

SCIENCE FOR THE PEOPLE

ALTERNATIVE TECHNOLOGY:
TOYS FOR THE FEW OR
TOOLS FOR THE MANY?



Women and Health
Sexism at Cancer Lab
Nuclear Power Hazards

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inside

3 ABOUT THIS ISSUE

4 LETTERS

5 THREE VIEWS ON ALTERNATIVE TECHNOLOGY

6 Alternative Technology: Is Less More?

10 Alternative Technology: Possibilities and Limitations

14 Alternative Technology: Not A revolutionary Strategy

18 WOMEN AND HEALTH: A REVIEW OF THE LITERATURE

20 SEXISM AT CANCER LAB

24 NUCLEAR POWER HAZARDS

29 JUNGLE LAW: STEALING THE DOUBLE HELIX

A review of Ann Sayre's Rosalind Franklin and DNA

32 CURRENT OPINION: RECOMBINANT DNA RESEARCH

35 NEWS NOTES

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PICTURES AND GRAPHICS

- p.11 *The Pentagon of Power*, by Lewis Mumford
p.12 *The Pentagon of Power*, by Lewis Mumford
p.15 Sabadel
p.17 *cpf*
p.19 *Healthpac/cpf*
p.20 Quarterly Report, Winter 1975 of the Fred Hutchinson Cancer Research Center
p.26 *Granite State/cpf*
p.30 *Molecular Biology of the Gene* by James D. Watson

**We've Moved!!!
Science for the People
has a new address:
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SCIENCE FOR THE PEOPLE: the organization

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 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 *SftP* and/or actively participating in local SftP activities. (Chapters and contacts are listed on the inside back cover.)

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. For legal purposes, *Science for the People* is incorporated. *Science for the People* is available in microfilm from Xerox University Microfilms, 300 North Zeeb Rd., Ann Arbor, Mich. 48106, (313) 761-4700.

continued on p.38

about this issue

Alternative Technology

Many people interested in strategies for social change have recently become involved in the alternative technology (AT) movement, and there are now extensive AT activities all over the country. This relatively new movement poses important questions for people who have come to realize the political influences behind science and technology. Several points of view on the subject are presented in this issue. Ken Alper and Chuck Garman argue from a Marxist-Leninist perspective that AT is inherently barren as a method for social change, and criticize the movement for serious neglect of the real situation of most working people. However, they do not show why people who are concerned with the needs of working people could not be productively involved in AT activities. Phil Bereano, following perhaps in the anarchist tradition, contends that innovative institutions, relying in part on AT, will make possible a new consciousness. This article seems to ignore the role of class struggle. The Boston Area Alternative Technology Group presents a third, intermediate position, and suggests concrete areas where a significant role for AT may exist. None of the articles deals with explicit examples of AT projects, and it becomes apparent in reading them that it would be extremely hard to evaluate the success or failure of specific projects. This is both because of the newness of the whole field and because individual projects are based on different theories, with differing criteria for success. Nevertheless, these articles place AT in the context of theories of social change and suggest some of the criteria by which it should be evaluated. We hope that this will stimulate further discussion in *SftP* with reference to practice as well as theory.

The article on nuclear power is a response to the pamphlet which was published in the May issue of *SftP*. The magazine should be a forum for continuing discussion and reevaluation of important issues, and this article is meant to stimulate further debate and careful thinking about the question of nuclear power.

Issues in Research Policy

The politics of research can be examined on 2 levels: the personal and the institutional. The review of Sayre's *Rosalind Franklin and DNA* deals with the micropolitics of bourgeois science in a specific historical case. When new ideas are private property to be aggregated for maximum gain by the "owner", it is hardly surprising that traditional sexist behavior is accentuated or that public knowledge of a woman's key contributions to understanding the structural basis of molecular replication can be discredited, denied and forgotten. In the article exposing sexist and elitist practices in cancer research at the Hutchinson Center, we are given a glimpse of an institutional research environment. Here we see that success comes to grant hustlers, traditional role players and loyal followers of the official line on priorities and approach. The experiences of these scientists pinpoint the questions of how science should be

carried out on the local level, and how priorities in research should be established in the first place.

Research priorities should not be controlled by corporations, Washington bureaucrats, politicians or Big Science administrators. Rather, ideally, they should reflect careful choices determined in the course of extensive public discussions, by institutions which serve the interests of working people. These discussions would explore people's needs in the broadest context. Such institutions do not exist as a significant force at present and thus a full solution to the priorities problem involves a much larger political struggle than merely questioning priorities.

Decisions about how research gets carried out within socially defined priorities, similarly, should not be made by private institutional interests (like research centers with elite governing boards), science empire-builders, or other managers and officials in research hierarchies. Such decisions should be the responsibility of the science workers themselves, their peers, and other work associates, in collaboration with genuine representatives of all working people's interests. The institutional support and ideological requirements (i.e., that science should serve the people) for such accountability and participation are, again, lacking and depend on broader political change.

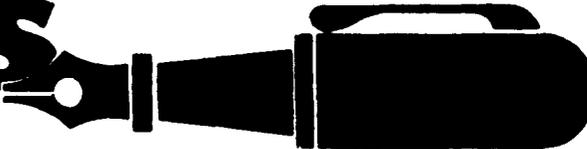
To these ends people working in science must increasingly confront questions that arise in their work. This includes everything from elitism and discriminatory practices — especially sexism and racism — to the content and priorities of science, and the economic — especially employment — impacts of various technological options. Developing organizations and making ties with progressive organizations of other working people would constitute major advances in this program.

Recombinant DNA

The very active debate on recombinant DNA provides a unique opportunity to put these ideas into practice. The decision of the City Council of Cambridge, Mass. to briefly and mildly intervene has created global waves, so unusual is it for a "public" and local body to involve itself in science policy. This research is rapidly moving out of the realm of "pure" knowledge into hard-core technology: it is now being lustily eyed by pharmaceutical and other industries, and technocrats in government are feeling pressures. Consulting opportunities are opening up for previously cloistered academicians. Nevertheless the debate itself reflects a good development: people no longer automatically accept that new technology means better living. While several variants of this popular opinion are, we believe, wrong (e.g., that technology is inherently bad, that civilization has irreversibly exceeded the limit of optimum technology utilization, that mystical explanations are more valid than science after all) it is nevertheless a positive advance that

continued on p. 38

letters



Dear Friends:

A while ago I was sent the March issue of *Science for the People*. I enjoyed reading the publication very much. Here in prison I am involved in a study group (M-L-M) and the others also read with much interest. Your book *China: Science Walks on Two Legs* is also making the rounds through the group.

We would very much appreciate being sent a subscription to this publication if you could afford to send us one. We are only paid slave wages in prison. Please know that several people would be reading and studying the publication.

Thanking you, I am

Yours in struggle
Calvin M. Arey, 58235

PS: Some time ago I also read an article entitled "Genocide of the Mind" which has also been passed around. We appreciate the warning about what "they" are planning for us!

Dear SftP

I have just received your bimonthly issue (May, 1976; Vol. 8, no. 3) of *Science for the People*, loaned to me by a fellow prisoner here at the Marion Penitentiary.

I found your entire magazine rich in political scientific information. I enjoyed all the articles, and was especially fond of Norman Diamond's essay, "Politics of Scientific Conceptualization. Its historical analysis of ideas influenced by politics in the scientific field is unquestionably an integral part of any society.

I'd be most appreciative if I could be put on your list of indigent prisoner subscribers to receive *Science for the People*.

Thank you in advance and for your prompt reply.

Salud,
A.L.M.

Dear SftP;

I read your brief article in *Newsweek* on the XYY factor. Personally I have been in prison for 24 years and I guess I have seen about every type of man-convict there is to see. Now I remember when this XYY factor came out and it's a bit hard to believe that any one person could be different from another. There may be men with an XYY factor . . . whatever that may be. I am sure that it's found in blood, but so is Australian antigen and you know that is new and is related to hepatitis . . . It would seem that something new is always cropping up and who can say that these new things are what they are supposed to be.

In a law suit in Atlanta against the U.S. Public Health Department that dealt with using inmates as guinea pigs to test different drugs and cures for malaria, this Australian antigen came up because I had contracted hepatitis. A doctor said, "Well, he has been incarcerated a long time and we find this Australian antigen in all long-term prisoners." So he could have just as well said he is an XYY case and who would have questioned him. What is XYY? It is surely not confined to convicts, and every person has that bit of thief inside.

Sincerely,
A. Ken Bankston
Marion Federal Penitentiary

Hello!

Thank you for introducing us to *Science for the People*...I put the issue on the table of reading materials for my customers and friends this week and it was read enthusiastically by a good number of steady visitors to the Cozy Corner who said they would buy it if we had it. So...please send the first issue soon.

The Cozy Corner is a small, but steadily growing, bookstore located in the heart of the Appalachian region—we are the only bookstore within a radius of 150 miles—with the exception of 2 Christian bookstores.

We draw our business from the region as well as from the local community...a town of 1,600 in a county of 28,000 people. Our community is often in the media; the *Mountain Eagle*, a radical weekly newspaper, is quite outspoken and was recently burned for taking on the local law enforcement; Harry Caudill, a local attorney and author, has been known nationally for his interest in the environment, namely strip-mining issues; and most recently, the double explosions at the Scotia Mines, a sub-contract of Blue Diamond Mines, which took the lives of 28 men in our community, has brought national attention to the need for mine-safety legislation.

Some of us are very interested in your magazine and look forward to receiving in regularly. If there are any issues around our area that you are interested in, perhaps we can assist in researching, or providing your stuff with the necessary intro to this area.

Sincerely,
Josephine D'Amato Richardson
Whitesburg, KY

Morning!

Enclosed is check for membership 1) Please send me the current issue on health-care system as only bookstore I can find which carries your magazine sold out real quick 2) I am interested in contacting SftP people in Portland, Olympia, Seattle, and would appreciate some names/addresses.

I am student (pre-med) and lab lackey in micro B lab at UO Med School. I've consistently read your stuff and always anticipate new issues. Especially out here there is not even the fantasy of a scientific community—maybe some wiggles in Seattle health care system—so news and ideas are joyfully welcome.

I welcome articles like Vandermeer's criticism of Garrett Hardin or the Genetic Engineering Group's article on XYY controversy. But at the same time I am very uncomfortable with articles like "Imperialism: The Common Enemy" (VII,4) not because I disagree with what McEwen has to say but rather because I think the space in the magazine is better used to inform people of more specific science-related events. For instance, Lewontin's criticism of Wilson's *Sociobiology* is directed at the kind of assumptions (unconscious) which develop into the behavior McEwen labels imperialist. Lewontin's criticism is more specific and addressed to a complex issue. McEwen gives way to generalizations and broad statements which slide into rhetoric. This is not to say that overviews are to be discouraged. I am looking forward to some hard thought on alternative institutions in response to Chidakel's analysis of Schumacher.

continued on p. 38

THREE VIEWS on ALTERNATIVE TECHNOLOGY

In the last few years, a sizeable movement has sprung up which criticizes the technology of the economically advanced countries, and which is trying to develop and build "alternative technologies". The Magazine General Meeting (the bi-monthly meeting of the Boston Chapter to evaluate the magazine) urged that Science for the People should begin to report on this movement and to evaluate its political significance. We begin here with a short description of the alternative technology movement, adapted from a brochure written by the New England Network for Appropriate Technology. There follow three analyses of the alternative technology movement with differing evaluations of its political promise. We encourage contributions from readers on this topic.

What is Alternative Technology?

E.F. Schumacher coined the term "intermediate technology" in 1973 to signify "technology of production by the masses, making use of the best of modern knowledge and experience, conducive to decentralization, compatible with the laws of ecology, gentle in its use of scarce resources, and designed to serve the human person instead of making him[sic] the servant of machines." Today, the term "alternative technology" is more frequently used to express these ideals. The central tenet of alternative technology (AT) is that a technology should be designed to fit into and be compatible with its local setting. Examples of current projects which are generally classified as AT include building of solar collectors for heating and cooling; developing small windmills to provide electricity; roof-top gardens and hydroponic greenhouses; fish tanks in basements; and worker-managed craft industries. Some groups argue that only small community-based technologies should be called AT, while others argue that larger-scale technologies like factories are appropriate in certain situations and should not be absolutely excluded. There is general agreement, however, that the main goal of the alternative technology movement is to enhance the self-reliance and self-sufficiency of people on a local level. Characteristics of more self-sufficient communities, which it is hoped that AT will be able to facilitate, include: 1) low resource usage coupled with extensive recycling, 2) preference for renewable over nonrenewable resources, 3) emphasis on environmental harmony, 4) emphasis on small-scale industries, and 5) a high degree of social cohesion and sense of community.

What are Some Examples of AT Activities

The *New Alchemy Institute* at Woods Hole MA and also California is currently experimenting with fish and algae eco-systems, and is building a completely autonomous house, which integrates food production, energy generation, and waste recycling, on Prince Edwards

Island. *Intermediate Technology* (associated with Schumacher's group in England) in Menlo Park CA is developing a small-scale glass factory and other projects for Third World countries. *Boston Wind* teaches design courses on wind power and other AT in the Boston area. *Sun Tek* of Cambridge, MA, *Solarwind* of East Holden, ME and Total Environmental Action of Harrisville, N.H. all do design-work consulting on solar energy. The *New England Solar Energy Association* publishes a newsletter and serves as a general forum for groups developing solar energy and related AT. *Grant County Community Action Council Inc.*, Moses Lake, WA, is developing a guide for constructing a solar water-heating system which can be assembled at minimum cost with common tools and materials. *Earth Mind* in Saugus CA designs windmills and solar collectors. The *New England Food Coop Organization* (NEFCO), a federation of all the food coops in the Boston area is currently working with the *Natural Organic Farmers Association* (Plainfield VT) to develop a direct link between organic farmers and food coops in the New England region. The *Shelter Institute* of Bath ME is teaching people to design and construct their own homes. The *Farallones Institute* in California designs, constructs and evaluates 1) innovative, inexpensive ways of building 2) components for self-renewing energy supply and resource recycling 3) improved means of food and fiber production including field crops, aquaculture, and wildlife management. *Earthworm* is a recycling collective in the Boston area which is finding the reclamation of wastes quite profitable. The *Social Ecology Program at Goddard College*, Plainfield VT, teaches courses in AT and attempts to apply AT within an anarchist framework. *Resources*, in Cambridge, has developed a computer data base of 5000 alternative groups across the country. The *Institute for Local Self-Reliance* in Washington DC is involved in educational and research activities, developing and disseminating information useful to communities and cities seeking to be as self-reliant as possible. Their projects include urban gardening, hydroponics, aquaculture, biological waste conversion, solar and wind energy.

ALTERNATIVE TECHNOLOGY: IS LESS MORE?

Phil Bereano

The following essay has been substantially edited from a longer version which also included discussions of alternative technology as it relates to technological rationality and the technological imperative, and considered the post-scarcity potential suggested in the work of Murray Bookchin.

Over the years articles in *Science for the People* have dealt with the political, economic, and social implications of specific technologies in such areas as genetics, contraception, and weaponry. Some have also dealt with the determinants of specific technological forms. But the magazine has rarely addressed the notion of the "technological society," that is, the intellectual and political ramifications of a culture which is historically unique in its intensive reliance on technologies and on "technological rationality" as a mode of thought. As political people, as technically oriented political people, such an analysis is important if we are going to be able to decide what we should be *doing* now.

A critical aspect of the discussion of issues of technology and social change relates to the definition of "technology." I believe that technology does not refer to hardware alone, but to hardware, software, modes of organization, ensembles of techniques, *and* the political economy within which they are embedded and utilized. I agree with David Dickson in *The Politics of Alternative Technology*[1] that the means of production, such as machinery, embody the relations of production (e.g., aspects of capitalism, domination and hierarchy) under which they were conceived. Technology must be understood in this sense. Numerous studies of the Industrial Revolution in Britain and elsewhere, by Dickson and others, show that the development of technologies of all sorts (specific industrial machinery, the imposition of the factory system over the "putting-out" system, or technologies which are totally separated from physical hardware such as Taylorism and time-motion studies) were specific responses to the desire by capitalists to pacify the labor force in addition to—or even sometimes in preference to—increasing productivity. Technology is not neutral, and most of the technological forms which surround us today in an advanced capitalist society are the result of management's need to control labor. The dominant forms of social organization therefore become built into the technological forms.

Consequently, I would define a position which says that current technological forms are frequently associ-

ated with alienation, hierarchical control, and domination, and that we must work to *develop new and appropriate technological forms as a part of a political transformation*. "Indeed, it is only through political change, and in particular through achieving liberation from the economic and political shackles of a dominant class, that the possibility of significant technological change can emerge." [2] What sort of a technology would this be? Let me offer the following suggestive definition: Alternative technology is an attempt to find technological forms which make life easier and better by assisting humanity to overcome the constraints of scarcity, and yet are human-scaled and comprehensible, consistent with ecological processes, durable. They must also be less alienating than the dominant technological forms in industrial capitalism, less disruptive of the social/psychological/cultural fabric, and must also reinforce and be reinforced by decentralized organizational structures.

Several years ago, Peter Harper sketched out most of the important criticisms of alternative technology: AT so far has focused on consumption rather than production, is trendy and gadgety, has a bourgeois flavor about it, and frequently advocates scrounging for materials (which becomes a new competitive process). [3] Furthermore, some proposals for alternates to existing technological forms are actually massive or megatechnologies which represent the ultimate in alienation from one's natural environment. Harper also explores the relationship between technological forms and the work/leisure balance in a society, using the three model societies imagined by Paul and Percival Goodman in their book *Communitas*. This approach seems particularly fruitful to me because it directly raises issues of values and questions about the kind of society we would like to have after the revolution.

Interest in alternative technology has reinvigorated the debate between socialism and anarchism: centralization vs. decentralization, seizing state power vs. creating new institutions, views of class. The main issues I would like to discuss in this context are (i) the continued validity of a materialist analysis, placing primary emphasis on economics; (ii) the sanctioned modes of thought of contemporary Western society; (iii) appropriate organizational forms; (iv) the distinctions which may exist between technology and society relationships in the Third World as compared to the developed world; and (v) my own views of the drawbacks and dangers in

Schumacher's work. (Since *Small is Beautiful* is the most widely known statement of an intermediate technology position, I will comment on it in some detail although I feel that Dickson's book is superior politically.)

Materialism and the Primacy of Economic Analysis

Marxism is a method of analysis and a materialist philosophy. The means of production and productive relationships, such factors as labor, capital, technology and land, are the base of society; and social values, art, laws and government, and religion make up the superstructure. The superstructure is formed and influenced by the base, though this relationship is to a certain extent reciprocal. The corollary has been that analyses of social situations which are focused on economics are considered to be more valid than analyses based on superstructural elements, such as religious tenets. However, by its own terms, the *substance* of Marxism is rooted in the historical situation of over one hundred years ago (such as existing working conditions, perceptions of the role of technology in social change, the nature of work processes, and the composition of the working class). The situation in our own day, particularly as regards technology, is so vastly different from earlier eras that, while perhaps retaining Marxist *methodology* it is legitimate—and quite necessary—to ask serious questions about the continued relevance of the substantive conclusions, which were based on 19th-century experience, and the sorts of modifications of them which might be necessary to account for historical changes.

Personally, I have always resisted a perspective which views economics as central to understanding human existence, because I am uncomfortable with the realization that Marxism shares such a perspective with both the leading intellectual welfare economist apologists for corporate liberalism and the most confirmed bourgeois American businessmen. I feel more comfortable with a materialist perspective which recognizes that superstructural elements can exert very important influences on social/historical developments.

The most important part of Schumacher's book to me is his essay on "Buddhist Economics," where he attempts to look at human relationships as they might be perceived from the perspective of a different *cultural* tradition. Schumacher spent some time in Burma studying Buddhism. He states that Buddhism views work as having at least three functions: to give people a chance to utilize and develop their faculties; to enable them to overcome ego-centeredness by joining others in common tasks; and to bring forth goods and services which are needed for an existence proportionate with real human needs. Only the last of these seems to involve materialism, but Schumacher claims that Buddhist economics must be very different from the economics of modern materialism "since the Buddhist sees the essence of civilization not in a multiplication of wants but in the purification of human character." [4]



According to Schumacher, a Buddhist economist's goal would be "the maximum of well-being with the minimum of consumption," [5] which leads to the point of view that "less is more." In a humane, liberated, and communitarian society, people would not have to fill their lives with material objects in order to satisfy *wants* which they believe to be *needs*. Neither the biosphere or interpersonal relationships would be subjected to continual ravage justified on the grounds of maximizing economic productivity and efficiency. For the first time, economically developed societies have the potential for using technology to escape the constraints that scarcity has imposed on humankind. Perhaps, then, a compelling task for radicals is to focus on the non-economic aspects of life, or at least to develop a vastly different economics. After all, "human needs do not exist for the sake of the economy. Rather the economy exists for the sake of those needs." [6] As Roszak says in his introduction to Schumacher's book, "We need a nobler economics that is not afraid to discuss spirit and conscience, moral purpose and the meaning of life, an economics that aims to educate and elevate people, not merely to measure their low-grade behavior." [7] Some people are critical of Schumacher's ideas in part because of his social stratum. "Are the ideas, the contribution of upper-class persons to be rejected out of hand because of their class origins? Or are ideas, actions to be judged on their merits, in relation to how they contribute to the advancement of humanity?" [8]

In *Revolution and Evolution in the 20th Century*, James and Grace Lee Boggs conclude that "the main contradiction in the United States is the contradiction between its advanced technology and its political backwardness." [9] In Chapter 9 of the Boggs' book, these

issues are addressed as "Changing Concepts for Changing Realities," and they note:

During the last two hundred years we have been traveling ahead with gathering momentum to make economic development the governing principle in every decision. Now it is necessary for our very existence that we change directions, that we embark on a new road. The old direction, the old road, created by one philosophy, one set of values, has become destructive not only of others but of ourselves as well. The old concepts have taken us on a road where material things have become not just the means but the very end of human aspirations. We have replaced man/womankind as the end and goal of living with the things which we originally created to serve us as means. We now value human beings for their economic possessions and their economic status rather than for their humanity.[10]

A Reorientation of Our Modes of Thought

I see Schumacher's book as one of a number of works that are beginning to point the way towards a change in our mode of thinking, and not as a definitive programmatic statement. Many people are now suggesting that the critical analysis of post-industrial society must abandon reductionism and scientific mystique, size and growth, efficiency, centralization and control in hierarchical patterns, concern for means instead of ends.

A radical critique of the existing social order is clearly a necessary condition for any process of meaningful social change, and indeed a great deal of important work by liberal muckrakers and by leftists has been along this line. But a critique is not sufficient by itself to bring about change; with that element must be combined a vision of the alternative. "Man/womankind today needs to redefine what are appropriate social relations. This can't be done by a plebiscite, by counting noses, or by any other kind of numbers game. It must be done by particular kinds of people projecting another way to live and testing it against certain classes, certain races, certain groups, certain people." [11] In other words, serious utopian writing is based on a belief that the future is not inevitable, but rather that a compelling conception of social goals can help to create the conditions for their own fulfillment.

In the attempt to engage in both theory and practice, we sometimes seem to forget that we are concerned with a dynamic process, both between theory and practice themselves and in terms of the creative new elements which can help both our theories and our practices. In this sense we should read someone like Schumacher to see what, if any, valuable stimulation his ideas might provide to the continued development of our philosophy.

If, as I believe, this era is unique, technologically and historically, then it is of fundamental importance to ask new questions for the time if we are able to seize it. What are some of the elements which might compose such a new vision? Let me indicate some of the areas which

seem most relevant for fashioning a humane notion of the future for a highly technologized society, and some of the sources of holistic alternative to the aggressive and destructive technology-enthralled present.

We must begin by reassessing which social processes, institutions, and values are properly categorized as means, and which are to be seen as ends. Foremost among the writers who have analyzed post-industrial society in this manner is Jacques Ellul, who wrote *La Technique* in 1954 (published in 1964 in English as *The Technological Society*). Ellul uses the term "technique" to denote "the ensemble of practices by which one uses available resources in order to achieve certain valued ends." He critically points out that the supremacy of technical thinking in the contemporary era depends upon extolling intermediate values (or means) such as *rationality* and *efficiency* as the overriding principles in evaluating social processes, as if they were ends. "And this is what the constant misunderstanding is: it is that the society gives possibilities for human life. So when we challenge it, we seem to be questioning elements that when seen from another viewpoint appear perfectly positive." [12]

Technological determinism is a view which basically maintains that whatever can be done technically will be done, should be done, and in this society, is done even if it need not be done. Lewis Mumford phrased the issue in a sophisticated manner when he wrote (specifically about automation, but obviously applicable to technology in a larger sense), "It has a colossal qualitative defect that springs directly from its quantitative virtues; it increases probability and it decreases possibility." [13] In other words, the momentum of a new technology seems to impel its utilization and to make less likely other possible courses of action, perhaps of a nontechnological nature. This technological momentum seems to me to be particularly an outgrowth of masculinist attitudes in which bigger is better, activity is progress, and "progress is our most important product." A feminist perspective would urge reflection and vision, particularly of a more comprehensive and less fragmented nature.

One of the foremost critical writers on the ways in which modes of thinking relate to technological activity is Theodore Roszak who specifically links the new social phenomena to an inquiry about scientific rationality and technological society. [14] Those who proclaim adherence to *scientific* socialism ought to address Roszak's arguments that there are a variety of styles of knowledge. Science and knowledge are not equivalent because knowledge is not merely information but concerns meaning also. For example, nature used to have a meaning to people; now it is meaningless, although the source of much interesting information. Roszak uses the Greek term *gnosis* to refer to this other kind of knowledge—meaning or wisdom. *Gnosis* is augmentative, whereas scientific rationality is reductionist and anti-organic. Roszak knows that science appeared on

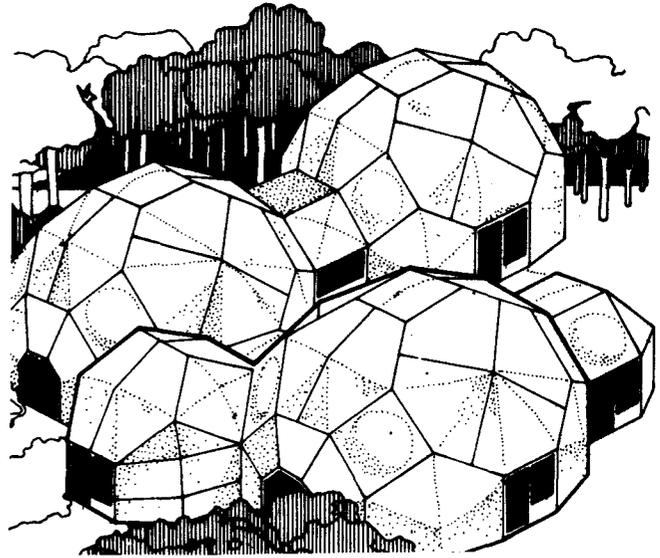
the historical scene as a liberator, freeing people from superstition and a pre-existing confining world view. Although he acknowledges this phenomenon, Roszak says that the scientific method has imposed a tyranny of its own. Mystery, wonder, visions and other nonrational modes of human inquiry and experience have been ruled illegitimate by the definitions of science and socialism alike. Scientific reductionism—the attempt to describe a complex reality by subdividing it into smaller systems, a heavy reliance on modelling, a quest to describe things in terms “objective consciousness” can master, the use of “sub-optimization”—is an approach which robs human beings of a portion of their potential. The resulting emphasis on experts and professionals relating to an increasingly fragmented, nonholistic subject matter, blocks a true understanding of natural and social phenomena. Roszak explains:

Reductionism flows from many diverse sources; from an overweening desire to dominate, from the hasty effort to find simple, comprehensive explanations, from a commendable desire to deflate the pretentious obscurantism of religious authority; but above all from a sense of human estrangement from nature which could only increase inordinantly as western society's commitment to single vision grew more exclusive. In effect, reductionism is what we experience whenever sacramental consciousness is crowded out by idolatry, by the effort to turn what is alive into a mere thing.[15]

Organizational Forms

Concern with overcoming dominative forms of thought seems to lead inexorably to new attempts to explore technological and social arrangements which emphasize smallness, simplification, and decentralization. There is a lot of decentralist-anarchist activity going on. Some may be easy to ridicule; some may embody a new variant of the individualistic biases of capitalism. But many are genuinely exciting operations: women's health clinics (in particular women's self-help clinics), food co-ops, book-stores, carpentry collectives, printing collectives, trucking collectives, music collectives, dance collectives, and all the rest. Regardless of whether any particular examples are successes or failures, we should avoid criticism that is based on intolerance for the notion of experimentation and the values of creative exploration which sometimes lead to “failures.” Some experimental forms may fail, but a person seriously interested in social change would be attempting to analyze the causes of such failures and to reflect upon them, and to discuss with others whether changes in any fundamental parameters might have produced a different outcome.

But it isn't sufficient just to be “alternative.” We should examine the *explicit* politics of each such institution, an if it is in fact an arena for social struggle then it should be supported, even though—just like all struggle situations in this society—it is apt to display contradictions. Perhaps the monopolies can't be put out



of business by these low-production units, but few of the people who are seriously involved in a food co-op thinks that they will put A&P out of business.[16] We have historical evidence to warn us that sometimes different and alternative institutional forms become distorted from their original purposes, and may even work against them: some of these alternatives were centralized and even publicly owned, such as the TVA; some of these are in the form of producer co-ops, which may be trying to perpetuate the exploitation of workers (such as the Sunmaid and Sunsweet organizations which are fighting the UFW); and sometimes consumer co-ops can focus on low retail prices in socially regressive ways.[17] In some instances, the alternate society effort isolates the people engaged in it from other elements in society; in Britain, when the workers at the Lucas Aerospace Combine presented alternative technology ideas as part of a conversion plank in the course of their labor negotiations, the academic/intellectual AT community did not give them strong support.[18] In other words, we should analyze each alternative institution to see whether it serves the people or merely serves its own personnel.

In regard to the worker-management concept, we must acknowledge that Schumacher is not talking about hippie food co-ops and woodworking shops. The one example of an organization which he discusses at length, the Scott Bader Commonwealth, is hardly such an enterprise. In 1971 its sales were 5 million British pounds, and its net “profits” were nearly 300,000 pounds; 379 individuals are worker-managers in this co-op venture. There is important latent interest in such organizations. A recent poll conducted for the People's Bicentennial Commission found that only 8% of Americans wanted to work in a nationalized firm, only 20% in a capitalist context, but that 66% would prefer to be in a company owned and controlled by its employees. Why aren't more radicals actively working on this last model?

continued on p. 34

ALTERNATIVE TECHNOLOGY: POSSIBILITIES

AND LIMITATIONS

The form technology takes is determined by the values and priorities of the socio-economic system. As it develops, it reinforces that system. Therefore, when we speak of technology today we must be careful to identify it as a *capitalist* technology, one that "represents an accumulation of past choices made for the most part by and in the interests of employers." [1] Those who have an interest in controlling workers in order to increase efficiency would have us believe that the technology of production lines, secretarial pools, pollution, hierarchical control is good, that it is necessary, and that it is inevitable.

While "progress" is sold to us as improving the quality of life—in the form of products that relieve us from monotonous labor, move us faster through the air, cook our food in seconds—it has, in fact, alienated us and degraded our lives. Technology for most of us is mysterious and awe-inspiring. Taught to believe in and trust a small group of specialists who supposedly hold the golden key of knowledge, we increasingly relinquish control over our own lives, and are left atomized, frustrated, suffering a vague sense of loss and resentment. Many people are aware of this process and identify technology as the root of evil. They adopt a fatalistic, resigned attitude that this is an inevitable development, a force that has generated a momentum beyond human control.

However, this attitude is beginning to change. Concepts of an "alternative technology" that would somehow restore our control over our lives are becoming credible. For some, alternative technology means nothing more than new inventions which would make technology less imposing and more ecologically sound. Others, however, do not think that we can develop a new way of life out of technology alone. They claim that, in order to develop a meaningful concept of alternative technology, we must determine new values and priorities and the technological forms that would be compatible with them. We agree with this position as far as it goes, but we would add that a struggle for new values and priorities is not merely a matter of moral argument: it involves a political and economic struggle against those who have an interest in maintaining the system as it is.

E. F. Schumacher, author of *Small is Beautiful* and one of the most influential proponents of an alternative technology, rightly comprehends technology as part of a "form of life," and sees that different moral outlooks would lead to different technologies. He understands contemporary advanced technology as following from a system of priorities in which work is nothing more than

the means for a paycheck, and is thereby degraded. He sees the drive for profit coupled with technologies that lead to the destruction of the environment. And he recognizes that a system in which people treat others as means, and the accumulation of wealth as the end, is one which develops technologies of human surveillance and manipulation.

Schumacher's work is faulty, however, in that he does not see how both the form of technology and the moral poverty that goes with it are grounded in the economic structure. We maintain that the degradation of work, of human relations, and of the environment arises in large part from the ways that a capitalist economy *forces* people to behave. In a competitive market, each company has strong pressure on it to maximize its profits by achieving the greatest possible labor productivity at the lowest possible cost, and by maximizing total revenues (price times volume). Such a strategy is not simply the result of greed, but follows from financial necessity. If a particular company does not so behave, it will lack the capital for new investment; its products will become uncompetitive. Such a company has a precarious existence.

There are strong pressures to get work done in the fastest, cheapest manner possible: pressures toward capital intensiveness (the opposite of "small is beautiful"), stultifying division of labor, repetitive tasks, etc. There are pressures toward the degradation of the environment: each company wants to maximize its *own* profit, and has no practical interest in the conservation of scarce energy resources or in preventing destructive materials from polluting the environment. All of this results in the moral perversion of human relations, for the capitalist must view both worker and consumer as means to capital accumulation; thus the worker is manipulated and suppressed, and the consumer lied to and plotted against by advertisers.

Although Schumacher is against private ownership, and understands it to be antithetical to the kind of society he wants, he sees the struggle primarily as a *moral* contest between the greedy and the virtuous. He does not grasp how economic structures mold values and create political power. The bulk of his book is, therefore, a moral sermon.

Schumacher's lack of understanding of the relationship between the economic structure and the values and political relations of a society is apparent in his suggested strategies for social change. Schumacher presents two schemes by which the means of production may be

effectively taken from the capitalists and given to the workers and the general public. The first is based on the actual example of the Scott Bader Corporation, a British company producing sophisticated materials—polyester resins, alkyds, polymers, and plasticizers—which was given to the workers employed there by the Bader family in 1951. Since then, it has prospered enormously, while dedicating itself to the development and happiness of the workers, and supporting charitable public causes. This, apparently, is evidence that socialism can be attained through the spreading of a cooperative movement.

Schumacher's argument is, however, striking in what it omits. There have been a very large number of cooperative experiments, both in the US and in Europe. Rather than review their history, which would show that only a tiny fraction avoided collapse, and that almost all that *did* survive did so by shedding any significant social philosophy, Schumacher picks a single example of success. Schumacher never, therefore, examines the economic forces that often were important factors in the failure of earlier cooperative ventures. Nor does he consider the possibility that these forces may still threaten the Bader Commonwealth: Why, instead of its prevailing against capitalism, won't capitalism prevail against it?

What if Dupont or Monsanto, through heavy investment in productive technology, were to produce an identical product at a fraction of the cost? Or if they were to develop, through a massive program of research and development, a new product line that made Bader's plant obsolete? Or if they intentionally undersold Bader, at a loss, until Bader's limited financial resources were used



up? Bader would have three alternatives: streamlining operations (which may inevitably require the “degradation of work”); bankruptcy; or takeover by a more heavily capitalized firm. The destruction of small companies by larger and more “rational” companies is not an unfortunate chance occurrence. It arises from pressures of capitalist development. But this pressure Schumacher does not acknowledge.

Schumacher's second scheme is a form of nationalization of all but the smallest businesses. Since in Britain and the US about half of corporate profits goes to the government in taxes, it should upset no one if the number of shares of stock is doubled, and the new shares become government property; instead of taxing the company, the government as a stockholder would get half the total dividends. Once the government has control, it can relinquish effective control to the workers and local governments, and the priorities of the company can rise to a higher moral plane.

“The transition from the present system to the one proposed,” Schumacher claims, “would present no serious difficulties;”[2] the capitalists are merely giving stock instead of taxes to the government. But either the capitalists are losing power and wealth or they are not. Social welfare programs and high corporate taxes reflect power relations and were won through years of class struggle. Schumacher's scheme *either* means that the power and wealth of the capitalists will be preserved—in which case corporations will operate very much as they have in the past, maximizing efficiency and giving wealth to rich stockholders—or that capitalist power and wealth will be destroyed—in which case economic efficiency and maximizing return will not govern production. To believe that the capitalists will allow themselves to be dispossessed without mobilizing all their financial and political power, that the transition from capitalism to socialism “would present no serious difficulties,” is to ignore history.

Even if the social ownership of production could proceed a certain distance, as it has in Britain, so long as a country remains in the international market, forces may very well overwhelm the socialization of the economy. If a country cannot match international rates of capital accumulation, its position in the world market will decline. What ensues is the takeover of domestic industry by the heavily capitalized firms of the US and Germany. The alternative is withdrawal from the international market. Such a withdrawal has often been met by financial and possibly military sanctions by capitalist countries. Schumacher, in summary, does not fully recognize the opposition to a country's transition to socialism that would arise both domestically and internationally.

Despite the shortcomings of Schumacher and other advocates of alternative technology, the movement as a whole has value for us in that it brings out the fact that the form of technology is not invariable but is a function of the society in which it is found and tends to preserve that society; any movement for social change must include a program for changing technology. A political

revolution must be accompanied by a social and technological revolution to be truly successful. The Soviet Union is a clear case where this did not occur. Although ownership of the means of production no longer lay in the hands of a few private individuals, the actual *mode* of production was never even challenged. Lenin, in fact, advocated adopting the Taylor system of management, applauding it as “one of the greatest scientific achievements” in the field of work and production efficiency. This attitude is one of the factors that led to a state capitalism that was qualitatively little different from western capitalism.

A critique of capitalist technology might have two parts: one would proceed by accepting the predominant social values, showing that capitalism cannot or will not effectively achieve them. The second part of the critique challenges the predominant values of this society and envisions forms of technology which involve different social goals. Accepting the aims of contemporary society, it could be shown that a large number of national health problems—perhaps the majority—are created by industry, either in the plant or through pollution. Industry is able to increase production, profit and new investment because it does not have to pay to prevent these hazards. But it ruins the health of workers and nonworkers alike. To cope with the problem a huge medical empire has grown up, with the medical supply, drug, and research industries (which together amount to ten percent of the average American family’s income[3]). If occupational health and safety and pollution abatement become major concerns of production units, it would cut direct production of these industries and hurt their profits, for a certain amount of money would have to be diverted from direct production. The resulting improved health would hurt the medical and medical-related industries. That is because one industry substantially exists to exploit the damage done by another. Other examples include the following: Factories leave the cities to cut taxes and so to maximize profits; this makes transportation by automobile indispensable, and so leads to an increase in auto production. Agribusiness practices extensive monoculture; this necessitates the use of chemical insecticides which supports a sizeable industry.

The second part of the critique is less familiar. To a large degree, the values and priorities of capitalism as a system have been incorporated by individuals. Capitalism is not just an economic system, narrowly defined, but a social-moral system which promotes certain human tendencies—e.g. competitiveness, materialism, individualism, the treatment of nature and people as means rather than as ends—and discourages others. The priorities of the system determine how technology will be developed.

For example, the priority of capitalism as an economic system is to maximize profits. This priority, as we mentioned earlier, determines the organization of work; work is governed entirely by efficiency. What follows is the technology of the production line, the dividing up of work into meaningless fragments, the social isolation of the worker, the maximization of the pace of work, the use of industrial processes that workers do not understand (with no effort made to make the work comprehensible to the worker), machinery which the worker cannot understand or repair, etc. To the extent that these priorities have been incorporated by the working class, the result is a consumer mentality.

A critique would point out that this is senseless, that to turn work into stultification, and then turn leisure into enjoyment without any social significance, detached from the “real” world, is a perversion of both work and leisure. What is needed is the reorganization of work; this involves a different technology, e.g. the end of assembly lines. This part of the critique is different from the first in that it challenges values of the society which are very widely held.

The real benefits of any radical political change will not be in terms of an increase in the total number of products available to the working class, but in terms of the reorganization of the whole social and economic system in accordance with values and priorities which are different. An enormous increase in human welfare can take place without any increase in total production, or with even a sizeable decline. What is required is that instead of the criterion of capitalist profit determining



what is produced and how it is produced, a standard of human need, to be arrived at through public discussion, will govern. That means the transformation of social, political and productive life, and the transformation of the material life of the society.

The primary value of alternative technology is that it is part of the vision of a good society which might help motivate a movement for political change. In addition, we recognize three ways in which demands for the development now of alternative technologies, or their actual development, might become strategies which challenge the system. We are not at all sure however that these strategies will be effective.

We can envision three strategies, involving alternative technologies, which would challenge capitalism: 1) the demand for technologies which are ecologically sound, 2) the demand for collectively managed workplaces and the technologies to go with them, and 3) the actual use of technologies of self-sufficient production.

1) *The demand for technologies that are ecologically sound*: Barry Commoner has argued[4] that a large portion of economic growth has been bought at the expense of the natural environment. This "capital debt" to the environment must be paid back or else the whole ecological system will deteriorate and finally collapse, taking the economy with it. Commoner argues that this pay-back cannot occur under the present system. He argues that American industry has become too capital and energy intensive. It has purchased increased labor productivity, i.e. output per worker-hour of labor, at the cost of decreased capital productivity, i.e. output per dollar of invested capital. But in order for an economic system to survive it must regenerate its essential resources, in this case capital. The decrease in capital productivity threatens this capability.

Why has the system not collapsed thus far? As the productivity of capital has fallen, *increased* total production has provided more available capital. However since this capital is being used to finance increasingly capital-intensive production, the process is self-defeating. In addition a greater output per worker-hour and the decreasing amounts of capital available for the creation on new jobs have given us a steadily rising unemployment. Commoner then argues that this whole conflict has been cushioned by the cost of pollution being external to the marketplace. If American industry were forced to bear the cost of pollution, the result would be lower profits and consequently an even greater capital shortage. Capitalism cannot pay the debt; the strain to the economy, says Commoner, would be intolerable. If he is right, the demand for an ecologically sound technology is the demand for a technology which cannot be realized within the context of capitalist economic relations.

It would be very difficult to decide whether Commoner is right and perhaps even more difficult to calculate the implications of his thesis for alternative technology. In one sense at least, Commoner appears correct. American nonfinancial corporations do seem to be experiencing a shortage of liquid capital (e.g. money). Because of the tax

structure and the high rate of inflation, many American corporations used debt financing in the late 1960s and early 1970s. With the slowdown in the economy, they were forced to turn to still more borrowing to repay old debts, to meet interest charges, and to extend credit to customers with the same problems. From 1950 to 1974 short-term debt increased from 13% to 30% of the gross corporate product and interest costs have risen from 2% to over 20% of profits.[5] This liquidity problem threatens individual corporations with either bankruptcy or takeover by sounder institutions, so they raise the spectre of a national capital shortage. The only way they can solve their problem is by increased profits, which would give them increased capital, and so the demand for an ecologically sound technology, in so far as it threatens profits, does indeed threaten them. However in some ways alternative technology may help American industry through this crisis. Alternative technology could provide a whole selection of products which can be produced by American industry. Labor-intensive technologies may increase the number of jobs (albeit low-paying ones) without the consumption of vast amounts of capital. Small-scale experiments may serve to demonstrate that ecologically sound production is efficient and adequate for people's needs, but the implementation of alternative technologies on a small scale does not seem to threaten the capitalist market system; it may even complement it, precisely because of the capital shortage and the surplus of labor.

2) *The demand for collectively managed workplaces and attendant technologies*: Worker dissatisfaction is the best predictor of death and disease.[6] Such dissatisfaction is correlated with lack of control as well as the boredom of repetitive work. Blumberg points to studies that show that if workers were free to discuss and decide how work is to be done, the result would be a tremendous increase in their sense of well being. At the same time, there is a lot of evidence that under these conditions productivity would actually rise significantly.

Bowles and Gintis argue that the only reason that worker's control over the work process is not implemented is that it would threaten the dominant position of the capitalists[7]. Once workers control their own productive activity, they would become intolerant of the remaining vestiges of capitalist domination. Therefore a demand to increase workers' control is a demand which leads ultimately to socialism.

Workers' control implies an entirely different technology of production. For example, the regimentation, social isolation, and extreme division of labor which is imposed by a production line is incompatible with a situation in which initiative arises from the workers themselves. From workers' control, then, there follows an "alternative technology" of production.

Union leaders and radical organizers have not pushed the demand for workers' control; employers, however, have felt the effects of job dissatisfaction, and have become increasingly interested in programs of "job enrichment" and "worker participation." Some liberal

continued on p. 33

Alternative Technology: Not a Revolutionary Strategy

Introduction

This paper analyzes the failing of alternative technological strategy for social change from a Marxist-Leninist perspective and puts forth a Marxist-Leninist strategy as being historically correct for bringing about changes in social relations. Alternative technology and more generally alternative institutions, which provide a vision to motivate people for change, are not new phenomena. Throughout human history there have been visionaries decrying the baseness and oppression of particular times and calling for a return to some more primitive communal state. A strategy for change based on alternative technology is not sufficient, we believe, for the following reasons: 1) it fails to recognize the fundamental conflict in interests between the working class and the ruling class; 2) it fails to recognize the primacy of the workplace in the process of social change and the necessity of the working class taking state power before basic change in the use of technology can occur; 3) it poses technological gadgets and utopian community as the answer to society's problems with no need for class struggle.

History of "Alternatives" Strategies

Over the centuries many books on idealistic communistic societies have been written. These have ranged from Moore's *Utopia*, Andreae's *Christianopolis*, Campanella's *City of the Sun*, to Bellamy's *Looking Backward*. Visions of nowhere (the meaning of the word "utopia") were developed and worked out in detail by a number of men, many of whom then tried to put their visions into practice.

Among these was John Wycliffe who argued in 14th century England that communism "ought to be the actual state of society. For God grants everything to the righteous and makes them lords of the earth. But multitudes of men cannot be heirs to the bounties of the earth unless everything is held in common." [1] Wycliffe was preaching at a time when the enclosure of the common lands was beginning and the peasants were in revolt against this oppression.

With the rise of capitalism and increasing exploitation and misery of the masses came the anti-capitalist visionaries. Saint-Simon was one of these early reformers. His proposals included the transfer of industry from private to public ownership, the retention of private

property in consumption goods, and the insistence that each shall labor according to his capacity and receive a reward according to services rendered. He believed that the new state should be under the spiritual direction of men of science and that change should be brought about by persuasion, by the written and spoken word, not by means of violence. After Saint-Simon's death the new faith gained a number of distinguished adherents, engineers, noted professors, writers and other professionals including Buchez, President of the Constituent Assembly of 1830. The movement continued to prosper for a number of years, and the Saint-Simonians made a number of expeditions abroad to promote their faith and to serve people.

By the 1840s, though, the movement started by Saint-Simon was virtually dead. Other Utopians had risen to take his place, each of them with his own particular theories and detailed plans. Fourier developed plans for alternative communities, which Americans like Emerson and Thoreau tried to copy at Brook Farm in West Roxbury, Massachusetts. One of the more influential of these visionaries and reformers was Robert Owen, an English manufacturer. He held that the aim of human society is the greatest happiness of the greatest number and became famous for his paternalistic treatment of his workers at New Lanark, Scotland. He even came to the US and set up a colony at New Harmony, Indiana which failed after three years. His optimism was boundless, and like all utopian socialists, he felt that all that was necessary was to provide an alternative to the baseness of capitalism. At a convention of trade unions and cooperatives in 1833, Owen maintained that the workers would be won over to the truths of cooperation within six months and added: "I will only briefly sketch the outlines of the great revolution in preparation, which will come upon society like a thief in the night." [2]

Around this time many cooperatives were started and many of these have failed. Over the century and a half they've attempted to compete with capitalism by providing a better alternative. Today there are extensive cooperative movements in most European countries as well as many other countries in the world. In England it is quite extensive and old. Started in the early 1800s, by the 1960s the movement had 12,000,000 members, employing 250,000 people and conducting about 10.8% of the total retail business. [3]

Today there are new advocates of utopian schemes. Their clarion call is to develop alternative technology or food co-ops, auto repair shops, etc., which people will use to break away from the monopoly capitalist/imperialist system. Another variant is that these alternatives will provide a vision to motivate people to overthrow the system. The alternative institutions strategy for change is based upon the same political assumption as the earlier utopian movements: that class struggle is not necessary and radical change can be brought about by piecemeal efforts.

We believe the central question here is how does the transition from capitalism to socialism take place. In the transition from feudalism to capitalism the capitalist class conquers political power only at the end of a long period during which the economy of capitalism has successfully competed with the economy of feudalism. The advocates of alternative institutions are looking to this model to bring about the transition to socialism.

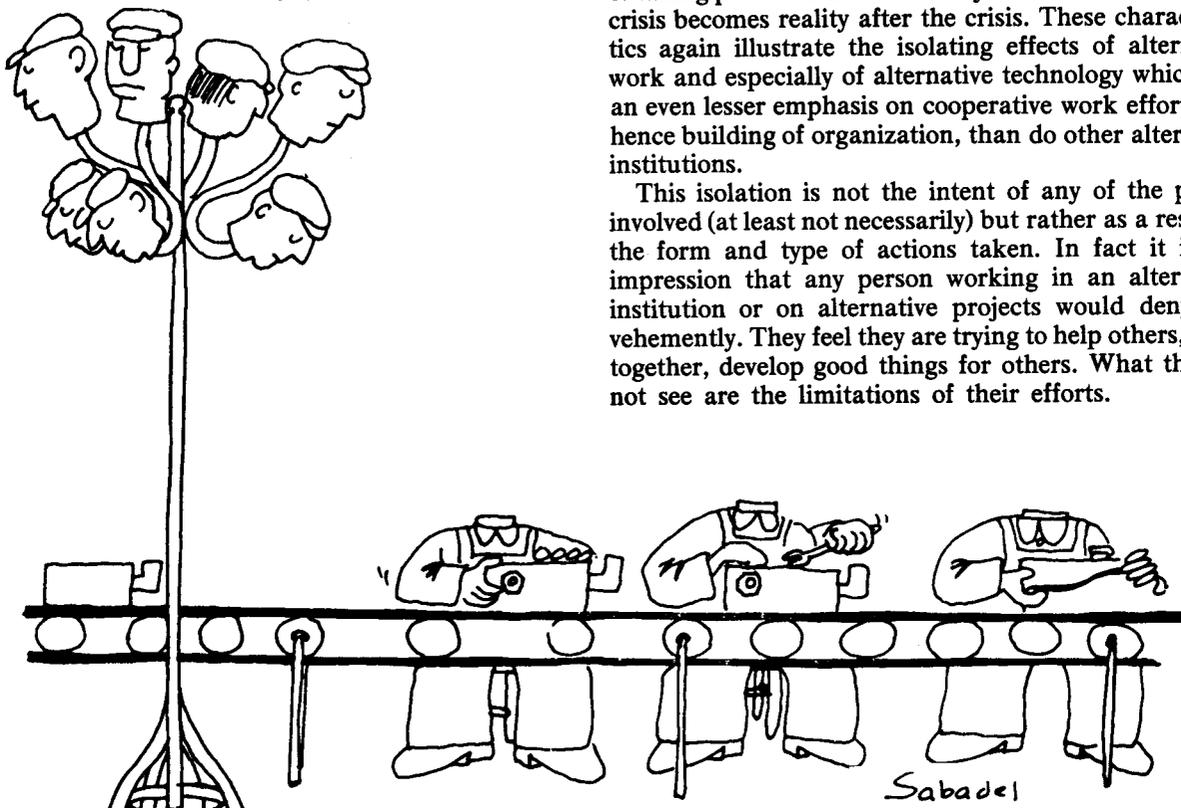
Alternative Technology Strategy

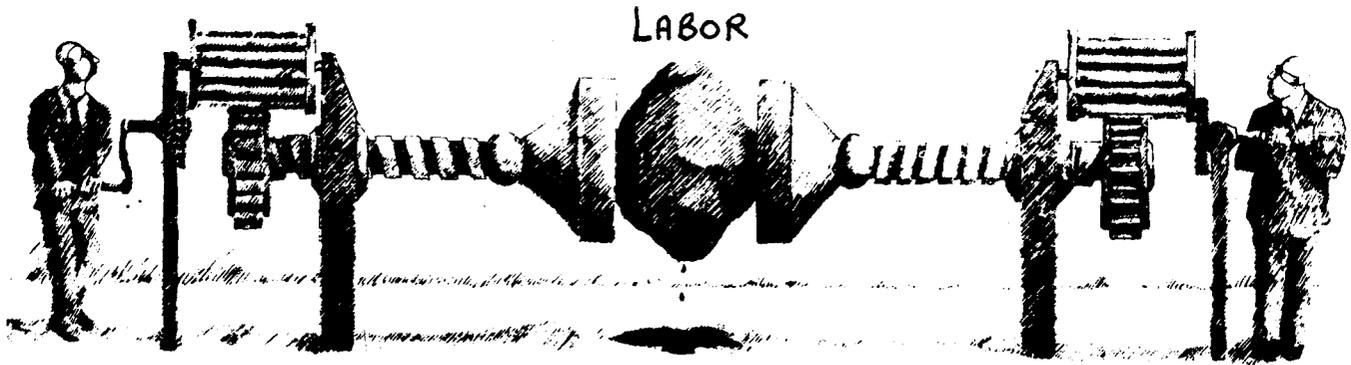
It is important to differentiate between alternatives themselves and the social philosophy put forth by their adherents. In this article we are not addressing ourselves to the worthiness of an alternative attempt, be it a food co-op, ecology group, collective farm, or commune, etc. Any and all of these may be beneficial for the people involved. What we want to address here is the concept of alternative technology and institutions as a strategy for social change or as a prerequisite for the formation of a "vision" which in turn is necessary for social revolution.

There are a number of arguments against the alternative technology strategy to social change. Alternative technology and institutions often end up isolating people from the mainstream of society. They often start and certainly expand under conditions of economic crisis. *They are carried on by poor, dissatisfied, and frustrated people (including professionals), people who think things can be better, must make ends meet, and/or refuse to act out inhuman social relations.* This type of social behavior has long-term drawbacks in that it isolates its participants from the majority. This isolation occurs because the working conditions for such people change. They may not be as oppressed by their work, the managerial and work requirements may be more equal, and the environment may be nice even though the pay may be low. This is especially true in alternative technology done by professionals where the government often foots the bill making one economically comfortable as well as providing what looks like socially beneficial work.

Alternative work is often seen as providing needed public services as well as answers to survival. This situation has three important effects on individuals: 1) alternatives provide a place (escape) for those who see that things are rotten and want to take some action without dealing with the totality of the situation (the necessity for socialist revolution); 2) the public services lessen the crisis for a few, without dealing with or informing them of the real issues (why there is a crisis); 3) the enormous amount of energy poured into such alternatives, many times for starvation wages, is misdirected for it produces no collective organization capable of taking power. Hence the reality of social life before the crisis becomes reality after the crisis. These characteristics again illustrate the isolating effects of alternative work and especially of alternative technology which has an even lesser emphasis on cooperative work efforts and hence building of organization, than do other alternative institutions.

This isolation is not the intent of any of the people involved (at least not necessarily) but rather as a result of the form and type of actions taken. In fact it is our impression that any person working in an alternative institution or on alternative projects would deny this vehemently. They feel they are trying to help others, work together, develop good things for others. What they do not see are the limitations of their efforts.





The adherents of the alternatives' strategy believe that they can win in a competitive battle with monopoly capitalism/imperialism. It is the same old strategy developed by the earlier utopian socialists. Provide a better alternative, win over the masses through example and just wait for the capitalists to crumble. We feel this is rather naive, to say the least. The ruling class now owns or controls most of the resources of the country and certainly is not willing to let them or the power associated with them go without a fight. For instance suppose everyone tried to participate in food co-ops. Would they have more control or better food? No! If co-ops significantly increased their size they would become more and more dependent on agribusinesses which could then increase their prices if they wanted, forcing people back to supermarkets to pay higher prices. Depending on local farmers and produce markets works only for a small, isolated minority not for any majority. Much of the farm land in this country is already under corporate control. Another example would be alternative power sources. But again who would produce them? (Assuming they were cheap enough for people to buy, which they aren't). Does one think that the steel, oil, gas, and electric companies would sit by and let people break up their power monopoly? The prices for raw materials would be made too high or the materials would become unavailable. Again only the few would be able to invest in alternative technology. In fact it is only the few that benefit from David Rockefeller's daughter's composting toilet selling at \$2000 and good only for those not in apartment buildings. So realistically many people cannot take up alternatives and secondly if they wanted to the present system would see to it that they did not. *Alternatives cannot take hold in a monopoly capitalist society.*

Also, the government is not going to sit idly by and watch as property relations are attacked and changed. The state is the executive council of the ruling class of a society and our society is no exception. If somehow, alternative technology or institutions were to seriously threaten some sector of the ruling class, you can be sure the state would step in to change the situation. We see no way in which the present ruling class can be dislodged by providing a "better" alternative to people.

The Vision

There are also advocates of alternatives who point out that alternatives are necessary to provide a vision for the future. They realize that better technology cannot change society while the bourgeoisie is still in power, but they put forward the position that alternatives can provide a vision to motivate people to overthrow the ruling class.

What do alternative technologists intend to show in their visions? Other ways of satisfying human needs and developing new cooperative work methods in producing them would seem to be primary. It is hard to imagine what else would be of primary importance besides the poor products we produce and the way people are treated and used by this production scheme. Besides, developments to increase production would only be used by the capitalists to extract more profits.

This view assumes that others don't have a vision or cannot create one. Let us look for example at the reality surrounding alternative technological work. Most of those people doing alternative technological research enjoy their jobs, probably have at least pleasant working conditions, and many times may even be paid decently. Their view of what is wrong with life is necessarily biased by these factors and hence also their solutions. Alternative technology can be seen as eventually useful for people, providing a way for people to see that better things are possible (vision) and thus acting as a motivation for people to work for change. More strongly than anything else, however, this view puts forth what essentially would be a fine world from the alternative technologist's point of view. A world where their work would be used to help people and people would have control over their lives. This view is consistent with the class of people holding it: what we call the petit bourgeoisie. They fail to understand the real conditions of the proletariat because they do not share their work situation. The grave mistake that people will take up the struggle and be able to understand and control it without having planned it and without a direct relation to their own gut is committed by those not sick, hungry, or materially deprived. Without this crucial relationship

between people and their environment the majority is always left as slaves to the privileged few, this time the alternative technology elite planners.

The vision produced by scientists of alternative technology frequently fails to recognize that what is primary for the working class is their struggle with the bosses. Most workers already understand that their work situation is unpleasant, that products are shoddily built and that the rich are exploiting them. We believe a vision of alternative technology (like windmills) does not motivate workers to struggle against the ruling class; they know of countless examples of capitalist inefficiency and use of technology to exploit.

So we do not disagree with the need of a vision but rather with the type of vision necessary. We see the need for a vision that will enable the working class to take power (revolution) and maintain power (dictatorship of the proletariat) as society is slowly changed (socialism) to eliminate class structure and change production in order to work for everyone's needs and abilities (communism).

What is necessary is that the vision for the working class be brought to them and that this vision is their becoming the ruling class under the dictatorship of the proletariat. This vision is viable because it attacks the critical problem, the execution of power. It does not deny material benefits but in fact insures them; but even more important, it insures better social relations which is the main oppression of workers under capitalism. It insures this by eliminating the material basis for crime, sexism, and racism.

What is important to remember however is that none of this can happen without the power to make it happen. Throughout recent history the major struggles of the masses of people have been around attempts to take state power. From the Paris Commune, to the Russian revolution, the Chinese revolution, Albania and Cuba, it is the masses of workers in alliance with the peasants rising up to take power that has made the difference. It is this struggle that needs a vision, a direction to sharpen



Spinach sorter.

and strengthen its movement. What it doesn't need is some sideline niceties to get lost in, to divert it from its most important achievement, the conquest of power by the working class. There are those who say that this was tried here in the US between 1850-1940 during which the most violent and massive labor struggles of this country took place, and that it did not work. These people fail to take account of the efforts of the ruling class to contain these struggles and their temporary success in co-opting the unions and helping, along with the revisionists,* to destroy the once revolutionary communist party. Today as imperialism is suffering another crisis the workers are again getting ready for battle!

Intellectuals, working class and others, have the job of providing this vision and working together with the workers to determine strategy and tactics of the struggle. But the vision is political, it involves human relations and social change, not mechanical technological change. Technology will change as the working class uses its power to do things in the interests of serving the people. When politics are put first people learn to see change in a broad scope and thus broad movements develop. The correct vision will enable all people to discover oppressive relations and change them, as well as develop new technology.** Scientists because of their position in society must step out of their professional role. They cannot rely on or pretend that speaking out against "bad" science or the malicious use of "good" science will have any significant effect. This action leaves them divided from the working class by posing a small feud between them and the rulers that feed them. To demonstrate their alliance to a revolutionary struggle scientists must also take up working class struggles like fighting against racism, supporting union drives, etc.; by putting themselves clearly on the side of the people. Unless this is done they remain ambivalent or worse on the side of the ruling class and will be respected accordingly by workers, without trust or as enemies.

Chuck Garman, Ken Alper

* Revisionism in essence means abandoning the class struggle and ends up siding with the bourgeoisie against the proletariat. Calling for the peaceful transition to socialism is one example of this poisonous line. (e.g. Chile)

**For example China! See *China! Science Walks on Two Legs*—written by a delegation of Science for the People members who went to China.

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Chuck Garman is a member of SftP and has worked on the editorial committee of the magazine.

1. Harry Laidler, *History of Socialism*, Thomas Crowell Co., NY, 1968, p. 19.
2. *Ibid.*, p. 76.
3. *Coop Handbook*, written by the Coop Handbook Collective, Houghton Mifflin, Boston 1975. See Chapter 2, pp. 16-31.

WOMEN AND HEALTH: A Review of the Literature

*This short article appeared in a packet put together by the Political Economy Program Center of the Institute for Policy Studies in Washington. * We are reprinting it here as a way of opening up this important area, and stimulating related articles for future issues. The bibliography section is not meant to be comprehensive. We felt that the books discussed are important ones for Science for the People readers to know about, and would welcome more detailed reviews, particularly of the science-related books.*

This introduction to the topic includes a short bibliography selected so as to show the scope of the subject, a word about the contribution of the women's health movement, and its importance to the Health Left, and a personal opinion about the future agenda.

THE BIBLIOGRAPHY

A brief glance at the appended bibliography reveals that the women's health movement, arising from a natural concern with the problems that most often bring women into contact with the medical establishment, has focused on reproductive functions and mental illness. Other major topics are women in medical care (e.g., female hospital staff), sexuality, and rape.

If not chronologically the first to appear, *Our Bodies Ourselves* (1971) [1] was certainly a landmark. It covered all of the issues in a style accessible to the majority of women. Not only was its content remarkable, but the collective way in which it was written reflected the new group process of the women's liberation movement. Although as recently as last summer I was unable to persuade the World Health Organization to buy a copy for its library, the successive printings and translations for foreign editions testify to the book's widespread and well-deserved reception.

It was followed by a series of books that focused on one or another aspect of women's health. Among the most popular are *Vaginal Politics*[2] which looks critically at the current practice of gynecology in the U.S. and at some alternatives, and *Free and Female*[3] which examines women's contact with the medical profession through the optic of women's sexuality. Whereas the

*The packet is #1 of the Health Movement Organization. HMO is organizing an informal exchange of ideas and information on health in capitalist America. Anyone interested in receiving their packets or contributing to them should contact them:

c/o Health/PAC
17 Murray St.
New York, NY 10007

latter is a better documented book in an academic sense, the former is more accurate, in my opinion, because it is a politically conscious work.

Women and Madness[4] was also published that same year (1972). A landmark of its own kind, to my mind, this book examines issues that have been all but closed since the Freudian pronouncements of the late 19th and early 20th centuries. In what was, again, ground-breaking style, the book gave women a public forum in which to describe their own experiences of mental distress and psychiatric oppression. The new publication on the subject, *Psychoanalysis and Feminism* (1974) is a more theoretical and academic treatment by a brilliant British feminist.

In 1973, *Lesbian Nation*[6] came out, making use of the confessional style to discuss the issues of the women's health movement. In the same year, *Witches, Midwives and Nurses* [7] and *Complaints and Disorders*[8] appeared, supplying the women's health movement with a past, and thus the possibility of an historical perspective for future analyses. In 1974 *HealthRight*[9] began publication, a quarterly newsletter designed to provide a forum for the women's health movement.

Last year *Against Our Will*[10] was published, sparking serious debate on the issue of rape in newspapers and on television and radio. I think this publicity gave support to rape crisis centers across the country. It was not the first book on the subject, but the broadest in its approach, and the attention it received was well deserved.

The work on documenting women's health continued: the URPE Women's Work Project contributed importantly to our knowledge with the publication of *Women in Health*[11]. Also in 1975, the learned journals began to consider the women's health movement as a topic for serious study. The *International Journal of Health Services*[12] devoted an entire issue to us, the prestigious *New England Journal of Medicine*[13] published an article, and an issue of *Social Policy*[14] contained a 30-page insert on women and health. It is interesting to note that this represents a reversal of the usual trend for issues of medical science to appear first in learned journals and then in popular magazines and books.

THE CONTRIBUTION

The bibliographic review just skims the surface of publication in the last 5 years, but I think it reflects accurately the scope of the women's health movement, and the major topics of its concern. I have emphasized

the scope because it seems to me that the first contribution of the women's health movement is its *holistic concern* with health that transcends mind-body dualisms and medical specialization.

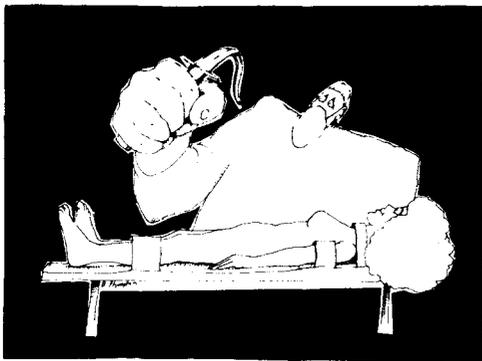
Each of the books listed — and many of them are based on short articles that appeared in magazines and newspapers reaching millions of readers — made a major contribution to the *demystification* of medical science and technology. The women's health movement, using books, articles and films like "Rape Culture" and "Taking Our Bodies Back," [15] working through women's health clinics, consciousness-raising groups, rape crisis centers and feminist therapy groups, has *demedicalized* certain problems and has broken new ground in *health education*: in this it is succeeding where the medical establishment has failed.

The fruit of these contributions is a *self help* health movement that, I like to think, has revolutionary potential. It represents a concrete demonstration of people's ability to control their own lives and opens to them the possibility of taking their destiny into their own hands. It also represents a challenge to the prevailing practice of curative medicine, not only by emphasizing *prevention*, but also by investigating alternative therapies, some of them based on *folk medicine*.

A second outcome — the result of giving women the knowledge to challenge medical authority — is a *changing relationship* between male doctors and female patients, which might form the basis of socialist medical practice. The bourgeois model of the passive patient, isolated in his/her individual responsibility for illness, might be supplanted.

In both the approach and methods adopted by the women's health movement, there is much that the Health Left could learn.

The women's health movement has contributed (directly or indirectly) to higher rates of *unionization* among health workers, 80% of whom are women. Through its services, the movement has also drawn numbers (admittedly still small) of female professionals into a new alliance with female patients, in some instances crossing class lines. But it remains to be seen whether feminist solidarity is a strong enough basis for new alliances within the medical establishment between low-paid female hospital domestics, middle-level female nurses and technicians, and female doctors at the top of the medical hierarchy.



Healthpac/cpf

A FUTURE AGENDA

The women's health movement, like the women's liberation movement in the U.S., is mainly made up of, and seems to function principally in the interests of, upper class women. In some cases, e.g., *Free and Female*, it does not even distinguish class interests; in others, e.g., *Women and Madness*, I feel it pays lip service to so-called "Third World women" and treats them as if all members of a "minority group" belong to the "working class" in this country. Radical lesbians, it seems to me, have confused issues of class with those of cultural norms. The facts that puritanism still reigns in the U.S. and that lesbians and homosexuals are ostracized in American society do not constitute a theoretical basis for radical lesbianism. As mentioned above, it has yet to be demonstrated that feminism will forge new class alliances or enlist the female "bourgeoisie" in the cause of the working class. It is not even clear that the women's movement has resisted cooption and is not serving the interests of capitalism, though it may well be challenging some members of the capitalist class. On the agenda, then, at the levels of both theory and practice, is the need for class analysis and class consciousness in the women's health movement. This seems to me to be fundamental if the movement is to realize its revolutionary potential.

Redefinition of Health

Although I have pointed to the scope of the women's health movement in the bibliography, it must also be said that the overwhelming concern with reproductive functions is a very narrow focus. It sets unnecessary biological limits on the women's health movement which, I believe, has a much greater contribution to make than the reform of obstetrics and gynecology. The natural holism or integration of work and home life, which is greater in women's than in men's lives, would seem to lay the grounds for a new definition of health which unites internal and external environments. The more marked progression through the life cycle in women's than in men's lives would seem to give women better insight into a concept of health that transcends capitalist age categories and the medical specializations that follow from them. On the agenda I would place women's active involvement as feminists in broader health issues, the expansion of their quite natural starting point of reproductive health to the whole range of problems that confront them as total human beings.

Political Involvement

Women who recognize themselves as colonized are quite rightly hesitant to impose themselves on others. Thus the women's health movement has demonstrated politically only on issues of direct concern, such as abortion. It seems to me that we now need the courage to emerge from this modest position. At the very least, the

continued on p. 31

SEXISM AT

Three cancer researchers at the Fred Hutchinson Cancer Research Center* (FHCRC), Seattle, Washington, have lost their appointments at the culmination of a three-year fight with the administration of that Center. Their struggle exposes some of the basic flaws in the "war on cancer," which currently spends about three quarters of a billion dollars a year without making significant progress in reduction of either incidence or death rate.

Ruth W. Shearer, Ph.D. and two of her male coworkers held appointments as Assistant Members of the FHCRC beginning in 1972. Their specific interest was in the mechanism of cancer-causation by chemicals, viruses and radiation, as well as the factors involved in preventing the carcinogenic process. Dr. Shearer had written over a dozen papers in the field and participated in a number of international symposia. She organized the well-attended "Diet and Cancer" symposium at the AAAS meeting in Boston, February, 1976, at which her associate Dr. Thomas J. Slaga, presented a paper on "Protective Factors in the Diet." Even the man who fired her, William B. Hutchinson, M.D.,** president and director, admitted (as he dismissed her), "...you have a highly creditable record of research accomplishment and this is recognized nationally." (letter to RWS, 2/12/75) Yet, despite this, none of the three was recommended for appointment after July 1, 1976, and two of them are now working elsewhere. The other has remained with Pacific N.W. Research Foundation (PNRF), the parent organization of FHCRC, where all three held positions prior to the existence of FHCRC.

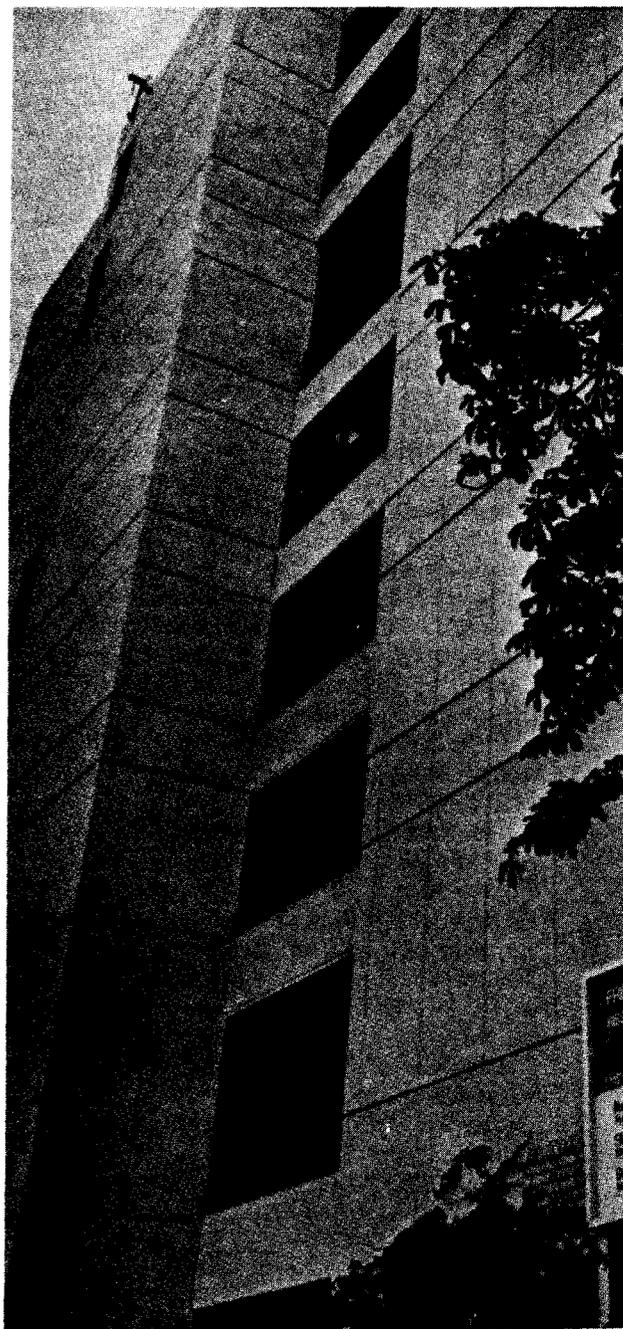
In a series of memoranda which she has made available to *Science for the People*, Dr. Shearer relates that their problems began after she and her two colleagues were placed in the "disloyal" category in 1973 by Dr. Charles Evans, associate director and effective head of FHCRC. This was in part the result of their protesting sex discrimination: although all three scientists had come to the PNRF at the same time, after completing their postdoctoral training, Dr. Shearer received substantially less pay and benefits than her two colleagues, something she found out when they compared their paychecks. She naturally requested pay equal to that of the two men, and the two supported her request. This was, of course, taboo and helped mark her as a dangerous agitator.***

Their disloyalty was verified in the eyes of the

* Fred Hutchinson was a professional baseball player who died of cancer in 1964. The FHCRC was organized in 1971, and designated one of the Comprehensive Cancer Centers by the National Cancer Institute in 1972, in part through the efforts of Sen. Warren Magnuson [D. Wash.]

** FHCRC Director, William Hutchinson, brother of Fred Hutchinson, is a former surgeon. He is wealthy and has close ties to the Seattle political and financial elite.

***This male chauvinism is obviously not unique to the FHCRC administration. At the Sloan-Kettering Institute in NY, only two of the 44 Members and Member Emeriti are women.



administration, Dr. Shearer says, "when we failed to bring our checks for \$100 for Senator Warren Magnuson's [D.-Wash.] campaign, after being commanded to do so by Dr. Hutchinson's secretary." (letter from RWS to Scientific Advisory Board, FHCRC, 11/19/75) Magnuson is a long-time friend of the research lobby in

CANCER LAB



Washington and was instrumental in getting the FHCRC established and funded. He is featured in a prominent full-page photo in the FHCRC Annual Report (1975). Such Congressional patrons of Big Science apparently reap rich rewards, in votes and money, if Ruth Shearer's experience is at all typical.

Divide and Conquer

From then on, the Administration considered them "unmanageable." (quoted in letter from RWS to Scientific Advisory Board, 11/19/75) When Dr. Slaga approached Dr. Karl Hellstrom, a well-known FHCRC immunologist, and asked why they were not being appointed, "he was told that the COPAP [Committee on Program and Personnel] members all know that our research is good, but we don't have a leader." The trio had always functioned as a cooperative, so there was no individual the hierarchy could pressure in order to control them.

"...Perhaps you are aware that the Scientific Advisory Board is in fact something of a puppet superstructure, existing more to comply with terms of granting agencies than to provide powerful influence or direction to the Center."

—from a letter from a member of the Scientific Advisory Board to an M.D. friend of Dr. Shearer's who had written to the Board in support of her case after all 10 members of the Scientific Advisory Board failed to answer her letter of November 19, 1975.

The by-laws of the FHCRC charge the Scientific Advisory Board with the determination of program priorities. These decisions have been taken over by COPAP. Unlike the SAB, required by the by-laws to be nonemployees, all but one COPAP member are employees of FHCRC with vested interests in promoting the fields of research which associate director Charles Evans favors.

To break their growing unity, the administrators tried some classic divisory tactics. For instance, they told Dr. Shearer in January, 1974, that she would have to wait until June for her pay raise. They then authorized pay raises for the two men to start the next month. "I objected to this discriminatory delay in my pay raise," she wrote in a memorandum on 12/16/75, "and was told that in that case the men would also have to wait until June! This obvious attempt to destroy our cooperative relationship by the 'divide and conquer' technique failed, but communication did become more strained" among the three.

The FHCRC also demonstrated that they placed their own political needs above the need to fight cancer. Their harrassment significantly hampered the scientists' work. For example, Dr. Shearer was given very little work-space, and they were not allowed to accept grants which paid less overhead than the National Cancer Institute (NCI) paid. They were assigned parking two blocks away, although new people appointed in 1975 were parking right across the street. When Dr. Shearer called these problems to Dr. Hutchinson's attention, he refused to answer her letter.

Sloan-Kettering:

Another Cancer Research Center

At New York's Memorial Sloan-Kettering Cancer Center virtually no research into epidemiology has been done in almost a decade, there is no department of preventive medicine, and carcinogenesis research has very low priority: at Sloan-Kettering, only three or four scientists, out of almost 300, are working on prevention-related projects. For this reason, the Politics of Cancer Committee of Science for the People, NY Chapter, has demanded that Memorial Sloan-Kettering devote a major part of its effort to research into the prevention of cancer.

In analyzing Sloan-Kettering Institute, our Committee has found that the very people who would stand to lose the most by a *preventive* approach to cancer also dominate Sloan-Kettering: the big polluters, such as General Motors, and the New York bankers who control these corporations. For more than a dozen years, Dr. Leo Wade, former medical director of Standard Oil of New Jersey, was the vice-president of Sloan-Kettering. Under his direction practically nothing was done to uncover carcinogens in the environment. Several other prominent Board members are also officers of Exxon.

The monopoly capitalists have many prestigious scientists on their payroll, whose job it is to defend their profit-oriented approach to medicine, and make it sound "scientific." Dr. Lewis Thomas, for example, the President of Memorial Sloan-Kettering Cancer Center, is a vocal opponent of unorthodox methods. He is also on the Board of Directors of Squibb, Inc., one of the world's largest drug companies and manufacturers of anticancer drugs. Dr. Robert A. Good, director of Sloan-Kettering Institute, is a consultant to Merck, Sharpe & Dohme, another drug giant. Dr. James B. Fisk, another MSKCC Trustee, is a director of American Cyanamid/Lederle Laboratories, makers of Methotrexate and other anticancer agents. There are many other examples.

When this kind of conflict-of-interest is built into the structure of a research center, it is practically impossible for any productive research to be done which might threaten the capitalists.

After Ruth Shearer communicated these problems to the Scientific Advisory Board of FHCRC in November 1975, the administration wrote to the NCI and requested the withdrawal of Dr. Shearer's grant for research in the molecular genetics of tumors. The head of tumor biology grants at NCI, Dr. Brian Kimes, told her that it was unheard of for an administrator to try to sabotage a priority project in this manner. Kimes called the FHCRC leadership and got them to postpone this request until the end of May. Next, the FHCRC refused to allow her to transfer any of her research equipment to her new sponsoring institution, even though this equipment had been bought specifically for her projects. Although many

institutions do keep researchers' equipment when they leave by choice, the American Cancer Society, which had paid for most of Dr. Shearer's equipment in the first place, requested its transfer to facilitate continuity in the project. The administration regarded the equipment not as tools which Dr. Shearer would use to try to understand cancer, but as private property which they had acquired and intended to hold on to in order to build their research fiefdom.

In addition, she claims that they siphoned off funds, which were donated to PNRF specifically for her research, into the building program of FHCRC. In investigating these relatively small gifts, Dr. Shearer discovered that "all contributions, no matter how designated, end up in the building fund" at FHCRC (memorandum by RWS, 12/16/75).

Putting Prevention Last

Dr. Shearer and her two colleagues' work is in the field of chemical carcinogenesis, a vital area of research since 60-90 percent of human cancers are caused by environmental factors.[1] Yet when they met with Dr. Charles Evans in the fall of 1974 to discuss their progress, Evans began the meeting with, "Now, you know that I don't consider chemical carcinogenesis an important field—I believe that virology and immunology are the only fields of cancer research worth pursuing." (RWS memo 12/16/75) Although this may sound shocking to some, Evans' attitude reflects the general situation in the "war on cancer" today. Such fields as chemical carcinogenesis and epidemiology are two areas that must be stressed if cancer is to be prevented. Yet the NCI spends only about 10-17 percent of its budget on cancer causation,* and the higher figure generously includes the virus program, or "biological carcinogenesis" as it is now sometimes called!

A subcommittee of the National Cancer Advisory Board, headed by Dr. Philippe Shubik, expressed its "general astonishment" in 1975 at the "low priority" accorded research into environmental causes of cancer. More recently, Dr. Umberto Saffioti resigned his post as head of the NCI chemical carcinogenesis program in the Division of Cancer Cause and Prevention and made similar charges.

"There's Money in Cancer"

The control of research depends in part on the governing boards and officials of institutions like FHCRC (see box for another example), and on the

* The bulk of NCI funding is for research in treatment and rehabilitation of cancer, including for example chemotherapy (treatment with experimental anticancer drugs), radiation therapy (use of all kinds of radiation to destroy cancer tissue) and diagnostic technologies.

1. Samuel S. Epstein, "Epidemic! The Cancer-Producing Society," *Science for the People*, July, 1976, p. 4.

**HARVEST QUARTERLY: A NEW MOVEMENT JOURNAL STRESSING
HISTORICAL MATERIALISM**

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national policies of the granting agencies. However, in addition it is shaped by the prevailing ideology of the science practitioners themselves, which frequently takes the form of individualism, opportunism and careerism. These attitudes can serve the interests of offending industries and business in general—the capitalist system—as well as if the big capitalists were directing these matters themselves. Building an “empire” and defending it become the chief goals of science administrators and many researchers wind up having to spend half of their time simply writing proposals and pursuing funds. In such a situation, success and power often go to those who care the least about the serious responsibilities of their work.

Careerism, in particular, stifles creative and potentially “disturbing” research at this and similar cancer centers, which have sprung up since the passage of the National Cancer Act in 1971. When Dr. Shearer asked one FHCRC scientist (member of COPAP) to collaborate with her on a project, he told her irritably, “Look, I don’t want to talk about correlations! I don’t believe my work is significant to cancer. Sure I’m in a cancer center, but that’s for political reasons. There’s money in cancer. But I’m not really interested in cancer!” (letter from RWS to Scientific Advisory Board, FHCRC, 11/19/75)

This kind of opportunism is common in the “war on cancer” and the astute opportunist often knows how to hustle for grants and contracts and beat out the more serious or dedicated researchers. Yet, as Dr. Shearer points out, “the most important questions require a many-pronged attack by researchers trained in different disciplines. This is a primary reason for the establishment of comprehensive cancer centers in the first place!” (memo of 12/16/75)

Another obstacle to productive research is the effect such careerism, opportunism and greed have on the development of new ideas. Dr. Howard Temin, upon being notified that he had received the 1975 Nobel Prize, said he thought that cancer research needed new ideas more urgently that it needed more money. “The limiting thing is a lack of new approaches.” (*Portland Oregonian*, October 7, 1975). Yet, as Dr. Shearer says, “New ideas are stifled by the system which requires that new Ph.D.s find a niche in the domain of an established researcher and keep this privilege by doing research which supports the interests and biases of that person rather than following up on their own leads.” (memo of 12/16/75)

This “feudal system” helps to keep new ideas down and mavericks in their place. Contrary to the mythology of the War on Cancer, new ideas are not encouraged and are sometimes even suppressed if they threaten the interests of top bureaucrats or the big bankers and industrialists who wield enormous power in the medical field.

Ruth Shearer and her colleagues fought hard, but did not win their struggle. Their protest, revealed in letters and memos, exposes the FHCRC administration, and illuminated some of the basic issues underlying cancer research. Issues such as these can become the focus for organized struggles. They can be used to educate and organize cancer center employees and the general public to oppose repressive and discriminatory policies. This could be done through leaflets, forums or articles. Ultimately, we feel that by bringing people into strong and principled organizations effective changes can be made in the field of science, and fights like this can be won.

The experience of these researchers shows that the fight against cancer is a political struggle, involving fundamental class interests, as well as a scientific one.

Politics of Cancer Committee
Science for the People, New York City Chapter

Epilogue: Ruth Shearer is now working—free of bureaucratic abuse and inhibitions—at a newly formed nonprofit research organization, the Issaquah Group for Health and Environmental Research near Seattle. This organization was created by friends and supporters of Dr. Shearer in her battle with the FHCRC. (address: 1595 N. W. Gilman Blvd., Issaquah, WA 98027). Dr. Thomas J. Slaga is now working in the Cancer and Toxicology Program of the Biology Division of Oak Ridge National Lab, Oak Ridge, Tennessee.

Members of the Politics of Cancer Committee of SftP in New York work in the fields of health care and cancer research. Several of them are employed at the Memorial Sloan-Kettering Research Center where they have been actively involved in struggle pertaining to cancer research, especially opposing the suppression of new ideas and advocating emphasis on cancer prevention.

HEALTH HAZARDS OF NUCLEAR POWER

Introduction

The article "Nuclear Power: Who Needs It?," which appeared in the May 1976 issue of *Science for the People*, was a reprint of a pamphlet[1] prepared by a San Francisco Bay Area project group, many of whom are members of the Berkeley Science for the People chapter. The pamphlet was prepared in support of proposition 15, the Nuclear Safeguards Initiative recently defeated (June 8) in California. Similar initiative campaigns are underway in several other states. In our view, the pamphlet represents an important attempt by a SftP chapter to link its work to a spontaneous mass movement. This attempt should be applauded as a serious effort to reach a large audience and to expand the scope of SftP work. However, we feel that the pamphlet suffers from some major weaknesses in its political analysis, even keeping its intended purpose in mind.

Is It Safe? — Is It Necessary?

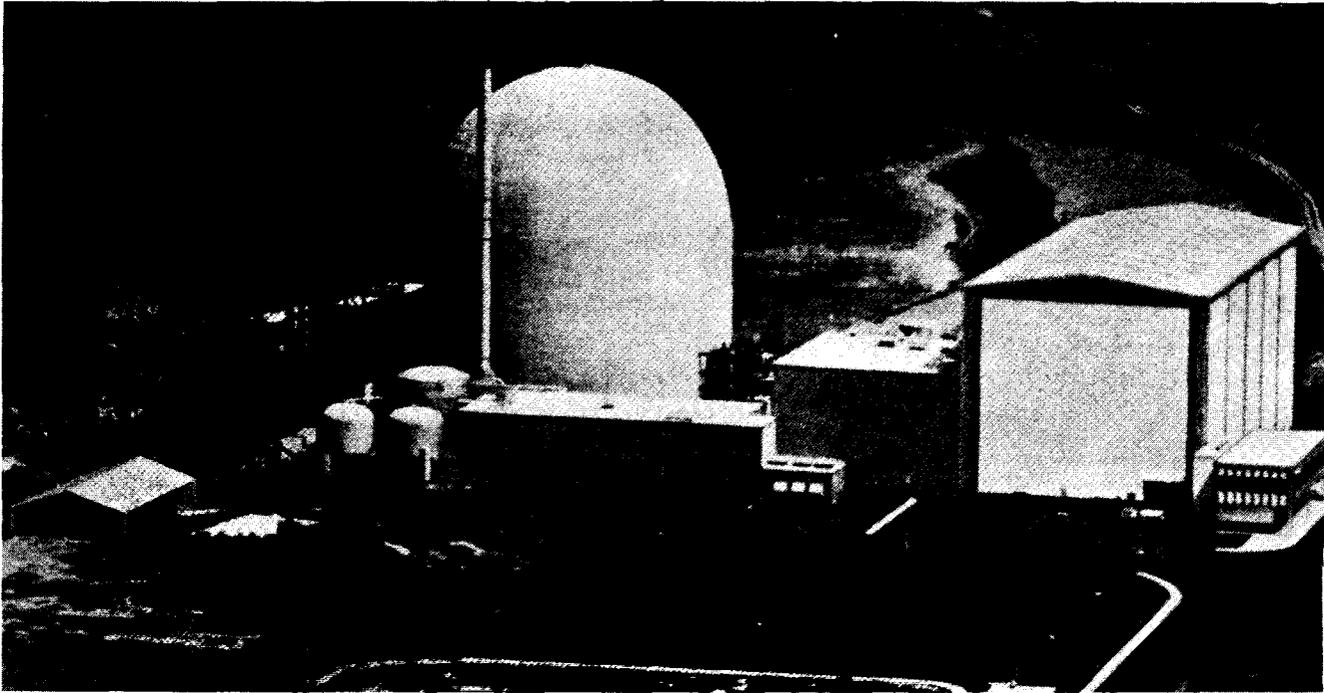
The pamphlet does not seriously address the question "Under what conditions, if any, is nuclear energy a 'good' source of energy?" The anti-nuclear movement answers this question clearly—nuclear power cannot be developed safely under any conditions. Do we agree?

One cannot answer the above question without considering others. What are the alternative sources of energy available at this time and in the near future, and what are the relative merits and risks of these various forms of energy? What are the potential effects of energy conservation programs? In short, "Is nuclear power necessary?"

Of course, the pamphlet does touch on some of these problems, but, we feel, in an unsatisfactory way. There is a tendency to, first, not "take a stand" on nuclear power *per se*, and second, to avoid discussion of the technical issues. It is true that arguing on the technical aspects of a problem can lead to a situation where two sets of "scientific" experts wind up opposed to each other, and this may lead to confusion in the eyes of the "public." But this is no reason to avoid these questions, especially in a case such as this, where a main concern of the public is the safety of nuclear power. As revolutionaries interested in issues of technology, we must combine discussion of the technical issues with informed political analysis.

In its brief discussion of nuclear safety, the pamphlet does mention the problems of major accidents at nuclear power plants, waste disposal, and the potential theft of bomb-grade uranium and plutonium. One important area *not* mentioned in the pamphlet is the occupational health and safety hazards faced by workers involved in various aspects of the nuclear fuel cycle. It is true that nuclear power is not unique in this respect. For example, a recent study of over 9000 coal miners conducted by the National Institute for Occupational Safety and Health (NIOSH) and by the Bureau of Mines showed that almost one third had black lung (pneumoconiosis), and that 2.5% had the "severe, advanced form that can cause disability and death." [2] It is estimated that 200,000 or more active and former coal miners suffer to some degree from this disease. [3] The death rate among coal miners from all forms of chronic respiratory disease is five times greater than for the general population. [4] Similarly, oil refinery workers are exposed to a wide range of carcinogenic substances. Unfortunately, because of a lack of cooperation by the oil companies, it has been impossible to carry out good epidemiological studies in order to determine the incidence of various types of cancers among refinery workers. [5] Both coal miners and refinery workers are continually exposed to the danger of fires and explosions.

The technology exists to greatly reduce or completely eliminate the above diseases and dangers: a major cause is in the organization of production under capitalism. Properly ventilating a coal mine or maintaining a safe refinery reduces profits: it is cheaper to expand that other commodity, labor power. Nuclear power seems to be qualitatively different. It is not clear that the technology to operate safely exists, no matter how much money is spent. One problem is that it is impossible to completely contain the radiation produced, and even very low levels of radiation have harmful effects. The most authoritative report of the effects of nuclear radiation was prepared by the National Academy of Science and is known as the BEIR report. [6] It discusses three major types of damage that arise from radiation—genetic damage from gene mutations and chromosome aberration; induction of cancer; and damage of various kinds during the early stage of development, to which the foetus and young child are particularly susceptible. The conclusion of the report is that there is no threshold



below which radiation does no biological damage; even the smallest increment in the environment increases the statistical probability that a person exposed to it will suffer genetic damage or develop cancer (or both).

Harmful as radiation is to the population at large, it is much worse for workers in the nuclear industry because they are exposed to much greater doses. For example, at the only commercial nuclear fuel reprocessing plant which has operated in the US, the Nuclear Fuel Services plant at West Valley, NY, the average annual full body exposure rose from 2.74 rem* in 1968 to 7.15 rem in 1971. (The plant closed in January 1972).[7] The latter figure is over 40 times the exposure received, on the average, by a member of the population at large (mainly from background radiation, not associated with power production). For uranium miners, the situation is even worse. A study of 4180 uranium miners showed an excess of about 180 cases of lung cancer by 1973.[8] Taking into account the long latency period for the disease, it is estimated that 600-1100 of the current total of 6000 uranium miners will eventually die from radiation-induced lung cancers.[9] Although radiation effects on uranium miners, largely due to ingestion of radioactive

* The *absorbed dose* of radiation is the energy absorbed per unit of mass. It is measured in rads (*Radiation Absorbed Dose*).
1 rad = 100 ergs/gram

However, biological effects depend not only on the energy absorbed, but also on the kind of radiation (, , neutron, etc.), and the energy of the individual particles. Biological effectiveness (*dose equivalent*) is measured in a different unit called the rem (*Roentgen Equivalent Man*). Its definition is
Dose equivalent in rem =

Absorbed dose in rad X Quality Factor
The quality factor, different for different types of radiation, has been determined so that dose equivalents, in rem, measure biological damage.

radon gas,† could be reduced substantially by better mine ventilation, some radiation would remain. Again, improvements doubtless could be made in containing radiation in fuel reprocessing, and, indeed, some are being incorporated in the proposed plant at Barnwell, South Carolina. However, the technology is so complicated that it is difficult to believe that major improvements will occur in practice, taking into account the fact that radiation levels were so large and increased rapidly with time at West Valley, and that the Barnwell plant will have a much greater throughput of radioactive material.

In considering whether or not nuclear power is necessary, it worth keeping in mind that even many of its proponents advocate it only as a short-run solution to energy shortages, until advanced coal, wind, solar, etc. technologies are developed. The pamphlet fails to point out that we can do without nuclear power and not have energy shortages in the short run by using already known and practicable conservation techniques. Studies have indicated that it is technologically feasible to save at least 30% of all energy used in the residential, commercial, and industrial sectors and up to 50% in the transportation sector.[10] By the introduction of existing energy technologies like heat pumps, solar heating and cooling, and solar water heating, even more fuel could be saved. Of course, even though these conservation measures are technologically feasible, the extent to which they are introduced will depend, to a large degree, upon their potential for generating profits.

† The element radon, chemically an inert gas, is one of the radioactive elements occurring in the natural decay series of Uranium 238, the main (over 99%) isotope in naturally occurring uranium.



Granite State/cpf

Taking into account all the other problems with nuclear power (waste disposal, possibility of accidents, problems with plutonium, protection of facilities, etc.) it is clear that the position of the "liberal" anti-nuclear movement is correct—that first, it is not necessary, and second, that the unresolved problems are so great that nuclear power should not be developed at this time. This was really the thrust behind the initiative—"We say it's unsafe (and unnecessary), you say it's safe. But if you really believed nuclear power was safe, you wouldn't be opposed to the initiative, because you could meet its terms."

The pamphlet suggests that demand for electricity may not increase very much. Indeed, it underlines the statement "*Energy growth is a matter of public policy, not a law of science.*" We believe this statement is misleading. Corporations are *forced*, in order to maintain lagging profits, to continually look for new products and for new methods of marketing. To the extent that they are successful, this will lead to increased production and, in the long run, increased demand for energy, including, in particular, electricity. It is true that energy demand has not increased much in the last few years, largely due to the recession and sharply increased prices for fuels, especially oil. But with the current recovery, the

situation is already showing signs of reversing itself. Consumers again are showing a preference for large cars. In recent months, oil refineries have been operating at near record levels. Furthermore, growth in electricity consumption is an essential for development in underdeveloped countries, including those which are socialist. Thus, the recent lack of increase in electricity consumption in the US is not, by itself, an argument against the development of nuclear power.

Jobs and Profits

We disagree with the pamphlet's emphasis, in the section entitled "What About Jobs?," on replacing capital intensive by labor intensive production. There are other ways of creating jobs. A better emphasis would be a demand for a six-hour day with no cut in pay. Historically in the US, important working-class struggles were built over the demands for a ten-hour day and an eight-hour day. A shortened work day would directly create more jobs. Politically, this demand sharpens the struggle between capital and labor, since the capitalists would *perceive* this as a direct attack on their profits. (Whether decreased profits *actually* would follow is not clear, because of secondary effects such as increased purchasing power, which would stimulate the economy.) It is our belief that we must continually emphasize the liberatory potential of technology to eliminate boring jobs, shorten work hours, and to improve people's lives. It is important to bring out the contradiction between the potential of even our existing technology and the reality of the way it is used in a capitalist society. In fairness to the pamphlet, we must mention that this point is mentioned, though almost as an afterthought, in the last paragraph of the section of jobs. We quote: "We support the use of energy in liberating people from monotonous and physically exhausting work."

The Energy Industry and Government—Alliance Against Progress

We agree with the emphasis in the pamphlet on the role of the energy companies. However, one is left with the feeling that the main reason for opposing nuclear power is that Exxon, Mobil, etc. are for it!! But suppose Exxon was in favor of solar power. Would we therefore be opposed to it? It might have been useful to have included some examples of how the corporations have handled other forms of energy. Have oil and coal been developed in ways that are safe, rational, and that have been beneficial to society? One needs merely note such recent events as the gross violations of safety measures in the Scotia coal mine explosions[11] and the history of drilling in the Santa Barbara channel,[12] or to look at the scars due to strip mining, to know the answer to this question. If the energy companies have not been able to develop fossil fuels safely and rationally, then why should we expect the same companies to do any better with the far more complicated technology of nuclear power?

NUCLEAR POWER IN USSR*

With a present generating capacity of 6000 megawatts (nuclear) compared with 38,000 in the US, the USSR is now constructing an industrial complex to mass-produce reactors—to be called “Atomash”—near the Volga and Don Rivers. Completed units will be towed on barges throughout eastern Russia and Europe. Production is to begin in the 1980s, turning out 1000 MW units at a rate of three or four a year. Many western companies are exploring possible roles in this massive effort: Combustion Engineering, Babcock and Wilcox (major US reactor producers), Mitsubishi (Japan).

The USSR is planning a large export program, not only to Eastern Europe where commitments have already been made, but possibly also to the Third World. According to Deputy Foreign Trade Minister Vladimir S. Alkhimov, the export of uranium enrichment services is a “big new feature” with a “high hard-currency value return.” As for safety/environmental issues, the first full-scale breeder reactor broke down when welds failed allowing steam to mix with the liquid sodium coolant (an explosive combination). Eventually the Atomash plant will build breeders. According to *Business Week*, “when the respected Soviet physicist Pyotr Kapitsa dared to raise his concerns over safety at the Academy of Sciences last fall, he stirred some enthusiasm among his colleagues—as well as repeated public rebuttals from high-ranking party officials. Kapitsa’s harangues cloaked their attacks in the guise of responses to Western alarmists, who they claimed were frequently in the pay of the oil companies, but their message was clear enough: Moscow will brook no opposition to nuclear power.”

An important missing link in the pamphlet is a discussion of the relationship between the energy corporations and the government. Perhaps the most famous episode was the “Teapot Dome” scandal of the twenties, in which Secretary of the Interior Albert B. Fall received huge payments from Edward L. Doheny (Pan-American Oil—now part of Standard Oil of Indiana) and from Harry F. Sinclair (Sinclair Oil) for turning over to their companies leases on naval oil reserve lands, without competitive bids. Forced to resign, Fall served as a consultant for oil interests, including Sinclair.[13]

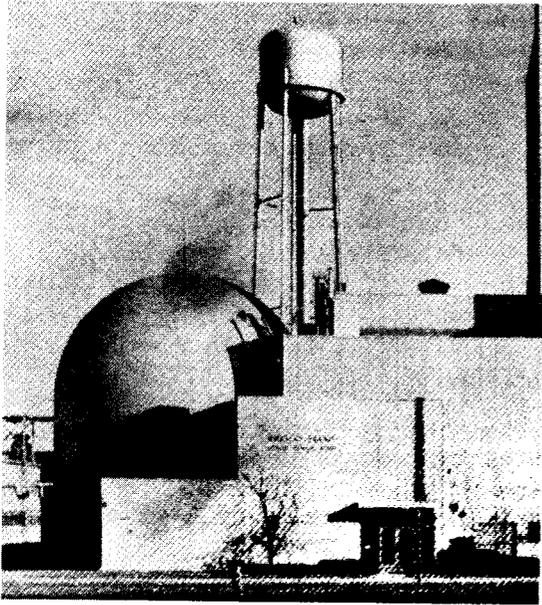
However, the ties between the energy industry and government are much stronger than a few dishonest individuals accepting bribes. The oil industry, in parti-

*Source: “Why the Russians go all-out for nuclear power,” *Business Week*, August 2, 1976, p. 52.

cular, has produced many high government officials. Andrew Mellon, whose family controlled Gulf Oil, as Secretary of the Treasury from 1921 to 1932, fought tirelessly for the oil depletion allowance, introduced in 1926.[14] Later, as Ambassador to England, he played a major role in the negotiations that led to Gulf sharing Kuwait oil 50-50 with British Petroleum (then Anglo-Persian).[15] Both Herbert Hoover and Lyndon Johnson had close ties with oil interests. The late Senator Robert Kerr (Dem.-Okla.) was president of Kerr-McGee Oil, which, as well as having substantial oil holdings, is the major uranium producer and processor in the U.S.[16] Present and former members of the board of directors of oil companies who have been active in government including Admiral Arleigh Burke (Texaco), Clark Clifford (Phillips), William McChesney Martin (Shell), George McGhee (Mobil), David Packard (Socal), and Robert Roosa (Texaco).[17] As pointed out in the pamphlet, many members of the Atomic Energy Commission (AEC), now ERDA, came directly from companies involved in nuclear power, or wound up with these companies after leaving the AEC.

The US government has helped the energy companies in many ways. In 1950, the Saudi Arabian government was pressuring Aramco (at that time 30% owned by each of Socal, Texaco, and Exxon, and 10% by Mobil) for a 50-50 deal on oil revenues, rather than the earlier system of royalties. The Treasury Department conveniently promulgated a decree which allowed the 50% paid to Saudi Arabia to be treated as an income tax payment, rather than an expense of production, and hence to be 100% deductible from US taxes (rather than from income, in which case they could only deduct the percentage given by the corporate tax rate). This ruling, later upheld by IRS, enabled the companies to satisfy the Saudi demands without it costing them a penny![18] The money was paid by the US taxpayer. This tax loophole and the depletion allowance have enabled the international oil companies to pay practically no income taxes ever since.

The government has also helped in other ways, such as by giving bargain leases for exploration and development on government lands and offshore, by a massive interstate highway program which increased automobile and truck use, and hence gasoline use, and by using the Marshall Plan to force European countries to shift from consuming (largely indigenous) to oil (largely controlled by American companies).[19] The list is almost endless. But nowhere is the relationship between government and business any closer than in nuclear power. Here the government has paid for almost all the research and development, subsidizes the production of enriched fuel, will subsidize the disposal of wastes (if a suitable method can be found), and even passed legislation (the Price-Anderson Act) which limits the liability of reactor operators in case of a major accident. Indeed, the government supplies the major part (\$500 million per accident) of this limited liability insurance.



Fermi, the reactor that "almost lost Detroit," is now being dismantled.

Nationalization—A Reform?

Such a discussion of the influence of the energy industry on government might have clarified the discussion, which we found vague and confusing, of nationalization of the energy industry. The position of the pamphlet seems to be as follows: some politicians are talking about nationalization—we aren't taking a position on this, but if it occurs, it should be fully democratic in structure. It then goes on to explain some of the features that such a democratically nationalized industry would have.

In our view, this position completely ignores class struggle. This type of nationalization simply cannot occur in a society where sharp class antagonisms exist. The close relationship, pointed out above, between the energy companies and the government is simply one example of how government aids the interests of the bourgeoisie. Of course, through struggle, some concessions can be, and have been, obtained. But something as major as that proposed in the pamphlet seems to us to be so totally unattainable in a capitalist society as to appear ludicrous.

But, one may argue with justification, a demand need not be totally attainable in order to be a "good" demand. The important question is whether or not it advances the class struggle. But even here, the pamphlet fails. It takes legitimate existing working class and middle class struggles—for open information, for health and environmental protection, and for employment—and makes them consequences of a vague, unattainable, pie-in-the-sky democratically nationalized energy industry. This doesn't help these struggles. Rather it obscures, and may even retard them.

We do not, at this time, have a clear analysis of the complicated issue of nationalization. However, we do believe that a key question is "What forms, if any, of *movements* for nationalization will advance the class struggle?" It would be useful for Science for the People to try to develop an analysis and to apply it to concrete situations. For example, what is our position on the struggles for municipalization of electric utilities that are going on in some communities?

Concluding Remarks

The sources of energy: water, oil, coal, are social—they belong to society as a whole. They have been expropriated by the corporations in order to make profits. Under capitalism, they have not been, and indeed, cannot be, developed in a rational way. Our political position should be to encourage people to regain control over what is rightfully theirs. Part of this fight is for the people to demand a voice in how energy is produced and distributed. As pointed out in the pamphlet, the initiative deserved support as a first step in this direction.

The other reason given for supporting the initiative—"that it supplies some needed safeguards upon nuclear operations and may help avoid some real disasters"—is harder to agree with. First, we strongly suspect that the nuclear industry, together with its cronies in the California legislature, would have found ways to circumvent its terms. Second, we believe that the industry was correct when it said it couldn't meet the terms of the initiative. Nuclear power, by its nature, is less safe than other forms of energy, and cannot be developed safely, especially under the conditions of monopoly capitalism existing in the US today.

Energy and Environment Group
of the New York Chapter
of Science for the People

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JUNGLE LAW: Stealing the Double Helix

A review of Anne Sayre's *Rosalind Franklin and DNA*, (W.W. Norton, 1975).

Judy Strasser does free-lance writing and is particularly interested in the land-reform struggles now going on in the San Joaquin Valley, California. She participated in the campaign against the Stanford Research Institute during the Vietnam War and is now living in Madison, Wisconsin with her one-year-old son and her husband.

What motivates scientists to do tedious experiments, chemical dishwashing, mathematical manipulations that often lead nowhere? An aura of intellectual romance shrouds the scientific world. It hides scientists' daily routines from public view, and mystifies the reasons they choose the work they do. For most people, the politics and economics of science—the decisions about who gets funded and who does not—simply do not exist. Nonscientists think that scientists tackle certain intellectual puzzles simply because they (like mountains) are there; or that scientists, guided by humanitarian impulses, turn their talents to pressing social problems.

A few years ago, I attended a conference as a nonscientist observer. A corner of the mystifying veil lifted and taught me a lesson about scientific motivation. The conferees represented many disciplines, though they all worked on related problems. They seemed to divide themselves into two groups. The larger consisted of older men from rather ordinary applied sciences. The applications were agricultural, and I found that I could usually follow the gist of their arguments despite my scientific ignorance. The smaller group included the young hot-shots: a select batch of new—and almost—Ph.D.s, perhaps two dozen men and two women from a few top institutions. They all worked in a “pure” and glamorous field. Their papers impressed me with their unintelligibility, and I was apparently not alone. The moderator of their panel apologized profusely—but, I thought, with considerable pride—for the obscure vocabulary required to discuss or understand his rarified discipline.

Outside the conference sessions, these young scientists stuck pretty much to themselves, talking shop with vehemence. They obviously felt their particular branch of science superior to the others represented at the conference. Obviously too, they were engaged in intense

competition among themselves. I heard tales of intrigue, of institutional infighting, of personal antagonisms. I heard about concealed data and spy-like visits to laboratories. I heard half-serious schemes of sabotage. I also heard, from more than one person, that the object of their scientific attentions was a Nobel Prize.

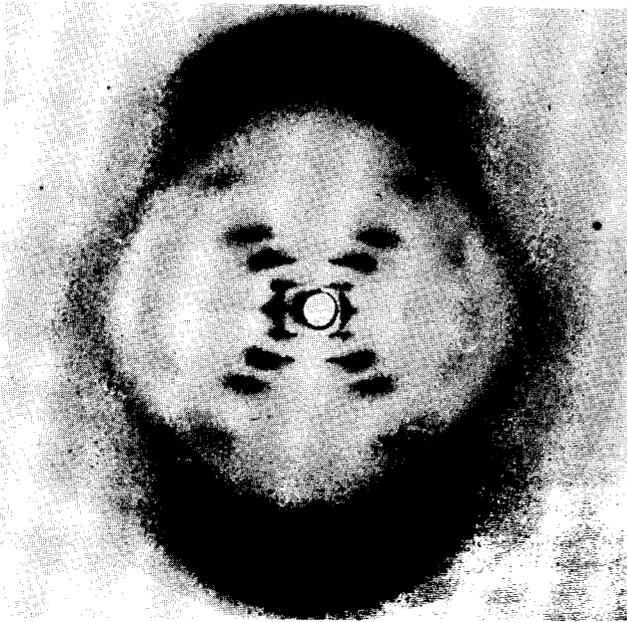
I began to feel that I was reliving James Watson's scientific potboiler, *The Double Helix* (Atheneum, 1968; Mentor paperback, 1969), a book I had read with enthusiastic interest several years earlier. Apparently Watson told it not only as it was, I thought, but as it is. I was in the middle of one of those breathless neck-and-neck races for scientific glory. It seemed as thrilling as Watson makes it sound.

Anne Sayre's book, *Rosalind Franklin & DNA*, revived my memories of that conference. Sayre wrote her book to refute Watson's cruelly distorted picture of Franklin's role in determining the structure of DNA, the stunning scientific accomplishment for which Watson, his co-worker Francis Crick, and Franklin's co-worker Maurice Wilkins were awarded the Nobel Prize. (The Prize is not awarded posthumously, and it is never divided more than three ways. Rosalind Franklin's premature death relieved the Nobel committee of the decision whether she merited the award.)

Using materials gathered during extensive interviews of people who knew both Franklin and James Watson in the early 1950s, and evidence from Watson's own book, Sayre shows how the Nobel laureate transformed a superb, dedicated woman scientist into an ugly caricature. The fictional Rosy of *The Double Helix*, Sayre writes, is “the perfect, unadulterated stereotype of the unattractive, dowdy, rigid, aggressive, overbearing, steely, ‘unfeminine’ bluestocking, the female grotesque we have all been taught either to fear or to despise.”[1]

Sayre sets the record straight in a convincing, compelling biography. Rosalind Franklin was a brilliant scientist, passionate about her work, motivated, according to Sayre, by a fierce love of truth and dedication to the methods of scientific inquiry. Her crystallographic work provided basic data used by Francis Crick and James Watson in building their famous DNA molecule in February, 1953. Franklin had suggested in late 1951 that the molecule probably had a “helical structure” containing 2, 3, or 4 chains and “having the phosphate groups near the outside.”[2] A year later, Watson and Crick

obtained (without Franklin's knowledge) crucial experimental data she had developed: her X-ray photograph of the hydrated B form of DNA, which provided clear evidence of the helix and its diameter; her density data indicating the possibility of a two-chain molecule, and other information that convinced Watson that the nucleotide bases are in the center of the molecule with the sugar-phosphate groups forming a backbone outside.[3] These data immeasurably aided Watson and Crick's efforts at model-building.



X-ray diffraction photograph of DNA fiber taken by Rosalind Franklin, 1952-1953.

Sayre notes that since Franklin's death, a "gentle robbery" has stripped her of credit for these important contributions. The British Museum exhibit of the DNA molecule, for example, omitted her from the list of people who contributed to discovering the structure, until her friends complained. Several encyclopedia and journal articles about DNA barely mention her accomplishments. *Rosalind Franklin & DNA* would be an important book even if Sayre did no more than bring to the public's attention the work of this neglected scientist.

But Anne Sayre does much more. Her biography explores the inherent sexism in the rigidly hierarchical scientific world of post-World War II England, a sexism which made Rosalind Franklin, who merely demanded professional equality with her male colleagues, seem to many an outraged feminist. The book documents James Watson's sexist attitudes. (His own book corroborates and expands Sayre's claims on this point.) Sayre also builds a good case for Watson as a scientific thief. She convincingly argues that the laureate built his molecular model and his reputation on Rosalind Franklin's data without crediting the source.

Finally, Sayre suggests that Watson, when writing *The Double Helix*, invented Rosy to "rationalize, justify, excuse, and even to 'sell'" a new brand of scientific

ethics.[4] Sayre argues that Watson was forced to create an impossible woman who stood as an obnoxious impediment to scientific progress, in order to explain away behavior which violated the accepted standards of the scientific community.

Sayre, it seems to me, strains to make this final point. The strain is evident in her writing throughout the book, and it weakens the entire work. At first I thought that her hammering insistence on certain points, and her sometimes strident pleas for the reader's belief came from her worry that, as a nonscientist and a friend of Franklin's, she would be accused both of misunderstanding scientific facts and of outright bias. She feared, perhaps with good reason, that no one would accept her refutation of a best-selling book by a Nobel Prize winner. But when, in her Afterword, I read her accusation that Watson reduces the "ethics of science" to "roughly the same as those of used-car dealers," I realized that the strain comes from Sayre's confused understanding of how and why science is done.[5]

Life in the Science Jungle

Sayre describes the highly competitive world of Western science in glowing terms. This, it seems to me, is a major error and the source of the book's weakness. "Ideally, all problems should be available to all comers on an open, competitive market," she writes.[6] "Rivalry is stimulating and useful, and this is the way in which science works," she adds a few lines later.[7] Sometimes, she explains, when time is short, problems are many and pressing, or funds are limited, scientists agree to restrict themselves to specific problems. But she concludes that the "free-market approach to science" is the best, "for research is too creative a business to profit from being narrowly channeled." [8]

Scientific progress, she notes, demands continual communication of hunches, hypotheses, methods, and results. Sayre suggests that the tension that results from the need for communication in a highly competitive atmosphere can be relaxed only if scientists accept the highest standards of honesty, decency, and devotion to truth. Certain accepted traditions therefore rule western science; for example, a moral imperative that researchers credit the sources of their ideas. Sayre says that "a body of practice, etiquette, manners, which is generally subscribed to" allows scientists to trust each other—to communicate their most recent results to their most intense competitors, safe in the conviction that they will not be scooped.[9]

Sayre accuses Watson not only of violating this unwritten civilizing code of the scientific jungle, but of encouraging others to imitate his unethical behavior. She reports that in an informal poll at the State University of New York's Stony Brook campus, one graduate student told her that the way to "get on" in science is "to keep your mouth and your desk drawers locked, your eyes and ears open, and 'then beat the other guy to the gun.' . . . Another graduate student said that it was all down in *The Double Helix*, how to get ahead, and nobody thought the worse of Watson, did they?" [10]

These students—and also some of the ambitious young hotshots at the conference I observed—share with the young Watson a hunger for glory motivated neither by love of truth nor love of humanity. They too spurn (at least in their bragging banter) the traditional rules of scientific competition and fair play which Anne Sayre describes. But neither they nor Watson should be blamed for the “crumbling” of the “rules which for years have worked fairly well to keep the competition civilized.”[11]

The competitive structure of western scientists to strive for the glory, the power, the research money which accompany success. James Watson apparently felt the rewards well worth breaking a few unwritten rules. He acknowledges self-interest as his own motivation in *The Double Helix*. He had dreams of fame when he first approached the DNA problem.[12] Later, he explained to an acquaintance that he “was racing [Linus Pauling] for the Nobel Prize.”[13] When he and Crick thought they had solved the problem, Watson reports, Crick was eager to build the model and report the solution to other scientists so that they could redirect their work to incorporate the newly discovered, exciting DNA structure. Watson confesses that he was “equally anxious to build the complete model,” but “thought more about Linus and the possibility that he might stumble upon the base pairs before we told him the answer” than about other scientists’ work, or the progress of science in general.[14]

Watson’s self-portrayal is disgusting; more so when contrasted with Sayre’s portrayal of Rosalind Franklin’s character and apparently selfless motivation. It does seem wrong that he should play dirty and win; that she, playing fair, would lose. But Sayre herself calls science a jungle. Watson and his young admirers play by the jungle’s law. Moralizing will not prevent such things. Sayre would do better to attack the problem at its root: the competitive, hierarchical structure of western science which rewards arrogance, sexism, and cheating.

Judy Strasser

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WOMEN AND HEALTH

continued from p. 19

women’s health movement should take up issues that affect themselves and their sisters abroad, such as breastfeeding and the multinational milk companies. Here is an issue that affects child rearing practices and the fight against the medical establishment in the U.S.; but in challenging the baby food producers, American women have not demonstrated concern for their Third World sisters whose babies are dying of malnutrition and diarrhea because breastfeeding is discouraged by a similar medical establishment and bottlefeeding promoted by a rapacious food industry. But I would like to see a much broader political involvement and thus place it on the agenda: it seems to me that the women’s health movement has a responsibility to all people as well as to itself for the realization of its revolutionary potential.

I said at the outset that this agenda is a personal opinion. It follows that the program is open for discussion. One suggestion already received is that the women’s health movement should place wife beating on its list of concerns, because women in health services may be particularly well placed to identify and assist battered wives. What I hope is that this introductory statement will spark a lively debate to which women will contribute with all their diversity and richness of views.

Meredith Turshen

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The potentially disastrous effects of gene implantation research on the health of people in local communities have aroused concern in Cambridge, Massachusetts. The Cambridge City Council met in front of overflow audiences for two open hearings on June 23 and July 7 to discuss the ramifications of gene implantation (recombinant DNA) research in Cambridge for public health. The meetings were called in response to an active debate concerning Harvard University's plans to build a special facility to house this research, and were also spurred by an exposé article on the situation at Harvard in a local weekly newspaper.

At the second of these two meetings, the Council voted 5-4 in favor of imposing a three-month "good faith" moratorium on certain kinds of gene implantation experiments. The forbidden experiments are classified by the National Institute's of Health *Guidelines for Experiments Involving Recombinant DNA Molecules* as the more dangerous ones, requiring "P3" and "P4" physical containment.* In addition, the Council voted to establish an Experimentation Review Board for the city to examine in detail the hazards posed by this and other forms of ongoing genetic research. Nine people were appointed to the Board in early August. None of them are scientists doing research, though several are in public health. The Board will study the problem and make recommendations to the Council about what should be done.

The Cambridge action has set a precedent for open public debate on this scientific issue, and serves as an example for other local and state governments to curb, through cautious legislation, the rapid expansion of this and other technologies. Unfortunately, the "open" debate in Cambridge was tailored to the special interests of Harvard, whose representatives arranged the list of speakers both in favor of and opposed to the research, for both meetings.

One serious problem is that the moratorium does not affect gene implantation research which is currently being done at both Harvard and at the Massachusetts Institute of Technology. This research, although defined by NIH as "less dangerous" (requiring essentially no physical containment), is regarded by many scientists to be just as dangerous as the P3 and P4 work. The distinction between degrees of danger is based on the question of what constitutes "lower" and "higher" organisms, a subjective decision which so far has not been based on experimental measure of risk. If this distinction made in the *Guidelines* is incorrect, Cambridge citizens may be at greater risk from these "less dangerous" experiments, since they do not involve the physical barriers between the experiment and the experimenter and the outside world that the "more dangerous" experiments require.

For the alleged improvement of public health, newer and more potent threats to human health and the ecosystem are being developed through the technology of gene implantation. The Group on Recombinant DNA of Science for the People calls for an immediate moratorium on all gene implantation work which allows novel genetic combinations between organisms which are not known to exchange genes naturally. This moratorium should extend over government and biological warfare research as well as private, industrial, and academic research.

A national moratorium should allow the pursuit of at least three objectives:

- 1) *Development of Democratic Procedures* that will insure open discussion and public decision on the problems posed by gene implantation research.
- 2) *Reassessment of Dangers and Risks* before intellectual and economic investment in the development of this technology grows larger and accidents occur.
- 3) *Development of Alternative Technologies*, such as the isolation of genes from higher organisms using *in vitro* (outside of the living cell) techniques, that do not involve the manufacture of novel microorganisms.

The moratorium should continue until these three objectives have been met.

*P3 containment requires controlled access to the lab area, a biohazard sign on the door when work is in progress, and negative air pressure for the lab, or at least for cabinets in which manipulations are done. P4 containment adds several more restrictions: air locks at entrances to the lab, clothing change and shower rooms for lab personnel, waste treatment and air decontamination systems for the lab.

Group on Recombinant DNA, Boston SftP

POSSIBILITIES AND LIMITATIONS

continued from p. 13

experiments in job design have stressed the factors of partial worker control and profit sharing, and have in fact increased production, sometimes by up to 40%. The authors of *Work in America*, far from seeing workers' control as being a challenge to capitalism, argue that employers who institute workers' control "will be responding directly to their obligations to shareholders."^[8] However, the success of these experiments is destined to be limited. Some have been curtailed when the workers involved, having tasted freedom, demand that employers go all the way, others because employers begin to realize the implications of extending this organization beyond a small group of carefully selected elite workers to the workforce at large. Finally, workers will realize that these enhancements are at base not serious but cosmetic, and that the criterion of profit still rules over human fulfillment.

3) *The actual use of technologies of self-sufficient production:* If small groups of people could create autonomous cooperative communities which produced their own food, generated their own electricity, heated their homes from the sun, produced their own tools, and in every other way were self-sufficient, these people would have effectively seceded from the market economy. No longer would they have to sell their labor to an employer who extracted a profit from it; and no longer would they have to buy products marked up to assure a retailer a profit. If a sufficient number of people formed such groups, the "economy" as we now know it would disappear: there would be no GNP because goods and services would not be sold; money would become useless.

It is important to note that proposals for social transformation through the formation of such communities must cope with the fact that there is no way that small-scale production can provide the variety and number of goods and services which the international economy now makes available. One can argue that much of the Gross National Product is useless gadgetry and frivolous services, supported only by artificially stimulated consumption created by massive doses of advertising and media manipulation. The fact is, however, that most people have grown accustomed to certain goods and services, to the extent that they consider them vital necessities and would absolutely refuse to accept a standard of living that did not provide them.

Even the bare necessities of life—food, energy and shelter—can hardly be produced locally as cheaply as they can be bought, assuming that labor has a money value that could be realized in the market. If the aim is to maximize material wealth, these small communities are currently a poor bet.

There are, however, other factors that may go into the balance. The self-governance of work and social life might outweigh material disadvantages. Improvements in the technology of small-scale production could cut costs and raise productivity. At the same time, the costs of energy-intensive large-scale production may rise. It is therefore possible that small-scale production and coop-

erative consumption could become a broad-based, popular movement that challenges the present economic system. However, it would be impossible to say that this is a likely development.

Further, there are dangers in the concept of self-reliant productive groupings. To a certain extent, the present high-consumption, high-waste system is based on an insidious notion of "self-sufficiency" that is readily exploited. A vague need for human independence and personal achievement is turned into the suburban lifestyle of individual house with individual car, pool, TV and lawnmower. This self-isolation is self-sufficiency only in that the basic consumption unit does not depend on or deal with the other consumption units but deals directly with and is individually exploited by the larger market.

Without larger support systems or a larger sense of solidarity, each consumption unit might be sold its own windmill, rotary tiller, prefab greenhouse and solar heater; radical socialist self-sufficiency will turn into isolated, bourgeois consumption. This insidious notion of self-sufficiency is a motivating force behind much of the alternative technology movement.

Further, even if relatively self-sufficient cooperative production is achieved on the scale of apartment house, city block, housing project or urban neighborhood, there is another possible pitfall: a feeling of isolation on a larger level may occur, in which the community or neighborhood sees itself as set off from, perhaps even in opposition to, not only the ruling classes and the megacorporations, but also society as a whole, decreasing solidarity among working people.

We have examined two aspects of alternative technology: its use as a vision of the future, and its use as a strategy for social change. We are not convinced that alternative technology represents an effective strategy for social change. But we think that providing a vision of the future is important for motivating a movement for social change, and alternative technologies are a crucial part of this vision. The formation of this vision remains as a task for a cooperative effort by scientists and working people.

This article is by Eric Entemann, Fred Gordon, Kathy Greeley, Ray Valdes and Peter Ward, who are members of the Boston SftP chapter's Alternative Technology Subgroup.

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IS LESS MORE?

Continued from page 9

Self-management (the French term often used in the literature is *autogestion*) can have diverse meanings. A literal and limited definition might suggest only democratic management of a firm by its workers. But in a deeper sense, it refers to a system of organization at the national level which would embrace not only the productive system but all of the institutions of society including those with fundamentally political or ideological functions.

By and large, the alternative technology/alternative institution people have not tackled the problems of how the heavy industrial base of a society such as ours might exist in their vision of the future. Organic food restaurants, after all, are not as essential to the economy as are steel foundries. As regards alternative forms of technological hardware, much work remains to be done on this problem; for example, I am involved in an investigation of small-scale steel making which hopes to incorporate, among other things, the experiences in the People's Republic of China with backyard steel-making during the Great Leap Forward. But, in regard to alternative institutional forms for heavy industry, there is much we can learn about what has been going on in other parts of the world (and some activities in this country). There is self-managed activity in major industrial sectors occurring in Yugoslavia, in the Basque regions of Spain, in Peru, and of course it existed in Chile under the UP. There is a major worker-owned mine in Vermont.[19] In the American Northwest there are still plywood co-ops, and we should study their history and current operations. And, in the service sector, for example, we might look at the experience of International Group Plans, a large insurance company in Washington DC totally owned and run by the 350 people working in it. A network center exists in Ithaca, New York, called "People for Self-Management" to provide such information.*

I am not talking about "self-management" solely as a political slogan, nor am I suggesting that in all of the above-mentioned examples the workers' political consciousness is fully developed. I am saying that there are exciting possibilities of putting these theories into practice and having these practices molded by conscious politics. I am talking about the technologies—hardware and social/institutional setting—which are appropriate to a radical future.

...[E]ven "workers' control of production," a very fashionable slogan these days, would not be any sort of "control" at all if technology were so centralized and suprahuman that workers could no longer comprehend the nature of the technological

*Readers of *SftP* who wish to become more familiar with the large and growing literature about self-managed collective enterprises around the world might write to People for Self-Management at Box 802, Ithaca, New York, 14850. Issue No. 13 of the *Newsletter* has a three-page, single-space bibliography, and Issue No. 14 contains an extended suggested definition of self-management.



apparatus other than their own narrow sphere. For this reason alone, libertarian Marxists would be wise to examine social ecology in a new light and emphasize the need to alter the technology so that it is controllable, indeed, to alter work so that it is no longer mind-stunting as well as physically exhausting toil...[20]

[At this point the original essay discusses the developed world and "post-scarcity," and the importance of scale.]

The Third World

Schumacher has a chapter dealing with neo-colonialism, although he is uncomfortable using this term. In another chapter, he deals with the concept of economic development ("primarily a question of getting more work done," involving motivation, know-how, capital, additional markets for outlet)[21] and correctly notes that existing programs of aid have increased the dependency of the poor nations upon the developed ones. Schumacher is primarily concerned with increasing the levels of economic activity, but in several places he recognizes that development is not solely an economic concept; Third World writers are trying to remind us that the concept of development must include a social and cultural aspect as well (and in this regard, many Third World societies are more highly "developed" than our own). Schumacher's point is that "the choice of technology is the most important of all choices." [22] Most aid schemes totally ignore such an inquiry, and seek to transplant developed-nation technology into a Third World context; and many Left analyses do the same.

Schumacher's emphasis is on intermediate technology which would be appropriate for the Third World. He notes that "whether a given industrial activity is appropriate to the conditions of a developing district does not directly depend on 'scale,' but on the technology employed." And he goes on to say:

In the end, intermediate technology will be "labor-intensive" and will lend itself to use in small-scale establishments. But neither "labor-intensity" nor "small-scale" implies "intermediate technology." [23]

Schumacher does not give an entirely satisfactory definition of what he means by intermediate technology. He relates the concept to "equipment cost per workplace" and he makes it clear that he is aiming for something between the levels of the present indigenous technology of the typical developing country and the enormous scale "sophisticated" technology of the developed countries.[24]**

As Gandhi said, the poor of the world cannot be helped by mass production, only by production by the masses. The system of *mass production*, based on sophisticated, highly capital-intensive, high energy-input dependent, and human labor-saving technology, presupposes that you are already rich, for a great deal of capital investment is needed to establish one single workplace. The system of *production by the masses* mobilizes the priceless resources which are possessed by all human beings, their clever brains and skillful hands, and *supports them with first-class tools*. The technology of *mass production* is inherently violent, ecologically damaging, self-defeating in terms of nonrenewable resources, and stultifying for the human person. The technology of *production by the masses*, making use of the best of modern knowledge and experience, is conducive to decentralization, compatible with the laws of ecology, gentle in its use of scarce resources, and designed to serve the human person instead of making him *[sic]* the servant of machines. I have named it *intermediate technology* to signify that it is vastly superior to the primitive technology of bygone ages but at the same time much simpler, cheaper, and freer than the super-technology of the rich. One can also call it self-help technology, or democratic or people's technology—a technology to which everybody can gain admittance and which is not reserved to those already rich and powerful.[25]

To me, this sounds like a very sensible and valuable vision, something worth working towards. In fact, it sounds like just what Science for the People described in impressive detail in the book, *China: Science Walks on Two Legs*.

Dangers and Drawbacks

In conclusion, let me state that I do not accept all of Schumacher's ideas and analysis. Much of his analysis is politically naive, and certainly a great deal of it is permeated by an upper-caste point of view.[26] It can lead to the mushy and confused politics of a Governor Jerry Brown. Also, Schumacher runs the danger of being paternalistic; how do well-meaning members of a rich society know what is "appropriate" for the Third World? Too much in Schumacher seems to point in the direction of doing one's own thing. Religious metaphor is used too

**Examples are described in the quarterly "Appropriate Technology" published by The Intermediate Technology Group, 9 King Street, London WC2E 8HN, England.

simplistically.[27] But if we are indeed less naive and less paternalistic than Schumacher, why don't we try to juxtapose his insights with the thinking which has proved most critically stimulating to us. I have tried to do some of that; undoubtedly readers of *Science for the People* have additional theoretical perspectives they believe are valid. I would like to know what kind of analyses occur when people apply these constructs to that idea that "small is beautiful."

I wish to thank a number of friends, particularly Les Hoffman, Fred Lee, Sam Salkin, and Susan Schacher, for their criticisms of earlier drafts of this essay.

Phil Bereano has been involved for the past six years in research and teaching on issues of technology and society, at Cornell and currently at the University of Washington.

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26. *Ibid.*, a potential example is found on page 140 where it seems as if bourgeois romanticism is rhapsodizing about the happy condition of the natives in a Third World country.
27. *Ibid.*, p. 201; "The basic things of life have been needed and produced since Adam left Paradise."

NEWS NOTES

SILKWOOD COVERUP

Sara Nelson, head of the Labor Task Force of the National Organization of Women compares the Karen Silkwood investigation with the Watergate coverup.

Ms. Silkwood, an employee of the Kerr-McGee Corporation in Oklahoma, was killed in November 1974 in a mysterious automobile accident. She was on her way to meet an official of the Oil, Chemical, and Atomic Workers Union and a New York Times reporter to discuss her allegations concerning the plutonium plant where she worked.

In addressing the delegates at District 8's Legislative Conference May 21, Nelson enumerated the efforts made by NOW on behalf of the Silkwood investigation in view of lack of effort by federal agencies. Nelson said that the investigation has "all the evidence of coverup, and lack of action on the part of the agencies." The next stage in NOW's effort is to encourage the committee (U.S. Rep John Dingell's House Subcommittee on Energy and Power), through legislative mailings to stay on the case even if there is minority opposition. Nelson further said that what must be done is "to make sure the public really understands that the work of Silkwood and OCAW is correct."

—Oil, Chemical and Atomic Workers Union News
July 19, 1976

NOT INSANE

Every cloud has a silver lining. Or at least a radioactive one for the Energy Research and Development Administration who, although they have "misplaced" tens of tons of nuclear material, are the proud win-

ners of the third "Insanity Award" presented by SANE, the anti-nuclear war lobby. The award distinguishes institutions and individuals that "best exemplify irrational approaches in foreign and nuclear policy."

In a letter to ERDA accompanying the award, SANE said: "With the amount you can't find, someone could produce more than 20 times the explosive power of all the bombs and all the shells that have been used in all the wars of the history of humanity." Is nuclear power worth it? (See *Science for the People*, May 1976, Vol. VIII, #3).

—New York Times,
August 8, 1976

RADIATION HAZARDS IN PHOSPHATE MINING

About 80% of the nation's phosphate and more than a third of the world's supply is provided by strip mining the Florida terrain. Yet in its efforts, or lack of efforts, the phosphate industry has been responsible for creating environmental as well as health hazards that include air pollution, water pollution, land destruction and depletion of water resources. But now a new hazard is becoming a concern to Floridians. The concern is that of radiation from radon 222, a short-lived radioactive gas produced by radium. This gas is usually found with uranium in deposits of phosphate. The problem is of sufficient concern that the Polk County Health Department has placed radiation monitors in some 750 homes to determine the prevailing radiation levels.

A preliminary study by the Environmental Protection Agency on conditions in Polk County, located in the heart of the phosphate deposits, concludes that, if present levels of radon radiation persist, the possibility that local residents will develop lung cancer doubles. The executive director of the Florida Phosphate Council, Homer Hooks, articulated the attitude of the phosphate industry: "Why a friend who is an engineer tells me that our senators and representatives walking in the halls of

Congress are probably exposed to more radiation than you get from phosphate. Granite is radioactive to some degree."

At the order of the Ford Administration, the EPA and the President's Council on Environmental Quality ordered intensive study of the environmental impact of the Florida phosphate industry and simultaneously the EPA issued a moratorium on further expansion of the mining industry.

Plans by the phosphate industry to expand have alarmed adjoining counties including Sarasota, DeSoto and Manatee. Most of the opposition against further expansion has been led by the Sarasota Herald Tribune and by the Sarasota County Commissioners. The phosphate industry's response to opposition was to sue the Sarasota Tribune for \$10 million and the Sarasota Commissioners for \$2 million on grounds of harassment. In continued intimidation, the industry has also threatened to sue a real estate brokers' group that organized a speakers' bureau to make information available about the dangers raised by phosphate mining.

—New York Times
July 24, 1976

SUNWORSHIPPERS

Large corporations are acquiring a large number of patents assigned for solar energy. These include patents for solar heating and solar generation of electric power. These corporations include the US' major oil, automotive and aerospace industries. Large aerospace and defense contractors receive most of the federal grants and contracts for solar energy. Small solar hardware firms control a very small share of the patents.

In 1975, 89% of ERDA's contracts as well as 83% of NSF's grants went to large corporations. Three companies, GE, Honeywell and Martin Marietta accounted for 20% of ERDA's solar R&D outlay.

Large corporations receiving federal money acquire a certain legitimacy within the solar industry just due to the fact of receiving huge

amounts of government funds. These funds permit the large corporations to acquire data and personnel that remain with the firm after the contract is completed. New contracts are then easier to obtain. This spiraling tendency will secure a virtual monopoly on the development, distribution, and pricing of solar energy systems.

— People and Energy, May 1976
Center for Science in the
Public Interest

CONFLICT OF INTEREST IN THE FEDERAL ENERGY AGENCIES

A study of the records of 2 major Federal energy agencies found that more than half of their top officials were from private enterprises holding contracts, licenses, or permits from the agencies. This study of the managers of the Energy Research and Development Association (ERDA) and the Nuclear Regulatory Commission (NRC) was made by Common Cause, the public affairs lobbying organization.

ERDA, with a budget of \$6 billion, is responsible for conducting Federal energy research. NRC, with a budget of \$249 million, is charged with assuring the safe operation of the commercial nuclear industry. Nuclear contractors, such as General Electric, Union Carbide, Bechtel, Westinghouse, Babcock and Wilson, Gulf Atomic, General Dynamics, and Rockwell International, contributed a large number of scientists, engineers, and administrators to both energy agencies.

One example cited was that of MIT professor, Norman Rasmussen, who was hired by the Government to head a study on the potential dangers of reactors. The study found that it was highly unlikely that a reactor accident would cause serious damage. At the same time he was working on the Government project, Rasmussen was a consultant to 5 commercial companies in the nuclear field, 3 of which had close connections with and were licensed by the NRC.

—New York Times
June 5, 1976

REGULATORS REGULATED

According to Nutrition Action, a publication for the Center for Science in the Public Interest, "30% of FDA officials and FDA lawyers who leave for another position take jobs with regulated firms, trade associations of regulated firms, or law firms that have regulated clients." About 25% of FDA's top officials have worked in the regulated sector for a long period of time before joining with FDA.

Like a revolving door, top FDA officials take a few years off from their industry careers to gain experience and insight into how FDA works. They then return to industry to use this knowledge to thwart Federal regulation.

The FDA is also used by newly graduated law students as a kind of "graduate school" where they can learn valuable skills and knowledge which the regulated industries could use to circumvent regulation. Industry usually buys off the most promising lawyers from the FDA, offering much higher salaries and a better chance of advancement.

—Nutrition Action,
August 1976

PEOPLE, HUNGER, LIFEBOATS

The Environmental Fund, one of the largest ecology and population-control organizations in the US, has recently published a statement on the world hunger crisis according to the NY Times. Entitled "Statement on the Real Crisis", it focuses on "the galloping growth of population" as *the* cause of world hunger and claims that family planning "cannot and will not, in the foreseeable future, check this runaway growth".

According to the Environmental Fund, the problem is too many people. Therefore, countries which cannot attain self-sufficiency in the near future should not receive aid. These poor nations should be thrown from the "lifeboat" to prevent the more developed countries from being

dragged under. This policy of starving out the poor nations is endorsed by political scientist Zbigniew Brzezinski, a foreign policy adviser to Jimmy Carter. Brzezinski has been mentioned as a possible Secretary of State if Carter is elected President.

—New York Times
July 15, 1976

OIL WORKERS' HAZARDS

Is nuclear fuel the only potentially hazardous form of energy? If we defeat the promoters of nuclear power expansion will we have eliminated all the dangers involved in energy production? The answer is no — not for the people at work in oil refineries — 90,000 in the U.S. and Canada alone. It is not that the refining of oil is necessarily a hazardous process, but the oil companies' drive for profits at the expense of worker safety leads to refinery fires, lack of safety precautions, and occupational diseases.

The Philadelphia Area Project on Occupational Safety and Health (PHILAPOSH) has just published a fifty-page book entitled *Oil Refinery Health and Safety Hazards, Their Causes and the Struggle to End Them*. It details the dangers of present refining technology, inadequate maintenance practices and the drastic workforce reductions that threaten oil workers and their communities. Through study of industry documents, interviews with hundreds of oil workers, union and industry officials and on-site inspections, author Richard Engler documents the truth to a statement by Sun Oil Company spokesperson William Miller, who said in 1973 that "Oil is not our product, money is."

The study, which also suggests ways to improve the present situation, is available from PHILAPOSH, Room 607, 1321 Arch St., Philadelphia, 19107. The price is \$2 for Oil, Chemical and Atomic Workers Union members, \$3 for individuals and \$25 for businesses and government institutions.

—Oil, Chemical and Atomic
Workers Union News
July 19, 1976

MORE LETTERS (continued from page 4)

Basically, I support your editorial committee's statement from Jan. 1976 that the magazine "should deal with issues of science and technology in a radical manner rather than presenting general leftist issues and analysis."

Illich has written a book on western medicine. I hope it generates more analysis of the present situation and his proposals, ideas, in your pages.

Be strong,
Kevin Walsh
Portland, Oregon

REPORT FROM LOS ANGELES

I would like to report, very briefly, on two activities that may be of interest to many readers of *Science for the People*.

Tapes have been secured of the talks presented at the symposium on biological determinism which was sponsored last year by Ann Arbor Science for the People. These talks are being broadcast, somewhat aperiodically, over station KPFFK. Offer sheets are going out to other Pacifica stations to make the talks available throughout the Pacifica network. I am also cooperating with progressive organizations and individuals (feminist groups, trade unions, progressive faculty) to make this material available to them.

The audience response has been good and, in some cases, very strong and very enthusiastic. In those cases, I plan to do repeat broadcasts in the fall.

(I am anxious to secure other good taped material that members and friends of Science for the People may have and would like to see exposed to a large audience.)

I would also like to report on an occupational and environmental health and safety project which has been initiated. The major thrust for this project has come from members and associates of a socialist media group who have been working with local unions to produce a slide show for their memberships, as well as other

media materials. Also participating is a member of Science for the People who has been providing technical information to the health and safety council of a local union, and some people associated with a political free clinic who have been concerned with environmental pollutants and food additives.

Plans for the summer involve continuation of current activities as described above; expansion of educational, media, and technical activities; and development of a resource center for both technical and media materials. Anyone wishing to participate should contact: Science for the People, c/o P.O. Box 368, Canoga Park, CA 91303.

Al Huebner

ABOUT THIS ISSUE *cont. from p. 3*

the word of establishment experts is now frequently suspected of hiding unstated motives and interests. Fifteen or twenty years ago this would not have happened. But this awareness is not sufficiently widespread to protect dissident graduate students, faculty or employees elsewhere from severe harassment. As the example from cancer research shows, much more awareness and unity must be achieved before these issues can be solidly challenged. Meanwhile the debate must be broadened to reveal its full political implications. For example, the recombinant DNA issue can be readily expanded to address research priorities, environmental origins of disease and other analogous major technological choices such as nuclear power. By waging this debate in all possible arenas — schools, community forums, local media — progressive science workers can make a significant contribution toward the larger social changes that are needed.

Continued from page 2

EDITORIAL PRACTICE

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.

Other Contributions: Letters: contributions for continuing debate, commenting on previous magazine content, initiating new discussion, etc. News Notes: news items illustrating the social and political role of science and technology, especially reporting people's actions on these kinds of issues (300 words or less). Chapter Reports and *SftP* Activities: brief summaries having essentially assured publication, with editing. Graphics: all kinds, including cartoons, designs, photographs, etc., not necessarily original but with credits.

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SESPA is defined by its activities. People who participate in the (mostly local) activities consider themselves members. Of course, there are people who through a variety of circumstances are not in a position to be active but would like to maintain contact. They also consider themselves members.

The magazine keeps us all in touch. It encourages people who may be isolated, presents examples of activities that are useful to local groups, brings issues and information to the attention of the readers, presents analytical articles and offers a forum for discussion. Hence it is a vital activity of SESPA. It is also the only regular national activity.

We need to know who the members are in order to continue to send *SCIENCE FOR THE PEOPLE* to them. Please supply the following information:

1. Name:

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