruiting at

GE should resume shipment of replacement parts to the hospitals and medical schools of Nicaragua for the equipment purchased from GE before the trade embargo.

*Neil Koblitz is a professor of mathematics at the University of Washington in Seattle and a member of FACHRES-CA (Faculty for Human Rights in El Salvador and Central America). While on sabbatical in Berkeley, he worked as a liaison between FACHRES-CA and the local student group SAICA (Students Against Intervention in Central America).*

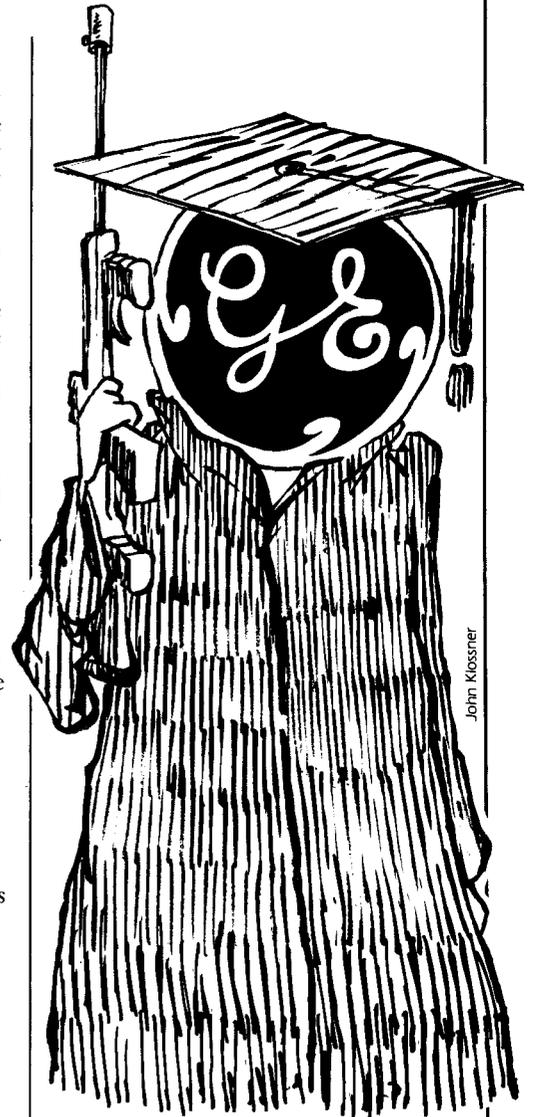
Minnesota, Colorado, and other universities is a significant and welcome development. Less well known but equally important are the increasing efforts of progressive students to block on-campus recruiting by the major military contractors. Last fall, the University of California-Berkeley saw three major actions against General Dynamics (GD) and General Electric (GE) when those corporations came to recruit on campus. My purpose here is to describe some features of the Berkeley anti-GE campaign by SAICA (Students Against Intervention in Central America).

The students' central demand is that the university stop providing its facilities for war contractors, in particular GD and GE. This demand fits into SAICA's strategy of targeting all major forms of university complicity in war crimes and crimes against humanity in Central America.

Because of GE's horrible record in many areas (such as trading with the Nazis during World War II, manufacturing detonators for nuclear weapons, and toxic polluting), it has been possible for Central America activists to unite with many diverse groups and individuals around the demand to stop GE.

In SAICA's own educational work on GE, the focus has been on GE's involvement in Central America, especially its supplying of Gatling machine guns which, mounted on helicopters in El Salvador, take a gruesome toll of civilian casualties. GE's complicity in gross violations of international law (the Nuremberg Principles) is sufficient reason to bar the company from campus, SAICA argues. In addition to the demand that GE stop sending the guns to El Salvador, the students have directed a second demand: that GE resume shipment of replacement parts to the hospitals and medical schools of Nicaragua for the equipment purchased from GE before the U.S. trade embargo against that country. SAICA notes that the sanctions against Nicaragua are in violation of international law (the June 1986 World Court decision), as well as inhumane.

In addition to its intrinsic merits, this



John Klossner

second demand is important symbolically. By showing that SAICA is not antitechnology, it offers a basis of unity with science and engineering students. SAICA has been remarkably successful in raising moral issues among those students, and has received valuable support and virtually no vocal opposition from future engineers on campus. The intensive leafletting in the engineering buildings and the improvement of personal ties

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## The Science Question in Feminism

By Sandra Harding

Cornell University Press, 1986

REVIEWED BY MIKE WOLD

Is science above politics? The ideologists of science say yes: science is simply an objective way of looking at the world, unaffected by personal biases or social discrimination. In practice, of course, science has been used to support political tendencies of both the right and the left: racism and antiracism, Marxism and Social Darwinism, sexual repression and sexual liberation. Typically, science is appealed to as the final arbiter—the objective judge.

Sandra Harding, in *The Science Question in Feminism*, points out that science is the one discipline that expects its methods and descriptions of its own practice and motivations to be taken at face value. She compares this to studying a society and taking as absolute truth the statements that people make about themselves. Science, to be consistent, needs to be open to question and criticism.

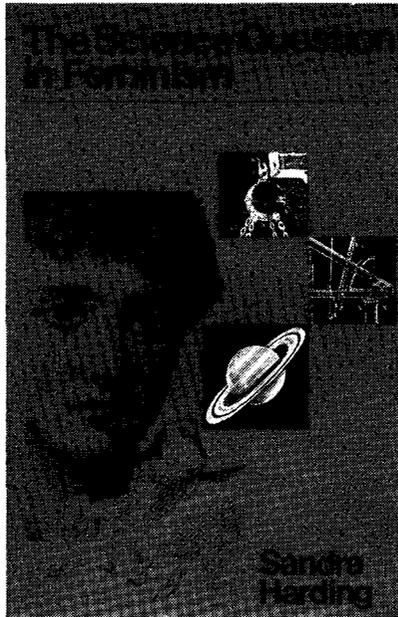
Feminism has had an ambivalent relationship with science. On the one hand, it has appealed to the idea of “scientific objectivity” as a means of gaining its goals. At the same time, it has posed a challenge to science and scientific methodology itself that earlier social movements did not.

Harding gives some insight into the clash between feminism and science, and makes provocative claims about the role that feminist science will play in the future. She points out that there is no single feminist critique of science. Criticisms have ranged from the way that science has excluded women to the idea that masculine bias in scientific theory and inquiry has reduced its ability to be objective. Feminists have also denied that value neutrality is possible and that science, in attempting to be purely objective, ends up serving the powers that be.

Harding usefully distinguishes among these sometimes conflicting critiques, and considers them in their own terms. She argues that the scientific establishment has found all of them threatening in some way. Even affirmative action, which one might

consider the least threatening to scientists, has been met with a great deal of resistance. Science, she says, is like the military: for many of its male practitioners, it is a way of proving oneself a man—a way of being superrational, emotionless, and objective. Women entering the field have therefore threatened this self-image of the scientist.

She distinguishes between feminist critiques and broader critiques of the nature of science itself. Feminists argue that science’s objectivity has been compromised by taking on the sexist, classist, or racist biases of its practitioners. Other critiques see science as a worldview, claiming that scientific methodology itself partakes of the biases that were present in its originators. Both approaches, she suggests, have validity, though they



differ in that the feminist critique of “bad science” implies that there could be a “good science.” But the feminist critique of bad science applies mainly to results and interpretations. The critique of science as such applies to the questions that are asked and the types of hypotheses that are formulated.

This latter is apt to be the most controversial of her claims. Harding argues that science itself is flawed, that its origins betray a masculine bias—an ideology of controlling and even raping nature—that is still present in the practice of science today, even if not overtly stated. She also points out that scientific methodology is not as clear-cut as scientists claim.

Physics and mathematics, which have been considered the paradigm of scientific methodology and the purest forms of science, are, in Harding’s view, only a special case in scientific investigation. They may have been elevated to an ideal methodology precisely because they fit a superrational ideal of methodology. As science takes on more complicated subjects, such as living beings, ecosystems, and societies, the methodologies that imitate physics and mathematics have generally proven to be reductive and often reactionary, losing important aspects of the phenomena they are studying.

Harding suggests that feminism, rather than destroying science, is necessary to complete it. She compares the changes in society that gave rise to the scientific revolution to those taking place today. In the late Middle Ages, there was a vast gap between mental and manual labor, with a taboo on manual labor for the aristocracy and a lack of education for those who did manual labor. This gap was bridged by the rise of specialized artisans, shipbuilders, mariners, miners, foundrymen, and carpenters who, even if they could not read or write, had a great deal of specific knowledge and learned through experimentation. These were, in a sense, the first modern scientists.

Today, there is a comparable gap between intellectual and emotional, intuitive labor, and feminism may provide a means to bridge that gap. I don’t think Harding is saying that physics will necessarily take on an emotional component, but that fields like biological and social sciences would benefit from a bridging of this gap. Indeed, physics may cease to be the paradigm of the scientific method. In a future society, the questions on which physics focuses may be considered to be relatively unimportant and rather irrelevant to the problems society is facing. Instead, sciences like biology, ecology, and psychology may become *the* important sciences, against which the others are judged.

The book is provocative. Its main fault is that it seems aimed at an audience of the convinced, and an academic one at that. While its consideration of the differences and contradictions among the various feminist critiques of science is helpful, it provides few concrete examples of the problems it is talking about. Its extensive bibliography might make it most useful as an entry point for someone studying the subject in depth.



## Africa In Crisis The Causes, the Cures of Environmental Bankruptcy

by Lloyd Timberlake, Earthscan

New Society Publishers, 4722 Baltimore Avenue, Philadelphia, PA 19143, 1986, \$9.95

**A**lthough consciousness about famine in Africa has increased, awareness of the causes of famine has hardly moved forward at all. The author, a former science editor at Reuters and editorial director of Earthscan, argues that though drought may have triggered the famines, human mismanagement is the underlying cause. He shows, in a clear, nonrhetorical way, how the imposition of Western development strategies and agricultural policies has been a disaster for African economy and agriculture.

Agricultural techniques that work in temperate zones with rich soils have been uncritically transferred to tropical zones with poor soils. International monetary policies that emphasize export crops have weakened the ability of Africans to feed themselves. Foreign aid policies that see "aid" as a means of providing a market for Western grain have had similar effects.

Assumptions about the role of scientists and experts, as well as an orientation to serving urban populations, have caused politicians and development specialists to ignore the peasants, who have the best knowledge of the land. Assumptions about the dominance of men in farming have ignored the predominant role of African women in food production. On top of it all, increased military conflict and militarism, which have some of their roots in all of the above problems, have devastated the land and uprooted populations.

It is both a strength and a weakness of the book that there are no villains in Timberlake's diagnosis, only institutions that made mistakes. On the one hand, this gives room for those institutions to change. On the other hand, it softens the obvious fact that Western corporations and African elites have reaped significant benefits from the way that development in Africa has been carried out.

There are no easy answers. At the same time, the directions to follow are obvious. Agricultural specialists need to win the cooperation and get the input of the peasants before development schemes will succeed. Food aid and other funding

must be oriented to increasing self-sufficiency. Governmental elites must get to know the peasantry and design policies that will serve their needs.

Small projects along these lines have already had a great deal of success. Africa was not ridden with famine a hundred years ago; it would take even fewer years to make it self-sufficient again. The problem is one of political understanding and will.

—Mike Wold

## Beyond Oil The Threat to Food and Fuel In the Coming Decade

by John Gever, Robert Kaufmann, David Skole & Charles Vorosmarty

Ballinger Publishing Company, 1986

**B**eyond Oil is an undertaking of Carrying Capacity, Inc., an organization which promotes movement toward a permanently sustainable way of life. The organization harnessed the computer modeling capabilities of the Complex Systems Research Center at the University of New Hampshire to predict the U.S.'s

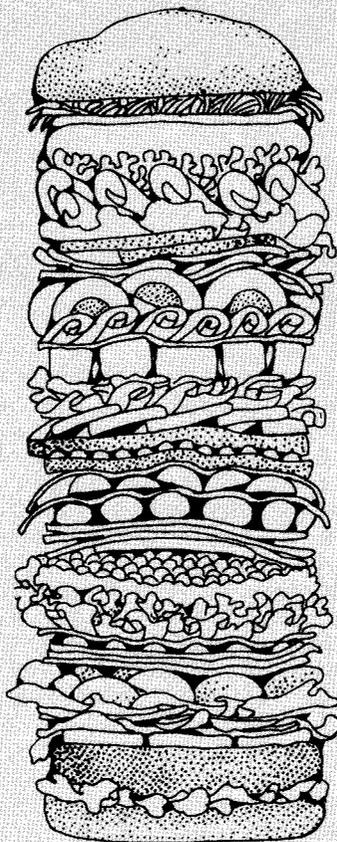
## The Fast-Food Guide

by Michael Jacobson and Sarah Fritschner

Workman Publishing, New York, 1986, \$4.95

**W**hich fast-food chain's chocolate shake has over 1000 calories? Whose roast beef sandwich has almost two grams of sodium? Which fast foods are lowest in fat, sugar, sodium, additives, and calories, and highest in nutritional value? You'll find the answers to these questions and many more in *The Fast-Food Guide*, a new publication by the Center for Science in the Public Interest's Michael Jacobson and nutritionist Sarah Fritschner.

Based on the premise that fast food has become a significant component of the U.S. diet—one with a \$50 billion annual price tag—the authors reason that the time has come to have information available which enables consumers of fast food to make sensible choices about nutrition and thus health. The first section establishes the background on how the fast-food industry grew and how it functions today as an aggressive marketing entity (with discussions of its approaches to the children's, breakfast,



and overseas' markets). It's a revealing study of how the fast-food industry creates and caters to the eating habits of most Americans.

The chapter "The Health You Save May Be Your Own" speaks to the importance of choosing nutritious fast foods. Heart disease, high blood pressure, cancer, and stroke are some of the so-called degenerative diseases in which poor nutrition can play a role, and with 55,000 fast-food restaurants feeding 46 million people each day, the potential for health and illness is obvious.

Jacobson and Fritschner break food down into its components and discuss the impact of each on nutrition and health: protein, fat, cholesterol, fiber, sodium, sugar, vitamins, minerals, and additives. An interesting feature of this section is that with the discussions of the linkages between diet and health—fat with cholesterol and heart disease, fiber with cancer, and sodium with hypertension—there are charts guiding the reader to fast-food nutritional information.

Which fast foods are lowest in fat?—salad bar cauliflower and green peas. Which are highest in fiber?—100% bran and whole-wheat and rye breads. Which are highest in salt?—the large Roy

energy and agricultural resource needs into the twenty-first century. Although the results provide useful quantitative support for advocates of the soft energy path and sustainable agriculture, the tone of the book is disconcertingly technocratic and the policy recommendations are unimaginative.

The book first develops the concept of carrying capacity, the amount of life that an area's resources can support without impoverishing the environment. This broad idea is then applied to the U.S.'s energy resource base, as the authors discuss the decline in quantity and, as importantly, quality of available energy resources. This analysis concludes that existing market forces will not provide sufficient "hard" or "soft" energy resources to offset the decline in petroleum expected by the year 2025.

After a discussion of the relationship between energy use and economic growth, the authors present their model of energy use and the United States economy with their conclusion that limits on energy availability will produce a drop in the Gross National Product starting in the year 2000 and leveling off in 2025.

*Beyond Oil* then turns to a discussion of agriculture in the U.S. that similarly concludes that this sector of the economy—like the energy sector—cannot be sustained in its current form much longer. Indeed, "the United States will have to work hard just to avoid becoming a net food importer over the next forty years." The problems of the energy and agricultural sectors are, of course, related: if current agricultural practices continue, farmers will be using ten percent of all the oil and sixty percent of all the natural gas consumed in the U.S. in 2025.

The bottom line is that the U.S. can no longer "have a growing population and a growing average material living standard and food surpluses and the assurance that future generations can have a material living standard like ours." Trade-offs must be made and Carrying Capacity's preferences are clear: population growth must be curbed, conservation and energy from renewable sources must be increased, and new farming methods promoted.

Most of those sympathetic to these conclusions don't need any more charts and graphs to convince them. On the other hand, those who favor hard-path

energy production and high-tech agriculture can simply take issue with the models' many assumptions and thus discard the results. Perhaps the next project for the Complex Systems Research Center should be studying how to change governmental policy and personal behavior to move the United States toward the soft energy path and sustainable agriculture before it's too late.

—Stephanie Pollack

## Alternatives to the Peace Corps

### Gaining Third World Experience

by Becky Buell and Kari Hamerschlag

Food First Books, 1885 Mission Street, San Francisco, CA 94103, 1986, \$3

**T**he Peace Corps is something of a schizophrenic organization. On the one hand, it performs the useful function of exposing Americans to the conditions and problems of Third World countries. On the other hand, as this pamphlet points out, the Peace Corps is a direct agent of U.S. foreign policy, whose

CONTINUED ON NEXT PAGE

Rogers Roast Beef with Cheese, with 1953 milligrams of sodium. In the extra-high calorie department, a 20 fluid-ounce Dairy Queen Chocolate Malt weighs in at 1060 calories!

An important feature that emerges here is the Gloom Factor, a numerical rating of the overall nutritional value of foods, taking into account fat, sodium, sugar, calories, vitamins A and C, iron, and calcium content. The higher the Gloom Factor, the less nutritious and more unhealthy the food. For example, Wendy's Triple Cheeseburger is the most gloomy with a score of 85, the Burger King Double Beef Whopper third gloomy at 66, and McDonald's McD.L.T. is the 18th gloomy at 54 points.

Following a short discussion of the battle over labeling of fast-food ingredients is the "meat" of *The Fast-Food Guide*: the nutritional breakdown and ranking of the various fast foods available to consumers. First, the authors rank french fries, shakes and malts, hamburgers and cheeseburgers, chicken, fish, and roast beef in terms of calories, fat, sugar, sodium, and Gloom Factor. Then, for the next 100 pages, Jacobson and Fritschner take in-depth looks at 17 of the biggest fast-food chains.



From Arby's, Burger King, and Dairy Queen to Domino's Pizza, Jack in the Box, Kentucky Fried Chicken, Taco Bell, and Wendy's—and, of course, McDonald's—these pages include not only discussions of how to choose and what to avoid at each chain, but also lists of every ingredient in every product the chain uses and numerical breakdowns of the nutritional content of each of these products. As these ratings confirm and as Jacobson and Fritschner remark, "Fast-food restaurants have come a long way since they sold hamburgers and fries for 25 cents. For the good of the country's health and economy, they could go a lot further."

This book is a living example of science for the people and, as a resource, is nothing less than invaluable. However, other than a prod near the end to join the Center for Science in the Public Interest, readers will have to look elsewhere for analysis and praxis for changing the agricultural and food distribution system from one oriented toward profit—to which the fast-food industry is one visible manifestation—to one which serves people's needs.

—Joseph Regna

## CONTINUED FROM PREVIOUS PAGE

purpose is "to combat the virus of Communist totalitarianism." So the kind of development that the Peace Corps often supports is not truly helpful to its subject countries.

This pamphlet provides a list of Peace Corps-type projects in Third World countries that are more oriented to empowering the people in those countries. The list, unfortunately, is fairly short, and much of it is made up of Christian groups—which could be a disadvantage if you're not a Christian. Nevertheless, for someone looking for alternatives, this is a good place to start.

—Mike Wold

## Women In Science Antiquity through the Nineteenth Century

by Marilyn Bailey Ogilvie

MIT Press, 1986, \$25 hardcover

In her preface to *Women in Science*, Marilyn Bailey Ogilvie apologizes for having to include biographies of women who made only "an incremental factual addition or a minor theoretical speculation." Even including women whose scientific endeavors were "practical" rather than "theoretical"—particularly midwives and practicing physicians—Ogilvie could find (sometimes minimal) information on only 186 Western women scientists born before 1885. The limited quantity of information on women scientists contained in Ogilvie's biographical dictionary does not, however, impair its quality.

Ogilvie begins the book with a brief introduction designed to set the historical context for the biographical accounts which follow. There we are, introduced to the best-known women scientists of antiquity, including the mathematician and philosopher Hypatia of Alexandria, Egypt. Hypatia's career ended abruptly in 415 A.D. when she was brutally murdered at the hands of a mob, apparently due to Bishop Cyril of Alexandria's envy over "her wisdom exceeding all bounds and especially in the things concerning astronomy."

Women scientists were still rarities in the Middle Ages, but some flourished in convents and in the Italian medical schools, which included women as both students and teachers. Hildegard of Bingen, a German abbess, published five books in the twelfth century containing both theoretical and practical insights based largely on "visions" she had.

Ogilvie describes Hildegard's science as "comparable to neither ancient nor modern science" and understandable only "as a medieval phenomenon immersed in a medieval milieu."

During the Renaissance, "woman's involvement in science remained distinctly peripheral," due to "the persistence of woman's subordinate status and of the idea that woman's nature is fundamentally different from man's." French women could, however, participate in scientific discussions at salons, and Italy offered opportunities for women scholars in the sciences, arts, and humanities unequalled in other parts of Europe. Laura Bassi, for example, may have been the first "superwoman" scientist—she received a Doctor of Philosophy from the University of Bologna, lectured there on physics and anatomy during the mid-eighteenth century, and was the mother of twelve.

Bassi was only one of the female scientists who emerged in the eighteenth century, a time when women were reading treatises on physics and chemistry, attending lectures on anatomy and natural history, and visiting lyceums and museums. Elizabeth Fulhame, a British chemist, published an *Essay on Combustion* in 1794, making her one of the few women of her time to develop a theoretical explanation for her scientific observations. Sophie Germain, a French mathematician, corresponded with Lagrange and Gauss, worked out a partial proof of Fermat's last theorem, and won a prize for developing a mathematical model for the vibration of elastic surfaces.

By the mid-nineteenth century, women were active in all aspects of science, although Ogilvie notes that "most of them were engaged in the data-gathering rather than the idea-creation component of science." In the early twentieth century, even that deficiency was overcome and women emerged as prominent theoreticians. At this point, the names become far more familiar—Marie Curie, Elizabeth Blackwell, and Ellen Swallow Richards, to name a few.

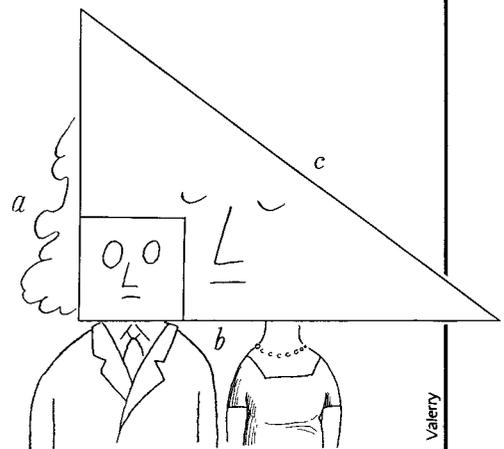
Ogilvie has skillfully combined biography with social and political commentary about women's struggles, the nature of science, and the relationship between science and politics. Her longer sketches never fail to place the women in context, whether commenting on the science of the time, painting fathers and husbands as enemies or mentors, or noting the scientists' political work.

Indeed, one of the themes which emerges from the book is how these women's science—often derided as

"practical" rather than "theoretical"—was directed at remedying social ills. Even in the seventeenth century, British midwife Elizabeth Cellier was compiling statistics on maternal and infant mortality due to inadequate obstetrical care and proposing a plan for a hospital that would care for mothers, educate nurses, and find homes for "illegitimate" children. Two centuries later, American chemist Ellen Swallow Richards—usually cited only as the founder of home economics—served as a consultant to government and industry on contamination of air, water, and soil by hazardous substances.

The biographical accounts in *Women in Science* are fun just to browse through. Beyond that, however, this book provides interesting historical information for those now debating the degree to which the feminization of science can, will, or should change the way science is done.

—Stephanie Pollack



## The Politics of Education Culture, Power, and Liberation

by Paulo Freire

Bergin & Garvey Publishers, 670 Amherst Road, South Hadley, MA 01075, 1985

Freire is a provocative writer, not only for those interested in breaking down the barrier between the expert and the layperson, the teacher and the student, but for anyone interested in the mechanism by which liberatory social change can come about. Although his direct experience is with teaching Third World peasants how to read and write, his theories have to do with the relation of learning to political consciousness and action—not simply how education can "raise" political consciousness, but how critical thinking about society provides the best means of education.

Freire's theory of the relation of

knowledge to liberation is a challenge to the vulgar Marxist who believes the masses must be manipulated into liberation, the everyday scientist who believes that scientific knowledge is politically neutral, and the educator who sees students as empty vessels to be filled with knowledge. This collection of recent essays deals with various applications of Freire's thinking.

—Mike Wold

## The Nicaraguan Revolution in Health

by John M. Donahue

Bergin and Garvey Publishers, South Hadley, Mass., 1986

**R**evolution is a process, not achieved in a day or a single event, and Nicaragua is a country deeply engaged in that process. Anthropologist John M. Donahue's *The Nicaraguan Revolution in Health* is an examination of how and why health and health care have changed in this revolutionary society.

Among the many sets of eyes peeled on Nicaragua have been those of the public health world. Public health people see clearly the links between the social, economic, cultural, and political facts of existence and health and disease. As Donahue observed about his pre-1979 days in Nicaragua, "it became acutely clear that the major obstacle to their health and well-being was the political economy of the dictatorship." The book's significance lies in the fact that Nicaragua serves as a model for other Third World countries in their struggle to negate what has been called the underdevelopment of health and to reach the World Health Organization's inspiring goal of Health for All.

In the style and prose of a social scientist, Donahue elucidates how and why the health system of Nicaragua has changed in the new political environment that has emerged since July 1979 and the impact these changes have had on the health of the Nicaraguan people. Popular participation is the key force, Donahue notes, which means community control of decisions and resources pertaining to health and health care.

After a brief overview of the pre-1979 health situation, including discussions of the role of USAID and how Somoza used the meager channels of health care delivery that did exist for repression, Donahue spends over half the book investigating what the revolution has meant for the health of the people of Nicaragua. He takes the reader through

the intrigue of training ordinary people under siege to carry out basic diagnosis, treatment, and even surgery, to the formative days of the mass organizations, through which people debate and make decisions about defense, the economy, education, and health.

What emerged in these early days was a debate that is still raging today and that exists throughout public health work in Third World countries: what will be the extent of popular versus professional control over the health care system? Through this conflict emerges the issue of what the sociologists call professional dominance. Donahue, as a social scientist, gives due consideration to this problem throughout his discussion of the evolution of health care in revolutionary Nicaragua.

The first concrete examples of this central dilemma were the struggles over who would control the form and direction of the four national popular health campaigns (antipolio, environmental sanitation, antituberculosis, and antimalaria) in 1981: the Ministry of Health (MoH) or the popular organizations. Donahue includes extensive discussions of the evolution and real implications of this pervasive issue of control. The MoH and the popular organizations are the human expression of the conflict which continues today over basic questions about Nicaragua's health care system: who is to be involved, how much and which resources are to be applied, and when and where will it happen?

Yet significant improvements in the health of the Nicaraguan people have occurred, and Donahue has compiled the statistics to document these dramatic changes. He plots the increase in the numbers of people vaccinated for and the decrease in the number of cases of various preventable infectious diseases. He records the increase in the number of health care encounters, physicians, hospital beds, health clinics, and health posts. Reflecting on the importance of the revolutionary context, these improvements were possible, to a great extent, due to the popular education in health that has occurred in Nicaragua.

In the fourth chapter, Donahue examines the cultural and pedagogical bases for this popular education and its implications for achieving popular participation in health. Of particular usefulness for the North American audience is inclusion of translations of popular health pamphlets and documents and the reproduction of almost 30 cartoons used in the pamphlets to bring home fundamental points about health and health care.

One truth is clear: the popular health model is working in Nicaragua. Yet the biggest threat to the health of the Nicaraguan people that remains is not the diseases themselves nor the ongoing debate over control. It is the counterrevolution, the surrogate war the U.S. is waging on real, live people in Nicaragua. Not just peasants, but health workers and health facilities have been prominent targets for the contras. And, of course, drawing the resources of this tiny economy into needed defense means that all other efforts, including those in the health area, suffer.

The actions of the U.S. government are putting all that has been achieved in danger of being wiped out. As a physician, I am particularly enraged at this prospect. *The Nicaraguan Revolution in Health*, beyond the scholarship it embodies, forces us all to look inside ourselves and realize that the health of the Nicaraguan people is not just in their hands; it is also in ours.

—Joseph Regna

## TechnoCop

### New Police Technologies

by the BSSRS Technology of Political Control Group

Free Association Books, 26 Freegrove Road, London N7, 1985

**O**ver half of this book is devoted to the impact of the computer revolution on the ability of police forces to keep track of us all. Most of the technology the book discusses—the ability to track the movements of all citizens (through health insurance cards and motor vehicle registrations) or to give the police officer in the street immediate access to information on individuals, automobiles, and addresses—is already in place in Britain.

Projected technologies—voice and key-word identification, conversation transcription, and facial identification from TV cameras—only enhance the already frightening potentials of police databases. Other technologies discussed include surveillance possibilities, such as sophisticated wiretapping, and weapons for riot control.

Naturally, all this equipment isn't limited to catching burglars. Not only is it used against political activists and movements, but it provides a means of harassing minority and poor communities. A final chapter discusses the use of technology to help break the recent miners' strike in Britain.

—Mike Wold

## GRASSROOTS

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with those students (with the help of an engineering professor in FACHRES-CA) have been paying off.

One feature of the anti-GE campaign which strengthened SAICA's credibility was the formation of a broad coalition of representatives of campus organizations—including student engineering societies—to ask GE to participate in a one-on-one debate with a critic. When GE refused, many on campus became more favorable or at least neutral on the question of militant tactics.

Perhaps even more troubling to GE than the physical blocking of its recruiters for a few hours is the damage done to its image among the engineering students at a leading center of scientific training. By combining a dramatic confrontation at the site of GE recruiting with painstaking educational work, SAICA has engaged the attention of Berkeley's future engineers and has probably already done tangible damage to GE.

Most of the student activists at Berkeley are veterans of the massive antiapartheid campaign which, after the violent police suppression of the "shanty towns" last spring, resulted in a major victory for the movement when the university regents decided to divest. And now the companies themselves are beginning to withdraw from South Africa. These successes of the antiapartheid movement's campaign of pressure on the corporations are fresh in the minds of Central America protesters when they work to build up a similar level of pressure concerning a different but related issue.

The students in SAICA are also mindful of the lessons from earlier student movements, particularly the anti-Vietnam War and antiapartheid movements. I was quite impressed with the internal strength of their group in several key areas: nonsectarianism, internal democracy, and women's leadership. In addition, those members who only recently became active in the Central America issue are working to educate themselves about the region, by bringing some Latin American studies into their academic program, learning Spanish, and in several cases traveling to Nicaragua and El Salvador.

If groups like Berkeley SAICA can grow on campuses throughout the U.S., then the antiwar movement will be much closer to producing a level of mass militancy that can provide effective support to the struggle of the oppressed people of Central America against U.S. aggression.

## OPINION

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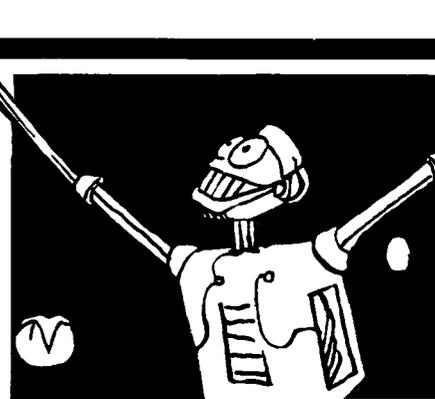
retard the process, or be effectively neutral. Those that promote the process we refer to as transitional technology. A proposed technology (or for that matter any proposed scientific project) should be judged not only on traditional scientific merits, but also based on its likely political effects—not whether or not it is bad or could be used to bad ends, but whether or not it is transitional. Plans for implementation of technologies must be judged similarly.

Such an evaluative framework is not cut and dried. Only in the most obvious cases will there be no doubt about a technology's transitional nature. Usually the consequences of a technology can only be guessed, and thus we never will be in a position to predict accurately whether a particular development will be transitional or not, any more than the use-abuse school was able to predict whether a technology would be used or abused. But the framework recognizes the need to do the analysis, as difficult and vague as it frequently is.

The key difference between the use-abuse and the technology-is-politics schools is in the dialectic view of politics and technology. The use-abuse school adopts (in my opinion) a technology-in-space attitude about the technologies themselves. While any technology might be misused, it might also be beneficially used, if only the social relations were right. It is thus not a question for the scientist to be concerned with the sociopolitical aspects of technologies, since they have no inherent sociopolitical content.

Alternatively, the technology-is-politics school adopts the position that technological development is conditioned by current sociopolitical conditions and, in turn, exerts an influence on those sociopolitical conditions. The analysis begins with an examination of what sociopolitical forces led to the development of a particular technology in the first place, proceeds to the question as to what political changes are likely to be encouraged by it (above and beyond those that conditioned its development in the first place), and terminates with a value judgement.

For example, proposed Technology A will be transitional under such-and-such circumstances and thus should be pursued by a radical scientist when such circumstances hold true. But proposed Technology B, while appearing to be very humane and positive, can be shown to be nothing more than a palliative designed to placate and mollify increasing unrest among the peasants, and therefore



should be opposed by a radical scientist.

In today's political climate, it is particularly important that scientists and technicians provide leadership in the evaluation of proposed technologies. The popular climate seems to have swung well towards the skeptical side of not trusting the technologies that brought us Three Mile Island, Bhopal, and Chernobyl, and I think we can expect increased questioning of science and technology in the immediate future. Serious challenges to the idea that any old technology is good have already been registered in our legal system with the California mechanization case and the ice-minus biotechnology case.

Science for the People and like-minded individuals should be on the forefront of such battles. If we are not, we run the risk of one or the other lunatic schools taking over as self-appointed technical advisors. (I am here reminded of the U.S. President claiming, presumably based on advice from a prestigious scientist, that genetically altered microorganisms were always safe if based on a deletion!) It is at least partly the job of Science for the People to encourage scientists and technicians to participate seriously in this process.

But the vast majority of scientists and engineers would prefer to ignore the sociopolitical questions. For them the use-abuse school is really quite convenient. If technologies themselves are neutral, it makes no difference what we do. The politicians will make the decisions about the implementation, and we have no control over them. I have already heard this argument from a colleague who seems to salivate every time he hears of all the Star Wars research money on its way to the university.

In sum, I wish to suggest that the two lunatic views be rejected out of hand (technology is good, technology is bad), and that the use-abuse school be regarded as an incomplete and inappropriate analysis. The technology-is-politics point of view more closely corresponds to what is actually happening in the world and is the point of view of a progressive scientist ought to have. I hope these comments serve to continue the debate that Jon Beckwith wisely opened.



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## Science AND Journalism

Covering Controversy  
in Science

Transcripts from the  
Conference sponsored by  
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### PANEL DISCUSSIONS

#### Sex Roles Research & the Press

Anke A. Ehrhardt, Columbia University  
Jonathan Beckwith, Harvard Medical School  
Caryl Rivers, Boston University  
Julie Ann Miller, Science News  
Barbara Kosta, NOVA/WGBH

#### Statistics, Models, Data: What Do They Really Mean?

Eric Lander, Harvard University  
Dan Wartenberg, Harvard University  
Richard Knox, Boston Globe  
Lucy Horwitz, UMass Boston

#### Reporting About AIDS & AIDS Research

Victor McElheny, MIT Bush Fellows  
Jerome Groopman, Harvard Medical School  
Ann Giudici Fettner, New York Native  
Larry Kessler, AIDS Action Committee  
Bernard Fields, Harvard Medical School  
Judy Forman, Boston Globe

#### Star Wars & the Media

Kosta Tsipis, MIT  
Carolyn Meinel, Analytic Decisions, Inc.  
Walter Pincus, Washington Post  
Jonathan Schleiter, Technology Review  
Vera Kistiakowsky, MIT  
Robert Zalisk, National Public Radio

### ROUNDTABLE DISCUSSION

#### What Makes Science News?

John David, Harvard University  
Jay Winston, Harvard University  
David Chandler, Boston Globe  
David Ansley, San Jose Mercury-News  
Rae Goodell, MIT  
Gerald Lanson, Boston University  
Jim Cornell, Harvard Center for  
Astrophysics  
Linda Harrar, NOVA/WGBH

### ADDRESSES

#### Are There Genes for Crime?

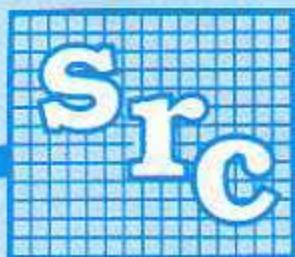
Leon Kamin, Princeton University

#### Yellow Rain and the Press

Matthew Meselson, Harvard University

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