November/December 1977 Vol. 9 No. 6 $1

SCIENCE FOR THE PEOPLE

SEVESO:
ENVIRONMENTAL DISASTER IN ITALY

Lead, Women & Sterility

The Myths of Hunger

Laboratory (An SftP Play)

CHAPTERS AND CONTACTS

Science for the People is an organization of people involved or interested in science and technology-related issues, whose activities are directed at: 1) exposing the class control of science and technology, 2) organizing campaigns which criticize, challenge and propose alternatives to the present uses of science and technology, and 3) developing a political strategy by which people in the technical strata can ally with other progressive forces in society. SftP opposes the ideologies of sexism, racism, elitism and their practice, and holds an anti-imperialist world-view. Membership in Sftp is defined as subscribing to the magazine and/or actively participating in local SftP activities.

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COVER: The cover graphic and the graphic used on page 8 are the work of Pat Parkinson, an English-Canadian artist. She has shown her work, including several pieces that dramatize environmental and social ills, in Toronto and Boston. Persons interested in seeing more of her art should contact the Boston SftP office.

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inside

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about this issue

In this issue we have two articles and one play dealing with occupational and environmental issues and their interconnection.

The article "Seveso: Zona Infestata" by Paolo Strigini and Annamaria Torriani-Gorini describes the reasons behind last year's explosion at the chemical factory near Seveso, Italy, and the effects of the disaster on local residents. It seems clear from the article that the multinational corporation controlling the chemical plant had little regard, except where profits were concerned, for the way their product was made, possible harmful effects on the factory workers and potential damage to the surrounding community.

Phyllis Lehmann in her article describes how some U.S. companies are trying to forestall action on certain industrial jobs that use chemicals and materials known to be unsafe. Though the effect of these chemicals is most apparent on unborn children, the extent of damage to men and nonpregnant women is yet to be determined. Rather than make the workplace safe for everyone and prevent possible damage to the surrounding environment, which would strain profit margins intolerably, the owners and managers find it more expedient to require sterilization from women seeking these jobs, or even bar women from the jobs entirely.

Finally, our own SftP play "Laboratory!" is set in an industrial laboratory where employees find that they can no longer tolerate creating and making ecologically destructive products and organize to control how they work and what they produce.

These articles raise important questions for discussion here and in future dialogues. First, it seems clear that industrial corporations cannot deal with matters other than in terms of short-term profits. These short-term gains for a limited group of investors are made at the expense of workers and local residents and damage the long-term interests of everyone.

Further, it seems clear that while occupational and environmental disasters at Italian chemical plants, North American lead smelters, or Japanese factories are isolated examples at present, the full story has yet to be told. That is, new instances of damage are continually being attributed to a chemical, drug, pesticide or industrial process formerly thought to be safe (or never tested). Corporation profits come out of a debt to the natural and social environment, and requiring corporations to repay this debt by cleaning up their act would put them out of business.* Business pleads layoffs and federal inspectors lessen or ignore existing occupational and environmental standards, because a capitalist economy cannot accomodate the large numbers of workers that would be out of jobs.

The course of action that will become more and more reasonable, even essential, as the situation grows intolerable, is for people to institute socialism — the common ownership and social governance of the means of production.

What kind of socialism? This depends of course on the particular country and situation. It is unlikely, though, that worker ownership and control of a developed industrial economy would significantly improve the workplace or environment if present capitalist levels of production and consumption are maintained. We can use the example of the Seveso plant in Italy to illustrate this point.

In the not-totally-remote possibility that workers seize power and institute a people's government in Italy in the next five or fifteen years, how much could be changed? In a world of unlimited resources and without the international capitalist market economy (in which socialist countries now participate), workers could halt production, carefully analyze environmental and occupational hazards, discard badly designed, badly built or antiquated plant and machinery, and design and build new factories for human needs rather than profits.

In the real world, however, evaluation skills and techniques are often primitive, technical personnel scarce, and building materials and natural resources limited. If the people's government decided that Seveso or any of the similar factories in northern Italy produced a socially essential product, life would be little changed for the workers and local residents. Workplace conditions would perhaps even deteriorate (as in the case of Cuba in the early 60's), with needed parts blocked by international economic sanctions and machinery untended due to a flight of trained personnel. China, the Soviet Union, Cuba, Tanzania and other socialist countries have faced this dilemma of industrial development, workplace hazards and environmental pollution in different ways and with different degrees of success. We encourage discussion on what approaches would be appropriate for an advanced industrial economy in a world of limited resources.

*This idea of a "capital debt" to the environment is developed by Barry Commoner in his book *The Closing Circle.*

ABOUT THIS ISSUE, *continued on p. 39*

letters


Workbook/cpf

ANTI-NUKE OUTREACH

Dear SftP,

I appreciated very much, and can't second too strongly, Frank Bove's article on the Clamshell Alliance in the July-August issue.

Hopefully the antinuclear movement is waking up to the realization that this struggle is not occurring because nuclear power is any particular aberration of the US economic system, and that the movement will act accordingly.

What this specifically means is that the antinuclear movement *must* move beyond young, white, middle-class, well-educated people who so dearly love setting up "model communities" as Mr. Bove calls them — and get out into the world and the reality that Middle America deals with and lives in every day.

It's very important to have people of conscience involved, but we *must* realize that conscience is not what motivates the biggest majority of Americans, it is not what most people can readily identify with.

If nuclear power is viewed in this way — not as an aberration of the system — and the antinuclear movement moves *beyond* issues of conscience, then we can begin to see the aligning of powerful mainstream organizations that can *indeed* provide the kind of support, and have large enough constituencies to truly make a difference. By stressing that nuclear power is brought to us by the same people that bring us poisoned water (Allied Chemical — kepone), fouled air, unsafe working conditions, and soaring utility bills, we can not only involve a huge cross-section of the population, but point out some very basic differences in our present economic system in such a way that many people can relate it to their best self-interest, and not as a threat from some starry-eyed college environmentalist.

In short, we *must* take the antinuclear struggle beyond the Sierra Club, Food Co-op, Anti-War crowd. These people, hopefully, can be counted on. We have to present public events, and organize, and work *with* groups of people in such a way that we don't continue to talk to ourselves and remain isolated — that we involve the millions of people who don't really know much about nuclear power, but if they knew that their skyrocketing electric bill was tied to nuclear plant construction, would surely be working *with* us.

Sincerely,
Mike Ferner
Toledo, Ohio

SEX ROLES, BIOLOGY, AND SOCIETY

Dear SftP:

Freda Salzman's article, "Are Sex Roles Biologically Determined?" (*SftP*, July-August 1977) attempts to debunk the notion that social relationships, as we now see them, are determined in some unchangeable way by purely non-social aspects of our biological development as individuals. I am all for that attempt; it is galling that Ms. Salzman can point to a considerable amount of recent writings which defend such notions.

Ms. Salzman restricts herself, after a very wide-ranging indictment of all sorts of related ideas, to the question of sex differences in brain anatomy and function. Her position, as I understand it, is that there is no obvious connection at all between whatever differences there are in male and female neuroanatomy and their abilities to perform almost any of the occupational and social roles which one or the other sex are excluded from. But somehow she becomes bogged down in a useless discussion about the hypothalamus and its development.

The female hypothalamus mediates the menstrual cycle but the male hypothalamus exhibits no cyclicity at all. She attaches great significance to a report that this is not immutable and that *some* of the female-pattern hypothalamic behavior can be induced in male monkeys — although she doesn't mention that in the research she cites the males were castrated and that female hormones were given to them in capsule implants. So what? No normal males will ever exhibit these cyclical changes and all normal females during their fertile years will, and no amount of change in their social environments will affect that (except, perhaps, in pathological situations.)

But what relevance are these practically immutable biological differences to the social problems confronting us? Ms. Salzman does address this more important question, but not with the attention it deserves. I do not believe that the biological differences between the sexes, and there are many, are impediments to altering sexist social problems. Attacking the existence of these differences with statements that the hypothalamus "appears . . . *not* to be sexually differentiated," is shoddy thinking, and no help to anyone.

Sincerely,
David Vinter
Ann Arbor, Michigan

Dear SftP:

There was a logical error in Freda Salzman's argument in her interesting article "Are Sex Roles Biologically Determined?" (July-August issue). She says that cases "in which chromosomal XX females were successfully reared as males and chromosomal XY males as females . . . indicate the overriding importance of social factors." They do nothing of the sort. The former category consists of fetally androgenized genetic females, in many cases the result of a genetic defect in adrenal steroid synthesis, an androgen precursor of cortisol being produced rather than cortisol. The latter category, the testicular feminization syndrome, consists of individuals carrying an X-linked mutation resulting in a defective gene product unable to recognize and bind testosterone. These cases thus do not bear on the question posed in her title.

Although I realize that genetics may be and has been misused to justify keeping women and minority groups in a subordinate position, we should be aware that this debate is to a large extent

a red herring which conceals the real problem. *It is a fact that our social system favors and rewards aggressively selfish behavior, particularly in the case of men. Women (and other people) cannot have fair treatment under such a system, however sex roles be determined.*

Debunking pseudo-science is important but it doesn't change anything; it must not blind us to the real issue which was not mentioned in Salzman's article.

J. Gordin Kaplan
Ottawa, Ontario

Author's response:

Let me start by responding in a general way to the political questions raised. I believe that debunking pseudo-scientific biological determinist theories of the status quo is an extremely important political action — as I see, it, a counter-counter-revolutionary effort. Such theories, emanating from the most reputable parts of the scientific establishment and widely publicized as scientific fact, have been an effective force in defusing movements for progressive social change and have had pernicious effects, as well. Theories of women's innate nature have been used as a basis of social policy, such as laws which existed into the early decades of the twentieth century which prohibited women teachers once they married from continuing to work, and other similar laws needed to protect women from their ambitions, supposedly destructive to themselves and their families. Moreover, ideas of women's nature have been internalized by women, themselves, thus becoming a determinant of social behavior and a means of social control. A striking example of this is the situation which existed at the turn of the century when roles for middle- and upper-class women had become extremely rigid and oppressive, leading some women who tried to abide by them to neuroses and hysteria, as Freud's theories explained.

These same dangers exist today. The beginnings of this can be seen in articles such as that of Alice Rossi, "A Biosocial Perspective on Parenting" (*Daedalus,* Spring 1977). In this article Rossi uses highly questionable and selective data involving a "bio-evolutionary perspective" and supposed hormonal effects on sexually differentiated brains, which I discussed in my article, to argue that biological mothers are predisposed to be better child-rearers than men and that to make men equally competent parents would require "compensatory training... far in excess of anything now envisioned" — the feminine mystique of child-rearing. She then discusses some rather important immediate social issues, such as day-care facilities, and urges that the questions she has brought up be used as a basis for policy formation. Again, women apparently need professionals to tell them what is best for them and their children.

Rossi sees little hope of our society providing decent day-care facilities, and recommends individual solutions of smaller groups of cooperating parents. She, nevertheless, holds out the prospect of a new society "more attuned to the natural environment... that asks how we can have a balanced life with commitments both to achievement in work and intimate involvement with other human beings." Socialist feminists realize that it is a liberal delusion to believe that a capitalist society, based on maximizing profits and not on fulfilling people's needs — which can't even provide adequate day-care, can be transformed into the society Rossi envisions. As far as parenting goes, the problem is not the supposed hormonal effects on sexually differentiated brains, but the "compensatory training" males now receive which teaches them to be competitive and aggressive in order to be successful and to denigrate "women's work." (I basically agree with the italicized sentences in Kaplan's letter.)

Now let me respond to the technical questions. The criticism which Kaplan makes in the first paragraph of his letter is a valid one, although I believe that he overstates the case. There are examples of individuals with the same syndrome, for example, the fetally androgenized females, who have been successfully reared as males or females. Moreover, there is the case of an apparently successful sex-reassignment of one member of a pair of normal, identical male twins. The sex-reassignment of one of the twins was made by his parents after consultation with physicians because at the age of 17 months his penis was accidentally destroyed. (See review of *Man and Woman, Boy and Girl* by Kathy Grady, *Science for the People,* Sept.-Oct. 1977, p. 36.)

I believe that Vinter misrepresents the experimental results and the point I was trying to make when he states unequivocally that "the male hypothalamus exhibits no cyclicity at all" and goes on to describe *some* of the details of the particular experiment performed on monkeys which demonstrated that the hypothalamus of an adult male retains intact the capacity for cyclical response. I cited, in addition, the experimental results that the cyclic female pattern of hormone production can occur in female humans and non-human primates who have been exposed to high levels of androgen before and after birth. The fact is that the same result cannot be obtained in male or female rats exposed to androgens during a critical period after birth; it, however, can be obtained in male rats castrated at birth.

The point I made was that even with respect to a specific, but rather basic, physiological function, the hypothalamus in humans and non-human primates is not sexually differentiated, unlike the results found in rats. The model of the human brain now being marketed (I believe that it is a real Madison Ave. production) goes much further in that it is posited that the human brain is sexually differentiated with respect to *socially significant behavioral traits.* This model rests almost entirely on studies of animals, mainly rats, which indicate that the part of the brain most involved in the male-female patterns of stereotypic behavior and hormonal production is the hypothalamus-limbic system. Highly questionable and extremely limited studies of humans, primarily those of the fetally androgenized females, are then used to claim that the model is valid for humans, as well.

It did not seem necessary in terms of the point I was trying to make to go into the details of the experiment, and I still do not think it appropriate to do so here. Thus, I did not mention, for example, that the testes of sexually mature male monkeys were removed, as well as the ovaries of a control group of sexually mature females, because, as we all know, the gonads — testes and ovaries — are indeed sexually differentiated, but they are not part of the brain, although our society acts as if they were.

—Freda Salzman

news notes

CAUSE OF UNEMPLOYMENT DISCOVERED

Frank Press, Carter's science advisor on leave from geophysics at M.I.T., is concerned about stagnation in U.S. science and technology. In an Alumni Lecture at M.I.T., Press said, "I think we are on an inventive plateau, a kind of pause you'd almost expect because we had such explosive growth .... and could that, in part, explain why we have a global situation in which several nations are competing to sell each other the same or similar products — automobiles, steel, television, shoes, etc.?"

Continuing, he said, this may "be the reason why so many countries are facing a situation of continuing high unemployment — because so few new industries and social innovations are being created which can absorb our trained and untrained youth." ... "We badly need some new directions, and science and technology could play a role in providing them ... Perhaps we are seeing the beginning of this movement in today's advances in microbiology, enzymology, molecular biology and recombinant DNA." ... "Another new direction lies in an area which we entered with some enthusiasm, only to fall back with some disenchantment. That is space."

Apparently, for the rulers' experts, the big technology remains the big hope.

—based on *Boston Globe,* Oct. 9, 1977

AUTOMATING COPS

Quasar Corporation is marketing robot, Century I, for a security guard. It weighs 650 lbs., is 7 feet tall and can be programmed to be as vicious as any beserk cop. It's bullet proof, has sensors to detect presence of bad persons, and can stalk and overtake someone at 20 mph. It emits recorded messages and if it doesn't get what it wants it has blinding lights, deafening sound, electric shock and disabling gas. The U.S. Army, not satisfied with Century I, has ordered Century II.

—based on *New York Times,* Sept. 8, 1977

CATFISH ALLIANCE FORMS

In mid-September a coalition of anti-nuclear groups and individuals from the Southeast met near Huntsville, Alabama, to organize and plan for future demonstrations. The coalition (which calls itself the Catfish Alliance) had formed loosely last June, and has grown to encompass the anti-nuclear movement in the entire Southeast. Actions planned for the future include blood donations (since nuclear radiation is correlated with a higher incidence of leukemia) and civil disobedience at the Barnswell reprocessing plant in South Carolina. Their mailing address is: Catfish Alliance, Route 4, Box 332, Scottsboro, Alabama 35768.

—adapted from the *Birmingham Post-Herald,* September 19, 1977

THE PILL, ROUND FOUR

Hazards associated with oral contraceptives continue to be found. A study just published in *Lancet,* a prestigious British journal, finds new evidence for increased mortality due to cardiovascular disease in pill-users. The study involved 1,400 general practitioners in England and followed 46,000 women, half of whom were taking the pill when the study began 9 years ago; the other half were controls.

It is concluded that mortality, adjusted for age, is 4.7 times higher for pill-users, and that the risk is increased substantially in older women, in women who have taken the pill for more than five years, and in cigarette smokers. The study found new dangers in high blood pressure and bleeding within the skull, in addition the previously recognized hazards: blood clots, heart attacks and strokes.

The U.S. drug industry initially responded to the study with uncharacteristic reserve. A Pharmaceutical Manufacturers Association spokesperson was quoted saying that the study would have to be valuated and if warranted, that prescribing criteria and patient information might have to be changed. Since part of the funding for this study came from several large pill producers, they presumably endorsed the study design, and perhaps have been aware of its findings for some time.

A related finding in the research is that the risks associated with the pill exceed those due to pregnancy complications in the control group, the reverse of the previous claim that taking the pill is safer than becoming pregnant.

—*Lancet,* Oct. 8, 1977,
New York Times, Oct. 19, 1977

UPDATE ON PRETERM

One year ago 44 women health workers went on strike against Preterm, a women's gynecological and abortion clinic in Boston (see "Clinic Workers Strike for your Health, *SftP,* May/June 1977). Although the picketing ended in April, the women have not given up the fight. In September they learned that the NLRB planned to issue a ruling favorable to the strikers, stating the Preterm's unfair labor practices provoked the strike. This ruling would force Preterm to rehire them with back pay dating from March.

During the NLRB trial in March the strikers offered to unconditionally return to their jobs, in an act of good faith. In May a few people returned to work. It is important to understand that these workers are not breaking the strike, but rather are abiding by the offer made in March.

Because of the pending NLRB decision, Preterm has recently asked one third of the strikers to return to work. As long as Preterm has to pay the strikers anyway, they would rather have them working. This does not mean, however, that Preterm accepts the judge's ruling; there are still approximately ten workers whom Preterm refuses to reinstate. The blacklisted women will continue to fight for their jobs. They want to go back to work — soon, and with a union contract.

SEVESO: ZONA INFESTATA

Paolo Strigini and Annamaria Torriani-Gorini

At 12:40 p.m. I was having lunch with my family in the backyard . . . My wife was making coffee and we feel a beastly stink . . . I said, let's go inside, that one can't resist . . . Ten days later they say it was dioxin. So we could have died ten times . . . The health officer said, it's nothing, it's nothing.

Someone who has worked twenty, thirty years to build a house for himself, I don't think will leave it like that . . . for this dioxin . . . if it's really there.(1)

On July 10, 1976, in the early afternoon a stinking cloud invades the air of Seveso, a small industrial town ten miles north of Milan, Italy. In the nearby town of Meda an explosion has occurred at Icmesa, a chemical plant which produces cosmetics and other products. For at least two generations the people in the area have been used to the worsening fumes and noises of an advanced industrial society. Similar accidents have happened before. If here and there a few trees or vegetables, a few chickens and rabbits or even a sheep (there aren't many sheep around any longer) are poisoned, sometimes a little cash refund may be obtained after litigation with the nearby firm.

People in the area know that nature and the products of the soil are polluted, that air and water are no longer the way they used to be. But the polluters are their main source of employment. The traditional textile and wood family crafts and shops have been replaced or transformed, while agriculture — except for its backyard variety — has all but disappeared. About seventy-five percent of a workforce of 50,000 is employed in manufacturing (Italian average: 35%, quite comparable to the U.S.A.), mostly in furniture, mechanic, chemical and textile shops.(*2*) Most inhabitants are working class suburbanites with large nuclear families. The age composition is skewed in favor of young adults in the productive age due both to a moderate, but steady flow of immigrant workers since the fifties, and to a consistently shortened life expectancy. Death rates in the area (adjusted for the age composition) between 1951 and 1971 have been around 15% higher than the national average,(*2*) which includes areas where medical facilities are much less developed. In spite of this heavy toll, presumably due to pollution inside and outside factories, population has been growing in the same period three times faster than the national average.(*2*) People come here because these are cheap suburbs, offering a variety of jobs and opportunities.

Small Is Beautiful?

In this part of Milan's outskirts only three plants employ more than a thousand workers and a few, like Icmesa, around a hundred.(*4*) The average size of manufacturing firms is below ten employees here, while it is about thirty in Italy and sixty in the U.S.(*4*) Not all these shops are indeed autonomous. Icmesa, for example was bought in 1969 by Givaudan, a Swiss firm affiliated with

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The main source for this article has been a 158-page issue of *Sapere* (December '76), edited by G. Maccacaro, published by "Dedalo", C.P. 362, Bari, Italy, 70100. Crucial information to corroborate some of the major points also comes from two first-hand, critical accounts in English: one by B. Commoner (*Hospital Practice*, Nov. '76, p. 39 and May '77, p.31) and the other by Hayes (*Nature*, Aug. 19 '76, p. 636 and June 2 '77, p. 384). After this was written, a very interesting and long article dealing with hazards due to 2,4,5-T production and use in the U.S. and the history of the controversy between producers and regulatory agencies, including a detailed account of what happened in Seveso, appeared in the *New Yorker* (T. Whiteside: July 25, 1977). *Science* has only printed a glib note on Seveso (July 8, 1977, p. 143), which prompted a letter by the authors of this article. Thanks are due to R. Boughman, for discussing with us his impressions (from the experts meeting in Rome in April '77) and for his technical comments, to G. Cattoretti (University of Milano Medical School) for invaluable information and insights, to M. Lowe, for reviewing our manuscript, and to many others.

Paolo Strigini immigrated from Italy in 1965, and has been working in this country as a molecular biologist. He has been involved with the movement in the US and is now looking for a nonacademic job in environmental economics. Annamaria Torriani-Gorini, with Luigi Gorini, fought for the right to do science in a society free of fascist, racist and sexist bias in Italy, France and the US. She is a molecular biologist at MIT, now an Associate Professor after a long struggle against a conservative, male-dominated university.

This article is dedicated to Giulio Maccacaro (1924-1977), an Italian fighter toward science for the people.

"Enough with industrial secrecy. We must know what is being produced."

The photographs in this article are courtesy of the editorial staff of Sapere.

the Switzerland-based multinational Hoffman-La Roche, a big vitamin and drug seller. Icmesa employed 97 workers, mostly unskilled and growing older, and 44 technicians and administrators, mostly young and inexperienced.*(3)*

The northern outskirts of Milan seem a far cry from those underdeveloped countries where multinationals, such as Hoffman-La Roche, often set their plants. Its inhabitants are stable and relatively prosperous suburbanites, traditionally allied with the Christian Democrats, the moderate, socially heterogeneous coalition — supported by small and big business — that has ruled post-war Italy to the present. While this dominant party, ridden with scandals and inefficiencies, suffered a substantial setback in the last national election (June '76) and lost all the large cities and several regions in the country, it has maintained its full grip on this area and an uneasy control on the region. A generally conformistic outlook, bred by recent memories of poverty and by a traditional Catholic upbringing, and a total dependence on the precarious fortunes of small business make the inhabitants an easy target for political and economic blackmail.

A Poisonous Cloud

Here comes Professor Trabucchi, and says that he will come in and drink our milk. How come a professor says this and then . . . we are told we must drink nothing, or take nothing from the garden ...They say there is just one A zone and we must evacuate like everybody else.(13)

On July 10 the cloud generated by the explosion at Icmesa fell on Seveso, while a persistent acrid smell of phenol quickly reached Milan. Local police were informed of the explosion; on the following Monday, July 12, Icmesa's management also informed the local authorities with a letter which became famous:

> An unaccountable chemical reaction . . . broke the safety valve discharging a cloud of vapours which, after hitting the trees inside the gates of the factory, was pushed by the wind toward Southwest and soon dissolved . . . As we cannot assess the substances carried by such vapours nor their specific effects we have taken care to contact our neighbors, so as to prevent consumption of orchard crops, since we know that the finished product is also used for herbicides.*(4)*

This letter persuaded the authorities that the possible presence of some herbicides was the worst hazard to be expected from Seveso's cloud. The cover-up, helped and prolonged by some officials who should have known better, lasted ten days. On July 13, Dr. G. Ghetti,* a local health officer, based his report to the regional health authorities on the Icmesa letter, transmitting the misinformation almost word-for-word. After animal deaths and the first skin rashes in children were reported (July 15), Dr. Ghetti allegedly sent another letter (no phone call), which apparently took five days to reach Milan, ten miles away.*(4)* Later, while dozens of people were suffering from poisoning, Senator (Christian-Democrat) G. Trabucchi, professor of pharmacology at Milan university, addressed a local community meeting with reassuring rhetoric: "I will come and drink milk in your homes." Mr. Jann, the general director of Hoffman-La Roche, warned on the Swiss TV that "Italians, and especially the women, are always complaining: everybody knows that Italians are a highly emotional people . . . Capitalism means progress and progress may occasionally bring some inconvenience."*(3,5)*

Up to July 23, the official rhetoric was "everything is under control"; regional health department chairman, Dr. V. Rivolta, merely cautioned people not to eat fruits

*Ghetti had been a company physician in a nearby factory, where half of the workers died with bladder cancer, while he published a scientific paper on their case and did his best to see that it would not be recognized as an occupational disease (E. Elena in *Icmesa*, cit., p. 58).

and vegetables and children not to play with dirt.

On July 18, however, under pressure from the union locals, Icmesa had been finally closed by order of a local judge; the next day a nearby textile plant, employing a hundred women, was also shut. A delegation from the regional government was sent to Switzerland to inquire and came back on July 20 with the name of the probable poison: dioxin.

July 23rd, the day that "everything is under control," G. Reggiani, director of the Roche Research Center in Geneva, urged evacuation of the area and warned against dioxin's hazards. Three days later, an official letter of Hoffman-La Roche from Basel confirmed such warnings and recommendations and provided the first data. The same day, the regional government ordered evacuation. On July 27, two and a half weeks after the explosion, the first children were finally moved out.

By the beginning of August, about 800 people had been removed from the area southwest of Icmesa and placed by the government in nearby motels. The mass of conflicting statements left evacuees bewildered; homesick and skeptical about the hazard, many tried to go home. The army was called to garrison the Seveso area and to start the clean-up. Givaudan, whose lax policies were responsible for the mess, was, incredibly, put in charge of supervising clean-up operations.

The Ordeal of the People

Dioxin's international fame started with the Vietnam war,*(6,7)* but that experience was largely ignored outside Asia. Almost half South Vietnam's fields and forests were sprayed with defoliants, resulting in ecological damage that will take fifty years to repair and in probable exposure to dioxin —100 times more toxic than cyanide — of 1.3 million people. Among the less disputed diseases in Vietnam attributed to dioxin are disfiguring skin diseases, persistent weakness of eyes and muscles, liver poisoning and cancer, high rate of miscarriage and infant malformations. Insoluble in water, dioxin remains on the ground unchanged for years. Its most serious effects can be expected over a long period and their causal relationship with the poison is difficult to establish.

Difficult problems of public health were raised by the dioxin cloud from Icmesa, such as mapping the poisoned area, assessing people's degree of exposure, gathering medical personnel and facilities for counselling, diagnosis, and treatment. In the case of pregnant women, another issue overshadowed such problems: the right of these women to abortions. A few months earlier, a national referendum to repeal an old-fashioned and rigid anti-abortion law had forced the Italian government to liberalize abortion to some limited extent. Loopholes, tradition and the Catholic hierarchy

"Multinationals should respect land and not destroy it."

stood against application of the law. Only a few hospital facilities are in fact available for such treatment, due to the opposition of many medical directors who owe their positions to local right-wing politicians and due to the resistance of many nurses, often trained in Church-run schools.

The question of pregnant women and dioxin was argued with furor at all levels: scientific (is there real, solid evidence for abnormal births?), religious (should Catholics accept a human-made disaster as God's will?), economic (a subsidy for handicapped infants would have been available: how much?) and political (a special law for Seveso?). The archbishop of Milan let it be known that pious couples, solicited by the church, had offered to adopt the little monsters who might be born.*(12,13)* This offer was possibly a factor in persuading even the most traditional women that the risk was real. On August 11 the regional health department officially recognized that dioxin causes malformation in animals and therefore the same occurrence cannot be ruled out in humans. Providing legal grounds for abortion requests did not end the ordeal of the women. Many physicians took it upon themselves to establish in

each case whether a woman seeking abortion was not in fact moved by immoral motivations.

Hurt, bitter and angry women told a news conference in October some of their experiences.

> *They took me in for the obstetric visit and they were questioning me, why did I want an abortion. I told them it is so scary because of the dioxin and they kept asking whether we are all well in the family . . . I told them I am so scared, also because my husband is in a sanatorium with TB [possibly an occupational disease]. That was it: they stopped asking. Then they snapped: 'If your husband is in a sanatorium, how did you become pregnant?' I told them he came home for the weekend. 'Ha!,' they said, 'so he gave you this nice present!?' At this point I was going to swear, but instead I kept quiet.*
>
> *. . . If babies are not the way they should be, they give us a subsidy or something for child care. But if I have a baby and it is not normal and it is sick, what can I do? Shall I hit this other child over his head? [so as to be free to take care of the abnormal baby] (8)*

After much delay, confusion and secrecy, an outpatient community clinic which treated people with more respect opened at Seveso in the local school, on August 2. From here, women were channelled to a private hospital (Mangiagalli), where the staff also treated them with the respect and attention they deserved. Provisional and incomplete data from the "Mangiagalli" offer a chilling glimpse of the situation. Between August 2 and October 15, 22% of 182 pregnancies ended in spontaneous abortion, compared with a usual local rate of 12% (15% in factory workers). Less complete statistics tend to confirm earlier fears: eight infants with various kinds of birth defects were born between February and June of this year.

Despite the Catholic anti-abortion furor, 28 women chose and obtained therapeutic abortions. Other hundreds, not included in the statistics, chose to live their pregnancy in anguish or to purchase a clandestine abortion. These women were among the first victims of the tragedy that hit a society in which they were second-class citizens.

Mapping and Reclaiming the Disaster Area

The first visible consequence of dioxin poisoning is chloracne, a skin disease which hits small children most severely, but also affects heavily exposed adults, such as factory workers. Chloracne is not a minor ailment, sometimes lasting for years and resulting in permanent disfiguring. Between three and six hundred children with chloracne — the diagnosis is not always easy — were reported as of April '77, many in Seveso within two miles southwest of Icmesa, but also spread around in an area of about 20 square miles, inhabited by 100,000 people. As chloracne is largely due to individual skin response to chloro-carbon compounds, absence of visible symptoms does not rule out other medical risks. Therefore, mapping the area of dioxin fallout was an urgent and crucial task that could not be achieved on the basis of the damage already visible.

Unlike the clouds spread over Vietnam, Seveso's cloud contained a very high concentration of dioxin and very little if any defoliant, which made it harder to identify the fallout area, since plants are not at all affected by dioxin. Three zones (zone A, B and R) of decreasing pollution and risk were established, using aerial infrared photography, meteorological data concerning the cloud and the first soil samples analyzed. Total evacuation was ordered in zone A; specific or general precautions and vigilance, in zones B and R.

The mapping of the dioxin fallout, a difficult and time-consuming task, is still incomplete. Although techniques used are adequate for mapping purposes, a more sensitive method is required (and available) to detect lower levels of contamination (as may occur in human milk). Hence, new cases of chloracne have been reported for several months after the explosion even outside zone R, prompting new soil assays, which have revealed a wider spreading of the poison than was at first recognized.

For gathering and interpreting official data — which were often kept away from the public and from independent scientists — the local authorities relied on private research groups, who were linked to the very industries responsible for the pollution and who never visited the area. They courted the U.S. military, thought to possess a secret, perfect technical solution to their problems (as they used so much dioxin, they should have known how to handle it). "The farther away, the more expert they are," commented the local people: clearly, it was not mere geographical distance. When a miracle cure for dioxin failed to appear, the same officials who had denied the danger accused the scientists of having generated false optimism and hidden the gravity of the situation. "Technical reasons" were invoked to avoid or postpone urgent, practical decisions. No one in authority wanted simply to be in charge of cleaning up the mess.

The mess was considerable. All small animals died soon after the explosion and all the surviving large ones, in zone A, B and R, were found contaminated and ordered slaughtered in January. Four thousand dead animal bodies stored in sealed containers under alkali and countless plastic bags filled with contaminated leaves and dirt, quickly collected by government personnel, are still littering the A zone. More litter is being constantly accumulated, as the map of the poison grows

more accurate and large. Some litter, with a spirit of vengeance, has been stored within Icmesa's gates for the managers to dispose.

Some collected contaminated material has caught fire, increasing pollution and exposure risks: trichlorophenol, one of the main components of the cloud, is spontaneously condensed into dioxin, at temperatures between 500 and 600 degrees Celsius. Domestic cleanings with water, detergents and petrol —rather than neutral soap, as recommended by the Vietnamese — have also caused new victims. The total amount of dioxin fallout — which can only be calculated indirectly — is estimated at somewhere between one-half kilogram and 100 kilograms. About 20 kilograms of the poison — enough to kill millions — are said to be still in the factory's reaction chamber.

The Ministry of Health assembled an international committee of scientists in Rome in April '77. Instead of Matthew Meselson, perhaps the best-known expert on dioxin poisoning, who became famous for his fight against the Pentagon's experts during the Vietnam war, they invited a Nobel-prize-winning chemist who knows probably nothing about dioxin, except what he may have learned by sitting on the board of directors of Dow Chemical. Since the experts soon realized the impossibility of burying and sealing safely everything that was contaminated the dioxin had to be destroyed. The best technical remedy seems to be incineration, which requires removing the topsoil from the whole fallout area and burning it in special sealed ovens for at least half an hour at 1,000 degrees Celsius. Lower temperatures would risk producing more dioxin (from trichlorophenol), rather than destroying it. It has been calculated that 100,000 metric tons of dirt would have to be incinerated, with an estimated cost of $100 million, which does not include the value of what would be burned, including the buildings and everything they contain. This solution is being presently implemented by the Pentagon for disposing of its dioxin-containing war stocks. Risky as this solution is, delay may be more risky, so the Italian government plans a complete reclamation of the area, except for the most heavily contaminated parts of zone A, by the end of the summer.

A major uncertainty is the extent to which dioxin may already have spread out of the original fallout area. Although insoluble in water, dioxin is not necessarily forever immobile on the ground, as it can be mechanically transported by water, as well as by animals and people. During the fall it rained heavily and the swollen Seveso river, which crosses the area, provoked floods as far as downtown Milan. Alarming amounts of the poison have been detected in river sediments. No one knows how much dioxin will reach the regional water system, used by ten million people. Monitoring fishes and other animals, probably the best way to find out, was recommended in August by the Vietnamese.

No solution, however, at this point can be perfect. The ten-day delay on the part of the Icmesa managers and owners in disclosing the hazard and the consequent indecisive — at times, outrageous — conduct of some government officials have already caused a prolonged exposure of thousands. Furthermore, the explosion itself was probably not an unpredictable accident, but the result of criminal carelessness on the part of the corporate capitalists and the government.

Chemistry in the Real World

A group of workers, technicians and scientists from a large state industrial research center near Milan has researched, with people from Seveso, a revealing account of the production cycle during which the accident occurred.*(3)* The report describes the technical characteristics of the chemical reagents and of the equipment used to convert TCB (tetrachlorobenzene) into TCP (trichlorophenol). The report also analyzes the chemical reactions involved and the economic reasons for the various industrial patents, such as Givaudan's, Rindgewood's and Dow Chemical's. Demand for TCP is high, especially in Europe and the U.S., for the production of several defoliants for agricultural and military use and of disinfectants for the drug industry.

The production cycle of TCP basically consists of four steps: (1)alkaline hydrolysis of TCB into Sodium-TCP, (2)acidification of the latter into TCP, (3)separation and purification of this product and (4) recovery of the solvents used in the first step. The yield of the reactions that lead to TCP depends mainly on the conditions during the first step, such as duration, temperature and amounts of solvents present. Such conditions, however, also determine the rate of undesired side-reactions which produce impurities, such as dioxin. Economic and political factors are generally ignored in textbooks, political factors in patents and human work in both. Chemical processes are usually presented to students as nature's own work and to industrialists as recipes, to be followed by impervious robots. These attitudes, according to the report, reflect both the capitalist ideology of science and the capitalist production system.

Industrial chemistry comes alive as the report*(3)* describes in detail, among other things, the job of the shift worker and the daily laborer (three skilled workers in three shifts around the clock and one unskilled, from eight to four) who handled the crucial equipment at Icmesa. The first shift worker, who has already prepared and checked the equipment, starts the cycle at 8 a.m. by injecting 3,000 liters of organic solvents into the chamber. He then opens the huge lid, after rechecking all the valves, and makes sure that a slight negative pressure is maintained as he helps the daily worker to load it with the dry reagents. The two, standing on a mobile platform, tear open with a knife, and then pour into the

"Zone A. Polluted Zone. Access Absolutely Forbidden."

chamber, 47 fifty-kilogram bags of caustic powders. By the time loading is over and the lid closed and checked, it is time for lunch, but the daily worker has still to wash away the spilled powder, by splashing the floor and the equipment with a water jet pump, possibly while nibbling at his sandwich. The water left on the concrete floor dries "naturally," the rest is discharged into the sewage through a purification device...which has been broken for a year. Most water discharged from other parts of the plant, carrying organic solvents and other toxic chemicals, goes directly into the sewage or the fields, with not even the good-will intermediary of a broken device.

Although these workers appear to think and operate like Ph.D.'s in chemistry, no Ph.D. is required to understand that at some point something may easily go wrong. By examining further the job description and the chemistry involved, however, one realizes that both the causes and the consequences of what in fact went wrong had been built into the technical scheme.

Besides using equipment that had been constructed and previously used for a different purpose, the Icmesa management had introduced improvements in the process, as described by the Givaudan patent. The most important one consisted of recycling the expensive solvents during the first step rather than at the end of the production cycle. Such an "improvement" allowed the firm to save solvents and use fewer workers. Unfortunately, this also meant that, because the mixture was less diluted, temperature changes could occur more quickly and run out of control. Further, as the temperature increased, dioxin formed faster. One such "unaccountable chemical reaction" — in the words of the Icmesa management — must have occurred on July 10, 1976. Not only was an explosion very likely to occur, but in such a case the cloud over Seveso was entirely predictable, since the safety valve for the most dangerous step discharged in the air, over the rooftop of the plant.

Legal Responsibilities

The reasons for the position of this discharge valve are easy to imagine,*(3,4)* as minor accidents, given the technical set up, must have been rather common at this particular step. If the valve had been inside, minimal spills of dioxin would have heavily affected the workers. The existence of a chemical hazard could no longer be kept secret from the workers, the unions and the labor department. This, Icmesa wanted very badly to prevent, in order to avoid costly control devices and expensive injunctions, including the need for more skilled workers. Minimal spills of dioxin in the atmosphere, on the contrary — so thought presumably the managers — would be unnoticeable in the poisonous cocktail of an industrial area's air. The news of the major spill of July 10 must have been chilling for those who knew the danger.

Three Icmesa managers, Mr. Von Zwhel, Mr. Paoletti and Mr. Radice, were arrested (and paroled) soon after the explosion and indicted with causing a criminal disaster. Similar charges have been pressed against Dr. Ghetti and his colleague in the local health office and against the mayor of the town where Icmesa is located.(4)

The responsibility goes further. The health and labor department apparently knew nothing of what was going on at Icmesa.*(3,4,10)* As far back as 1972, an official request to disclose a detailed list of the chemicals, the processes and the resulting fumes involved in the Icmesa production, had been filed by an environmental protection agency newly established in the region. It took three years for the management to comply (it had been given a month) and its list was incomplete and deceptive. No inspection took place until after the explosion. It is claimed that, if the labor inspectors should visit more than perfunctorily every single shop — and the small ones are often the worst — they could only come back for a recheck after perhaps fifty years. This may excuse the inspectors, but not the politicians who are supposed to redress the inadequacies of the law, nor the high executive officers in charge of coordinating the various control agencies.

Besides the local managers and officers — the easiest to catch — others should have known of, and were responsible for the Icmesa production. although outside the Italian jurisdiction, Mr. Waldvogel, Mr. Sambeth and Mr. Moeri of Givaudan have been also indicted with causing a criminal disaster.*(4)* This has not prevented their bargaining with the Italian government and releasing interviews while, of course, continuing their business between Italy, Switzerland and other parts of the Hoffman empire. To the Swiss press, Givaudan's president Mr. Waldvogel boasted in July "we'll pay everything" and Hoffman-La Roche president Mr. Jann echoed in August "we have enough financial resources for a total indemnification." Precedents, however, are not encouraging. In 1973 the British government, after years of litigation with Hoffman-La Roche, was able to prove substantial embezzlement in the complex accounting between local firms and their Swiss headquarters, but unable to obtain any refund to the British public.(4)

A History of Horrors

When asked about the use of Icmesa's product, TCP, one Givaudan officer said it was for cosmetics and another said for defoliants. This TCP, given the production methods used, was so dirty with dioxin that its inclusion in cosmetics should be unthinkable, and only slightly less horrifying for defoliants. Sale of such defoliants would also raise problems, since the maximum concentration of dioxin legally tolerated in most countries, including Italy, has long been at least a hundred times lower (in Switzerland a thousand times lower) than it was presumably in the Icmesa product. Many countries have banned such TCP-based defoliants after the Vietnam war. But dirty defoliants are cheap. Unscrupulous or uneducated farmers welcome this sort of defoliant —in Italy they buy it in unmarked bags for their rice paddies — but the main traditional outlet for such products has been the Third World.

Ecocide and genocide go hand in hand. The history of dioxin and defoliants has been mingled with recent military history, from Vietnam's to Brazil's jungles and from colonial Portugal to South Africa. Between 1969 and 1972 two U.S. commissions,*(6,7)* one from the American Association for the Advancement of Science (AAAS) and one from the National Academy of Science (NAS), has tried to collect data concerning use and effects of defoliants in South Vietnam. In spite of political interference, such work led to Congressional stoppage of defoliant use in Vietnam in 1970; to its international ban from all military operations (Geneva agreement, 1972); and to stricter standards and partial bans for agriculture in the U.S. and elsewhere.*(11)* The Pentagon, however, officially knows nothing about dioxin. One year later an imaginative businessman from New Jersey, Arnold Livingstone,*(7)* tried to buy the $16 million leftover stock of "agent orange" from the U.S. Air Force to resell it in Latin America and South Africa; the deal was stopped just short of its conclusion by bad publicity.

Military and business ignorance — or secrecy — go hand in hand. Estimated yearly production of defoliants in the U.S. between 1960 and 1970 has soared from 33,000 to 175,000 tons. While global production of defoliants is hard to assess because of business secrecy, its size has obviously resulted in dioxin exposure not only of unaware people and cattle, but also of the workers who, equally unaware, handle such production. From a series of known — but quickly hushed up — industrial accidents in the U.S., Germany, the Netherlands, France and Britain, some reports concerning occupational diseases due to dioxin are to be found in specialized medical journals. The companies' archives (like the military's), if they deal with such trivial matters, are not accessible to the public.

Publicity cannot be avoided, however, when a lady is killed by defoliant in her villa in France, precious race horses are poisoned in Missouri, or a major disaster occurs, such as in Seveso, in an advanced industrial country. Industry's response, then, has been traditionally two-fold: first, plants hit by publicity are closed, while an improved technology is claimed to produce more expensive, but clean products; second, sweatshops like Icmesa multiply, making cheap dirty products in a semi-clandestine manner.

Progress in our chemical understanding of the environment has proved indispensable to identify and to

fight actual or potential hazards. Botanist A. Galston, *(10)* for instance, has warned since 1969 against the public danger involved in deforestation of the paths for power lines throughout the U.S. It has appeared clearly in this case that often the distinction between dirty and clean defoliants is meaningless. Both are easily converted in nature into pure dioxin at sufficiently high temperature, such as by forest fires or by burning treated wood in your kitchen, fireplace or campfire. Dioxin can also reach humans through the animal food chain.

The economic value of such defoliants and herbicides has been challenged by I. Oka and D. Pimentel,*(10)* who showed that treatment of corn reduces the food value of the crop and makes it more susceptible to insects. Thus, demands for chemical fertilizers, pesticides and defoliants —many of them environmental hazards —reinforce each other.(12) Sure enough, dioxin has now been detected in human milk in this country.*(13)*

As scientific and legal battle against chemical hazards multiply, some environmentalists have concluded that "the enemy is us." Others, while engaging in such battles, are learning to extend their concern for the human environment to its social components and to the economic and political forces that are responsible for its technological distortion and degradation.

Environmental (and Other) Blackmail

Too many scientists try to measure what is the maximum tolerable level of a poison, like dioxin, which should be zero; what is the best treatment for exposed people or animals, which is to prevent or at least stop their exposure; or what is the best reclamation technique, which is not to produce the poison. Many scientists are inclined to seek technically brilliant solutions within the terms of the problem which they are given.

The demand for defoliants can be checked to some extent by the law. Laws may force firms to install purification devices and even to keep them operational. Existence or lack of enforced standards finally determines how much and where dirty or "clean" defoliants are sold. Adequate laws, however, cannot be enacted or enforced because business forces people to accept dirty and dangerous jobs for themselves, polluting industries for their communities' development and contaminated products for their consumption. Confusion, ignorance and fear are fostered by as much religious, scientific, legal, economic and political deception as big business is able to command to support its environmental blackmail.

After the tragedy of Seveso, under the pressure of an outraged population and an alerted public opinion, better laws may be enacted and better means can be found to enforce them at the local, national and international level. A more comprehensive understanding of our chemical environment, inside and outside factories, may be developed. Scientists may learn to denounce loudly and clearly false problems and wrong solutions in real life, with the intellectual rigor, imagination and persistence they display in their professional capacities. Progressive people of all nations may learn from Italian groups — such as those that have inspired this article — and help them to do what is to be done. But all this may not be enough to break the international vicious circle of environmental blackmail. For this purpose, scientists may have to learn to develop democratic forms of organization that prevent science from being used against the people. Scientific and other specialized knowledge must be combined with all the power, the intelligence and the experience of the real world which the people, oppressed and exploited through social and economic inequalities, can command.□

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CURRENT OPINION

Scientists Must Oppose the Neutron Bomb and All Military Research

The production of the N-bomb (neutron bomb) by the U.S. following the development of the cruise missile is an indication of the arms race waged by the two super-powers despite endless disarmament talks. It brings forward once again the need and responsibility of all progressive-minded people in the scientific community to oppose and resist military research which is clearly directed towards another war, even a World War between the U.S. and U.S.S.R. The neutron bomb is a low-yield atomic device designed to be fired as 8-inch artillery projectiles or as warheads attached to the small Lance missile. The bomb is programmed to detonate 300 feet above ground. An average-sized N-bomb will produce an explosion the equivalent of 1000 tons of T.N.T., generate less heat and blast than other nuclear detonations but more neutrons and gamma radiation lethal to living matter in a radius of 1 mile plus. People in the immediate vicinity will become incapacitated instantaneously and die in less than a couple of days. Others outside this area who are exposed will be functionally impaired until death some weeks later. Suffering from radiation sickness will be intense and prolonged. Those on the periphery of the neutrons' reach might develop cancers and eye cataracts.

Advanced technology weaponry like the N-bomb has been primarily developed for a war in Europe, which, because of its highly developed industry, labor and market, is coveted by both the superpowers. In this context the N-bomb, lauded by its makers as being able to preserve property while destroying people and described as the ultimate capitalist weapon, would serve the interests of capitalism by helping maintain the highly profitable industrial capacity in Europe. One military spokesman, alluding to one of the more famous quotes of the Vietnam War, even stated that we will now be able to "save those cities without destroying them." The N-bomb, like other anti-personnel weapons, can and will be used to quell a people fighting for independence and socialism. This is just how anti-personnel weapons were used in Vietnam.

It is hard to see how nuclear confrontation with the N-bomb could be "limited." Faced with a deteriorating economic and political situation at home, the growing struggles of working people for a decent life and the determined opposition from Third World people fighting for independence and socialism, those in power can be expected to use new technology to up their war preparations more than ever to safeguard their investments, profits, markets, raw materials and cheap labor around the world.

The question that we in Science for the People should consider is what we as concerned scientists do to expose and oppose the increasing war preparations being made. Our organization has its origins in the anti-Vietnam war movement in this country and we should recognize the important role we, as scientists opposed to the war, played in exposing and opposing war research and war material production. The war which looms over the horizon is an inter-imperialist war between the two superpowers in which working people from both countries, and their "allies," will be used as cannon fodder to defend the profits of the capitalists. We will be told that it is the Soviet Union which is preparing to attack us, and therefore we need to develop weaponry to defend ourselves. The rulers of the U.S.S.R. are telling their people likewise. Our task should be to expose and oppose — in writing and in action — military-oriented research and development and war preparations, recognizing that profit-motivated interests distort the purpose of science. While science research is being cut back as a whole, military-oriented research is being increased. We hope readers of *Science for the People* can respond to this issue in the context of work and action we can undertake.

Frank Rosenthal &
Sadu Sadanand

resources

Tallahassee SftP

With this issue we start a new section. We want this continuing section to provide access to useful resources of all kinds. This usually means lists of books, pamphlets, films, and periodicals. We hope that this section can do this and more — we hope to include such things as requests for technical assistance, announcements about skills and services available from individuals, groups and organizations, notices of interesting dissertations, conferences and conventions. We encourage our readers to send items and suggestions for this column to Tallahassee SftP, c/o Progressive Technology, P.O. Box 20049, Tallahassee, FL 32304.

Women's Health Care: Resources, Writings, Bibliography. By Belita Cowan; 556 Second Street, Ann Arbor, Michigan 48103. 52 pp, $4.00, 1977 edition. Splendid . . . you'll have to see it to believe it. A very complete listing of organizations, periodicals, films, readings, etc. that relate to sterilization abuse, gynecological self-help, malpractice, childbirth, women in the health professions, menopause, abortion, birth control, rape prevention, sexuality and much more.

Charles P. Steinmetz: Scientist and Socialist (1865-1923). By Sender Garlin, 1977, $1.50, Occasional Paper #22. Includes full text of correspondence between Steinmetz and Lenin plus much more. Order from the American Institute for Marxist Studies, 20 East 30th Street, New York, New York 10016.

"The Gang of Four and Chinese Science," by John Gardner, *Bulletin of the Atomic Scientists,* September 1977. A six-page article that gives an explanation of some of the changes in Chinese science after the change in leadership.

The Menace of Atomic Energy, Ralph Nader and John Abbotts, 400 pp, 1977, $10.50. W.W. Norton. After a quick rundown of the history of nuclear energy, it carefully traces through all of the environmental, safety, and economic problems associated with nuclear energy.

The Health of Women at Work, Vilma Hunt, $6.00, Program on Women; 619 Emerson, Evanston, Illinois 60201.

"Sexism in Elementary Math Textbooks," Barbara Steele, *Edcentric,* P.O. Box 10085, Eugene, Oregon 97401. Spring/Summer 1977 issue.

The Great Atlantic Radio Conspiracy, 2743 Maryland Avenue, Baltimore, Maryland 21218. This group has several 30-minute tapes that can be useful for study groups, classroom use, etc. Though they cover a full range of political topics, the ones most likely to strike a good tone with our readers are ones like so: "Science for the People," "Free Clinics," "The IQ Fallacy," "Eating for Fun and Anti-Profit," "Capitalism and the Food Industry," "Health Care in America," "Ma Bell," "Death of Professionalism," "Politics of Mental Health," "The Great Utilities Ripoff," "Politics of the Energy Crisis," "The Stuff They Put in Food," "Sketchbook for a Radical Academics Manual," "Health Care in Cuba," "Abortion — Woman's Right," "The Politics of Psychosurgery," "Witches, Midwives, and Nurses," "The Politics of Hunger," and "Working May Kill You." All done from a radical perspective of course . . . $3.50 per program (cassette).

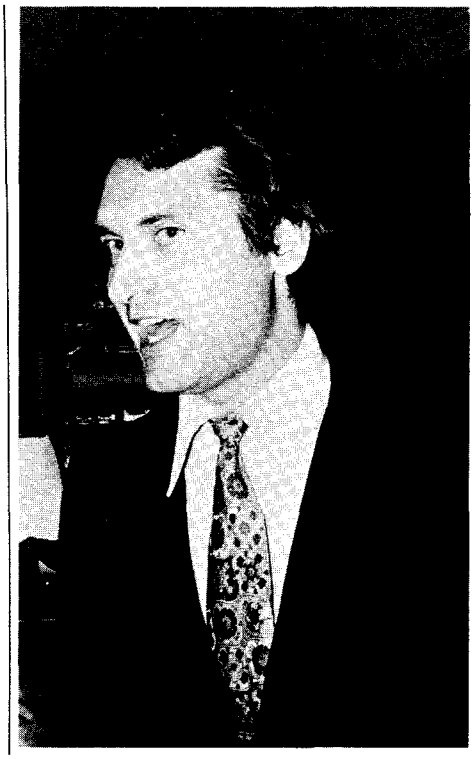
Marx and Science by J.D. Bernal, 1952, 48pp. Copies of this (now out-of-print) pamphlet are available for the cost of postage (two 13¢ stamps) from Tallahasse SftP

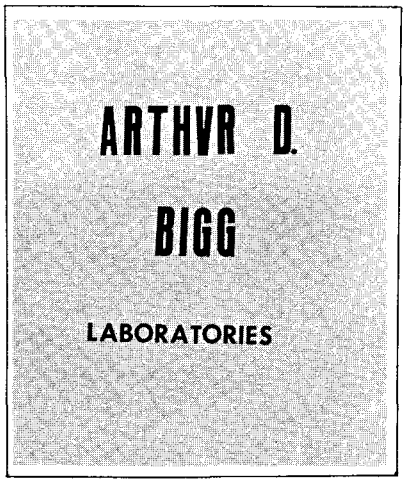
Mathematics in the Time of the Pharaohs, by Richard J. Gillings, MIT Press, 286 pp., $25.00. It tries to pierce the fog of racist distortions which still cloud the whole subject of non-European science history. It uncovers some mathematical myths. Gilling's mathematical detective work makes interesting reading — anyone who remembers high school mathematics can easily follow it. This book got a positive review from *Freedomways.*

Karen Norberg

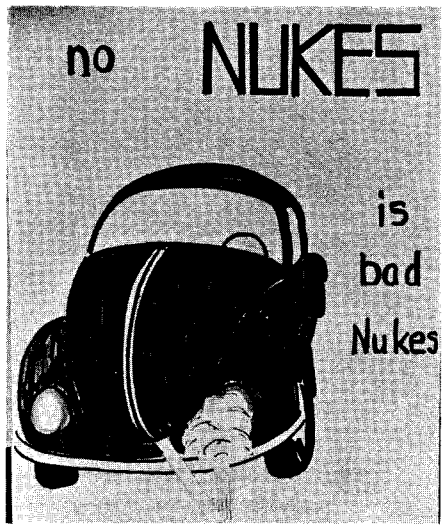
The Geological Imperative: Anthropology and Development in the Amazon Basin of South America, Anthropology Resource Center, P.O. Box 90, Cambridge, Mass. 02138, 106pp, $3.00. Effects of mineral exploration on indigenous peoples.

Have you ever needed a book and discovered that it is not in the local library and that it is no longer available from the publisher? Then you need a good out-of-print book searcher. The best one we know of who specializes in locating progressive materials is All Points of View, P.O. Box 321, San Antonio, Texas 78292. This guy has been known to locate such titles as *Science for Peace & Socialism,* Bernal & Cornforth; *The Struggle Between Science and Superstition,* Lewis; *Science and Revolution,* Unterman; *The Crisis in Physics,* Christopher Caudwell; *Biology & Marxism,* Prenant; *A Scientist Among the Soviets,* J. Huxley; *Out of the Night,* H.J. Muller; *Science and Idealism,* Cornforth; *Atomic Imperialism,* Allen; and many more. This is important reading of one is trying to get a handle on the various historical precedents to the present day science activist movement.





LABORATORY!



Laboratory! *was collectively written by several members of Boston SftP's political theater group, the Fuming Hoods. This play, while not the most detailed theoretical political argument, has proved to be an entertaining method of communicating basic ideas of "science for the people." Over the past several months, the Hoods have been entertaining and educating both members of SftP and people outside the organization with this play and other skits on nutrition, occupational health and safety, agribusiness, political economy and nuclear energy. People are encouraged to use this script to perform* Laboratory!, *adapting it to their own purposes. The Editorial Committee also encourages people to submit more material like this — fiction, poetry, theatre, art — to the magazine. For more information about the Hoods, scripts, bookings, etc , please contact the Boston SftP office.*

—E.C.

continued on next page

LABORATORY! An SftP Play in One Act

Action takes place at Arthur D. Bigg Laboratories, a scientific research and consulting firm.

CHARACTERS:

Management people:

MGR — Manager who develops management decisions (male)

PR — Public relations V.P. who presents management decisions to employees and stockholders (male)

BIGG — Mr. Bigg himself, principal stockholder and Chairman of the Board of Arthur D. Bigg Laboratories, Inc. (Overwhelming but silent personality) (male)

Laboratory workers:

D — Dishwasher, lab worker employed to clean and maintain glassware. She suggests first good project and her political consciousness is quickly raised (female).

LW — Lab worker who makes comments indicating cynicism. Consciousness raised slowly (male)

TECH — Technician and organizer (female)

SCI— Scientist who heads lab group. He quickly joins protest, but has elitist tendencies with which rest of group has to contend (male).

SCENES:

1. Presentation to employees of call for research proposals

2. Workers' discussion, good proposals suggested

3. Management chooses a proposal

4. Presentation of choice to employees and stockholders

5. Workers' consciousness is raised

6. Organizing

7. Management response: review organizing, choose alternate project

8. Workers realize need for larger organization

SCENE 1

Scene—Lunch in lab at Arthur D. Bigg. LW and TECH are seated at table. D is washing glassware at side of stage behind LW. SCI enters with PR.

SCI: Can I have your attention? Sorry I have to break into your free period, but it's the only time you're allowed together. We have a guest from upstairs who's come to read you an important announcement. I'd like to present Dan Fronkelsnortz. Dan . . .

PR: Thank you. I have the pleasure of announcing that . . .

(Reading)

Arthur D. Bigg, inventor of Captain Cardboard Cereal and Talcum Seltzer Menthol, who developed the oil slick eater for Accidental Petroleum, whose sociologists proved that sickle cell anemia is a communist plot, along with the hammerhead shark, takes this opportunity to call for research proposals.

In appreciation of outstanding achievement, we invite those in our employ to further contribute to the progress of science by bringing the latest advances in technology within grasp of the common man. The Bigg Foundation will itself sponsor the chosen research project.

Relatives and employees of the Arthur D. Bigg Corporation, the Bigg Foundation, and Global Advertising are all eligible to enter. Void where prohibited.

PR: Thank you, gentlemen.

Women: Mmmpf!

(PR leaves, escorted by SCI)

SCENE 2

Scene — Same as scene 1.

TECH: *(To LW)* Wow! That's the first time I've ever heard them call for proposals.

LW: Me too, and I've been working here for ten years. I wonder what's up.

D: *(Who has been washing glassware quietly at side of stage)* Where do these research projects we work on usually come from?

LW: Oh, hi Ruth. I didn't see you come in.

TECH: Well, whenever a big corporation like Talcum Seltzer or General Swill wants to solve a problem or develop a new product they come to Arthur D. Bigg. They never do any of that stuff themselves.

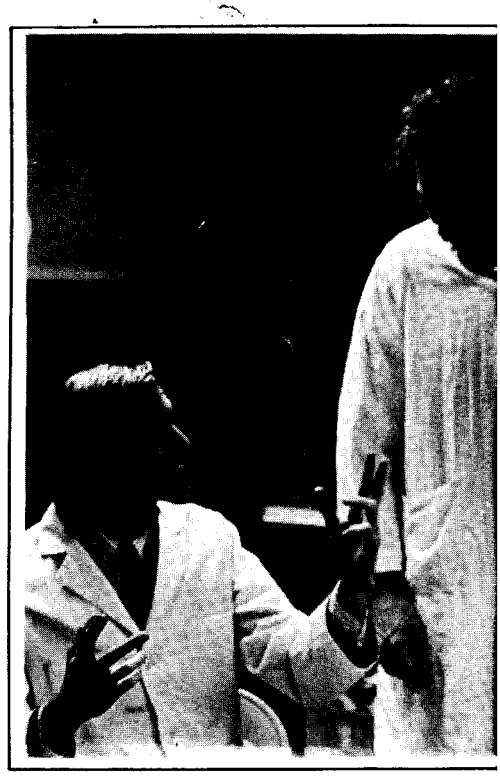
D: I don't blame them! I wish there was some place we could go. I got pissed this morning. Mr. Scientist blamed me for dirty glassware. But it's the distilled water rinse that runs through this machine. The pipes are bad. But he won't listen; he doesn't even know my name . . .

LW: Well, Mr. Bigg is asking for proposals. Maybe we could figure out a natural water purification process which . . .

D: Sure, but he wasn't asking me. What do I know about science — nothing; what has he taught me — nothing.

TECH: Well, we can submit a proposal. We work here too. What if we ask Scott; he knows a lot and maybe he could help us design it. It could be designed so each house could have clean water without adding chemicals. It would be a lot cheaper if it works.

SCI: *(Entering)* I've got it, folks! I think we can really win Mr. Bigg's contest. Why don't we design a solar energy panel which could generate enough heat to beat Gas and Electric increases.



The photos accompanying this play are the worl

TECH: Well, wait a minute. Ruth was just complaining about the lousy water in this lab, so we were talking about working on a water purification process which would also help everyone. But we can't do it alone. Do you think you could help us with the specifications?

SCI: OK, sure. But I can't do mine alone either . . .

D: Look — I like both ideas. Why don't we do them together. Bent, you work with me first and Kathy and Scott could start on the panel. At this rate we could have them both out in a few weeks.

(All exit, talking animatedly)

SCENE 3

Scene — Boardroom of Arthur D. Bigg. Bigg enters, followed by MGR and PR. All sit at table: Bigg with back to audience, MGR and PR at sides of table, so they can address BIGG and audience simultaneously)

MGR: *(With a pile of proposals)* Mr. Bigg, today we will select from this pile of proposals the one which will best serve the needs of Arthur D. Bigg, Incorporated. As you well know, our company, as a result of our past successes, has accumulated a large amount of capital, which needs to be invested in a profitable enterprise.

BIGG: *(Nods)*

PR: *(Grabbing a proposal)* The Osmotic Water Purifier is very impressive. With the increasing water shortages the market should be large. But, the theoretical studies show that it can only be built as large units and would therefore tend to become a regulated public utility.

The studies also suggest that the units would be very durable and therefore offer no hope of continuing sales.

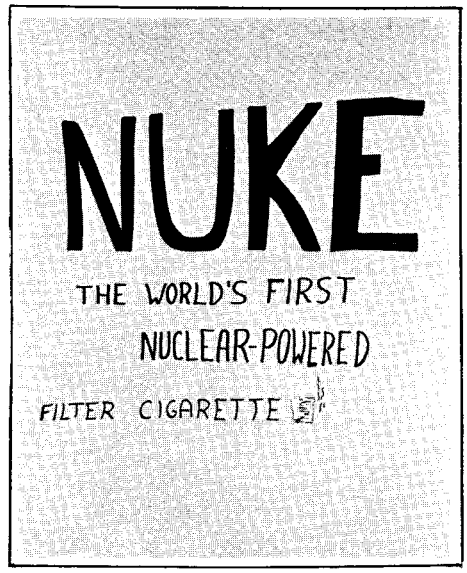
MGR: The solar heating units have a similar problem in that even though the initial market would be large, the continuing sales would tend to be low because of the durability of the units. The nuclear-powered cigarette filter, on the other hand, has definite advantages in that smokers will buy a new one with each cigarette.

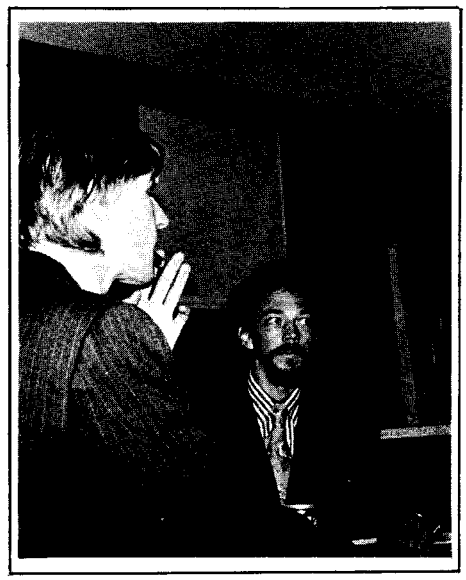
PR: Yes. It can also be promoted as a cure for cancer, that is, A Public Health Benefit.

MGR: After the development we'll have no more expenses, but will collect a profit for each cigarette sold. There's also a very good chance that we can get contracts from municipal sanitation departments to handle the special disposal problems which will be created by the radioactivity of the filters.

BIGG: *(Getting up)* Then it's settled. The nuclear-powered cigarette filter will be developed and promoted as the next cure for cancer. *(Strikes fist on table)*

Bob Shapiro, a member of the Boston SftP chapter.





SCENE 4

Scene — PR is giving a flip-chart presentation to a combined employee, stockholder meeting. Actors, except for SCI, melt into audience, which forms the audience for the presentation.

PR: *(First page of flip chart saying "Arthur D. Bigg Laboratories")* Good morning, gentlemen.

Women: What?!!

PR: And secretaries.

Women: Mmmpf!

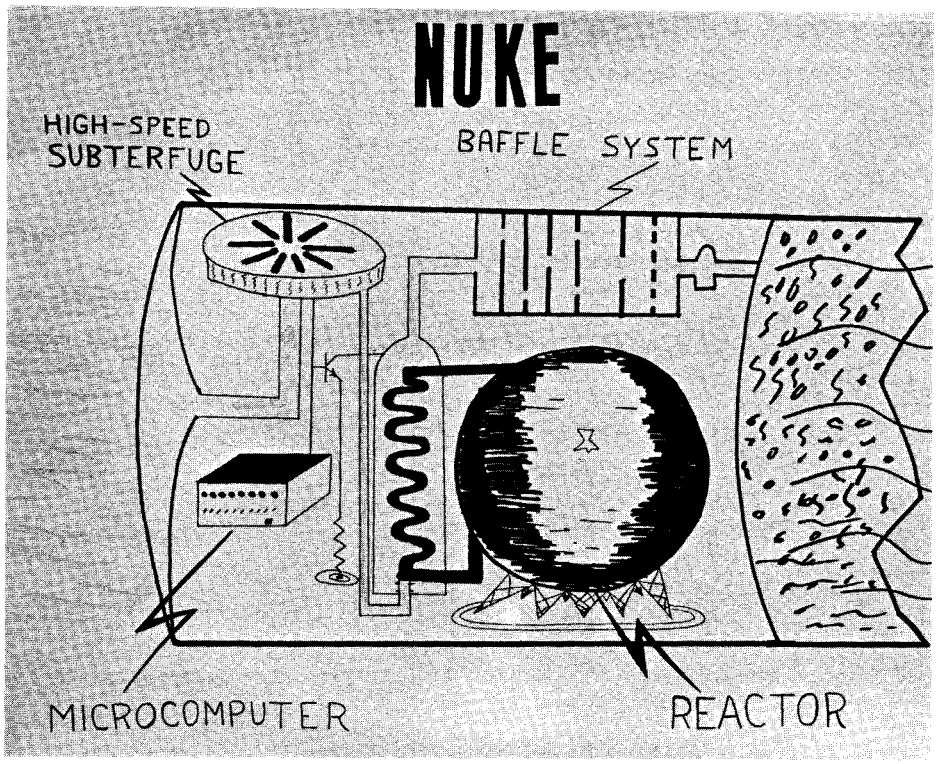
PR: Today I have the despicable honor of announcing to this joint employee, stockholder meeting the winner of the Arthur D. Bigg Research Grant.

(Polite Applause)

PR: Thank you. Now, in the interest of the pursuit of science in the interest of you, the citizens out there, Mr. and Mrs. America, Arthur D. Bigg, Incorporated has endowed a grant for the pursuit of scientific research leading to the development of —

(Flips to page containing:
NUKE
World's First Nuclear-Powered Filter-Tipped Cigarette)

PR: The World's First Nuclear-Powered Filter-Tipped Cigarette!



(Flips to LARK diagram of "Ordinary Cigarette")

PR: That's right! No longer will the world be confined to the primitive ordinary filter cigarette.

(Flips to LARK diagram, entitled "Coal Cigarette")

PR: Or even the more advanced coal cigarette. No! Ladies and gentlemen, Arthur D. Bigg Laboratories presents . . .

(Flips to elaborate diagram of nuclear-powered filter cigarette)

PR: The World's First Nuclear-powered Filter Cigarette!

(Polite applause)

PR: Yes, the cigarette filter complete with nuclear reactor, micro-computer, high-speed subterfuge, selective irradiation and baffle system!

The cigarette filter able to use gamma radiation to break up the tars of cigarette smoke just like gamma radiation breaks down lung tissue! The best hope since they banned Recombinant DNA! The cure for cancer within our lifetimes!

(Polite Applause)

PR: But, you say, will people use it? They'll eat it up. Just look at this advertising campaign Selma Brothers of Global Advertising has sketched out for us. It's got everything. Technical appeal.

(Points to diagram described above.)

PR: Sex appeal. *(Flips to drawing of a woman smoking seductively, with a small mushroom cloud coming from end of cigarette)*

PR: And charisma. *(Flips to drawing of a Volkswagen smoking, with mushroom cloud)*

PR: And think of the macho value! *(Flips to drawing of motorcyclist about to jump canyon, smoking with mushroom cloud)* Who would be caught dead offering a coal cigarette to a woman when the other men are packing Nukes? Why, this will be the biggest thing to hit smoking since Benson and Hedges went metric!

PR: You laugh, but you'll only be smiling when you see these figures compiled by our consulting economist, Kostia Living.

(Flips to pie chart, showing a little more than one-third for Arthur D. Bigg, the rest marked Cancer Society and D.O.D.

PR: While the Bigg Foundation will remain the principal investor and retains control, the National Cancer Society has agreed to make substantial contributions toward the development of a safer cigarette. And, of course, the Department of Defense is interested in military applications.

(Flips to investment-return chart, showing an exponential decrease in investment megabucks-per-year, corresponding increase for profits)

PR: And this speaks for itself. Are there any questions?

TECH: What's that line going down?

PR: That's expenses. The line going up is profits.

(D raises hand)

PR: Yes!

D: Who's going to clean up this world when your butts are through with it?

PR: *(Smile fades, shakes finger in warning)* Seeing as there are *no further questions*, I bid you good morning.

SCENE 5

Scene — Workers are returning to lab following presentation. SCI, having been unable to attend, is already there.

D: Oh no!

SCI: What! What happened to our ideas?

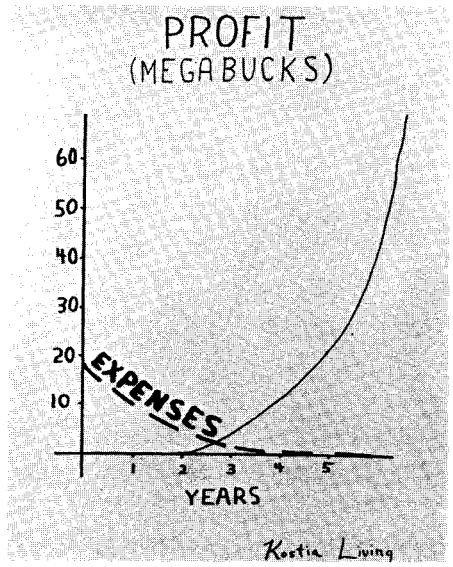
D: Who said they would listen to us?!

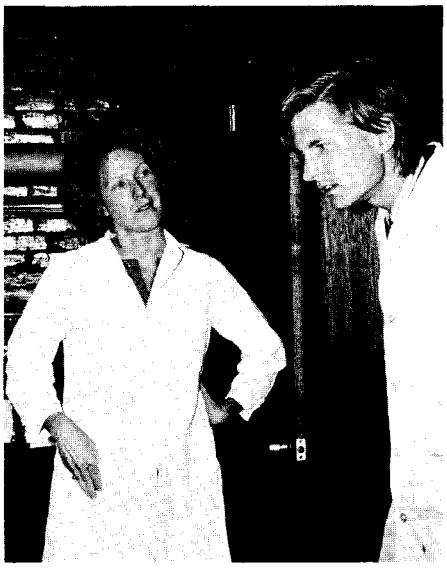
LW: What bullshit!

SCI: *(Realizing)* Oh damn! My water purifier is down the drain! All those non-company hours, my time . . .

LW: *Your* purifier! We all worked it out together! How do you think we feel? We didn't even have a chance.

D: But why, why did they decide on the nuclear-powered filter for a cigarette? It's bad enough we lost, but this is awful.





TECH: Because our ideas were too good. They didn't involve disposable throwaway parts and mushrooming profits.

LW: What do you mean?

TECH: All we'll get is the fallout. Who benefits from our research? Not us! Not the people! Take cancer, for example.

D: You take it. I don't want it.

LW: Isn't most cancer caused by pollution and chemical additives and stuff like that?

D: And places where you work.

TECH: Yeah. If they really wanted to prevent cancer they could clean up the pollution and workplaces. But then business would not be business. You know, most science work is done to make more money for the companies that sponsor us. They've got to get us to invent new things for them to sell. And then they have Charlie upstairs writing jingles to convince us that we need to buy them.

LW: Boy, I hope Starkist catches up with that guy.

TECH: And they keep us so busy arguing amongst ourselves that we don't even see it until it's too late. If we had been organized, we could have stopped it.

D: Yeah!

SCI: We *have* to stop it!

LW: What is to be done?

TECH: Look, we can't talk here. Let's meet at my house.

SCENE 6

Scene — TECH's kitchen table.

D: How can you stand living so close to the plant?

TECH: Beats commuting.

SCI: I think our project was terrific — a tremendous plan. It could have helped millions of . . .

D: Does it make millions?

SCI: Well . . .no.

LW: It's no good. We can't fight them with ideas alone.

SCI: What do you mean?

D: Don't you see the way they operate? An idea has to have clout behind it. Money is one kind of clout. That's the kind they prefer. But there are other kinds — public opinion, for one, or if we could get everyone in the lab to refuse to work on it. That would be another kind they couldn't ignore.

LW: We'll get fired first.

D: Sure. That's why we need to reach every person in this plant. If we *all* demand an end to the project, they can't fire all of us.

TECH: We've got to get more people involved. We've got to tell people what's going on here.

SCI: Yeah, let's hold a press conference and write articles for the paper.

LW: I can see the headline now: NUKE CIGS CAUSE WORKER FALLOUT.

SCI: Jesus Christ!

TECH: How about a demonstration? With the support of more people we could show Mr. Bigg where we stand.

SCI: I have access to a Xerox machine for a leaflet.

LW: Wow! Maybe we could get on the radio.

D: Wait a minute. Is anybody taking minutes?
(Pause, everyone looks at everybody else)

TECH: C'mon folks. Look: Press conferences, papers, newsletters, work meetings, won't amount to anything unless we're organized. We need to mount a campaign to reach people about this, both inside the plant and out.

LW: Yeah, let's build a phone bush with contacts in every department.

TECH: Think big. How 'bout a phone tree?

LW: O.K. I'll start on it.

D: I'll start on a leaflet leading to a demonstration. Let's convince the public that there is something they can do, *should* do.

TECH: If this gets big enough, we could seriously think about stopping the work. We could win.

D: O.K. Let's meet tomorrow at lunch. Everybody bring their contact sheets.

LW: That's too soon. I can't have mine ready by then. How about Thursday?

SCI: Thursday? I've got a meeting . . .

(All exit, talking animatedly)

TECH: How about Friday?

D: That's no good. How about Thursday morning?

(Ad librium)

SCENE 7

Scene — Management office with demonstration going on outside (off stage)

PR: *(Looks out window)* Look at them — picketing our own plant! We've been betrayed by our own people. It's undemocratic! Socialism, plain and menthol!

MGR: We can't fire them all.

PR: *(Glancing out at demo)* And with the uproar in the damn media, we can't even move to Georgia.

BIGG: What! The employees don't run this place!

(Slams fist on table)

MGR: The nuclear cigarette filter is clearly impossible. How about liquid sodium heat exchangers for breeder reactors?

PR: Sure! The blending of nuclear power and genetics! We might be able to sell nuclear science from the top down. With the new energy crisis they'll never be able to stop that!

MGR: They stopped the nuclear cigarette. We can't let them get us again. We should tell the union that stopping the Nuke cigarette cost them hundreds of jobs. Any other protests will cost more jobs.

BIGG: That's right. One more protest and *your* jobs will be the first to go.

(Slams fist on table. Leaves, followed by cringing MGR and PR)

SCENE 8

Scene — Workers are entering lab.

SCI: They've dropped the cigarette filter!

D: Wow! I hope I don't step on it!

TECH: Fantastic!

LW: Yeah, but have you heard what they've replaced it with? We're gonna start working on breeder reactors!

SCI: Oh, no! Those nuclear waste problems are almost as bad as the ones from the cigarettes.

(Groans)

D: Shit. Every time we stop a project they're gonna start another one that's worse. *(Sarcastically)* We've come a long way, Baby.

TECH: Look, let's not get discouraged. We've accomplished a lot. We organized the whole plant.

LW: But one plant does not a garden make.

D: Boy, that was poor. It could qualify for Federal Matching Funds.

TECH: As long as they — the Funds — control science and technology, there'll be no end to this garbage.

SCI: But maybe something can grow from this compost.

TECH: As long as there's a difference between the Mr. Bigg's who make the decisions and us who do the work, our ideas will never be heard, let alone acted on.

D: Since when do scientists and managers listen to me, a dishwasher, and a woman?

LW: Discrimination is their way of dividing us. We all have to work together.

SCI: We started doing that here and look where it got us — from the frying pan into the reactor.

TECH: That's why we need to grow, and join up with those who really have the power to change things — working people.

SCI: But workers don't know about scientific issues.

LW: True, but they are affected by them every day. They affect all of us.

TECH: Which is why we need to make the connection clear between why those who control science and technology don't care about the needs of people, and why those needs are never met.

D: Besides, we found out from the cigarette protest that people don't have to understand *all* the technical stuff to be able to decide if something is good or bad.

LW: Maybe we could help people find out those things that they *do* need to know to get some control over what's happening.

D: That sounds like real science — science for the people.

SCI: *(Rummaging through a pile of papers and finding a SftP magazine)* I just remembered . . . I picked up this magazine at the Boston AAAS meeting. It talks about some of the things we're trying to do.

D: Can I have a look at it? Aren't these the people who are doing that stuff on recombinant DNA?

TECH: Yeah, and they managed to stop the XYY research.

LW: How can they help us?

D: Maybe we can work together to get more people involved.

TECH: And build a national movement.

SCI: National? Intergalactic! I have access to a radio telescope.

D: Well, I have access to a radial tire. Let's drive over to McSoyburger's and talk this over. It's quitting time.

(All exit, talking animatedly)

LW: This could really be something.

SCI: Let's call them tomorrow.

(Ad Librium)

END

So Much for the Myths of Hunger

Barbara Chasin, Connie Phillips, Sue Tafler and Betsy Walker

Except perhaps for nuclear war, nothing in our times so threatens a majority of the world's people as do hunger and starvation. The prospects for a reasonably nutritional diet seem increasingly dim for hundreds of millions. Newspaper items predicting mass famine, accompanied by photographs of deformed, starving Asian and African children, have become commonplace. Even in the United States, evidence is accumulating that hard times may be here for millions who want to eat.

The food problem has become a recurring media topic. TV Guide and the newspapers ran full page ads for an "extraordinary human drama." From 1-5 p.m. July 31, 1977, you could "journey to Asia, Africa, and Latin America for intimate revealing visits with hungry families . . . feel the agony of hopeless mothers and fathers who watch their little ones growing up with crippled minds and bodies due to malnutrition." For four hours the viewer was confronted with images of starving people while messages, some in the form of song, told the hungry world to "hang on . . . help is finally on the way." In patronizing, condescending tones, implying that the hungry of the world could not manage without our help, Billy Graham, Art Linkletter, Carol Lawrence, Vincent Price, Julie Andrews, Steve Allen and others urged, uninterrupted by commercial messages, that we be compassionate and Christian. A donation of only $10.00 could mean the difference between life and death for one person. Our individual caring could quiet the "cry of a hurting world."

This show provides a particularly dramatic example of the propaganda that is being disseminated around the food issue. The most common cause of hunger is alleged to be overpopulation. The speakers on the TV marathon offered a somewhat sophisticated approach to the population explosion, mentioning, for example, that people have children because they need them for labor, or security in old age. Nevertheless, the speakers concluded that the solution is to set up family planning clinics.

Overpopulation is probably the most frequent explanation the "experts" from governmental agencies and private foundations have for the food crisis. There are simply too many people and not enough land and food to go around. Other contributing factors are the vagaries of weather and climate (short- and long-term fluctuations), the backwardness of the peasants — their lack of both modern agricultural techniques and an entrepreneurial mentality — and the greediness of United States citizens.

These same "experts" put forth a range of possible solutions. Family planning is the most common. Food banks have also been suggested, so that when times are bad the hungry nations can draw upon the deposited reserves. New sources of food and fertilizer are being researched, such as the possibilities of using kelp and of developing single-cell protein-rich microorganisms. Solar energy and rational recycling are urged by some groups as ways to conserve resources in order to help provide more food. On a more individualistic basis, the allegedly well-fed U.S. citizens are urged to give up eating so much meat, to care more about the world and stop hogging valuable resources. Finally, there are those who advocate that we let the teeming multitudes die off so that the balance between food and people can be restored.

While this last harsh approach, sometimes referred to as "triage"* or "lifeboat ethics,"** can be easily criticized, some of the other suggestions make a certain amount of sense. However, no solution, no matter how plausible it sounds, will work unless the real causes of hunger are addressed. Writings which provide a valid analysis of the roots of world hunger are few. Two excellent studies have just been published which go a long way in providing the kind of data needed for reasoned action. These are *Food First: Beyond the Myth of Scarcity* by Frances Moore Lappe, Joseph Collins, and Cary Fowler (1) and *How the Other Half Dies* by Susan George.(2) The authors of these books were involved in producing counterreports for the United Nations-

**Triage* was originally defined as the most efficient method of alloting limited medical resources when the number of battlefield wounded exceeded the possibility of attention to all. Medics decided which third could best benefit from care, which third would survive a wait for aid, and which third was so severely wounded that they should be abandoned in favor of others who were more likely to survive.

**If the earth is a *lifeboat* without enough resources to feed all, then some countries should be allowed to drown in order to at least save some.

sponsored World Food Conference held in Rome in 1974. These books explicitly refute the conventional myths of the food crisis and present convincing alternatives to all of the views described above. Hunger, as these authors analyze it, is caused by unequal distribution of wealth and power, an inevitable by-product of capitalism.

Too Many People?

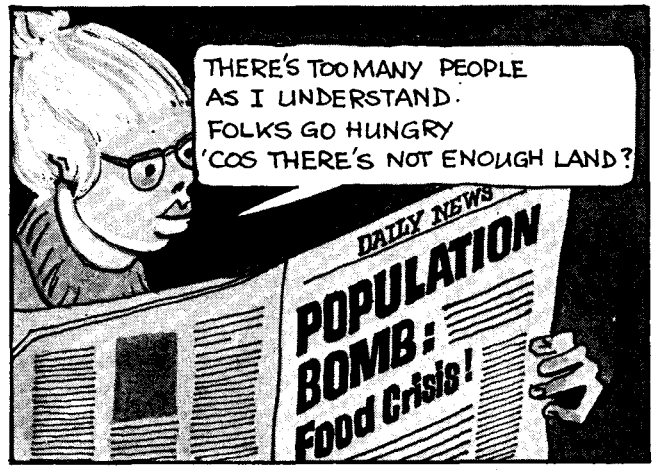
Too many people *is* a problem, but it is not the *cause* of hunger. Current rates of growth will undercut the future well-being of all of us. But hunger and high birth rates are both symptoms of the same disease: "the insecurity and poverty of the majority that result when a minority controls a country's productive resources." (Lappe et al., p. 64.) China, which constitutes one-fifth of the world's population, provides an important counterexample to the "overpopulation" theory. In China, where people's economic security is assured, the rate of reproduction has changed impressively. Within a five year period, between 1970 and 1975, China's birth rate dropped from 32 per 1000 to between 20 and 25 per 1000 (Lappe et al., p. 67). The illusion of overpopulation only appears when a country's resources are controlled by a powerful few, who don't distribute them equally among the population. As long as more and more people are severed from control over and participation in the productive and distributive process, we will have the problem of too many people.

Not Enough Land and Food?

There is no scarcity of land. The scarcity of food is caused by those who own land but do not use it to grow food. As long as the majority of the earth's people are at the mercy of food and land manipulation by the few, hunger, famine and starvation will continue. The authors examine some facts: Less than 45% of the world's potentially arable land is cultivated (Lappe et al., p. 16). Much of this acreage is planted with non-food and ash export crops — such as cocoa, cotton and rubber — which will not feed people. As long as the few large landholders are encouraged to practice export agriculture at the expense of food for local people, the poor won't eat no matter how much food there is. For example, during the severe drought and famine in the African Sahel in 1974, beef, fish and vegetables were being exported to rich countries.

Furthermore, much of the food produced doesn't go directly to feed people. The world currently produces 3,000 calories for every man, woman, and child (Lappe et al., p. 13). But much of the food is given to cattle and other livestock, to be consumed by those who can pay.

The current "scarcities" of land and food are planned; food prices are kept high and under control.



The capitalist "free market" system keeps food prices at the whim of the big corporations. Land can be taken out of production (15% in 1972 in the U.S., during the "food crisis"). Another tragedy is the reduction in wholesome foods consumed; between 1959 and 1970, consumption of milk declined 20% while that of soft drinks rose 79% (George, p. 140).

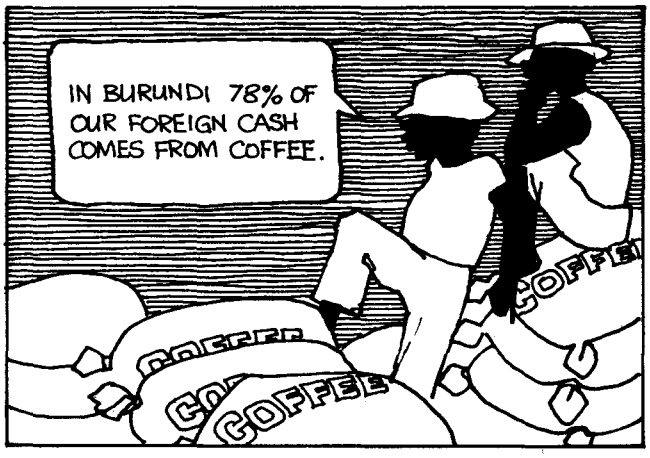
Is Climate to Blame?

Climate and the vagaries of nature will no doubt continue to be useful scapegoats for lack of planning, lack of investment and lack of justice (George, p. 26). Drought *is* a natural event, but famine is created by the people who control the world's food resources, mostly the grain trade. Susan George postulates that famine-prone countries are those that are most tightly controlled by the ruling class. The upper class does not stop eating whatever the weather.

Planning and management could prevent drought from developing into famine. China created an agricultural system less vulnerable to food shortages. Water harnessing and terracing to prevent wind destruction and erosion help to minimize the effects of weather on food production. China's political system assumes and plans for the worst and anticipates the effects of drought.

Lack of Technology?

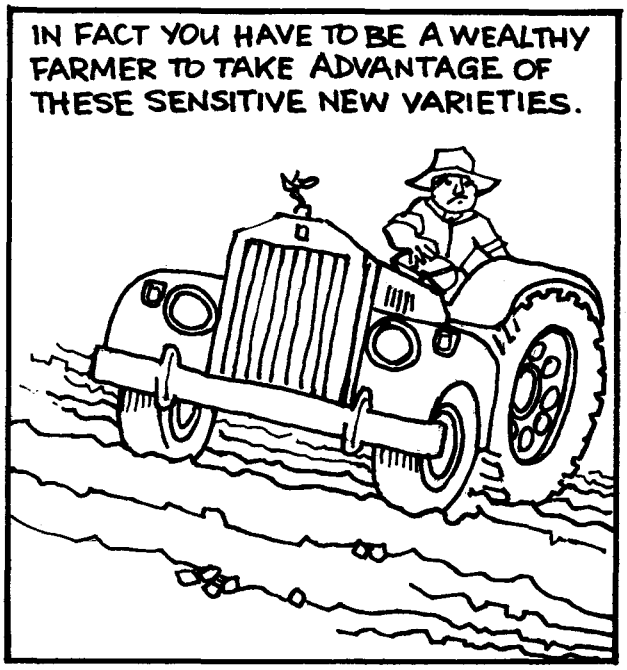
If the solution to hunger is to produce more food, then yes, the answer is one of technology. The Green Revolution proved, however, to be a "backfire technology" (George, p. 65). Mechanization, fertilizers, and pesticides, which are necessary to grow the high yield variety seeds, are affordable only to large landholders. Small landholders had to go into debt to purchase the high technology inputs, even if they could get the credit. Tenant farmers found their rents raised. Harvests were often disappointingly low, and the indebted small farmers had to sell their land (often to the large landholders),



joining the landless millions. Modern technology also requires less human labor. The Green Revolution allowed a few to get rich and forced millions of third world farmers to go broke and hungry. An International Labor Organization study shows "as food production per person has risen, the rural poor are worse off than before" (*Mother Jones*).

Agents of Hunger

We have found that the causes of world hunger are not too many babies or too much bad weather. What do these two books see as the real causes of hunger? A good place to start looking is in the history of the poor countries. Most of these countries were colonies not too long ago. When they were colonized, land ownership patterns were changed drastically. Small farmers lost control of their land, becoming workers on large farms, with no say in what crops were grown or what they were used for. Instead of food crops for local people, cash crops for export were grown. In addition, these displaced farmers had to start buying food, which in many cases must be imported. How has all of this affected the people and their ability to feed themselves?

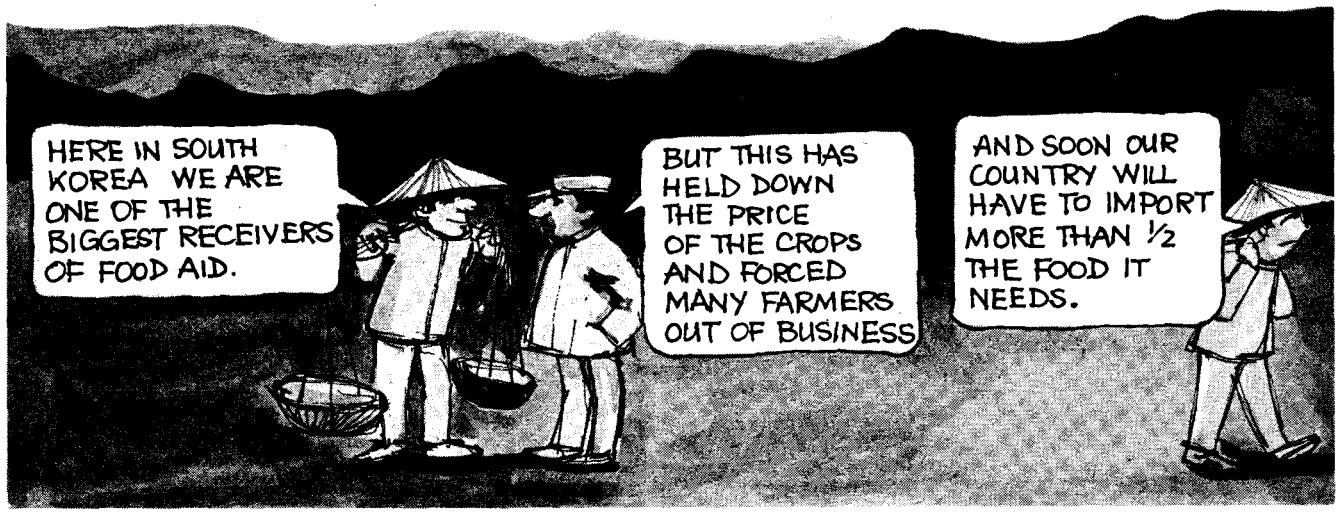


People cannot eat their own crops if they are exported. The poorly paid workers on large plantations do not share in the profits of the cash crops. People cannot grow food for themselves on land used for export crops or held out of production entirely. The central theme of *Food First* is that people in poor countries do not need to be given food to eat. They do not need to be given modern technology to improve crop yields (assuming

that modern technology does improve crop yields). They do not even need to be helped to feed themselves. People will feed themselves unless they are prevented from doing so.

Today, it is agribusiness corporations that keep people in poor countries from feeding themselves. These corporations depend on poor countries as a cheap source of raw materials. Take, for example, the pineapple companies like Del Monte and Dole (the latter owned by the food conglomerate Castle and Cook). In the 1950's Hawaii produced three-fourths of the world's supply of pineapple. The big companies imported thousands of low-wage workers from the Philippines and elsewhere. But in the 1960's, after several strikes, the plantation-worker unions won higher wages ($2.85 per hour), making Hawaii less attractive to Dole and Del Monte. They moved most of their operations to the Philippines, where wages are as low as 15 cents an hour (Lappe et al., p. 289).* Consumers do not benefit from the companies' savings; they pay the same price for pineapple as before. Workers in Hawaii do not benefit; they

*An excellent source of additional information on Del Monte is the NACLA report "Bitter Fruit", September 1976.



have lost their jobs. And certainly the people of the Philippines have not gained; they don't get to eat the pineapple, they receive very low wages for their work, and they have lost most of the land on which they grow food crops. Only the corporations benefit by receiving higher profits.

Multinational corporations are doing this all over the world — creating a Global Farm to feed a Global Supermarket. Del Monte raises bananas in the Philippines to ship to Japan, Mexican asparagus to be sent to Denmark, France, and Switzerland, and Kenyan pineapple to be sent to Britain. The U.S. strawberry industry in Mexico ships more than 150 million pounds each year to the U.S.; strawberry workers there receive only one-seventh the wages of those in California.

In addition to the raw materials and cheap labor, third world countries provide a marketplace for the products of agribusiness corporations. Through massive advertising campaigns, the poor are made to believe that they will benefit from products such as infant formula (see *Science for the People*, July 1977). Brazil is the world's largest exporter of orange juice, and Coca Cola sells most of this juice, in the form of Minute Maid, to U.S. citizens. Brazilians, meanwhile, are sold Fanta orange drink (made by Coca Cola) which contains no orange juice. Many Brazilians suffer from Vitamin C deficiency (Lappe et al., p. 306).

If the situation is bad, why is it allowed to continue? Why don't the local governments of the underdeveloped countries ban the multinational corporations? Why doesn't the U.N. do something? And what about U.S. foreign aid?

The World Bank claims that its goal is to eliminate poverty and help the small farmers. In fact, however, the World Bank contributes to the problem , because it provides the capital for agribusiness to take hold in these countries. Robert McNamara, president of the World Bank, often talks about the need for "more equitable distribution of the benefits of economic growth." Yet the World Bank quickly withdrew financial support of a land reform in Allende's Chile which would have distributed land back to small farmers. United Nations agencies such as the Food and Agriculture Organization (F.A.O.) have failed to minimize hunger and poverty despite their vowed aims. Very rarely does aid go to the people it is supposed to help. For example, in a recent Ghana famine reported by the *Boston Globe* (August 23, 1977), although food was donated by U.S.-A.I.D. and the European Common Market and transported to the famine areas, it was diverted at the local level by "those who don't need it . . . friends, workers, bank managers and others not severely affected by the famine." Through PL 480 (the Food for Peace program), the United States is more interested in expanding its own commercial markets and political leverage rather than in feeding the recipients. Surplus foods are used, but PL 480 food amounts only to 3% of our agricultural exports (George, p. 169). Food aid, rather than helping, actually hinders development by creating dependency and debts.

Conclusion

Both *Food First* and *How the Other Half Dies* are interesting, well-researched books. Both give a good picture of the dimensions of world hunger, discredit common myths about the causes of hunger, and present agribusiness as a real culprit. Strong points in *How the Other Half Dies* are the detailed discussions of the role of such agencies as the World Bank and the U.N. in fostering hunger. George is also sensitive to the fact that the effects of hunger and the exploitation of this condi-

tion by the capitalist system strike particularly hard upon women. She notes that technology usually benefits men first and can actually make women's lives harder. George's political analysis is weaker than *Food First.* She admits that third world countries are under "western thumbs," but looks with too much hope to governmental agencies and to the United Nations. She is also willing to admit the possibility of "good" agribusiness corporations. *How the Other Half Dies* is the shorter and less rigorous of the two books and might be of more interest to the casual reader.

Food First, while long and very complete, is written in question and answer format so that one can select sections of the book and still understand the main points. We feel that because it is more detailed and thorough it is a more valuable book than George's. *Food First,* although it avoids the word "capitalism," goes beyond the externals and symptoms of world poverty and hunger to clearly blame the political and economic system which is "built on human vulnerabilities not strengths."

We feel that studying food issues is an important method for understanding world capitalism. The only solution to hunger is for people to regain control over their food supply. We support national liberation struggles as a means toward self-reliance, and believe there are also more immediate actions we ourselves can take. We agree with the suggestions in the books that people educate themselves and others and that action taken be collective and not individual.

We feel that it is important to organize both educational and action-oriented efforts. The Boston chapter of Science for the People has a Food and Nutrition group which is involved in current analysis of food issues and in rewriting a high school curriculum unit on hunger and population. We are excited about plans for community outreach in the form of mini-courses which the Boston chapter is organizing. We encourage readers to respond to this article and welcome having people come work with us.□

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1. Frances Moore Lappe, Joseph Collins, and Cary Fowler. *Food First: Beyond the Myth of Scarcity*, Houghton Mifflin Company, Boston, 1977. 466 pages.
2. Susan George. *How the Other Half Dies*, Allanheld, Osmun, and Co. Publishers, Montclair, New Jersey, 1977, 308 pages.

Connie Phillips, Sue Tafler and Betsy Walker are members of the Boston SftP food and Nutrition Group. Barbara Chasin is a member of the Boston SftP Sociobiology Study Group.

Cartoons are borrowed from New Internationalist, *September 1977 issue. The September issue consists of a comic-book version of* Food First, *which could be used as an attractive teaching tool. The issue can be purchased at $1.25 each or much less for group orders of over 25, from 62a High Street, Wallingford, Oxford, OX10 0EE, United Kingdom.*

BOYCOTT NESTLE!

Nestle, the second largest food corporation in the world, is the major exporter of infant formula to third world countries. Infant formula, as a substitute for natural mother's milk, can cost a third to a half of the income of a third world family. Mothers are made to believe they are giving their babies the modern best, but then often dilute the formula to save money and rarely can prepare it under anything resembling sterile conditions. Nestle's widespread advertising and aggressive distribution is contributing seriously to infant malnutrition and deaths and is perhaps one of the most vicious examples of what multinational corporations will do to create markets and increase profits.

The Food and Nutrition group of Boston Science for the People (897 Main Street, Cambridge, MA 02139) supports the national effort to boycott all products of Nestle-owned subsidiaries. Food co-ops should become involved and pressure also brought to bear on supermarkets. Let Nestle know of your actions and your reasons. Their North American address is:

Nestle Company Inc.
100 Bloomingdale Road
White Plains, NY 10605

For information on what the Nestle's brand names are (Taster's Choice, Nescafe, Stouffers, Jarlsberg, Crosse and Blackwell, Libby's, for example) and to participate in the nationwide Infant Formula Action Coalition (INFACT), write to:

Third World Institute
1701 University Avenue or
Minneapolis, MN 55414

Interfaith Center on
Corporate Responsibility
475 Riverside Drive, Rm 566
New York, NY 10027

MOBILIZATION FOR SURVIVAL

The Urbana/Champaign and Berkeley chapters of SftP are active in the movement against nuclear weapons and have been working with Mobilization for Survival, a coalition of several activist groups to stop the arms race and ban nuclear power and weapons. For further information, contact Charles Schwartz, Physics Dept., UC Berkeley, CA 94720 or Bob Hall, 106 N. Gregory, No. 10, Urbana , IL 61801.

Protecting Women Out of Their Jobs

Phyllis Lehmann

Okay lady, your job or your fertility, which will it be?

It sounds like a 21st Century melodrama, but for Norma James, a 34-year-old divorced mother of four, it's all too real. James made history of sorts last year when she had herself sterilized so she could keep her job at a General Motors battery plant near Toronto.

Lead is used in automobile batteries, and if a woman inhales or swallows lead while pregnant, the metal could cause miscarriage or birth defects. GM decided, therefore, that all women would be transferred out of the battery manufacturing area unless they could prove they were no longer able to bear children.

Transfer for Norma James would have meant either less pay or loss of the steady afternoon shift that allowed her maximum time with her kids. So, unwillingly, she had a tubal ligation.

In a similar situation at the Bunker Hill Co. in Kellogg, Idaho, management suddenly decided that 37 women would have to be transferred from the lead smelter unless they could prove they were no longer fertile. To top it off, all 37 were herded on a bus one morning and taken to a clinic for pregnancy tests. Nine of the women refused to have the test and were fired. When their union intervened, the company agreed to reinstate them with back pay if they could provide proof from their own doctors that they weren't pregnant.

One woman capable of bearing children was barred from returning to her job in the smelter, even though her husband is sterile.

Thanks to a job re-evaluation that had nothing to do with the transfers, all the women now are earning as much or more than they did while working in the smelter. But subtle inequities persist. One woman transferred to the drill shop retained her grade 4 pay status, while the other employees in the shop — all men — are paid at the grade 10 level for doing the same job.

These cases are part of an alarming trend toward penalizing women because they are biologically capable of bearing children. And it's all being done under the guise of "protection." In reality, such industry policies leave working women, many of whom *must* work to support households, with some incredible choices: their jobs or their fertility, their jobs or their right to privacy, their jobs or their dignity.

The issue takes on scary dimensions in light of a recent estimate by the National Institute for Occupational Safety and Health: some 1 million of the 16 million women workers of child-bearing age are exposed to chemicals that could harm the fetus. If large companies succeed in discriminating against these women, some labor leaders believe, every woman of child-bearing age is in danger of being "protected" right out of a job.

Policies that infringe on the reproductive rights of female workers are, of course, morally distasteful to many women. "A woman should not have to choose between having a job and having a baby," says Ann Trebilcock, an attorney with the United Auto Workers.

These policies are not only unfair; they're also illegal. Requiring female employees to prove they are infertile, or to have pregnancy tests, or to sign a statement saying they will not have more children, imposes on women a condition of employment not imposed on men. Thus, it violates Title VII of the Civil Rights Act, which prohibits sex discrimination in employment.

This article first appeared in in the Long Island, N.Y., newspaper, *Newsday*, and is used by permission.

Phyllis Lehmann is a Washington-based writer who specializes in occupational health.

Such requirements also are at odds with the 1970 Occupational Safety and Health Act, which guarantees "every working man and woman in the nation safe and healthful working conditions." This law puts the burden squarely on the employer to provide a workplace safe for *all* workers —not just men, not just infertile women. The fact is that much of industry is not complying with the law.

"If industry were meeting current safety and health standards under the law, it would go a long way toward alleviating the problem of hazards to fertile or pregnant women," says Dr. John Finklea, head of the National Institute for Occupational Safety and Health.

Industries argue that special precautions are necessary to protect unborn children. With her reproductive organs intact, a woman *could* become pregnant, even if she says she doesn't want to. Also, she might not be sure of it for four or five weeks or longer. It is during these early weeks of pregnancy that the developing organs of the fetus are especially vulnerable to a variety of chemicals and metals that can cross the placenta. The most obvious birth defects stem from exposures in the first three months of pregnancy.

So the Lead Industries Association, for example, came up with a tidy solution: Don't employ "fertile, gravid (pregnant), or lactating females in the lead industries until such time as adequate information has been developed regarding the effect of lead." Unfortunately such high-sounding recommendations ignore the reams of information already available on the effects of lead. Decreased fertility and high abortion rates among women workers exposed to lead were well documented 80 years ago.

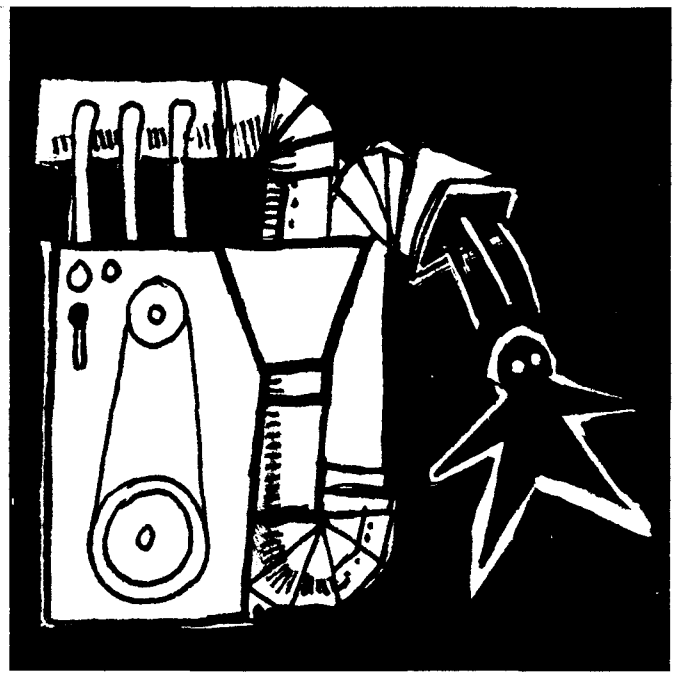
Dr. Harold Gordon, medical director for Dow Chemical Corp., flatly says that fertile women should not be hired in jobs where they might be exposed to any substances known to cause birth defects in humans. When pinned down, Gordon says he would limit such a policy to a couple of drugs, such as a measles vaccine that his company makes. But many women, all too familiar with corporate discrimination in the past, are understandably fidgety about any talk of exclusion.

Industries apparently are so fearful of ending up with a latter-day version of the thalidomide babies that they are willing to flout the law. Dr. Norbert Roberts, medical director for Exxon, puts it in a nutshell: "We'd rather face the EEOC (Equal Employment Opportunity Commission) than a deformed baby."

Why is industry so nervous about this particular issue? Beneath the moral righteousness, there are some solid legal reasons why companies want to be careful.

Birth defects suffered by the child of a worker would not be covered by workers' compensation, so monetary awards resulting from a lawsuit could go sky high, as in a personal injury case.

Also, even if a woman knowingly accepts the risk and continues working with hazardous substances dur-



ing pregnancy, she cannot legally release the company from liability on behalf of her child. A child who suffered ill effects as the result of prenatal exposure to job hazards could sue his mother's employer at any time up to about three years after he reached legal age — 18 or 21 in most states. (In personal injury cases, the legal statute of limitations does not start until the age of majority, even if the injury occurred during infancy.) Since most companies do not relish the idea of two decades of potential liability, they want to make sure that women working with certain substances *definitely* will not have children.

So far, there have been no sensational lawsuits arising from birth defects caused by the mother's job. In fact, proving that deformities resulted from a mother's exposure during pregnancy would be extremely difficult, if not impossible. But industry fears a litigation-minded public that it believes would quickly pounce on another source of juicy lawsuits. Businessmen cite the soaring number of medical malpractice suits and product liability suits as evidence of a "sue-the-bastards" attitude loose in the land.

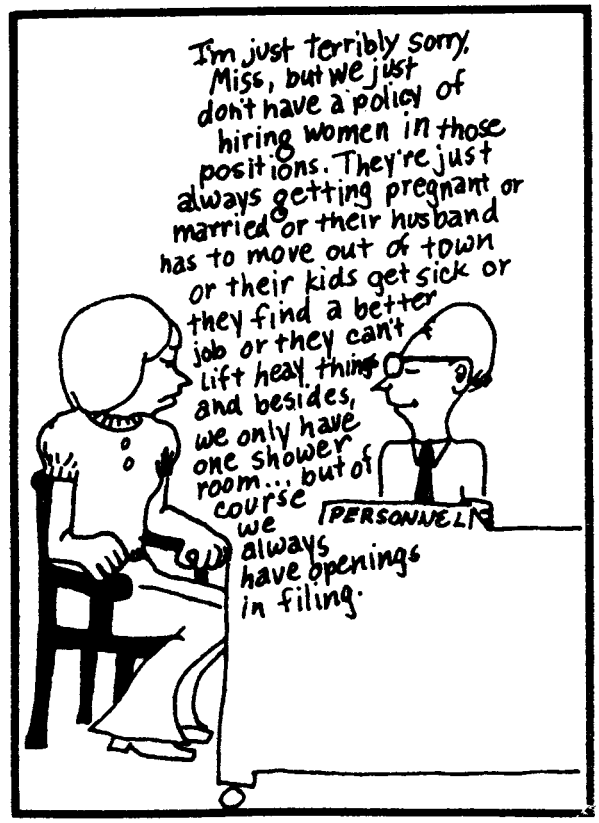
To many people, the new emphasis on "protection" also reflects some long-held attitudes about women in this society. Such as the "pregnant-unless-proved-otherwise" view that lumps all fertile women into the category of prospective mothers.

Sylvia Krekel, an occupational health and safety specialist with the Oil, Chemical, and Atomic Workers Union, points out that there is still a strong ingrained prejudice against women leaving the home and a genuine fear of women taking jobs away from men. In times of high unemployment, like the present, it becomes easy for industry to usher women out of jobs under the guise of "protection."

It is ironic, though, that the overwhelming concern with protection doesn't extend to the traditional "women's jobs." Recent studies have shown, for example, that nurses and anesthetists exposed during pregnancy to anesthetic gases that leak from hospital operating room equipment have 1.3 to two times the incidence of miscarriages and birth defects among their children as do women who did not work in operating rooms.

"I have a feeling that no one would seriously suggest that we remove all women of child-bearing age from the operating room," says Claudia Prieve, an industrial hygienist with the United Steelworkers. "Women as operating room nurses and anesthetists are too well ingrained into our system. After all, who would hand the doctor his scalpel and wipe his perspiring brow? "

"Contrast this with the plight of the women in the lead smelter or battery plant where there are jobs that pay well and a plentiful supply of men to fill those jobs. There have been very few women in smelters in the past.



Movin' On Up/apf

Why change now? So society says, 'We're going to keep those women out of there for their own good.' How often men mistake their prejudice for the laws of nature!"

What really blasts holes in industry arguments is mounting evidence that, lo and behold, the threat to the unborn is not just a woman's problem. The male contributes as much to the make-up of a new human being as the woman does — hardly a biological secret. So, if a man works with a chemical that alters his chromosomes (which carry genetic information), affects the number, quality and mobility of his sperm, hinders his sexual performance or makes him sterile, the effects on future generations are very real.

There is evidence that wives of workers exposed to certain substances — women who never had direct contact with those substances — experience reproductive problems. Wives of male operating room employees, for example, had 25 per cent more miscarriages and birth defects among their children than did women who had no link at all with anesthetic gases. In another study, wives of men who worked with vinyl chloride, a key ingredient in plastics, had a significantly higher fetal death rate than did a control group. As far back as 1914, scientists documented the danger to pregnant wives of house painters in one town who regularly inhaled the fumes of lead-based paints. Of 467 children born to the painters' wives, 23 per cent were stillborn. The rate of stillbirths for the entire town was 8 per cent.

In light of these findings, should men also be required to prove their inability to reproduce before being allowed to work with certain substances?

To many labor experts and scientists, the solution is obvious: Make the workplace safe for *all* workers. Sheldon Samuels, a health and safety specialist with the AFL-CIO, maintains that the government should set standards to protect both sexes against even the slightest effect on any organ of the body. The fetus and the reproductive system would automatically be included.

It sounds simple, but in the real world of too little research and too much government foot-dragging, such standards will be a long time coming.

The Occupational Safety and Health Administration (OSHA), the agency charged with implementing the federal safety and health law, sets and enforces specific standards in all kinds of workplaces. But virtually all the standards now on the books were adopted from old "consensus" standards drawn up by industry-dominated groups and designed, at best, to protect *most* workers *most* of the time. Because of pressure from industry and the go-slow attitude of recent administrations, OSHA has issued only a handful of new health standards during the five years it has been in operation. None contain any consideration for the fetus, which can be harmed by toxic chemicals the mother inhales, even though the mother herself may suffer no ill effects.

The government argues that it doesn't have enough solid data on which to base stricter health standards that could stand up in court. No wonder. Very few of the 20,000 chemicals commonly found in the workplace have been tested for their effects on the unborn. Consequently, only about 20 substances so far have been clearly linked with birth defects and miscarriages.

Another problem is that women routinely have been ignored by the occupational health researchers. Dr. Vilma Hunt, a Pennsylvania State University epidemiologist, points out that scientists often "simplify" their studies by limiting them to men. She notes that in one of the few national surveys that did include information about employment during pregnancy, women were not even asked what job they held. Their husband's occupations, however, were carefully noted.

Until the law is more strictly enforced and better standards written, some labor leaders argue, American industry should adopt the policies of such countries as the Soviet Union, where pregnant women are transferred with no loss of pay or seniority to jobs where they will not be exposed to dangerous substances.

Unfortunately, such an approach is unrealistic in this country where 87 per cent of all women workers are not even represented by labor unions and consequently are powerless to demand transfers. Also, transfers are unreliable because dangerous exposures could occur before a woman knows for certain she is pregnant. And while such a policy would deal somewhat with hazards to the fetus, it ignores working husbands who may pass on genetic defects to their offspring and working women who do not want children but who may be barred from well-paying jobs because they are of "child-bearing age."

Nevertheless, as more women enter the labor force in a wider variety of occupations and as evidence of job hazards continues to mount, society will have to face the issue of protecting both today's workers and future generations. Clearly, the solution is not a simple matter of denying jobs to those who might be more susceptible to harm.

Dr. Bertram Carnow, professor of occupational and environmental medicine at the University of Illinois School of Public Health, sums it up well:

"Considering the evidence about effects of toxic chemicals on the reproductive systems of both women and men, we either end up with workplaces full of 60-year-old eunuchs, or we eliminate the hazards. I think it would be easier to eliminate the hazards."□

Training Program

The University of Illinois announces a NIMH training program in Psychology, Biology, Political Science, Antrhopology and Education for research on Institutional (and other kinds of) Racism, with special attention being paid to the widespread misuse of the concepts of heredity in behavior genetics and sociobiology. Application for predoctoral (beyond second-year of graduate work) and for postdoctoral traineeships should be made to Jerry Hirsch, Psychology Department, University of Illinois, Urbana-Champaign, IL 61820.

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A Review of *The Night Is Dark and I Am Far From Home*

Ann Arbor SftP
Science Teaching Group

Listen! We just read an incredible book. It's called *The Night Is Dark and I Am Far From Home*, and it's by Jonathan Kozol. Kozol demands that we gaze unflinchingly at the source of our feelings of impotence about changing society — the public school system. As Paul Simon once observed, "As I look back on all the crap I learned in high school, it's a wonder I can think at all." The success of high schools in teaching students *not* to think is astounding.

Photo: Arthur Tress

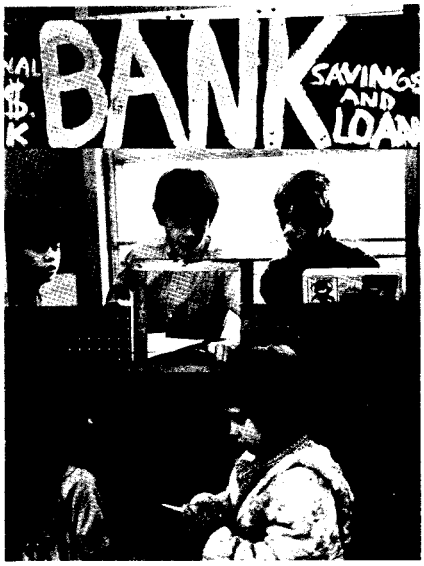
What *did* we learn in school today? Kozol says that we learned about how most of the world is hungry and poor, but that has nothing to do with the fact that our parents make $20,000 a year and live in suburbia. We learned about how famous people like Martin Luther King have changed the world, but how we could never aspire to such actions. We learned about how to listen to an expert's opinion, but not how to listen to ourselves. How often have we heard that we are being too radical and must compromise, that we shouldn't be so emotional and should talk about things rationally?

How can we be rational and unfeeling about mass murder and starving peasants? Why must we compromise on issues of freedom from hunger and oppression, Kozol asks. Even in the most progressive schools, students are allowed the freedom to discuss issues, but action is discouraged. The normal "solution" to problems is "write your congressman" or an exhaustive series of bureaucratic meetings where we are politely heard and equally politely refused. *Nothing Is Changed!* We must stop deluding ourselves that "things are getting better." They're not. As Kozol points out, the conditions of the poor are *not* better than they were 20 years ago. In general, they're worse. Yet the school system insists that we're making progress.

The inequities of our present system survive, and to a great extent we have the public school system to thank for that. Kozol stresses that we are taught not to rock the boat and that the system we have now is fine and will correct itself. Our history books, which could be inherently radicalizing, are bland. They present history, not as a series of struggles to free people from oppression, but as a mere accounting of the "facts." Radicals and revolutionaries become detoxified. For example, Helen Keller, that kind and courageous blind and deaf woman, could never have said of war, "the few who profit from the labor of the masses want to organize the workers into an army that will protect their interests." But she did. That, though, is not something the school system wants to teach you. In *The Night Is Dark,* Kozol destroys our naivete about the function of the public school system in America.

So where does that leave us? Our next step is to have confidence in our power to change things and then to begin changing them. Unfortunately, on this point, Kozol is unclear. He gives us little direction as to the kinds of actions he feels are most useful and what little he suggests is dubious. He states, for example, that those who enjoy the privileges of being middle class are as guilty of oppression as those who have both money and power in our society. He argues that that money is acquired by exploitation and thus we must stop enjoying those privileges in order to stop our oppression and relieve ourselves of our guilt.

But relinquishing our access to good medical care because many can't get it does little to change that fact. In addition, guilt-tripping people is not the most effective way of motivating them towards political action. His real purpose, to make individuals take on the responsibility for social change rather than continually shirking it, becomes lost. He feels that asking for specific actions from radicals is too often an excuse for inaction ("If you don't have a better plan, then don't say anything") and he apparently is



writing a book of concrete ideas for change in the classroom (tentatively entitled *Fighting Back*). But the lack of solutions in the book is painfully evident.

One other fault is that the book is written for middle to upper class people. Perhaps this was intentional since they are most likely to read it and may be more prone to radicalization by the book. Also, he does show how liberal reforms (like free schools) that the middle class finds so appealing are equally stifling, which is an important point to make. But how should the poor who can't enjoy the luxuries of a free school relate to Kozol's critique?

It is also necessary to criticize Kozol's sexist use of pronouns. Despite his apologies in the preface, his use of "he" for the child and "she" for the teacher perpetuates the current usages and stereotypes and is inexcusable.

In spite of our misgivings, this book is a powerful statement that will be meaningful and thought provoking to many. We therefore highly recommend that you read it.□

This article was written by the Science Teaching Group of the Ann Arbor chapter of Science for the People.

COME TO THE AAA$!
Washington DC Feb. 12-17, 1978

This years AAAS (American Association for the Advancement of Science) meetings will have two full-day sessions on Sociobiology and also sessions on Recombinant DNA. Members from the Boston Sociobiology Study Group and the Recombinant DNA Group are planning to attend, as are folks from SftP chapters in Ann Arbor, NYC, and Stony Brook. SftP has carried out actions at every AAAS meeting since 1969 except this year in Denver. Actions include confronting speakers, reorganizing scheduled AAAS sessions, holding our own workshops, selling literature. While many attending the meeting are elite scientists, there are also large numbers of students, high school teachers, and nonscientists. We have the opportunity to talk to hundreds of people.

If you are interested in participating in SftP activities at the AAAS meeting, please contact either the Boston office, (617) 547-0370, or Jon Beckwith, (617) 732-1920 or 868-3143, or write the office at 897 Main Street, Cambridge, MA 02139.

SCIENCE FOR THE PEOPLE NEEDS *YOU!*

Our situation is critical. While our expenses have risen considerably over the past year, our income has not. Using simple math one can see that we are approaching the suburbs of insolvency. And yet there is so much to do! SftP is bigger and more active (and thus needs more money) than ever. We are a growing organization with tremendous potential.

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Biological Determinism As an Ideological Weapon

Richard Lewontin

In the fall of 1975, the Ann Arbor chapter of Science for the People organized a symposium entitled "Biological Determinism: A Critical Appraisal." The papers presented at this symposium and two additional papers written by members of the Boston chapter have been published through the efforts of the Editorial Collective of the Ann Arbor chapter. We hope our readers will be interested in more of this book after reading the following excerpt from Richard Lewontin's introductory article.

The book is available from Burgess Publishing Company, 7108 Ohms Lane, Minneapolis, Minnesota 55435, as well as the Ann Arbor and Boston chapters of Science for the People — or ask for it at your local bookstore.

The struggle between those who possess social power and those who do not, between "freeman and slave, patrician and plebian, lord and serf, guildmaster and journeyman, in a word, oppressor and oppressed"(1) is a war fought with many and varied weapons. Of highest importance are ideas, weapons in an ideological warfare by which every class struggling to maintain its grip on the world tries to justify its position morally and rationally, while those fighting to overturn the social order produce their own self-justificatory ideology as a counter-weapon. If the revolution succeeds, that revolutionary ideology becomes transformed into a weapon of consolidation and conservation whereby yet further revolutionary challenges to the new dominant class can be resisted. Nothing better illustrates the historical progression of such ideological weapons than the revolution that created the twentieth-century market-industrial society.

The society of Europe before the seventeenth century (with the exception of certain mercantile Italian republics) was characterized by a static, aristocratic scheme of relations in which both peasants and landowners were bound to each other and to the land and in which changes in the social positions of individuals were exceedingly rare. Persons were said to owe their position in the world to the grace of God or to the grace of earthly lords. Even kings ruled *Deo gratia,* and changes in position could only occur by exceptional conferrals or withdrawals of divine or royal grace. But this rigid hierarchy directly obstructed the expansion of both mercantile and manufacturing interests who required access to political and economic power based on their entrepreneurial activities rather than on noble birth.

Moreover, the inalienability of land and the traditional guarantee of access to common land inhibited the rapid expansion of primary production and also maintained a scarcity of labor for manufactories. In Britain, the Acts of Enclosure of the eighteenth century broke this rigid system by allowing landlords to enclose land for wool production and simultaneously displacing tenants, who then became the landless industrial work force of the cities. At the same time in France, the old "nobility of the sword" was being challenged by the administrative and legal hierarchy who became the "nobility of the robe" and by the rich commoners of banking and finance. The bourgeois revolution was brewing, a revolution that was to break assunder the static feudal-aristocratic bonds and create instead an entrepreneurial society in which labor and money could more freely adapt to the demands of a rising commercial and industrial middle class. But the bourgeois revolution required an ideology justifying the assault on the old order and providing the moral and intellectual underpinnings of the new. This was the ideology of freedom, of individuality, of works as opposed to grace, and of equality and the inalienable rights to "life, liberty, and the pursuit of happiness." Paine, Jefferson, Diderot, and the Encyclopedists were the ideologues of the revolution, and one theme comes through in their writings: the old order was characterized by artificial hierarchies and artificial barriers to human desire and ambitions and those artificial barriers must be destroyed so that each person can take his or her natural place in society, according to his or her desire and ability. This is the origin of the idea of the "equal opportunity society" in which we now supposedly live.

Yet, the bourgeois revolution that destroyed those artificial barriers seems not to have dispensed with inequality of station. There are still rich and poor, powerful and weak, both within and between nations. How is this to be explained? We might suppose that the inequalities are structural, that the society created by the revolution has inequality built into it and even depends upon that inequality for its operation. But that supposition, if taken seriously, would engender yet another revolution. The alternative is to claim that inequalities reside in properties of individuals rather than in the structure of social relations. This is the claim that our society has produced about as much equality as is humanly possible and that the remaining differences in status and wealth and power are the inevitable manifestations of *natural* inequalities in individual abilities. It is this latter claim that has been incorporated from an early stage into the ideology of the bourgeois revolution and that remains the dominant ideology of market-

industrial societies today. Such a view does not threaten the *status quo* but, on the contrary, supports it by telling those who are without power that their position is the inevitable outcome of their own innate deficiencies and that, therefore, *nothing can be done about it.* A remarkably explicit recent statement of this assertion is that of Richard Herrnstein, a psychologist who is one of the leading ideologues of "natural inequality": "The privileged classes of the past were probably not much superior biologically to the downtrodden, which is why revolution had a fair chance of success. By removing artificial barriers between classes, society has encouraged the creation of biological barriers. When people can take their natural level in society, the upper classes will, by definition, have greater capacity than the lower" (2; p. 221).

Biological determinism is meant to convince us that, although we may not live in the best of all *conceivable* worlds, we live in the best of all *possible* worlds.

Here the entire scheme is laid out. The bourgeois revolution succeeded because it was only breaking down artificial barriers, but the remaining inequalities cannot be removed by a further revolution because what is left is the residue of biological differences that are ineradicable. We are not told precisely what principle of biology guarantees that biologically "inferior" groups cannot seize power from biologically "superior" groups, but the conceptual and factual errors of such a statement are irrelevant to its function. It is meant to convince us that, although we may not live in the best of all *conceivable* worlds, we live in the best of all *possible* worlds.

An important corollary, developed in nineteenth-century sociology, was that the natural sorting process that takes place in a free society is greatly aided by education since education is the means of bringing into actuality the latent differences among individuals. Lester F. Ward, the giant of nineteenth-century American sociology, wrote: "Universal education is the power which is destined to overthrow every species of hierarchy. It is destined to remove all artificial inequality and leave the natural inequalities to find their true level. The true value of a newborn infant lies . . . in its naked capacity for acquiring the ability to do"(3). (It is the same L.F. Ward who in his *Pure Sociology*[4] claimed that it was more permissible for a man of a superior race to rape a woman of an inferior race than *vice versa* because it would be a leveling up rather than a leveling down!).

Ward's thesis on education and achievement is echoed 66 years later by A.R. Jensen: "We have to face it: the assortment of persons into occupational roles simply is not 'fair' in any absolute sense. The best we can hope for is that true merit, given equality of opportunity, acts as a basis for the natural assorting process"(5; p. 15).

The ideology of the modern competitive market society is then not one of equality of station but one of a natural sorting process aided by universal education in which "intrinsic merit" will be the criterion and source of success. The social program of the state, then, should not be toward an "unnatural" equalization of condition, which in any case would be impossible because of its "artificiality," but rather the state should provide the lubricant to ease and promote the movement of individuals into the positions to which their instrinsic natures have predisposed them.

The concept that social arrangements are a manifestation of the inner or intrinsic natures of human beings and are therefore unchangeable has come to be called *biological determinism.* As we shall see, the degree of rigidity of the determinism varies in different versions of the system, from the notion that biological factors virtually determine completely the "nature" of each individual to the more subtle idea that human biological nature establishes only "tendencies," natural states toward which human beings will gravitate in the normal course of events. Biological determinism has two complementary facets, both of which are necessary to complete this scheme. First, it is asserted that the *differences* in manifest abilities and power between individuals, classes, sexes, races, and nations result in large part from differences in intrinsic biological properties of individuals. Some of us can paint pictures and others can only paint houses (Jensen [5]), while some of us can be doctors but others can only be barbers (Herrnstein [6]). But these facts alone, if they were true, would not in themselves necessarily result in a society of unequal power. After all, there is no reason that differences in ability, whether intrinsic or not, need imply differences in status, wealth, and power. We might build a society in which picture painters and house painters, barbers and surgeons would be given equal material and psychic rewards. This is the argument of Dobzhansky in *Genetic Diversity and Human Equality*(7). If taken seriously, this argument would deprive our unequal society of legitimacy offered to it by the argument of biological diversity. To complete its function as a legitimation argument for the present state of the world, biological determinism requires a second facet, the belief in *human nature.* In addition to the biological differences between individuals and groups, it is supposed that there are biological "tendencies" shared by all human beings and their societies and that these tendencies result in hierarchically organized societies in which individuals "compete for the limited resources allocated to their role sector. The best and most entrepreneurial of the role-actors usually gain a disproportionate share of the rewards, while the least successful are displaced to other, less desirable positions"(8; p.554).

The assertion that "human nature" guarantees that the biological differences among individuals and groups will be translated into differences in status, wealth and power is the other face of biological determinism as a

total ideology and represents the consolidation phase of the bourgeois revolution. To justify their original ascent to power, the new middle class had to demand a society in which "intrinsic merit" *could be* rewarded. To maintain their position of power, they claim that intrinsic merit, once free to assert itself, *must be* rewarded. It is all natural and inevitable, so why fight it?

One element is left to complete the ideology and bring it to perfection as a weapon in social warfare. It is easily observed that even in a democratic society rewards are not reassorted each generation. The children of oil magnates tend to become bankers, while the children of oil workers tend to be in debt to banks. Can it be that parents are passing their social power to their children and thus circumventing the perfect assortative process based on intrinsic merit? Hardly. It must be that the biological abilities that are rewarded are passed on biologically from parent to child. Thus, we have the equation of biological differences with hereditary differences that assures a legitimate passage of social position from generation to generation. The equation of *biological* with *hereditary* is clearly not essential logically, since inborn differences might easily arise from accidents of development. Folklore reflects an appreciation of this possibility in the notion that the physical and psychic dispositions of children may be influenced by experiences of their mothers during pregnancy. It is not clear when the equation of *biological* with *hereditary* became common, but it certainly predates modern genetics.

We have the equation of biological differences with hereditary differences that assures a legitimate passage of social position from generation to generation

Nineteenth-century literature is permeated with the notion that human behavior is inherited. The classic expression is in Zola's Rougon-Maquart novels, which chronicle the two halves of the same family, descendants of one woman by two men. The descendants of the husband Rougon, a solid, hard-working peasant, are intelligent, hard working, and ambitious, while those who sprang from the dissolute, drunken, criminal lover Maquart are equally degenerate and alcoholic. Among the Maquarts are Gervaise, the hard-working, successful laundress who nevertheless finally succumbs to her inherited laziness and drunkenness, and her daughter Nana, sexually degenerate from early childhood.

The Rougon-Maquarts are the type for the American myth of the Kallikaks, which has graced textbooks of psychology for years (for example, Garrett's *General Psychology* [9]). Martin Kallikak, a colonial soldier, had two wives, one half-witted and dissolute and the other respectable and middle class, and the respective branches of the family followed the type to remote generations. Thus, Kallikak's descendants through his middle-class wife are all good, solid citizens, while those through his other wife are shameful degenerates.

English literature, too, has demonstrated the rule of nature over nurture. Oliver Twist, raised from birth in that most degrading social institution — the parish workhouse — and educated in crime by Fagin, nevertheless develops gentleness, honesty, and the Christian virtues and all the while speaks perfect, grammatical English. All is explained when it turns out that he is the child of a respectable upper-middle-class woman. The most remarkable case is George Eliot's Daniel Deronda, who is raised from birth by an English nobleman and develops into the typical leisure-class, gambling dandy of the nineteenth century but who in early adulthood feels mysterious longings and attractions for things Hebrew, including a passion for a Jewish woman. The reader will not be surprised to learn that he is really the son of a Jewish actress.

In the twentieth century, modern genetic ideas have replaced the vague notions of "blood," but nothing else has changed. Oliver Twist and Daniel Deronda are the prototypes of the modern adoption study, but Dickens and Eliot were better experimenters than their modern counterparts who have failed to transgress class lines in their baby exchanges. Only in the imagination of a Victorian novelist or a Gilbert and Sullivan plot can children be distributed at random across social boundaries from an early age. The rediscovery of Mendel in 1900 very quickly provided a scientific apparatus that could be marshaled to produce "scientific" explanations and an apparatus of objectivity to support the claims of hereditarians for the supremacy of innate factors. Thus, E.L. Thorndike, characterized by A.R. Jensen as "probably America's greatest psychologist and a pioneer in twin studies of the heritability of intelligence" (10; p.17), wrote in a scientific paper on twins that "in the actual race of life, which is not to get ahead, but to get ahead of somebody, the chief determining factor is heredity"(11; p.12). This assertion that the "chief determining factor is heredity" was made in 1905, only 5 years after the rediscovery of Mendel's paper, but 13 years *before* Fisher's paper establishing the statistical theory on which genetic studies of quantitative characters are based, 10 years *before* Fisher's derivation of the sampling distribution of the correlation coefficient, and 5 years *before* Morgan's chromosome theory of inheritance. E.L. Thorndike appears to have been not only America's greatest psychologist but its greatest geneticist, statistician, and crystal-ball gazer as well. And he was not an exception. America's most prestigious academics and scholars in psychology, sociology, and biology have over and over again asserted as *facts* what they cannot have known to be true. They have used their immense authority to misinterpret, misinform, and sometimes deliberately misrepresent biological concepts and observations in the service of an ideology to which they adhere.□

ABOUT THIS ISSUE, *continued from p. 4*

Hunger and famine have been with us throughout history. Recently, however, a global "food shortage" has supposedly come to threaten the earth's population — especially the third world nations — with massive starvation. Overpopulation is usually given as the primary cause of situation: people in poor nations have so many children that there is simply not enough food to go around. Modern agricultural techniques, we are told, will help alleviate hunger, but cannot end it. The simplest solution is to have fewer children. Offering the "population explosion" as the cause of hunger has led directly to massive birth control and sterilization programs for third world people.

Two new books show that hunger is not caused by overpopulation. *Food First* by Lappé and Collins and *How the Other Half Dies* by Susan George, reviewed together in this issue by the Boston SftP Food and Nutrition Group, argue that there *is* enough food to feed everyone. Instead, the problem is one of distribution. The books document how a few wealthy individuals and multinational corporations control the world's land and agricultural resources, while the poor are steadily losing access to their already small holdings. Among the rich there is never a food shortage. Hunger is not a "scientific" problem that can be solved by agricultural technology or population control methods. Rather, it is an economic and political problem that can only be solved by a redistribution of power and resources away from the rich in favor of the world's poor.

* * *

In the last year we have published a number of articles challenging the ideas of biological determinism. We believe that these theories that seek biological bases for human social behavior represent a political attempt under the guise of "objective" science to justify the status quo. The Ann Arbor chapter of SftP has recently published a book, *Biology as a Social Weapon,* that details how scientific theories can be used to legitimate the existing social order and undermine any movements towards social change. In this issue we present an excerpt from Richard Lewontin's introduction to the book. He has concisely outlined the general framework of biological determinist ideology — its function and its fallacy and provides a philosophical foundation from which to criticize biological theories of human nature.□

SCIENCE FOR THE PEOPLE:

the magazine

SftP is published bimonthly and is intended not only for members, but also for a broad readership within the technical strata and for all others interested in a progressive-radical view on science and technology. The goals of *SftP* are to elucidate the role of science and technology in society, to enrich the political consciousness of readers, and to stimulate participation in concrete political activities.

The subscriber circulation of *SftP* is about 1,500, the total circulation about 4,000. The content of *SftP* derives largely from the experiences and interests of people who read the magazine. In seeking to "rely on the people", we urge everyone both to contribute to the magazine themselves and to encourage others to do the same. We are particularly interested in having articles written, discussed, or at least reviewed, collectively, when circumstances permit.

1. *Operations*: *SftP* is published through the activities of the Editorial, Production and Distribution Committees under the direction of the Magazine Coordinating Committee (whose members are drawn from the other committees). All committee members (part-time, unpaid and serving 6-12 months) and the Magazine Coordinator (part-time, paid) are from the Boston area except for some members of the Editorial Committee who are from other cities. All committees are accountable to the general membership by way of 1) the annual Northeast Regional Conference (the most regular and widely attended conference of SftP) which reviews the magazine and makes general policy, 2) the different chapters of the Northeast Region through the Northeast Regional Coordinating Committee, and 3) local chapters through selection, review and direction of their participants on the Editorial Committee. Nationwide representation on the Editorial Committee by active SftP members is encouraged.
2. *Material for Publication*: To be in accord with established guidelines, material for publication 1) should deal with issues of science and technology, from a radical perspective, 2) should raise the political awareness and involvement of the general readership, and 3) should stimulate activities of individual persons and groups and the formation of chapters, but should not generally have the character of an "organizing manual."
3. *Kinds of Contributions: Articles.* Good articles can evolve from our work and from community-based or other, political, investigation and activity. Topics may reflect research, teaching or other interests, and can take the form of book reviews, reports of events, or analytical articles. Writing done for another purpose often can be adapted for *SftP* and is welcome.

Procedure: 1) articles written for another purpose and roughly conforming to above guidelines: submit 3 copies along with a letter describing the article's origin, how it might be adapted, and whether the author(s) are willing to do so. 2) new articles: if convenient, send an outline of a proposed article so that the Editorial Committee can point out possible conflict with the guidelines and make suggestions concerning content, resource material, emphasis and magazine context. In this way, some assurance can be given that an article will be used. Writing articles collectively is encouraged. Submit articles in 3 copies. In attempting to give authors constructive criticism and support, the Editorial Committee expends considerable effort in reviewing articles and discussing them with authors. Final substantive editorial changes are cleared with authors. In discussing the magazine's content, in the "About This Issue" column, the Editorial Committee may point out unexplored questions, describe the range of opinion within SftP on a particular issue and draw some additional political interpretations of its own from the articles.

Current Opinion. Short, tightly argued positions on timely subjects are required for the Current Opinion feature. These contributions, including an occasional one from the Editorial Committee, should rely on facts and analysis generally accepted by the membership. It is the responsibility of the Editorial Committee to try to select those which best clarify the debate; this will include discussing changes with authors. Contributions should be 500 words or less, in 3 copies.

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