

SCIENCE FOR THE PEOPLE

VOL. VII
NO. 6
NOV., 1975

75¢

ALSO
IN
THIS
ISSUE:
"MILKING
PROFIT
OUT OF
COWS"

THE NEW ROBOTS

"The nervous joke that 'you can be replaced by a machine' has turned into an ominous reality."



CONTRIBUTORS: Michelle Fluck, The Genetic Engineering Group, Pam Hardt, Robert Shapiro, Chuck Garman, Dave Chidakel, Bruno Vitale, Diana Echeverria.

INSIDE

EDITORIAL: Eric Entemann, Michelle Fluck, Chuck Garman, Ann-Marie Crowley, Bob Park, Lorraine Roth, Alice Miller, Rich Rosen.

TABLE OF CONTENTS

4	NEWS NOTES
6	THE NEW ROBOTS
10	MILKING PROFITS OUT OF COWS
15	DETENTE: SUPERPOWER-SUPERSHAM
20	VIETNAM REBUILDS: DIALECTICS AND DIODES
24	CANCER PREVENTION — PEOPLES SCIENCE
26	SCIENCE TEACHING COLUMN
28	BOOK REVIEW: SOCIOBIOLOGY: THE SKEWED SYNTHESIS
31	LETTERS

PICTURES AND GRAPHICS

p. 6	<i>Man and Machine</i>
p. 7	D. Chidakel
p. 9	D. Chidakel
p. 10	R. Shapiro and P. Hardt
p. 13	R. Shapiro and P. Hardt
p. 17	<i>Red Paper #7</i>
p. 20	<i>Faces of North Vietnam</i>
p. 24	D. Chidakel
p. 25	B. Ames
p. 27	Diana Echeverria
p. 35	<i>Faces of North Vietnam</i>
cover	D. Chidakel

EDITORIAL PRACTICE

Science for the People is prepared and distributed through the efforts of three groups of our members, each taking responsibility for the editorial, production, and distribution functions respectively. Membership in these groups reflects a commitment to participate in magazine work for at least six months, up to a maximum of one year. The groups will be accountable to the general membership through open meetings called to discuss each issue and through criticism and comments received through the mail. In this way it is hoped that the magazine will present a more coherent political perspective, better reflecting the view of the larger organization. Nation-wide participation is strongly encouraged; interested individuals should contact the magazine coordinator at the Science for the People office. We also encourage preparation of single issues of the magazine by chapters outside of Boston, and point out that the separation of editorial and production functions should make this a more realistic task.

Every effort will be made to publish articles describing Science for the People activities. Analytical articles will be judged on the quality of their writing, and whether they reflect the general political outlook of Science for the People. The editorial committee may make minor changes, but any extensive rewriting will be carried out with the consent of the author. The editorial committee reserves the right to make editorial changes, or comments in italicized script, on all articles submitted. Authors should submit articles as double-spaced typed manuscripts; if possible, six copies are helpful. Contribution of drawings, cartoons, photographs, or designs on the topics of science, technology, energy, pollution, health care, the struggle against racism and sexism, imperialism, etc. are very welcome. 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.

ABOUT THIS ISSUE

In this issue, the familiar theme of the applications and development of science in our society is followed in two groups of articles. The first group deals with some of the dangerous ways in which scientific results can be loaded for and applied to increase the profit of big business, the exploitation of the working classes, the ideological control on society. It contains contributions on the expansion of large scale dairy industry, on robots, on newly proposed genetic theory of human behavior. The second group deals, on the contrary, with some of the way in which scientific knowledge and professional skill can be used to increase the control of the working classes on their working conditions and to enlarge international solidarity. It contains contributions on a new, simple technique to discover mutagenic properties of chemicals and a relation on the Science for Vietnam activities in Italy.

The article on the dairy industry discusses the concentration and centralization of this industry through the use of technology. Some questions are raised which hopefully will provoke discussion and response: Does large-scale production and automation tend to result in jobs that are boring and non-creative, independently of the economic milieu? What are the ramifications of the alliance, suggested by the authors, of small farmers, farm workers and consumers? What are the specific ways in which their long-term interests are in harmony?

The paper on the dairy industry has indicated how the use of technology has been instrumental in the building up of large-scale dairy farms; the paper on robots makes it clear that this trend toward automation is not limited to large-scale production and global control but is now increasingly being extended to small-scale production, clerical work, and engineering skills through the introduction of the most sophisticated and versatile machines, the robots. Hopefully this article, which gives factual information and organizes it in the frame of a class analysis of the dynamics of capitalistic society, will stimulate other contributions and reflections on more comprehensive topics, all of them in urgent need of definition, careful consideration theoretical understanding. In particular, we feel that our readers could contribute out of their practice, at least as much as out of their theoretical analysis, on such problems as the role of class struggle in the development of automation and the introduction of robots; on the intrinsic contradictions which the introduction of these devices could create for big business both in terms of the definition of the market values of commodities and in terms of the vulnerability of automated systems to class struggle; on the role of automation in a society freed of capitalistic exploitation.

The article "Sociobiology: The Skewed Synthesis" deals with the use of science as an ideological tool to maintain the status quo. Recently certain people have advocated a genetic explanation for human social behavior; the article discusses in particular the recent book *Sociobiology: The New Synthesis* by Harvard

professor E.O. Wilson. The danger of such expositions is that they may be used to support oppressive legislation with the fallacious reasoning that "antisocial behavior" is "in the genes" and thus cannot be changed, but must be controlled by laws. The authors of this article show that the "science" used by Wilson and his colleagues is not only false extrapolation but in fact contains many political assumptions and, upon close examination, reveals the class prejudice of the researcher. This raises the important question of what kind of scientific research should or should not be done. Should we hold to the faith that we will always be able to counter racist, classist or sexist theories by showing that they derived from badly done science; or rather should we take a political position that some types of research should not be done since the results will inevitably be used in oppressive ways?

In the view of many people who work in science, doing 'politics' is something that one does quite apart from one's work in science. At the opposite extreme are those who believe the only real political contribution they can make is by doing radical, alternative science. The article: "Cancer Prevention: Good News from Peoples Science" is an example of an intermediate position: straight establishment science which, through the imagination and persistence of the researchers, was tilted in a direction which will result in potentially great benefit to the working class (which is not to say that it won't be used against workers as well). This approach should be a component of Science for the People's strategy: identifying specific niches in establishment science where deviations can be arranged — despite funding bias, tenure and career hassles, research organizational politics — resulting in conceptual and practical innovations with immediate political consequences. There are possibly a great many such opportunities awaiting discovery, pointing out a pursuit.

Science for the People since its beginning has been strongly committed to solidarity with the people of Indochina. The article "Vietnam Rebuilds: Dialectics and Diodes" shows us a way to maintain those ties and help in the reconstruction of Vietnam and the building of socialism. The questions that the Vietnamese people are asking today, about the role of science in a new society and the ways to teach it, can ultimately also help us to answer those questions ourselves.

Finally, this issue contains the report of a Science for the People member who was chosen to attend a conference on detente and disarmament. The conference was sponsored by the World Federation of Scientific Workers, and was convened in Moscow. The occasion of this event stimulated a new discussion within the organization on some very basic questions: the nature of the Soviet Union, Soviet foreign policy, and the relation between the competing superpowers. Hopefully this debate will develop further, in part because it has obvious implications on the history of efforts to build a socialist society.

NEWS NOTES

UFW AND ELECTIONS

Union elections for farmworkers in California commenced this month with more than 200 ranches expected to have votes before this year's peak harvest ends. Balloting has not been very smooth, however, marked by many challenges of votes, court impoundments of ballots, deportations of eligible voters and a constant threat of violence by growers in many places where elections are being held.

Before elections began, the United Farm Workers of America, AFL-CIO, filed grievances with the California Agricultural Labor Relations Board saying it could not communicate with workers because growers denied UFW organizers access to the fields and labor camps. The Labor Board granted access but the growers continued to block access with 1) groups of armed vigilantes wielding rifles and silver 'sheriff' stars who chased UFW organizers off the land and 2) temporary restraining orders in Federal Court claiming that access violates the growers' private property rights. Three weeks after elections began, the UFW received a stay in a higher court restoring access to the fields until hearings and a decision are completed.

While the courts are kicking around the access ruling the vigilantes are still creating a tense and dangerous atmosphere for workers and the UFW.

The atmosphere inside the ranches is tense, too. Rev. Fred Eyster, National Farm Worker Ministry, visited the Gallo Livingston ranch and found the workers very intimidated. "Whenever we approached them during the lunch breaks, they would not talk with us if a Teamster was watching. I saw one worker approach

a UFW person with a warm greeting. When a Teamster shouted "Oh, a Chavista!" the worker immediately cried "No! No!" and sidled up to the Teamster to reassure him that he was loyal." (Report to the Northern California Working Group of the NFWM).

The Gallo ranch, though not the biggest, was significant because of the international boycott on Gallo wines. The UFW carried that election Sept. 10 but the Teamsters challenged the votes of 123 strikers and the UFW challenged 27 security guards. The Labor Board is holding hearings on the challenges.

Meanwhile the border patrol is playing a big role in threatening farmworkers with what Bishop Roger Mahoney, chair of the Labor Board, called "selective enforcement of the laws," including arrests of workers who signed UFW petitions for union elections. The UFW's Second Constitutional Convention in August called for legislation granting amnesty to all undocumented workers and protection of the right of all workers to organize themselves in a union of their choice. Early in this month, a UFW lawyer was arrested for trying to speak to a group of undocumented workers who had been arrested in Salinas. The New York Times Sept. 9 reported that one worker experienced an incident where a border patrol agent told him and other workers at the Border Patrol Detention Center, that "we will call lawyers for you if you go with the Teamsters."

Cesar Chavez, President of the UFW, has called on the Labor Board and California Governor Jerry Brown to investigate unfair labor practices and irregularities in union elections.

WOMEN IN MEDICINE

PHILADELPHIA — The Medical Library and The Center for Women in Medicine of the Medical College of Pennsylvania* are collaborating to produce a bibliography about Women in Medicine. The bibliography will include all identifiable books, periodical articles, reports and thesis of scholarly value on the subject of women physicians. The bibliography will be classified by subject cate-

gories such as Medical Education, Practise Patterns, and Role Conflict.

It is thought that such a bibliography should be especially useful to women interested in medical careers, their counselors, scholars and other researchers, and persons who are recruiting women physicians.

—Gay Community News

*The Medical Library
Medical College of Pennsylvania
3300 Henry Avenue
Philadelphia, Pennsylvania
(215) 842-6000

PLASTIC WRAPPER TIED TO CANCER

WASHINGTON—The Food and Drug Administration announced plans yesterday to halt the packaging of many food items in certain kinds of plastic because the plastic has the potential for causing cancer.

FDA commissioner Alexander M. Schmidt said that the proposal to limit the use of polyvinyl chloride, the second largest plastic used in food packaging, was initiated because the "FDA and the scientific community agree that vinyl chloride poses certain risks to human health."

The proposal would, in effect, ban most of the present packaging of luncheon meats, for example, and discontinue the use of plastic bottles for such things as salad dressing and vegetable oil.

The FDA decided, for the time being at least, that other forms of plastic made of polyvinyl chloride, such as that used to wrap fresh meats and fruits, would be permitted in grocery stores.

The basic distinction drawn by the FDA is between "rigid or semi-rigid plastics and "pliable" or "film-type wraps." The FDA ban would apply to the rigid or semi-rigid material.

Dr. Sidney M. Wolfe, director of the health research group, a private organization established by consumer advocate Ralph Nader, and a leader in the fight to ban polyvinyl chloride, chided the FDA for failing to ban all plastic packaging made with polyvinyl chloride.

"There is a significant amount" of cancer-causing residue in the pliable plastic made from polyvinyl chloride

CAP TAKES ON UTILITIES

Over 15,000 Massachusetts residents pledged to withhold payment on their electric bills on October 1 in order to halt skyrocketing rates and to force the Public Utilities Commission to establish a "lifeline" service. This movement was organized by the Massachusetts Citizens' Action Project on Energy (CAP), a state-wide coalition of consumer, senior citizen, and other community groups, and labor unions, which has launched this campaign for utility reforms.

Maintaining that "electricity is a necessity—not a privilege for those who can afford it", CAP has proposed a change in the rate structure so that the cost of the first 300 kilowatt hours per month, used by resi-

dents, would be cut in half, with industrial and commercial users making up the loss in revenue to the utilities. This amount of electricity, (lifeline), is the minimal amount of electricity needed for light and refrigeration.

At present, large industry and commerce pay half the actual cost of electricity because of "volume discounts"—the more you buy the less you pay. Residents pay *1½ times* the actual cost. This rate structure promotes greater demand, encourages wastefulness and misuse of diminishing resources. It also means greater profits for the privately-owned (banking and insurance industry controlled) utilities. *By state law*, the utilities are *guaranteed an 8% rate of profit* on investment in plant and equipment. Electric companies can promote greater consumption, and

invest in new power plants to satisfy increasing demand, with the guarantee that profits will go up.

Encouraged by a recent decision in California to establish a lifeline service, CAP is participating in hearings dealing with lifeline and continuing its organizing efforts. Along with lifeline service, CAP also proposes a moratorium on rate increases until the reform measures are implemented, and a flattening of the rate structure so that large industry pays on the same scale as residential users. CAP is prepared to struggle for public ownership of the electric system if private firms cannot provide electricity at a reasonable price.

Everyone! Please contribute items of interest and humor to this regular section.

In the May '75 SftP (Vol. III, #3) we published a plea for SftP readers to join with European scientists* in petitioning for review of Karl Armstrong's 23-year jail sentence. This sentence was passed on Karl for the Aug. 1970 bombing of the Army Mathematical Research Center in Madison, Wisconsin, where physicists and mathematicians were collaborating with the Army to perfect the electronic battlefield and optimize the heavy bombing of Indochina. A physics researcher was accidentally killed in this action; an anonymous warning to evacuate the building had been ignored by the police.

Karl Armstrong's action took place in the midst of a monumental American resistance movement and indeed grew out of the despair, after five years, that this peaceful movement, in which he had been active, could help. The carnage was being extended to all of Indochina and the Kent State killings had just taken place — yet the "political connotations" of his deed were denied during his trial, and recently there has even been the suggestion of the state's breaking its plea bargain and trying for a life sentence! In this atmosphere Karl's case recently came before the State Parole Board and was deferred for consideration until next year. He writes us:

"A couple of days ago I saw the State Parole Board for the first time . . . I get a year deferment . . .; please let all my brothers and sisters know that I am still trucking and hope to see them on the streets in a few years.

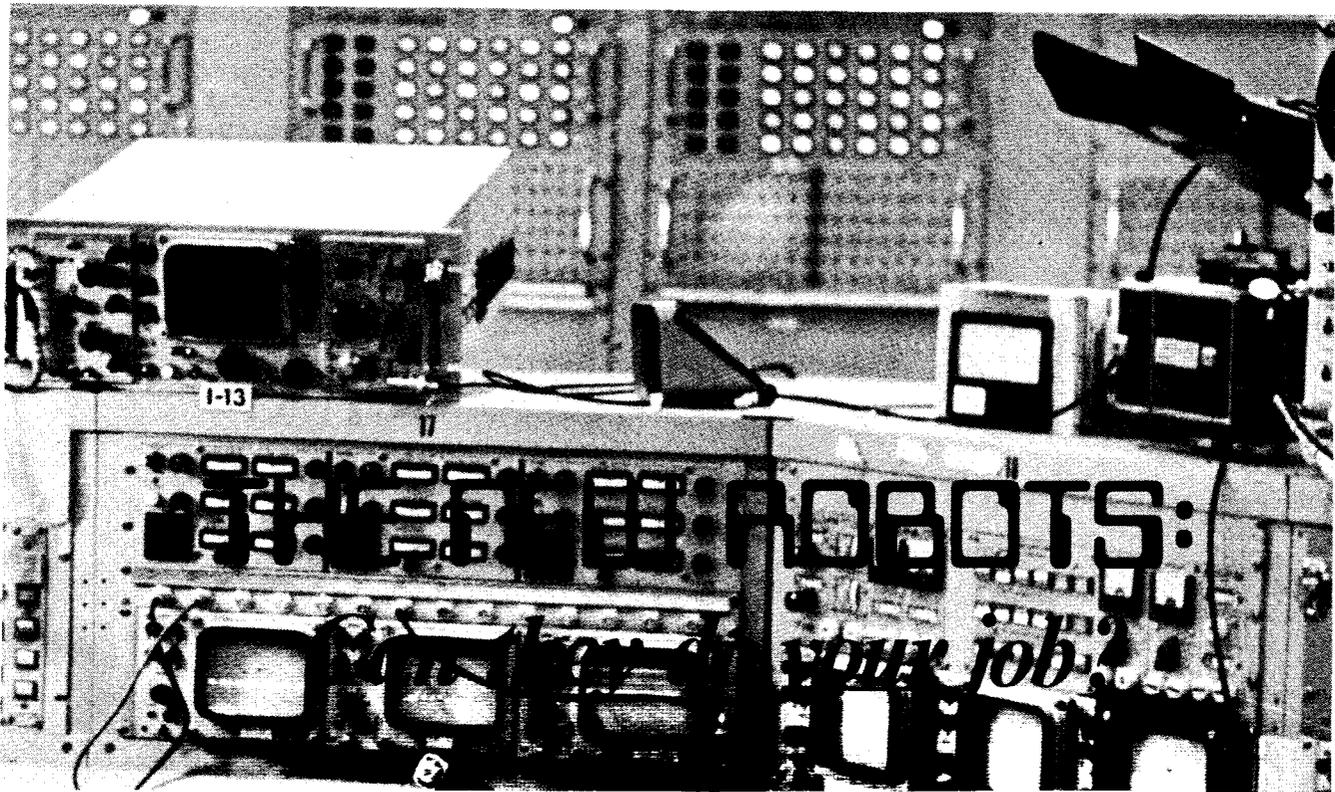
I feel that between now and the end of next year petitions should be circulated and sent to Gov. Lucey to get my time cut."

Please pick up the pen for Karl, in jail with 21 more years to go! Although the ending of the war has dulled interest and concern about Vietnam, still, the way the war ended, and the CIA and Watergate revelations that followed are vindications of the anti-war position on which Karl based his action and ought to weigh in his favor if we on the outside don't forget him. Letters, or better yet, petitions from school or work, supporting his application for a sentence review can be sent to Gov. Lucey of Wisconsin, with a copy to us for Karl and his lawyer. If you want to write to Karl Armstrong directly, as well, his address is P.O. Box C, Waupun, Wisconsin 53963.

We want to state clearly and forcefully our solidarity with Karl Armstrong. We believe that, by acting as he did and by attempting to stop military research at the AMRC, he correctly identified in one of the most sophisticated fields of pure and applied research one of the most dangerous enemies to fight against, one of the subtlest allied to aggression and imperialism in the world: modern technology, instrumental to the policy of aggression and repression carried on by the American government.

We believe that he intended to act for our Vietnamese comrades, for all that fought for peace in the United States and for us all; his deed was indeed an "act of war" and as such its "political connotations" should weigh heavily in any future revision of his case. We ask for an immediate revision of his trial and for his liberation.

(address of K. Armstrong: P.O. Box C, Waupun, 53963 Wisconsin, USA)



“Few industrialists at the conference doubted that the computers would eventually take over factories: only the speed of the conversion would be subject to outside forces . . . ”

A new wave of technological change is gathering. Only this time it threatens to be more than a new arrangement of control systems and conveyors. The “robot” is finally upon us and may condemn to the scrap heap people who are working not only in factories but in offices and in various service industries formerly thought immune to mechanization.

This threat is not from the robot of pulp science fiction — not from the robot that escapes its makers and builds an army of its own kind to take over the earth with clanking arms and legs and a rusty wit. This threat is from machines that lift heavy loads, do a variety of tasks with breathtaking speed and accuracy, never talk back or go on strike and seldom rest. If it is any consolation — their “intelligence” is generally not very high and it is debatable whether they are at all intelligent. What is not debatable is that they can take over tasks that humans do.

Robots are being employed as seamstresses, printers, welders, warehouse workers, armaments assemblers, clerks and machinists. At the supermarket they will soon be checking and bagging groceries; at MIT a funny little machine is said to swoosh down corridors unattended while it sweeps, mops, and waxes with a cheery lack of

interest in the horrified expressions of surprised pedestrians.

None of these robots has a very human appearance. No purpose is served by adding a complete set of arms, legs, knee caps and “heads”. They are really special-purpose machines that can do what automation has been heading for all along. It is just that they can act more independently, exercise more “judgement”, and function in a non-mass-production situation.

In particular it is this latter ability to replace workers who are not on the “assembly line” that has begun to win robots acceptance in American industry. Industrialists have been complaining recently about “profit troubles” and are looking for panaceas. According to Robert Glorio of AMF Versatran, “Until recently the robot was a frightening piece of machinery — so much so that virtually all companies engaged in their manufacture insisted that they be called “electro-mechanical handling devices” or other terms equally innocuous. But it no longer matters since industry is now accepting the robot largely as a matter of economic necessity”.[1]

These “electro-mechanical handling devices” are beginning to proliferate. Robots available now range from mini-robots with payloads of less than a pound to large

units with payloads up to 6000 pounds, a reach of two-and-a-half feet, and speeds of three feet per second with astonishing accuracy.

Unimate (Unimation Inc.'s robot) is finding broad application. For example, a Unimate is used to run a die-casting machine (used in industry for moulding metal parts). This is dangerous, uncomfortable work that requires continuous alertness and is very draining to human workers. But Unimate was so adept at this work that it had "spare time", so now the manufacturer supplies a model with a "random process selection" option which lets it be placed between two die-casting machines so that it can run both![2]

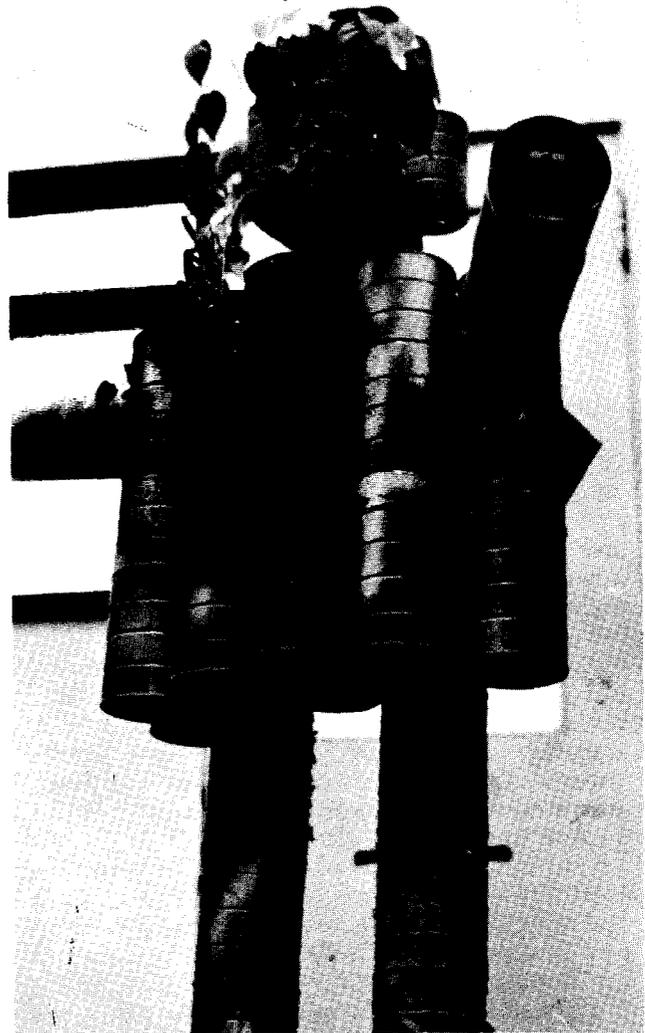
Needless to say, Unimate and its mechanical relatives can run three shifts a day with no coffee breaks, minimal down time, and no labor unrest. Manufacturers have found it particularly advantageous to introduce these docile machines into jobs where OSHA pressure would otherwise have required expensive health and safety measures[2]. Likewise, in the assembly of critical armaments where there is danger or the possibility of worker reluctance, automatic machinery has become attractive.

In fact, management may find these sexless machines particularly seductive. Could this be their long-imagined "final solution" to the labor "problem"? What would the right to strike mean under conditions of advanced automation? Telephone workers have already found that the automatic "direct dial" equipment has diminished the leverage of a strike because a few supervisors can keep the entire operation functioning.

Can robotics increase the ability of private business to withstand public resistance? When DOW Chemical's napalm manufacture became a symbol of national disgust over the Vietnam intervention, DOW stressed that only a "handful" of workers were involved in the napalm production — a "negligible" activity they told us. As a result of advanced technology, of course, a few "reliable" workers could produce a hell of a lot of napalm! But it was their numbers, not their machinery or their production figures that was publicized by DOW.

General Motors is using 15 Unimates as welders in its Norwood, Ohio plant and another 30 in its Vega plant at Lordstown, Ohio.[2] Levi Strauss, the well-known maker of blue-jeans has decided it is time to improve working conditions in its company. "Sweatshops have bugged me since I entered the industry," says Paul Glasgow, senior vice-president of Strauss who despite being "bugged" managed to cope with his feelings about it until the 1500-dollar "Servo-Sewer" was developed. With an "electro-optical closed-loop servo system" to guide pieces by the sewing needle, it joins the pieces and cuts the thread with speed and precision, dumps the product into a collection basket, and awaits new pieces. For a blue-jean pocket, for example, the process takes less than a second from start to dump. While Mr. Glasgow is bugged by sweatshops, he doesn't express himself on the matter of unemployment that might result from the 2200-percent productivity increase that they project for their new machinery.

Other machinery that Levi Strauss plans to install include a 30,000-dollar cloth grader that can function 15 times faster than the human eye, a 4500-dollar shade marker, and a "DF-13" which is a Servo-Sewer in combination with other gadgetry.[3]



Is it alarmist to worry about the effect of this kind of equipment on employment? Norbert Wiener, who is often called the "father" of Cybernetics, tells us about automation and robots:

It gives the human race a new and most effective collection of mechanical slaves to perform its labor. Such mechanical labor has most of the economic properties of slave labor . . . However, any labor that accepts the conditions of competition with slave labor accepts the conditions of slave labor and is essentially slave labor . . . There is no rate of pay at which a pick-and-shovel laborer can live which is low enough to compete with the work of a steam shovel as an excavator.[4]

Few people would want to argue that workers should

continue to do hazardous and tiring work if better jobs are available, but how does one know if they are?

John Diebold of the Diebold Group Inc (a consulting firm in the field of automation) isn't worried. He assures us that:

"Fundamentally, you don't cause unemployment by using new technology. It creates more jobs, over all, than it abolishes. And the more dependent we in the US become on world markets, the more true that will be. The surest way to hurt jobs in the US is to cut back on technological innovation."[5]

or as Jaeger of Pratt and Whitney put it "These things take care of themselves . . . I don't think it is the part, nor can it be the part, of industry to try to plan the social aspects of this thing." [6]

But can we rely on the belief that "these things will take care of themselves. . ." ? A report on a conference at MIT on the "Future impact of Computers on Manufacturing"* says "Few industrialists at the conference doubted that computers would eventually take over factories; only the speed of the conversion would be subject to outside forces, such as the severe economic downturns now being experienced by industry, or labor's objections to automated factories." This report tells us that the computer-run factory "would have little need for personnel" and that it would "clearly throw a great many people out of work . . ." [7]

Obviously this is a critical question. **Will robotics throw people out of work? Will this mean starvation for many or can the labor movement mount a major battle as it did at the turn of the century for an 8-hour day? What kind of a battle could turn robotics into a benefit for workers threatened by unemployment? To begin to answer these problems working people must not be lulled to sleep by reassuring myths.**

More than a decade ago, the President of the United Electrical Workers Union called the comfortable idea, that the electrical manufacturing industry would grow enough to absorb the workers displaced by automata, "a combination of half-truths and nonsense," [8] and a spokesman for the union told *Science for the People* in August of this year that "all you have to do is look in a lot of the shops that we represent people in and the machinery that came in—I'm not even talking about robotics so much as just automated machinery; there's just less people working in the shops."

John Snyder, Pres. of US Industries agrees that automation *will* displace workers and that arguments to the contrary are more myth than logic. According to Snyder, automation-related job elimination has been proceeding at about 40,000 jobs per week. [9] This doesn't disagree too much with the Fortune Magazine estimate that jobs must be found for about one-and-a-half million people a year who are pushed out by machinery. [10]

The prospect that working people may survive robotics as they did previous forms of automation shouldn't lead to smugness. The temporary "dislocations" that experts

*Held in November 1974, this conference included key representatives from industry and university engineering depts.

in automation speak about are the lifeblood of workers. For example, when the Hudson Motor Company closed its plant at South Bend it was followed by 15 suicides and the break-up of 300 marriages." [11] Moreover, the fact that automation hasn't caused massive, permanent unemployment may have been a result of 1) several large wars, 2) an unchallenged role as the leading imperialist nation (which is coming unglued) 3) cheap raw materials (which were tied to imperialism and so are coming unglued too) 4) and the ability of small industry and service industries to absorb workers who lost their jobs in mass production industries.

Each of these "safety valves" have provided some cushions for the hammer blows of automation. Now (barring a major war) they are all inoperative. In particular, jobs in "small" and service industries may not be expanding as they have in the past. As a matter of fact, they may be shrinking.

The Last Shelter Crumbles

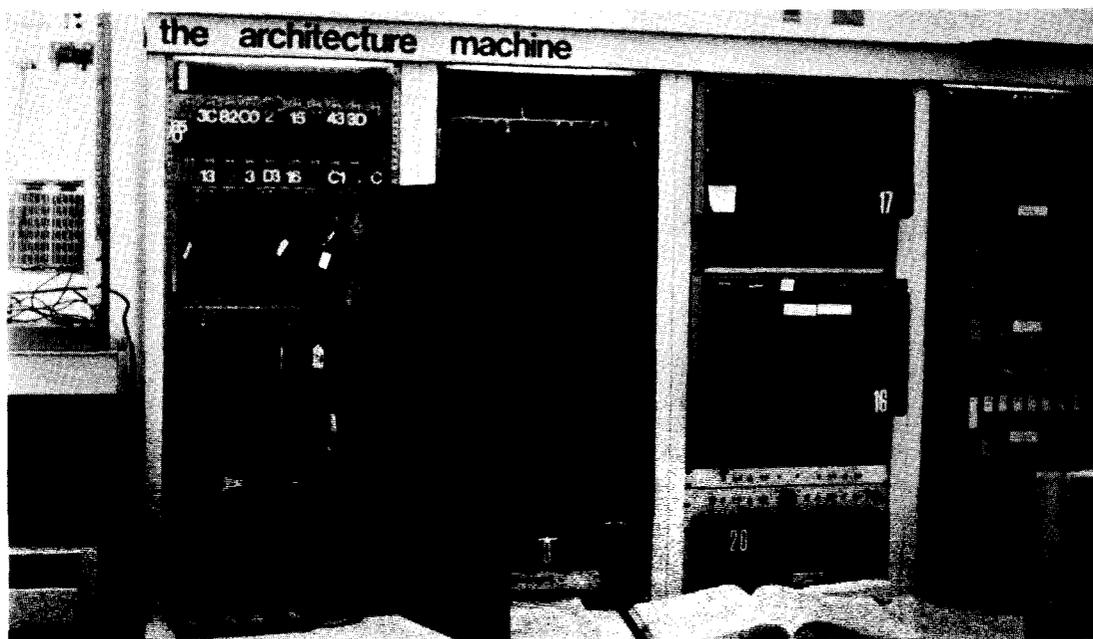
While the percentage of workers in industrial jobs has been reduced, the percentage of people performing clerical, transporting, storing, selling, etc jobs has been increasing until recently. In fact, these kinds of jobs simply are not easily automated because automation normally lends itself best to jobs that are repetitive on very large numbers of items that can be treated as a continuous flow process.

It is still the case that between fifty and seventy-five percent of the US output of manufactured parts is produced in individual batches of 50 or less. This very fact seemed to make this bastion of industry (employing forty percent of the industrial labor force) immune to automation; but robotics has changed all that. Independent of assembly lines, modern robots are capable of replicating with great speed and accuracy the kind of work an individual assembler, inspector, or machinist did. [12]

Likewise in the service sector, formerly "safe" jobs are gravely threatened. Clerical and secretarial jobs may well be virtually eliminated in the next twenty years by the "paperless office" where record keeping will be all electronic. Vincent Giuliano of Arthur D Little, Inc says that the use of paper in business should be declining within five years. Such a system would involve TV-display terminals with a keyboard at the desks of executives. [13]

As for secretaries—where will they be? In the steno pool? Not if the computerized stenographers which can search their memory banks to decide whether Mr. Smithers meant "read" or "red" prove their worth. [14]

The future of the office lies in the hands of two firms, it would seem. According to the head of marketing at Lextron Corp., "IBM and Xerox will dictate the future because of their marketing power", and the president of Inforex tells us that "With IBM and Xerox pouring out \$1.5 billion yearly in R&D [research and development], they will control the pace of technology in their interest." [15]



A Boston-based organization called "9 to 5" has gained itself a strong reputation for its work in organizing secretarial and clerical workers against such ruthless employers as insurance companies and universities. Janet Selcer, a staff member of 9 to 5 told *Science for the People* that they are concerned about automation, but that as office workers begin to see what their future will be, they expect to see unprecedented willingness to organize among them. The first wave of automation is already hitting clerical workers in the form of "word processing" machines (computerized typewriters). So far, though, she said "I don't think it's having a huge influence. The kinks haven't been ironed out, for one thing, so it's quite expensive still." After the kinks get ironed out though "the work itself will get degraded and it'll require less training and it'll stop being skilled and that's when it'll be like automated offices. So far, while there are word-processing centers that I know about, I know about very few companies that have instituted total systems. It just doesn't seem to have gotten moving that fast yet."

While it is too early to project how many clerical workers will lose their jobs to integrated circuits, the staff at 9 to 5 is well aware of what work would be like if IBM and Xerox succeed. "I think it's really serious and I think you can really calculate what the affects will be — both really negative in the kind of work that's going to be handed to people and how it's supervised . . . I mean it's really insidious what they plan to do with it too. Just the whole division of labor will get much more routinized until it's practically assembly-line work." To ward off some of the worst alienation that might result, according to Selcer, management plans to devise the appearance of a "job ladder" to simulate a hierarchy. The hope is, apparently, that artificial grades will distract people from the awful character of their work.

That electronics can replace clerical workers has already been demonstrated. Chrysler Corporation used

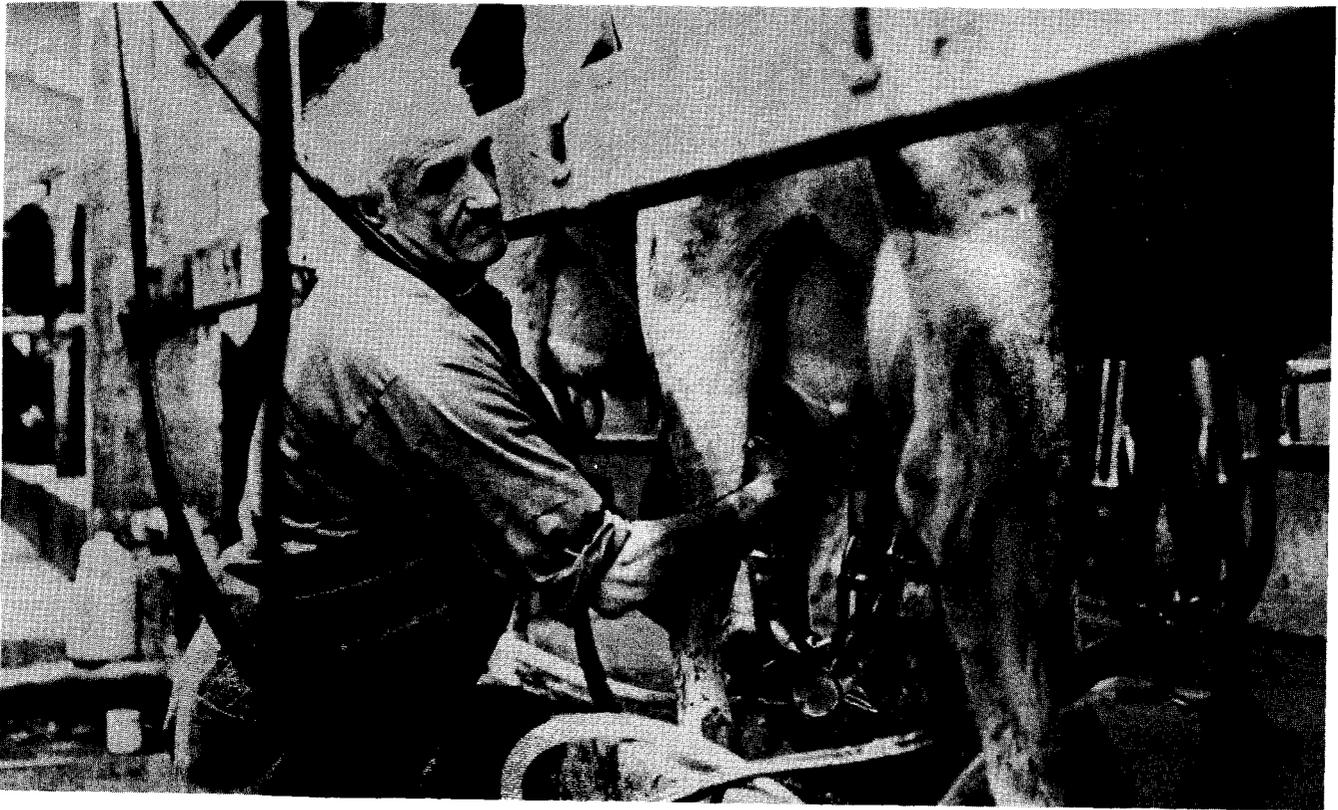
to send a million words a day in telegrams and teletype between its various plants and facilities. Now a giant computer does this work and also supervises accounting operations. Every seven-thousandth of a second it checks each circuit to be sure it is functioning and it records the number of words sent and figures the bill. The computer also stores the history of every car sold that is still under warranty so that any sales office can gain access to this information within seconds.[16]

One by one, jobs that could be done by people with a low level of training are being encroached upon by machinery. The nervous joke that "you can be replaced by a machine" has turned into an ominous reality and there is the very real fear that we are developing an "underground of the unskilled"[17]—a growing population of people without hope (disproportionately blacks and women) who are forced to live in the twilight of a "private enterprise" technology.

In an article on the affects of automation, Charles Killingsworth warns us that "permanent reductions in [the labor] force due to automation (and presumably other changes) are sometimes postponed by companies until an economic downturn makes large lay-offs necessary . . ."[18] This should warn us to not be too surprised if an economic "recovery" from the current depression/recession turns out to maintain a surprising rate of unemployment even though the GNP seems to be pumping away well above its former rate.

With the automatic factory now completely feasible, the working world can become a busy hustle and bustle uncluttered by humans and their eccentricities. Record production is now largely automatic. Petroleum distillation is now automatic and under computer supervision; likewise for bread; likewise for ice cream; and likewise for the laser read-out that will check out your food purchase and the mechanical device that will bag it when you go to the supermarket (not in the year 2000 but more likely next year). Even jobs as technologically advanced

cont. p. 30



“We do not believe that action by farmers alone can implement our recommendations or eliminate the undesirable effects. . . .”

Introduction

This paper is addressed to people interested in agriculture and agricultural policy in relation to food production problems in the world today. In our opinion, many articles which attempt to discuss food production problems fall into two disjoint categories:

- (1) Agricultural *technology*
- (2) Economic and political organization

We believe that an understanding of food production problems and their solution requires the integration of these categories. The kind of technology that is used affects the economic and political structure of a society; the economic and political organization of a society affects the kind of technology that is employed.

In an article appearing previously [“Concentration of Power in the Food Business”, *SftP*, March, 1975, p.8], the general consequences of the ascendancy of large, vertically integrated, corporate food businesses were described. We have focused on the dairy industry, in order to be more concrete and specific in our critique and recommendations.

The Importance of Dairy Cattle

Over the centuries, cows have been important to people because they can utilize feed supplies unfit for human consumption to produce large quantities of milk. Milk and its byproduct cheese are an important source of high quality protein, calcium and most of the vitamins people require including A, D, E, K and many of the B vitamins. Milk is also a source of phosphorus.

The dairy cow, being a ruminant animal, has a decided advantage in digesting and utilizing those parts of plants and other compounds which are practically useless to animals with simple stomachs. Substances such as cellulose, a major constituent of plant tissue, and urea, a non protein nitrogen compound, are of limited use to humans. However, cows, through fermenting and synthesizing actions of microorganisms in their complex stomachs, can efficiently convert these substances into milk and meat.

Cattle not only feed on plants useless for human consumption, but their feed can be grown on pasture land. Pasture land is marginal for growing crops such as cereals which are directly consumable by people. Forty-

seven percent of the U.S. agricultural land is grassland pasture and range.

Economically, dairy cows have been a valuable asset to general farms in the U.S. Most general purpose farms have kept some cows because they need only shelter, grazing land and a daily milking to produce milk which can be made into butter and cheese. Cheese, which stores well, can help a family survive poor crop harvests. Part-time dairying has also benefited farmers because the monthly milk check provides important earnings during the slow months of the year.

Gone Awry

Because of economic factors many trends have developed in dairy production which defeat the very qualities which have made milk producing animals so important historically to people.

(1) Farmers are increasingly dependent on grain as feed because of the high cost of land and other economic pressures to increase yield.

The cost of land and of yearly taxes has made it difficult for farmers to maintain enough land to raise feed for cows and is one of the contributing factors forcing them to buy grain and grain based concentrates. Many farmers prefer grain because cows produce more on a grain diet. Grain is denser and therefore, when a cow eats to her bulk capacity, she has consumed more than twice the nutrients and energy than if she had eaten hay. If the cow is efficient in converting the feed into milk and not body fat, by having consumed more food value she produces more milk. Farmers get paid primarily for yield and the increased yield makes profits larger.

There are two problems associated with grain feeding. First, grain is directly consumable by people. Because of the world food shortage people must now compete with livestock both for the grain and for the high quality farm land used to grow it. In the U.S. almost 50% of the acreage committed to grain production is used to produce feed rather than food.

Second, a cow's digestive system is designed to handle a diet of mostly roughage. The increased proportion of grain in the diet has caused health problems. Possibly fatal diseases such as rumen atony* are caused by a lack of sufficient roughage and/or excessive grain in the diet.

(2) Breeding programs are breeding for the universal high producing cow.

The Dairy Herd Improvement Associations are primarily concerned with increasing milk yields. The National Cooperative Dairy Herd Improvement Program (NCDHIP) rates bulls by comparing the performance of each of the bull's daughters with her herdmates. A bull whose daughters perform well in many herds is rated highly because it shows that the bull's superior genetic quality is the major contributor to their performance. The significance of specific environmental factors such as farm management, climate or a particular dam can then be discounted.

*Rumen atony develops when the muscular pillars in the rumen fail to perform their contraction and relaxation functions.

In breeding for universality the NCDHIP deliberately selects against genetic adaptation to particular environmental differences. For instance, in a hot climate they would build a special air-cooled shelter, rather than use Jersey cows who are better adapted to the heat.

In breeding for higher and higher production, we are evolving into a one-dairy breed nation of Holsteins even though other breeds produce more nutritional milk. In 1955, Holsteins represented 66% of the dairy population. Now they represent 80% of the cows. Holsteins are the highest yielding cows, but they produce a lower percentage of both protein and fat than either Guernseys or Jerseys. Other breeds cannot compete with the Holstein milk because the pricing mechanism pays primarily for quantity, not nutritional composition or flavor.

The nutritional value of a glass of milk is declining by selecting for high producers. There is an inverse correlation between increasing yield and the percentage of protein, fat, and other solids. As yield increases the protein and fat percentage declines. In addition, the lower fat in milk has caused a decrease in the fat soluble vitamins A,D,E and K.

Because the quantity of nutrients consumed determines the upper limits of production, cows are bred for greater appetites. A cow efficient at converting feed into milk will produce more if she eats more. The breeding trend has resulted in cows who are dependent on grain because they cannot consume enough forage to meet their genetically increased energy requirements. These cows are much more susceptible to a serious metabolic disease, ketosis, which is characterized by hypoglycemia, ketonuria, rapid loss of weight and reduced milk production.

(3) There is a trend towards large scale monoculture dairy farming, located away from population centers.

Before the Civil War, most farms were general farms which were located near population centers and produced a variety of crops and livestock products. Even with the advent of the railroad, milk had to be produced in the immediate neighborhood of cities. When refrigeration techniques were devised, milk could be transported long distances. As industrial and residential needs inflated land prices, farmers with land could not afford to expand their landholdings and new farmers could not afford the capital investment to buy land near cities. Farmers began to move to more remote areas where land was less expensive. The dislocation of dairying in conjunction with large scale monoculture practices have become so severe that the milk produced by a region bears no relationship to its population's dairy needs.

Although the great majority of dairy farms are still small, the trend since World War I and especially since World War II has been towards greater size. By 1980, it is expected that farms with less than thirty cows will be almost non-existent. California farms, many with several thousand cows each, are becoming the model for future dairying.

Management of these large farms requires computerization to determine when to breed, when to cull, how much to feed. A few people cannot keep track of the herd's day-to-day requirements. Work on these enormous farms must be divided into specialized tasks — milking, feeding, etc.

There are problems associated with large scale monoculture dairy farming. First, it creates jobs where people cannot participate in or understand the overall process or gain satisfaction from it.

Second, the cost of transportation and refrigeration of the milk has become large. Transportation is a major user of energy, especially petroleum, and a major source of pollution.

Third, monoculture creates pollution problems because there are too many cows in too small an area. Most livestock feeding systems result in manure being stored for some time in an untreated or partially treated form. Stored manure frequently creates the problem of gas and odor. Probably the most serious pollution threat from animal wastes lies in the pollution of water from nitrates, phosphates and organic matter. Groundwater supplies in areas of heavy cattle feeding can receive sufficient quantities of nitrates from leaching to make their consumption dangerous for humans, particularly infants. Surface waters can be sufficiently enriched in nitrogen and phosphorus to cause excessive algae growth making it unpotable for humans and deadly for fish. These pollution effects are doubly unfortunate because manure when properly handled is valuable fertilizer.

And finally, milk has become increasingly uniform to facilitate processing and transportation.

Recommendations

In this section we make specific recommendations about the dairy industry in the U.S.

- (1) Dairying in the U.S. should attempt to reduce its reliance on grain-feeding of cows and other feeding practices that place cows in competition with people for food or high quality agricultural land.

This action by itself will not guarantee that more grain is made available to those people in the world who need it. In fact, without other action in addition this would probably result in a decrease in the amount of grain produced by U.S. farmers. To have the desired effect other measures must be taken, including the adoption of some mechanism to encourage and permit farmers to increase grain production, coupled with an approach to food distribution that provides *all* people with an adequate basic diet.

This recommendation is obviously based on the assumption that there is a worldwide shortage of grain for human consumption. However, it is not intended as a 'solution' to the world food shortage. Any solution to that problem must include the social and economic changes that are a prerequisite for adequate food production and distribution in the Third World.

If there were no shortage of grain we would still have to ask whether the methods for grain production were viable in a long term sense: e.g. maintaining soil fertility, causing minimal environmental disruption, etc. We must know under what circumstances we can, as a society, afford to feed grain to cattle.

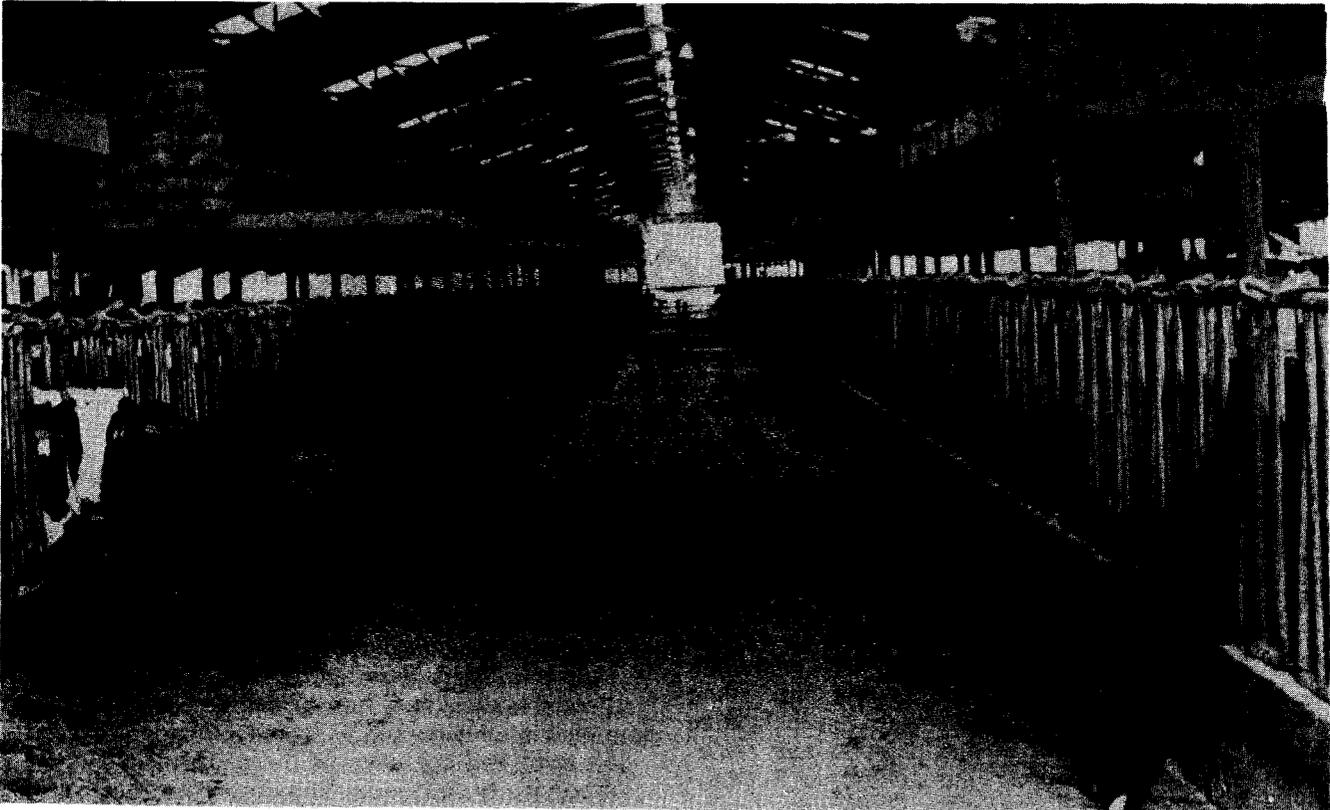
It is possible to have a modern dairy industry based upon forage feeding. New Zealand is a significant exporter of dairy products and the production level of New Zealand cows is good (though lower than the U.S.). Almost no grain feeding is done there, facilitated by a favorable climate that reduces capital expenses in dairying (barns etc.) and by less real estate pressure on land values. In the U.S. it would be necessary to unequivocally recognize the value of a dairy industry based on forage feeding.

- (2) Breeding programs for dairy herd improvement must recognize the value of a cow's ability to create high quality protein without competing with people for food or valuable agricultural land: genetic 'development' that results in cows dependent upon grain for milk production or health must be examined with a more critical eye.

The electronic digital computer in conjunction with advanced techniques for plant propagation and the use of artificial insemination in the breeding of animals, has encouraged the rapid development of new genetic strains. Unfortunately this has sometimes led researchers to attempt to develop 'ideal' genetic strains which are then used universally. When such a strain is introduced to a new environment it is totally unadapted to it and usually requires extensive artificial assistance in order to survive and produce well. The high yielding varieties of wheat and rice that formed the basis of the 'Green Revolution' required significantly more inputs in the form of careful irrigation, extensive use of commercial fertilizers and pesticides in comparison with the traditional varieties and the locally improved strains based on them.

Abandonment of local strains and environmental adaptation should be done only after careful consideration. It must be demonstrated that yields increase so much that they justify the dependency on the increased inputs and the reduction in the genetic diversity characteristic of successful ecosystems. This leads to our third recommendation:

- (3) The dairy herd improvement program (DCDHIP) should reexamine the national nature of its sire and cow evaluation methods, which predicate the existence of an ideal genetic strain for all regions and environments. The studies which claim to have demonstrated that there is little interaction between heredity and geographic environment in dairy cattle should be reviewed carefully. Sire evaluation should be done on a *regional* basis unless it can be proved that this leads to a significant impairment of the breed improvement program. Under this regional approach, outside bulls could be introduced into a



**“The electronic digital computer in conjunction
with advanced techniques has encour-
aged the development of new genetic strains.”**

region, but the evaluation of these sires would be on a regional basis, ie. within that region. There already exist regional dairy records processing centers so this change in scope of evaluation might even be less costly computationally.

Ignoring genetic-environmental effects and attempting to develop an ideal single strain for all environments leads to the need to alter the environments to make them identical. This approach results in the use of air-cooled aseptic housing and uniform feeding practices unrelated to the availability of local forage. Cost-price relationships at the current time might justify this practice in the short run, but as a long term strategy for genetic improvement, it raises serious questions.

The drive to produce higher and higher yields, whether in terms of crop yields per acre or gallons of milk per cow, recognizes no natural limit to yield potential. In this drive, every technical idea that increases yield in the short run will be tried. Incomplete knowledge of the

workings of biological systems makes us unable to distinguish between short term improvements and long term disasters. Economic forces coupled with an overinflated opinion of technical abilities has led to this one-dimensional approach to the problem of increased food production. Our next recommendation is:

- (4) Our society must *recognize* that increased technical knowledge and the consequent enhancement of our ability to alter natural processes, brings with it the danger of making alterations which have disastrous long term effects.

In modern economics and its applications, there is a tendency to analyze and optimize systems according to a single criterion which is suitable to quantification. For instance, production efficiency may be formulated in terms of the unit cost per gallon of milk, without due consideration for quality differences in milk, some of which may be quantifiable in economic terms, and some not.

The value of food cannot be determined simply by volume, or even by the volume of the nutritionally important constituents. Agricultural techniques that focus on increasing yield frequently result in decreasing percentages of important nutrients, as has happened with the protein and vitamin content of wheat in the midwestern U.S. Yield-oriented approaches also readily sacrifice qualities that cannot be easily quantified, such as flavor. Thus our fifth recommendation:

- (5) Breeding programs for dairy herd improvement must recognize the importance of other factors besides volume of production.

Because of both the level of attained technology and the size of human population, the world today requires that people everywhere cooperate in an effort to achieve a health and satisfying life for all. At the same time, despite this interdependency, self-sufficiency on a local or regional level is a goal to be strived for, even though it can never be fully reached. The further we move from self-sufficiency toward complete dependence on a global mechanism of control for even the most basic necessities of life, e.g. food, the less choice we will have about everything. In addition, such global management is more subject to miscalculation or manipulation and consequent widespread disaster. Thus, local or regional self-sufficiency in food production should be pursued wherever possible. This leads to our next recommendation:

- (6) We must question the economic mechanisms that permit the real estate market coupled with publicly subsidized high speed freight transportation to force agriculture away from population centers. We must recognize the value of agricultural production in close proximity to cities. This would not only reduce the societal costs of transportation but also permit the utilization of human waste as fertilizer.

Large corporations view dairying as an industry with no merit other than the profitability associated with it and show a willingness to abandon dairying at any time its rate of profitability is lower than some other potential investment. With this attitude short term economic considerations dominate all decisions. Long term effects are ignored.

Increased scale of operation, labor specialization, and automation may contribute to efficiency of production, but they also tend to destroy the wholeness and satisfaction of work, by redefining all tasks as specialized labor with no sense of purpose or overview. If we place no value on the quality of work, then we may expect that economic forces will couple with 'technological progress' to make most work alienating, regardless of the larger economic milieu. We reject the view that work is necessarily alienating and note that historically automation has tended to change the nature of work by reducing human involvement in the production process to special-

ized highly mechanical acts that require no imagination or initiative and are satisfying only in the sense that the wage received for such labor can purchase some satisfaction. This is an inevitable consequence of an economic system that places too little value on work as a wholesome and fulfilling activity. Worker control of the production process would reverse these tendencies. This leads to our next recommendation:

- (7) The trend toward large scale corporate dairy farming should be stopped. Other organizational models for dairying should be explored.

Conclusion

The direction of dairy farming in the U.S., is and has been dictated by relatively short term economic considerations. As a consequence, a number of current practices in dairying have undesirable long term effects. We have discussed these and made recommendations toward eliminating them.

We do not believe that action by farmers alone can implement our recommendations or eliminate the undesirable effects. Farmers can resist short term economic pressures only to a limited degree. Beyond that their practice is determined by the cost of the inputs they need to farm and the price of the products they produce. These costs and prices and cost/price ratios are controlled by the government and by large corporations. They reflect a set of value judgments which have far reaching consequences all too often ignored. The negative trends we have discussed are examples of this. Their rectification requires reexamination of basic value judgments and the economics that follow from them.

Food production and distribution affect everyone. The mode of production and distribution should be decided by society at large, not by the boards of directors of a small number of corporations who are interested in maximizing their profits. Many of the actual producers (e.g. farmworkers and small farmers) and the consumers have a common interest: production and distribution of adequate amounts of nutritious and tasty food in an ecologically sound and nonalienating way.

Farmworkers, consumers and progressive farmers must recognize their common interest and work together to bring about the necessary changes. Pressure from such a coalition could lead to changes in the existing milk pricing formulae that would reverse the trend toward less nutritious milk. Adjustment of the milk pricing formulae to include protein has had beneficial effect in several European nations. The conditions of agricultural work can be improved by joint pressure from consumers, farmers and farmworker organizations. The United Farm Workers' successes are an example of this.

But these changes will be limited in scope so long as agricultural economics is strictly profit oriented. Agribusiness corporations respond to increased labor costs by moving to an area of cheap labor, leaving many unemployed workers behind.

cont. p. 38

Detente: Superpower, Super Sham

In mid-March the SftP office received a letter from the World Federation of Scientific Workers [an organization of scientists, research and technical workers, and teachers in more than fifty countries] asking whether we would care to send a delegate to the "International Symposium on the Role of Scientists and their Organizations in the Struggle for Disarmament". The symposium was held July 15-19 in Moscow. Although the Boston Steering Committee recognized that the Federation was closely associated with the Soviet Union, they decided it would be worthwhile to send a delegate. A call went out for interested people through a notice in the newsletter and by contacting some chapters by phone. Three people applied and the steering committee chose Chuck Garman.

A Discussion Meeting was called in order to formulate positions on some of the issues raised by this trip. At a subsequent General Meeting on July 9, two statements were passed by large majorities. They are:

In the last few years we've been reading and hearing a lot about detente. The recent wheat deal with the Soviet Union was made possible by and helped to bolster detente. George Meany, the right-wing president of the A.F. of L.-C.I.O., says that detente is weakening America and making us a second-rate power. The Vladivostok agreement and the European Security Pact were considered a step forward for detente. What does detente between two superpowers really mean? How will it affect the people in the U.S. and U.S.S.R., as well as the rest of the world? Answers to these questions are essential, so that we understand detente in relation to the concrete situation in the world today rather than viewing detente as an abstract call for world peace. I hope that this report of my experiences before and during the W.F.S.W.'s symposium on disarmament, can begin to provide the answers.

Detente sounds very good! None of us wants the world to explode in a nuclear holocaust between the two superpowers. The question is whether detente is going to decrease the possibility of this happening or whether it is

Detente is a policy on the part of the superpowers to suppress genuine liberation movements, and revolutionary movements, to better manage and exploit the working classes of their own countries, and to carve out spheres of interest between the two of them throughout the world.

We support the real disarmament of the superpowers. This conference attempts to enlist the support of scientists for the policies of detente by appealing to their genuine desires for real disarmament and by hiding the imperialist nature of detente. True disarmament can come about only by mass movements of workers and the oppressed peoples of the world and not by the actions of the imperialists, the ruling classes of the superpowers.

On the basis of these statements our representative wrote-up and had duplicated a one page statement that he took along in order to present our position. [See Box]

only a sham to hide the true imperialist nature of both superpowers.

To answer this question we must first look at the two sides of detente. On the one side, detente represents the cooperation of the two superpowers to promote the imperialist system by trying to keep countries from gaining independence from their system. On the other side, detente is used to hide the real contention that exists as both of them attempt to enlarge their sphere of influence. Thus detente represents a temporary tactical alliance wherein the two superpowers can unite in their attempt to subvert true liberation struggles and at the same time hide their imperialist natures under slogans of "world peace" and achieving "a world without wars". (See Position Paper)

As an example of how detente conceals their true character, consider the fact that recent bilateral agreements have in no way affected the arms race. The ceilings set by the Vladivostok "understanding" of November 1974 are higher than either countries' present strength and the agreement puts no limitations on the moderni-

We support the real disarmament of the superpowers. This conference attempts to enlist the support of scientists for the policies of detente by appealing to their genuine desires for real disarmament and by hiding the imperialist nature of detente. This is done by trying to show "the interdependence between detente and disarmament"; and present disarmament as the way of producing "a world without war". (quotes from the program of the symposium)

It is our position that detente is a policy of collusion on the part of the superpowers; to suppress genuine liberation movements and revolutionary movements; to better manage and exploit the working class of their own countries; and to carve out spheres of interest throughout the world.

As ex-Premier Khrushchev said in an interview with C.L. Sulzberger on September 5, 1961: "We (the Soviet Union and the United States) are the strongest countries in the world and if we unite for peace there can be no war. Then if any madman wanted war we would but have to shake our fingers to warn him off." What "madman" was Mr. Khrushchev speaking of? Science for the People does not consider struggles for liberation as acts of madmen, rather we support these struggles and reject the notion that the U.S. and the U.S.S.R. should police the world.

Even if, through collusion, the two superpowers were able to suppress genuine liberation movements, will disarmament and detente bring about

"a world without war"? Of course not! True disarmament can only come about by mass movements of workers and the oppressed peoples of the world and not by the actions of the imperialists, the ruling classes of the superpowers.

The superpowers may collude with each other in one form or another and create a false sense of "detente" but the contradictions between them have by no means disappeared. The policy of detente attempts to cover up the deep contradictions between the two imperialist powers in an attempt to deceive the people of the world. Competition between the two superpowers is a necessary condition of imperialism, and thus the policy of detente is put forward as a deceptive tactic.

The U.S. and the U.S.S.R. are fighting each other for world hegemony, each out for its own narrow interests. They are engaged in a bitter struggle for oil resources and spheres of influence in the Middle East and Persian Gulf, and in the South Asian subcontinent. Europe, the heartland of capitalism, has become a major strategic area of contention. Here they both have enormous economic and military interests and it is here that they directly confront each other.

The policy of detente is used to serve imperialist ends. But we will not be taken in by this sham, and we resolutely oppose imperialism in all of its forms. Our organization has supported genuine national liberation struggles throughout its history. Rather than call for "a world without war" we call for a world full of liberation struggles against imperialism.

zation of missiles, allowing for improvements in accuracy and maneuverability.[1] Also, the U.S. is now developing subsonic cruise missiles capable of coming in under an opponents' radar at fifty feet off the ground.[2] In conjunction with this, the U.S. is developing a new guidance system capable of virtually perfect accuracy. What this all means is that the U.S. is developing the capability for a first strike, and is no longer interested in deterrence. My discussions with experts at the conference revealed that the arms race has not diminished and is producing greater instability. Detente has in no way slowed down the deadly competition between the two superpowers. We should popularize more information about the developments in the arms race and point out that in a period when unemployment is high, and welfare and municipal services are being cut back because of a lack of funds, the federal government is spending billions to develop the ability to strike first in an upcoming war.

Science for the People was provided an opportunity to take up the discussion of detente and the nature of the Soviet Union through our invitation to this symposium. Both my own study on these issues and the political discussion that took place prior to my departure were valuable to myself and the Boston Chapter. At a discussion meeting prior to the July 9th general meeting,

much of the discussion centered around whether we should send a delegate. Since there was rather rapid agreement among those present that the Soviet Union was imperialist, some persons opposed sending a delegate to an obviously imperialist-dominated conference. Others put forward the position that although the symposium would be Soviet-dominated there might be many middle forces*, who could possibly be won over to our position. After a lot of discussion a majority of those present felt that it would be appropriate to send a delegate, provided the Boston Chapter had agreed upon a position that would prevent our good name being used to support either the Soviet Union or detente.

At the general meeting two statements were passed (See Introduction) pointing out the imperialist nature of the Soviet Union and also, that detente was a sham. Through my own study and my minimal observations in Moscow, I was lead to the position that the Soviet Union was not only social-imperialist** but that capitalism had

*Middle forces are people who have not taken a position on a particular issue, but may choose to do so as a consequence of debate.

**Social-imperialism means imperialism hiding behind a socialist cover.

been restored in that once-proud socialist country.

Although I do not want to deal at length with the restoration of capitalism in the Soviet Union, I would like to relate one of my experiences. While speaking with one of the Soviet scientists about the Soviet economy, he mentioned that they were instituting a new system of quality control. Goods would receive an emblem of excellence after being compared to Western products. The managers of factories producing goods of sufficiently high quality would then receive a monetary bonus. This is not surprising considering the already-known fact that managers receive bonuses in the U.S.S.R. for increasing profits. Although other countries building socialism have used material incentives at times, these policies have been scrapped when their negative effects were realized. There doesn't appear to be any criticism of these policies in the Soviet Union, in fact, the power of the managers appears to be steadily increasing. This increasing reliance on material incentives and the increasing power of managers is one of the indications that capitalism has been restored.

It is very important that people in our organization take up the study of the nature of Soviet society. When speaking of socialism as an alternative, many people mistakenly think we are putting forward the Soviet system as a model. The Soviet model should not be considered an alternative to American capitalism. In order to oppose this model, we have to understand its nature. I'm including a book list for anyone interested in beginning this study. (See bibliography)

The Soviets use the W.F.S.W. to develop support among scientists for detente and other Soviet positions. It appears to me that the Federation is consistently follow-

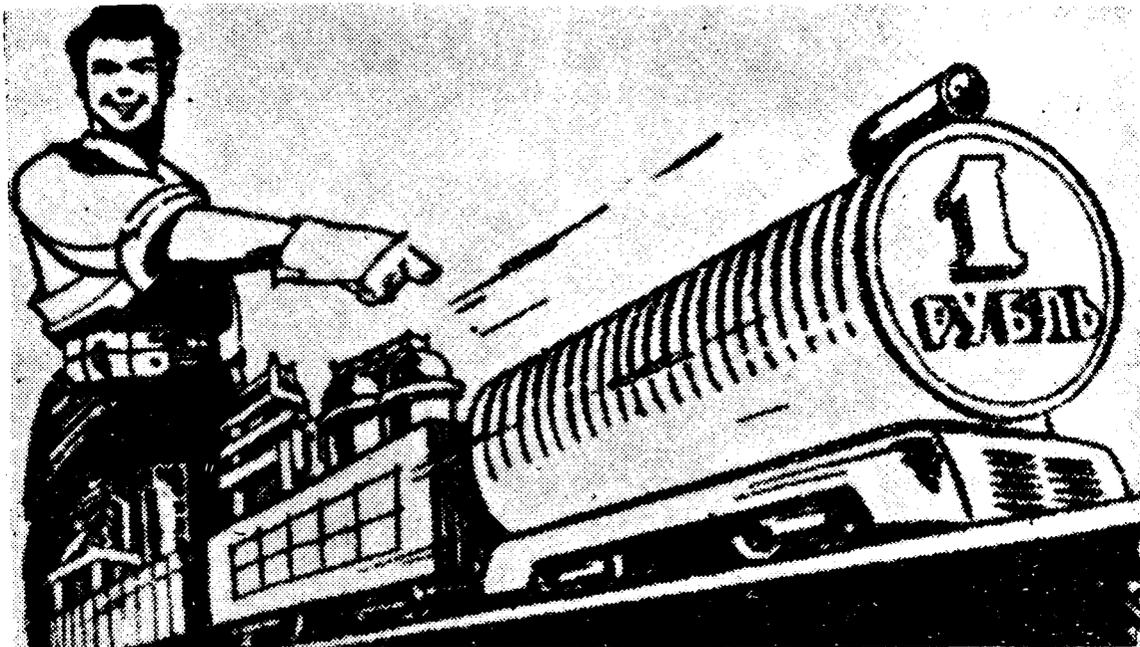
ing the Soviet line and should be considered a front for Soviet interests. Long ago it lost its credibility here in the U.S. We were invited to the symposium in order to draw us into naively supporting one of the superpowers in the battle for world control. If the Boston chapter had not formulated a position on detente before the symposium started, we would have implicitly supported that position.

It may have been a mistake for me to have gone, considering that we had explicitly taken an anti-detente position and anticipated that the conference was going to be Soviet-dominated. From what I could discern, there were very few middle forces to ally with; most of the delegates appeared to firmly support the Soviet position and in the future we should consider very seriously whether to send any more delegates to World Federation functions.

THE SYMPOSIUM

The conference was held in Moscow, July 15-19. As guests of the All Union Council of Trade Unions, we stayed in the Trades Union Hotel (Hotel Sputnik). Approximately 425 natural and social scientists attended the conference; one hundred and fifty-seven from capitalist countries, sixty-eight from Third World countries, fifty-eight from countries in the Soviet block, and one hundred and forty-two from the Soviet Union. Only a small percentage of these delegates were women.

One of the first things I did on arriving was to ask our representative from the Trades Union Council whether I'd be able to visit a factory. I was met with an incredulous question: Why would I want to visit a factory? After



Example of how Soviet revisionists try to put across capitalist idea that money, rather than the working masses, is what makes things go. Illustration is from Soviet journal, entitled "The Powerful Locomotive" with the front of the engine reading "One Ruble."

MINORITY REPORT

Disarmament and the Way Forward for the W.F.S.W.

We meet at a moment of crises when all our hopes for a socially just and peaceful world are threatened by the arms race and imperialism. Our struggle for disarmament is an integral part of our struggle for a world free from oppression.

We must intensify our work for disarmament in the face of the threat of nuclear holocaust. At the same time we must expose and call for the destruction of weapons of counter-insurgency which imperialism is unleashing against the just struggles of national liberation.

The Task of Scientific Workers

Science and technology are tools which can be used either to better people's lives or to exploit and oppress them. The ruling class of many countries use these tools to maintain their position of power through exploitation and oppression of their peoples, as well as other countries. It is the duty of scientific workers to help to produce a society where science can serve the people. How can we do this? By taking up the struggles of workers, women, and oppressed national minorities in our own countries, and by supporting the struggles of Third World countries for national liberation and their right to self-determination. We can only win people to the active support of disarmament, which is abstract from the everyday reality of people's lives, if we join them in their struggles.

Scientific work is a social activity in which all the conflicts of society are present, just as in any other social activity. Class struggle is present within the laboratory as well as within the factory. We must be

conscious of this reality and must analyze the specific forms class conflict assumes within science. Thus we as scientists must cooperate with both the general working class struggle and also with movements of national liberation. We can and should offer our specialized skills, and any other support necessary, in pursuit of our common goals of social justice and a peaceful world. Examples are: questions of health and safety in the workplace and at home, the problems of human settlements, pollution, hunger, and utilization of natural and energy resources. The main task of scientific workers in this context is to provide technical information and assistance, but to leave decisions about the solutions of the problems to those who are directly concerned. We must play the part of skilled experts at the service of the people, not as new rulers of society. This is the way for scientific workers to integrate with the general working class movement and help create the conditions for the widespread popularization of the benefits science can bring in a peaceful world.

How Do We Go Forward?

To achieve these aims we must strengthen the organization of the W.F.S.W. We must strengthen the links between the Federation and the scientists movements which are springing up in response to these changes. In the same way that the Federation stood up to the cold war and to nuclear terror it must now take up the struggle for national liberation and social revolution.

Signed: S. Siwatiban, Fiji; S. Vaghi, Italy; C. Garman, U.S.; H. Rose, U.K.; C. Posner, U.K.; F. Hussain, U.K.; J. Hanlon, U.K.; G. Solvo, U.K.; A. Costa, Italy; C. Ivaldi Mussa, Italy; J. Caraca, Portugal; O. Theophile, Congo.

explaining that I was curious about how factories were run in a socialist country, he said that he would see what he could do. I was never told no, but I never did get to visit a factory.

Since I had arrived a few days early, I had some time to do some sightseeing and to make contacts with people. Moscow is extremely clean with wide boulevards and apartment buildings surrounded by trees. It appeared to me that there was a lot of sexism in Soviet society. There was the kind of sexism that allowed women to do hard work, while the men watched. (I saw women working on the roads while the men sat in trucks.) As well as the kind of sexism we're more familiar with. (Consider as example a floorshow in a restaurant which was almost indistinguishable from an American nightclub or the first act at the circus in which scantily dressed women, waving flags, were lead around the ring by a man.) Although I was only in the Soviet Union a short time, it certainly appeared to me that there was no attempt to combat sexism.

By the time the conference began I had met some people, mostly from the British Society for Social Responsibility in Science, who were also not being taken in by detente. The first day of plenary speeches set the tone of the conference: detente was the main trend in the world today; it was the only way to struggle for disarmament; it reinforces democracy; and it was symbolized by the Soyuz-Apollo spaceflight, conveniently (but not accidentally) taking place at that time.

The actual work of the symposium was to be done in the smaller commissions. I had chosen to be in Commission 2, entitled: "The interdependence between detente and disarmament: the role of organizations of scientific workers in promoting detente". After three sessions of open discussion the commissions were then to make their report to the plenary. During the first meeting of Commission 2, some points in opposition to the Soviet position were raised. Questions about the success of the recent bilateral agreements as well as other points were voiced. The Soviets and their allies opposed any opposi-

tion to their position and appeared to be very well represented in the commission. It was obvious by the end of the first meeting of the commission that no opposition would be accepted.

We were totally outnumbered and the number of middle forces there appeared to be minimal. On the basis of that evaluation, knowing what would be the final report of the commission, I read our statement at the second meeting of the commission, and made copies available. For the most part the response was that the Soviet Union has supported national-liberation struggles in the past and will continue to support them in the future.

That evening some of us had a strategy session and decided Commission 2 was totally packed, and had very few middle forces, whereas Commission 5 on "The specific forms of cooperation of scientific workers and their organizations with the broad movement for peace and disarmament", had more middle forces some of whom we anticipated, could be won over to our position.

The next morning we all trooped into Commission 5, only to hear later that the President of the World Federation had come to Commission 2 in order to give a speech strongly supporting detente and to attack us.

Four of us spent the afternoon writing a minority report for Commission 5, (See Box) which we turned in to the committee writing the final report for the commission.

Although in the last section of the report we call for strengthening of the W.F.S.W., I now realize that this organization is totally incapable of taking up the program put forth in our report. At the time I had strong doubts about the nature of the W.F.S.W., but felt it was correct to phrase it in this manner. After talking with others and on greater reflection, I realize that the Federation is totally bankrupt.

That evening we had a meeting of potential supporters of the minority report. Some details were changed, but through simultaneous translation, agreement was reached and we had eleven signatures.

The last commission meeting was the next morning where the report of our commission was to be finalized, then passed on to the plenary. After the final vote on the majority report (thirty-six in favor), we presented our minority report and asked for support. The commission was immediately terminated for lunch, but one other person did sign. So our report now had twelve signatures.

That afternoon at the plenary session the major question on our minds was whether they would read our report. We had a very hard time finding out what its status was and had decided that if it wasn't read, we would publicly condemn the symposium in a clearly disruptive manner and then walk out. Our report was read, but with one major revision. Before reading it, the speaker characterized it as having been foisted upon them at the end of the commission by a small group and failed to mention that one quarter of the commission had signed it. A nifty trick at appearing to be democratic! In a later conversation he didn't respond when I asked him about his inability to see signatures, but informed me that the

report would be released with the other commission reports along with the signers' names. Although I've since received copies of all the other commission reports our minority report was not among them.

By that time we were somewhat exhausted from late-night meetings, etc., but still had our anti-space flight party to look forward to. We had organized the party in reaction to a party given by a number of the Americans, who had wanted to meet with their Soviet counterparts to toast the historic handshake in space. Earlier in the week the Americans had met and this example of detente in action was proposed. I had opposed it, although it certainly was an excellent example of detente. (The Americans and Soviets meeting to toast their achievements and specifically excluding others.) The tête-a-tête was given a room with plenty of liquid to toast with. Needless to say our party was not blessed with official sanction. We had to buy our own wine and hold it in one of our rooms. But in contrast to the detente party, ours, although small, had a truly multi-national character and we all had a great time!

The closing plenary session was the next morning and we expected it to be mostly back-slapping and congratulatory speeches. Because there had been no announcement of any new proposals, many of our meagre forces were not present. I was rather surprised at the introduction of an "Appeal to the Scientists of the World". Discussion ensued about some wording changes, but it was obvious that the greatest majority of those attending the plenary were in agreement with the general thrust of the appeal. There was a lot of talk and pressure for consensus. The appeal did not take as strong a pro-detente position as had been taken in Commission 2, but on the basis of my own position as well as that of our chapter, I knew I could not vote for it. I abstained, although I now feel this was a mistake and I should have voted against it. In the final vote there were no votes against the appeal, and two abstentions.

CONCLUSION

The main aspect of the entire experience has been positive. First foremost is that Science for the People (Boston at least) has taken up the question of the role of the Soviet Union today. This has stimulated discussion of social-imperialism, and made clearer to many of us the real danger of revisionism,* a danger to those who want to defeat imperialism, including the liberal to radical people that make up SftP. That the Boston meeting (of July 9) came to unity on a position exposing detente, further demonstrates the deep anti-imperialist sentiment (and understanding) in the organization. From our

Continued on page 37

*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. (Look at Chile for example).

Vietnam Rebuilds:

During the Indochina War, Science for Vietnam groups both in the U.S. and in Europe contributed skills and materials directly to aid Vietnamese forces struggling against U.S. imperialism. Many of these groups are still working but now with the objective of aiding in the reconstruction of S.E. Asia.

Most progressive science-related people welcome giving assistance to the Vietnamese to help strengthen the science and technology base for their development. Some organizations in the U.S., for example, the Scientists' Institute for Public Information, are actively raising funds, making arrangements for exchange programs and collecting materials as part of this effort. [see "Science in Vietnam: The Postwar North Seeks American Assistance", Science, 29 August, 1975, p. 705] While these efforts are for the most part undoubtedly well-intended, they do appear to neglect some important questions concerning the kind of scientific development which is appropriate and ultimately, the kind of social order which is being sought in Vietnam. It is these questions that the Science for Vietnam groups in Europe are particularly concerned with in developing their programs for aid. Furthermore, they see these issues as having direct bearing on their own science and political practice at home. The following report was written by a member of the Science for Vietnam group in Naples, Italy, who was visiting in Boston during August and September.

Why "Science for Vietnam"

Now that the war is over, people often ask: "Why Science for Vietnam?" It sounds like a third-world-helping program: good intentions and some danger of cultural imperialism (transferring our technology to a country fighting to construct socialism).

We are aware of the dangers; they are not easy to control (because of what we are, scientists in capitalistic countries; because of what Vietnamese scientists often are, formed in France or in the Soviet Union). But we see many reasons for continuing with the program and for intensifying our effort after the Vietnamese victory.

I want to give a few of these reasons here, in the concrete context of two recent visits to the DRV: the first in September 1974 by me (a physicist); the second in May 1975 by a delegation of the Italian SfvN Collectives (Tullio Artusi, an hematologist; Sancia Gaetani, a nutritionist; Carlo Pagani, a physicist).

We invited two Vietnamese scientists to Italy in the Spring of 1974; they spent three weeks visiting 4 out of a dozen or so of our SfvN Collectives. They met research workers and students in the universities, discussing concrete proposals of collaboration and exchange of people.

They insisted on our sending a delegation to Vietnam. What they could tell us, they said, was not enough to give us the correct feeling of what research in Vietnam was



like: its shortcomings, on one hand, its social, political context on the other. We raised the necessary money through a national solicitation and with some help from the Italian Ministry of foreign affairs.

We have seen so many things, met so many people, visited so many institutions that a detailed report would be impossible here [1]. I shall try and give only the outlines of our program and make a few comments on what we have seen.

We already had a number of scientific contacts with Vietnamese scientists, sometimes at a personal level, sometimes through official institutions; we tried to visit all laboratories, research groups, colleagues with which we had been in contact in the past or that had demonstrated an interest in our programs. These per-

Dialectics and Diodes



sonal contacts were essential to us. SfVN Collectives work in the general frame defined by Federscience, the Vietnamese institution related to the State Committee for Science and Technology and responsible for scientific contacts with foreign countries, but the actual definition of any scientific collaboration has always been done through a personal visit and discussion. We felt that the Vietnamese colleagues were as interested as we were in avoiding unnecessary bureaucratic structures and in exchanging on a laboratory to laboratory basis scientific information and technical requests.

Three main fields of interest and contact are: research in the Institute of the State Committee (Mathematics, Physics, Biology, Earth Sciences, Oceanography, Computing Sciences); research and teaching in the University

of Hanoi, the Polytechnical Institute and the Pedagogical Institute; medical research in the institutes of the Ministry of Health (Malariaology, Parasitology and Entomology; Hygiene and Epidemiology), at the medical school of Hanoi and at the Bach Mai hospital.

I also spent two days in the most extraordinary school I know of, the agricultural complex of Hoa Binh. It is in the mountains some 80 miles west of Hanoi; I shall say a few things later about this school and the interest it can have for us.

What the Vietnamese colleagues ask

The problems with which the Vietnamese colleagues are faced are almost always beyond the reach of the technical devices on which they can rely. During the war, problems were imposed by necessity and the very limited scientific resources were strained to the extreme in order to attack them. Things are much the same after the victory, even if now the sense of urgency is less strong. There is a basic inadequacy of the entire scientific structure to cope with the problems posed by the reconstruction of the country and by the construction of socialism.

This does not imply that Vietnam now has to imitate our scientific development, copy our school and research institutions, send young scientists abroad. They are trying to find their way and that will be, hopefully, rather different from ours. But it is clear that in this transition period we can be of use: from very small things (sending up-to-date information, books and back issues of journals to fill the ten-year gap left by war in their libraries; small amounts of electronic materials easy to find in our labs and on the market, extremely difficult for them to obtain) to more complex programs (as doing basic or applied research for them in fields, such as the carcinogenic properties of defoliants, where there is urgency but not enough experience and equipment in Vietnam; writing computer programs adapted to their computers; finding computer time for programs too complex for their computers).

I am giving in the Appendix a first set of lists of urgent material requested by Vietnam. There are more detailed lists available for specific fields of research and interested readers should contact one of the SfVN Collectives in the U.S. or in Europe. But already the lists given here will show the enormous effort that is necessary to help much essential research to start or to continue in Vietnam.

There is a basic question to which I am unable to give a clear-cut answer but to which I think I can give a tentative answer. The question is: how are research programs, priorities, investments defined in Vietnam today?

When we receive lists of requests from our Vietnamese colleagues, when we try to develop collaboration with their institutes, the intensity and urgency of our commitment will depend on the answer to this question.

This is why I feel that the question is a basic one. We want to help, to participate in the construction of

socialism in Vietnam; however, we do not want to be instrumental in constructing an elitist, technocratic structure of power for scientists. Our experience in Europe has shown us very clearly both the use of this structure by the ruling classes and the collusion of the scientist's power with the interests and the policies of the ruling classes. We believe that class struggle is going on in Vietnam at this very moment and we do not want to work on the side of the past (even when it presents itself in the glittering light of a modern, perfectly efficient scientific institute). We want to be useful in constructing the future.

I feel that there is a tentative, optimistic answer to this question. The problems on which Vietnamese scientists are presently engaged, the fields in which they are asking for our help, seem to be very concretely related to the needs of a country ravaged by war and now engaged in a deep transformation of its economic structures. When we discussed with biologists (in particular, plant and animal physiologists and geneticists) the general guidelines of their research and their demands on our Collectives, we found that the improvement of food production (via selection and transformation of local varieties, improvement in protein content in a number of staple plants, utilization of proteins from algae, etc.) provided the unifying frame for their programs. When we talked with physicists, we found that the choice of advanced applications of solid-state physics as the dominant sector of investment was explicitly motivated by the necessity of producing and eventually adapting to the Vietnamese context the basic electronic devices that allow for the development of automation, large-scale control of the production process, telecommunication, and military equipment (electronics being one of the fields in which Vietnam is at present totally dependent on help from both the Soviet Union and China and in which more autonomy could have important political implications). When we spoke with colleagues involved in medical research, we found that the equipment and material they were asking for was directly related to the production and development of vaccines (in particular, for leptospirosis), the analysis of nutritional deficiencies (often determined by the war) and the development of preventive medicine.

We have been told of the existence of an effective feedback between production units and research institutions; direct contact of scientists with teaching and production seems to be frequent, even if not generalized.

It is clear that Vietnam is not an ideal country in which ideal communists lead the working classes toward a classless society; remnants of the privileged groups (in particular, among the intellectuals) could still be strong and dangerous, and their activity could easily hide itself under the cover of "pure scientific research" and "technical efficiency". But the war (the political, even more than the technical, experience of war) and the leadership of the communist party have created forms of democratic participation which justify our continuous interest in the Vietnamese experience and our desire to be useful to Vietnam.

What we can learn from Vietnam

We have repeated so often to ourselves that the structures of our scientific institutions, defined by the interests of the ruling classes, are permeated by their ideology and instrumental in the imperialist design of global control, that we are beginning to feel a bit bored by these generalities. It is true but, left at this level of generality, it seems to me of little use.

What we need is a concrete analysis of these structures: their roles, their origins, their ideological image. We should learn how to tackle our own work, laboratory, university, and see beyond them to their class and ideological roots. It is so easy to say and so difficult to do that we have been practically unable to do it except in a very few instances (mostly from social sciences and medicine, where the ideological ties seem to be most apparent).

We think that our activity in the SfVN Collectives has helped us in this direction. What we learn from Vietnam (not only directly from Vietnam, but from the fact of working together for Vietnam) is useful in our everyday political activity, modifies our relation to scientific work, opens a new, critical frame for our past experiences as scientists. It gives us a number of new dimensions in which to organize our experience and see it in a larger context.

Our Vietnamese colleagues have asked us to collaborate to the development of the Computing Center at both the University of Hanoi and the State Committee; we have already sent them electronic material, computing manuals, textbooks, program libraries. But at the same time we have been led to question the whole idea of central electronic control in economical production and planning (the discussion of a technocratic experiment in Chile under Allende being very useful to us). Is productive efficiency always consistent with workers' control and overall grasp of the economical perspectives and choices? What are the political implications of automation in a socialist society? We are now trying to write down a critical bibliography on these problems for ourselves and our Vietnamese colleagues: we understand better an issue that is vital to our life here, in capitalistic society, and now, as well in the developing countries.

Our Vietnamese colleagues have asked us to collaborate with the development of science teaching in both high school and university; we have sent them a number of books and are at present trying to send them a few copies of the basic laboratories of the P.S.S.C. type. But at the same time we have been stimulated to prepare a systematic survey of the interests and choices that led to the current methods in science teaching. We have already sent to Vietnam a critical bibliography of the P.S.S.C.; we are preparing a more detailed report on integrated science teaching and on its ideological implications in a capitalistic society.

From South Vietnam, through the Provisional Revolutionary Government, a request has reached us to help in the construction of a Faculty of Medicine. The French Collective, in particular, has already collected money and books for a basic library and some equipment. This how-

ever has led us to an analysis of medical education in a capitalistic society (our feeling being that the PRG seemed rather ready to import and imitate such a structure). A small group in Geneva is preparing materials on this problem, a critical bibliography for Vietnam on the ideological basis of medical education, health care institutions and the very conceptions of medicine (health vs. illness).

It is hard to say how much of this thinking, writing of critical bibliographies, and discussing in small groups, can afterwards be translated into action, into initiatives in our own practice. This will depend on us, but also on the situation in which each of us operates. We found however that the reflections we were led to in our engagement in SfVN have already enriched us.

It should be clear that we do not want to give outside advice to Vietnam. We want it to participate in our concerns. Paths of development are not obvious in the construction of socialism; capitalistic technologies seem often to offer an easy, efficient solution to technical problems. To make use and take control of some of them is clearly inevitable for Vietnam and could be extremely positive. But this very fact obliges us to ask ourselves a lot of questions about the dangers of which these solutions are ridden. The comprehension that we reach in this process can clarify much of our political engagement and stimulate a more active struggle inside our own institutions.

The Hoa Binh School

A few words now on the Hoa Binh school. We have to recognize the technical superiority of our capitalistic society in so many fields that it is exhilarating to experience an example in which a socialist country like Vietnam is clearly leading the way.

The Hoa Binh school (it is called: The School of the Socialist Working Youth of Hoa Binh) is at the same time an agricultural commune, a small industry, a center of dissemination of modern agritechiques and a pioneering group working its way in the mountains, opening them up for agricultural exploitation.

As a school, it provides about 800 students from the national minorities living in the region with live-in accommodations and schooling from age 11 on, including into the faculty of agronomy of the university (the ratio male/female for the students being nearly one). The teaching is in Vietnamese; a majority of the 200 teachers or so is Vietnamese, but more and more of the new teachers are previous students of the school and are therefore of national minority origin. School activity takes approximately 4 hours/day; there are then at least 2 hours/day of individual study.

As an agricultural commune, Hoa Binh is responsible for 200 acres of pasture, rice fields, manioc fields etc.; this land has been reclaimed from forest and marsh by the joint labor of students and teachers. Work takes approximately 4 hours/day; to this, one has to add the work necessary for all communal activities (cooking, cleaning, washing etc.). At the beginning, a large part of this activ-

ity went into the construction, with local material, of the class-rooms and the dormitories. Everything there has been constructed by the students and the teachers.

As a small industry, it produces alcohol by manioc distillation; this alcohol is then sold to the State and provides the commune (that is practically self-sufficient in food) with some cash for clothing, salt, tools etc.

From this center of modern agritechiques, the students go back to their villages every summer and at the end of their studies to help their families; they take home with them the agronomical know-how they learned at the commune. In most of their villages the traditional technique is still that of burning parts of the forest, exploiting them for a few years and then moving to a new part.

As a pioneering group, the school goes on with reclaiming new land in the mountains. The current program for the school is to move to a new site, where about 800 acres of land will be reclaimed and almost 2,000 acres of forest exploited; in a few years there will be 1,500 students, 400 of them at the faculty of agronomy.

The school is still experimental. I found that a number of people (for instance, at the Pedagogical Institute in Hanoi) still felt a bit uneasy about it. "Could it be that such a school works only for the national minorities?"; "Perhaps only in the mountains?"; "How to extend this experience to the towns, to the plain?". There are many problems still to be solved in the context of Hoa Binh. It is easy to see, for instance, how to use in everyday work many of the things learned at school; much more difficult is to find out in which way the very fact of working should modify the way in which things are taught, the choices to be made etc. But I still think that in Hoa Binh Vietnam is ahead of many countries that are so much more technically developed.

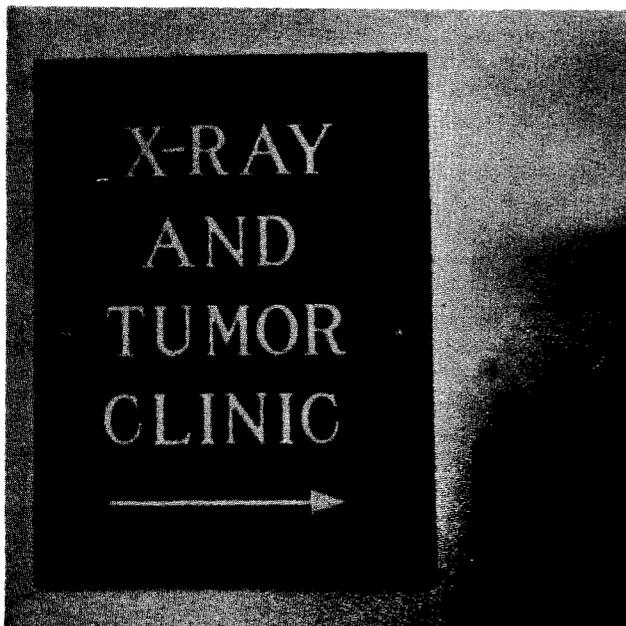
There is much to learn and there are many ways to be useful in a collaborative program with the Hoa Binh school.[2]

Conclusions

Activity along the lines given here is going on in Europe. I have tried to clarify the reasons for which we think that this activity is important, both for Vietnam and for our political engagement in our countries. Moreover, the experience obtained by the SfVN Collectives could be useful in several other contexts in which national liberation movements are at work or in which democratic, socialist societies are being born.

I think that our commitment to SfVN should not be used as a pretext for not being deeply engaged, at a personal and collective level, in political activity and analysis in our own institutes, laboratories, communities. It is clear that such a cover has been used in the past. A number of scientists and organizations have overemphasized the importance of technical help to liberation movements and socialist countries while playing down the importance of demystifying the scientific research and teaching carried on in our society, the need to clarify their underlying class determination and the role they play in making possible that same imperialist policy we

continued on page 34



Cancer Prevention: Good News from People's Science

That exposure to chemicals leads to cancer in humans has been known for two hundred years. In 1775 a British physician noted the high incidence of cancer among chimney sweeps, and correctly attributed it to their exposure to coal tar and soot. Since then a vast body of evidence has accumulated showing that many industrial chemicals are powerful cancer-causing agents — carcinogens — in animals and humans. The evidence from epidemiological studies shows that the incidence of different kinds of cancer varies markedly depending on where one lives and where one works: on the other hand, there is very little evidence that cancer can be “caught” from someone who has it. So, if you work in an asbestos factory, (for a review on asbestos see *Science for the People*, September 1975) a plant processing vinyl chloride or aniline dyes, or if you are a very heavy smoker, your chances of getting a cancer are far higher than if you were not exposed. In certain dye factories every worker employed at certain jobs eventually contracted bladder cancer.

Not all carcinogens are of industrial origin: some are naturally part of our food, others are food additives. For example, it seems that the Japanese stomach cancer was caused by the talc used to render the rice agreeable to Japanese palates. Cancer of the liver, very frequent in South Africa, is correlated with the presence in the diet of a high level of aflatoxin B1, a toxin produced by a common African mold.

The term cancer describes a condition in which some cells of the body are reproducing themselves in an uncontrolled fashion, relative to the normal process. Exposure to a chemical may result in changes in cell replication if the chemical causes mutations in the genetic material and alters the cell's natural growth processes. As discussed, below, there is now considerable evidence that many if not all carcinogens do cause mutations. However, in recent years, much emphasis has been focused on viruses as a cause of cancer, and most of the

National Cancer Institute basic research funds have gone into tumor virology. Despite this effort, the role of viruses in human cancer has remained unclear. It is clear that some types of cancer do not have environmental causes. In some types of leukemias the presence of viruses has been demonstrated recently. Their role is still unknown, but could be quite important if the situation is similar to that found in animals.

The virus cancer program was a product of the Nixon administration and seems to have distracted attention from such important causes of cancer as exposure to industrial and environmental carcinogens. The virus work focused on curing cancer, rather than preventing it. Given that according to the World Health Organization more than 80% of human cancers are due to environmental and industrial carcinogens, the incidence of cancer should be reducible by a factor of 5, by preventing these noxious agents from being introduced into the environment.*

Furthermore, as mutagens, the carcinogens can have other serious deleterious effects by acting on the cells of the reproductive system (egg and sperm), inducing changes transmitted to the next generation in the form of possible genetic diseases or leading to miscarriages if the defect is too serious for the fetus to survive. This is another strong reason to try to eradicate them from our environment.

As a result of lack of attention to chemical carcinogenesis, very little effort was put into *identifying* chemicals that caused cancer. Rather efforts were put into finding agents which cured cancer. So, it may be a little less surprising that the development of a powerful general method of checking compounds for possible carcinogens, developed as a side project of a California molecular geneticist Bruce Ames. Ames worked with

*It seems appropriate to mention in this context that the most frequent type of cancer among American males is the cancer of the lung, which can be attributed mostly to cigarette smoking.

bacteria, and routinely used compounds that caused mutations, to produce altered strains of bacteria with which to study the nutritional requirements of the bacteria. He became concerned about food additives, and their effects on humans. Pursuing this project, he began developing tests utilizing his bacterial strains, to test whether the food additives were mutagenic. This was the start of what is now a major departure for cancer studies.

The biological details of the Ames test are as follows. Variants of bacteria (*Salmonella typhimurium* in this case) have been developed which have a nutritional deficiency that renders them unable to grow. The variant bacteria and the chemical to be tested are allowed to interact. If the chemical has mutagenic properties, a mutation may result which restores normal bacterial growth properties: the bacterium and its descendants will have lost the nutritional requirements and therefore will be able to grow. Ames group has developed a battery of different bacterial variants which are permeable to chemicals and highly sensitive to mutagenic agents and which can respond to all possible mutagenic interactions known up to now.

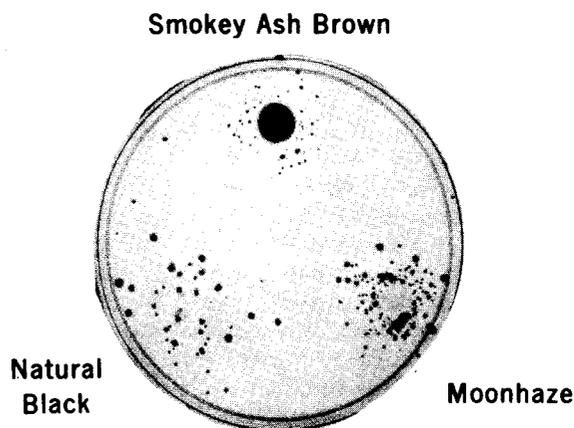
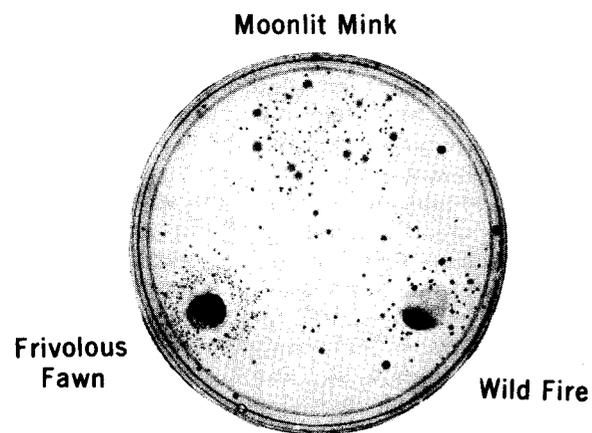
Some chemicals become carcinogenic as they are transformed by the body's processing (metabolism), that is, only after adsorption in the body (through skin contact, eating or breathing). Such metabolic transformations occur mainly in the liver; transport through the body brings all the metabolic intermediates as well as the unmetabolized raw materials to the urine. The urine therefore, is a good source to look for potential carcinogenic or mutagenic materials. The metabolic transformations of chemicals can also be performed in the test tube by exposing the chemicals to liver extracts which contain the enzymes involved.

In practice, the test used plastic plates filled with minimal nutrients for bacteria in agar gel; the variant (nutritionally deficient) bacteria are spread at the surface of the plates; the chemical to be tested is placed in the center of the plate and diffuses outward. Urine of people exposed to chemicals can be used as well as chemicals mixed with rat-liver extracts. If the test is positive, bacteria that have been mutagenised during the incubation

will appear as a halo around the center, at a distance where the chemical is sufficiently dilute to allow bacterial survival. If the chemical has no mutagenic properties, the plate will remain bare. The test is very easy to interpret.

Years of research in Ames' laboratory have allowed his group to optimize the conditions for the test and demonstrate that most known carcinogens are revealed by this test. More recently, they have started to analyse new chemicals. Their effort on cosmetics have shown that 63 out of 65 hair dyes tried are carcinogenic. . .

To this day, they have tried this test on 200 carcinogenic compounds as well as 100 non carcinogenic analogs of the above. 85% of the carcinogens were picked by the test, and only very few of the noncarcinogenic ones. (Those few had possibly been misclassified as noncarcinogens.) Among the carcinogenic chemicals that score poorly are chlorinated compounds such as carbon tetrachloride as well as other solvents used in laboratories and cleaning industries, (dry cleaning) and carcinogenic metallic compounds. Ames group is still in the process of improving the test, in particular to make it sensitive to chlorinated and metallic compounds.



Because of its success rate, this is a very good test to use in a first step. The ease of this testing procedure really makes it possible to test all new compounds, for example the hundreds of new compounds produced every year by industries.

There are other tests available. All of them are more cumbersome than the bacterial test. The most currently used in the western world (including USSR) are the following:

The dominant lethal test: In this, a male mouse is treated with the compound to be tested and mated after the treatment. The pregnant mice are opened early during pregnancy and analysed for the presence of dead fetuses (Moles). The main problem with this test is that spontaneous moles are quite frequent in mice.

The host mediated microbial assay: This test uses the same tester strains as the rapid bacterial test. The strains are injected in the peritoneal cavity of an animal exposed to a compound to be tested. This testing procedure was in use before the refinement of the rapid test and is less efficient.

Somatic cell cytogenetics: Mice are exposed to compounds to be tested and their lymphocytes (such as bone marrow cells) are examined for chromosomal anomalies. Chromosomal aberrations have also been observed in the lymphocytes of vinyl chloride workers.

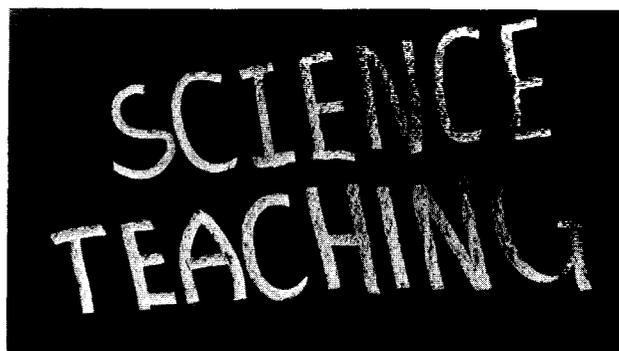
These three tests which are much easier, faster, and cheaper to use than the animal cancer test mentioned above and are not absolute in their ability to reveal carcinogens and mutagens. At this point *there is no absolute test capable of revealing them all*. In particular, because the Ames test is only 85% efficient, no compound that passes that test can be used safely before further testing. On the other hand, the 85% positive fraction should be taken out of the market or prevented from entering it. In this regard the approach of the FDA is somewhat alarming. They have proposed a "tier" system where compounds get tested in the rapid test at a first level. Those which appear to be active are then taken in a second step to a mammalian test to see whether they can also be mutagenic to mammals. If this proves to be the case, they may be taken to a third step for a risk assessment, when a compound proves indispensable or can not be taken from the environment. Note that most cancer chemotherapeutic drugs would fall into this last category. It is however surprising that these guidelines seem to protect chemicals rather than us. We see no word of caution for chemicals that may have been missed in the first step but that on the contrary there is a reluctance and further testing of chemicals which are exposed by the first step. . .

The FDA says that the difficulty about mutagenesis is not a problem of laws but one of adequate scientific knowledge and interpretation.

Maybe the most positive aspect of the Ames test is the ease with which it can be performed. It gives us a way to get some control over our environment, because for once the test can be learned with very little expertise. Recipes and tester strains can be obtained from Bruce Ames. The set up requires some means to sterilise and a small incubator. For example all high school labs are equipped sufficiently. In fact the test has been tried successfully in high school. In this regard, a practical and most rewarding aspect is its application to health hazards encountered in work places. In principle, the urine of a whole factory population could be tested for the presence of mutagens and carcinogens in less than a week, by a few people and with a financial burden of a few hundred dollars. Thus the Ames test opens up a new arena for attacking industrial carcinogens. For example organized workers in unions can now readily demand, in contract bargaining, large scale screening and public disclosure of the results as part of their defense against these hazards.

By directing considerable effort into this offshoot of their main research line, the Ames group has made a real contribution to attacking concretely, the problem of cancer. This is an approach to doing science, science for the people, which should be duplicated in many other areas of research.

Michele Fluck



THE CRANKY IN RADICAL TEACHING

Last May the Science Teaching Group was asked to participate in the *Great American Food Act*, a festive day on the Boston Common, devoted to the food crisis. In line with other current crises, in ecology, energy, war, and unemployment, this year it was food. We wished to expose this crisis as symptomatic of the capitalist system we live in. We wanted a political analysis of the food industry and its related technology, making the point that technological progress in this area is to increase profits and not to improve the quality of food. Our aim was not just to give facts, but to present an argument—to teach. Our classroom was now outside, and students were suddenly parents, children, and old people from diverse backgrounds, races and classes. Surely, conventional methods would not work.

One thing we all have in common is that we have to eat. On a more complex level, we are all consumers, meaning that we *pay* to eat. In this system of free enterprise, prices are set by the market, but the market is not "free" when you see Elsie's face stamped on two-thirds of milk produce. One way of showing this would be to dramatize a history of markets. We chose the Borden Corporation as representative of the expansion of agribusiness. Furthermore, cows are symbolic of wealth in many countries. The facts of history speak boldly for themselves, but in the tradition of street theater we had to be funky-provocative, but not obnoxious, didactic or dry. How we did it was to build a cranky called "The Saga of Jake and Elsie, the \$1,000,000 Cow."

A cranky is basically a paper movie, with a person turning a crank instead of a machine. It is a simple wooden frame with an inserted roll of paper that unfolds to tell a story. The size is mostly determined by the paper available and its use. It can be as small as paper toweling or be large industrial sheets. The cranky frame can be screwed onto a small step ladder or just rested on a flat surface. The pictures can be drawn to fit single frames or can be made to flow continually. There are times when the pictures stand alone, without script, so they should be colorful. For "special effects," people have found creative ways of cutting holes in the paper so one can stick things through, such as puppets, fists, fingers, etc.

A cranky is definitely stylized street theater, but as the focus is on the pictures, far less intimidating to perform. It doesn't require experienced acting, just a strong voice.

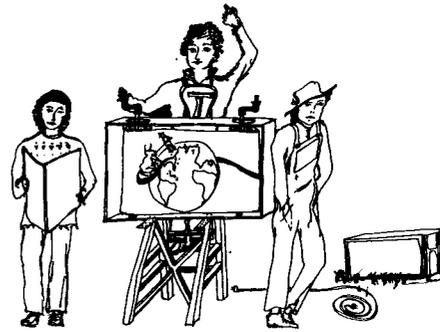
The only essential person is the cranker who can also be a character or narrator. The only other requirements are color, good words, ideas and noise, preferably musical noise. Speaking from experience, I will only add that the spirit of a cranky lies in how the group works together and in the power of the truth exposed by the story line, preferably comically.

There were five people in our group, three genetics teachers and researchers, and two students. With one exception, none of us had ever acted no less written, directed, or drawn pictures for a cranky. Having no central place to meet, we used laboratories for script sessions, people's hallways for laying out hundreds of feet of butcher paper, and kitchens for rehearsals. I was amazed by how well the group handled the difficulties of writing a script. I mention it because plays are normally conceived by one person, and authors consider it a personal creation. In this case it was a truly collective effort, with the multiple authors drawing on ideas which evolved from discussion. Towards the end we had a script and a list of picture ideas but nothing was drawn. We were reluctant to go outside our group for professional artistry, but resolved this by doing at least the preliminary sketching, involving an allnight session to produce 24 frames stretching over two rooms, drawn by 7 people. Throughout the process, we attempted to define our politics where differences had to be dealt with. The cranky not only produced an analysis of agribusiness, but taught us how to work together.

Our story started simply. Jake a small farmer owns a cow. He is self-sufficient, largely consuming what he produces. But with the advent of money and the division of labor, Jake can only survive by entering the market, where competition forces him to strive for greater efficiency and "productivity". He needs milking machines, and as with most small farmers, has to deal with a local business man "Mr. Bore-on" (the villain). Prolonged payments put Jake in debt, and as with 70% of all small farmers since 1930, he eventually loses his farm.

"Bore-on" is also forced to expand. It is in the nature of the system to need to expand and diversify. He now not only makes natural products from milk but also glues, leather, paints. (Today the Borden Corp. produces Krylon Paints, toiletries, Wise Potato Chips and other snack-pack foods. Jake's cow has evolved into Elsie, the \$1,000,000 Cow. Jake is now being milked by that cow).

Our hero is left with no alternative but to become a city worker and consumer. He works at a Bore-on supermarket, stuffing different colored boxes with the same detergent. Not happy, he starts helping customers by warning them off bad deals. On the advice of "Super T" ("T" for technology), Bore-on increases his profits by stream-lining his operation technologically. Jake now stands on unemployment lines. As an unemployed consumer, he discovers the new code lines for computerized pricing on the supermarket food containers. (They are currently on everything but fresh produce. It is the next step to push-button consumption). He adds an extra line of his own to one of these codes, the confused computer charges him nothing, and Jake is getting free



milk again. He is caught and prosecuted, allowing us, in this scene, to confront the arguments of the system — that Jake is just an isolated greedy individual, that the answer to the food crisis lies in automation, etc. We made the points that the direction food technology is going in disregards hunger completely, that it works in the interest of the few who hold monopoly (or oligopoly) power, that its use is to control price, not to increase protein production.

This brought us to the most difficult and weakest part of the production, — the kind of action to suggest. It is much easier to explain how exploitation and power works, using heroes and villains, than to tell people what to do about it. We touched on individual remedies like food stamps, and limited collective action like the food coop movement and the support of the farm workers' struggle, but feel that small actions like these mainly lead to a greater understanding of the struggle ahead of us. What's needed now is education about a complex, obscured mass of contradictions, and this the cranky mainly attempted to provide.

Our presentation was effective that day on the Boston Common but we were largely articulating and reinforcing what most of our audience knew or agreed with already. When we attempted the same presentation on two occasions in front of supermarkets, we were confronted with less responsive audiences, partly due to adverse environmental conditions, such as noise, traffic, angry supermarket managers, and partly to the novelty of the approach to people bent on buying food in a hurry. We'll have to modify the approach to the general public, perhaps by focusing on a particular topical food issue. We feel the cranky technique could be a good teaching aid in the classroom, to generate discussion around agribusiness as well as other topics not dealt with in the standard curriculum using the standard visual aids.

On the day of the Food Fair we proved once again the political effectiveness of drama as an organizing tool, and particularly of comedy, parody and satire. Our cranky taught through a lively interchange between actors and pictures, pictures and audience, audience and actors. A simple technological device accessible to all, it can be a versatile and powerful means of education and persuasion about the politics of science.

Diana Echeverria
c/o The Science Teaching Group

Book Review

SOCIOBIOLOGY- *THE SKEWED SYNTHESIS*

This article was written by a group associated with the Genetics and Society Project Group of the Boston Chapter of Science for the People. It is being submitted in response to the laudatory reviews of the recently published book by E. O. Wilson, *Sociobiology: The New Synthesis* (Harvard University Press). Wilson, a professor of biology at Harvard, has spent a good deal of his career working on social behavior in insects. He and a number of others in the field of animal behavior have decided to push for an extension of their conclusions to a view of human nature. One aspect of the public relations involved is the christening of a "new field," sociobiology. As a result of a campaign by Harvard University Press and the receptivity of the press, the book and its implications have received wide publicity.

Many of us in Science for the People have been involved in the struggles to expose the genetic explanations for social and political problems, including the Jensen-Herrnstein-Shockley propaganda on IQ, genetics and race (1) and the myth of the XYY male (2). We do this because we can see how such theories are used to oppress working people and minority groups and to spread an ideology which blames the victim of social and economic inequities for society's problems. In a similar fashion, the theories put forth by the sociobiologists and their predecessors help to support maintenance of the *status quo* and to convince people that revolutionary changes in social relationships (e.g. class structure and sex roles) are impossible. One way we see this done is by the rapid incorporation of biological determinist views into school curricula. The indoctrination begins very early on. If the views of human nature put forth by the sociobiologists are not combatted, they will be appearing very soon in new biology texts. (We have already seen one text on human nature, put out by Educational Development Corporation, which is pure sociobiology propaganda.)

Thus, while we continue to fight concrete examples of exploitation and oppression, we must also be on our guard to expose politics masquerading as impartial science which provides the ideological underpinnings for the maintenance of current power relationships. Sociobiology is not an academic question.

Beginning with Darwin's theories of natural selection 125 years ago, new biological and genetic information has played a significant role in the development of social policy. Herbert Spencer, who coined the phrase "survival of the fittest", Konrad Lorenz, Robert Ardrey, and now E.O. Wilson proclaim the primacy of natural selection in determining most important characteristics of human behavior. Such theories of "biological determinism" claim that genetic data can explain the origin of certain social problems.

Each time these ideas have resurfaced they have been said to be based on new scientific information. Yet each time, even though strong scientific arguments have been presented to show the absurdity of these theories, they have not died. The reason for the survival of these recurrent determinist theories is that they consistently purport to provide a scientific justification of the *status quo* and of existing privileges for certain groups according to class, race or sex. Historically, powerful countries or ruling groups within them have drawn support for the maintenance or extension of their power from these products of the scientific community. For example, John D. Rockefeller, Sr. said

The growth of a large business is merely a survival of the fittest. . . . It is merely the working out of a law of nature and a law of God.

These theories played a strong part in the enactment of sterilization laws and restrictive immigration laws in the United States between 1910 and 1930 and also in the eugenics policies which led to the establishment of the gas chambers of Nazi Germany.

The latest attempt to reinvigorate these tired theories comes with the creation of an apparently new discipline, sociobiology. This past summer, a front page story in the New York Times heralded the new field:

Sociobiology carries with it the revolutionary implication that much of man's behavior toward his fellows . . . may be as much a product of evolution as is the structure of the hand or the size of the brain. (New York Times, May 28)

Such publicity lends credence to the belief that "we are on the verge of breakthroughs in the effort to understand our place in the scheme of things" (*New York Times Book Review*, June 27). Like others before him, Wilson's "breakthrough" is an attempt to introduce "rigor and scope" into the scientific study of society.

However, Wilson dissociates himself from earlier biological determinists by accusing them of employing a method generating unfalsifiable hypotheses. He purports to take a more solidly scientific approach using a wealth of new information. We think that this information has little relevance to human behavior, and the supposedly objective, scientific approach in reality conceals political assumptions.



In his attempt to graft speculation about human behavior onto a biological core, Wilson uses a number of strategies and sleights of hand which dispel any claim for logical or factual continuity. The first 25 chapters of *Sociobiology* deal largely with animals, especially insects, while only the last chapter focuses on humans. Thus Wilson places 500 pages of double column biology between his chapters on "The Morality of the Gene" and "From Sociobiology to Sociology." But Wilson's claim for objectivity rests entirely upon the extent to which his last chapter follows logically from the fact and theory that comes before. Most readers of *Sociobiology*, we suspect, will be persuaded that the final chapter on human society flows naturally from what comes before. However Wilson's claim to continuity fails for the following reasons:

1) When Wilson is forced to deal with phenomena such as social unrest we find that his explanatory framework is amazingly elastic. Such behavior is capriciously dismissed with the explanation that it is maladaptive, and therefore has simply failed to evolve. Hence, social unrest may be due to the obsolescence of our moral codes, for as Wilson sees it we still operate with a "formalized code" as simple as that of "members of hunter-gatherer societies." Xenophobia represents a corresponding failure to keep pace with social evolution, our "intergroup responses . . . still crude and primitive."

This approach allows Wilson to selectively confirm certain contemporary behavior as adaptive, and "natural" and thereby affirm the present social order. The only basis for Wilson's definition of adaptive and maladaptive is his own preferences. While he claims scientific objectivity, Wilson reinforces his own speculations about a "human nature", i.e. that a great variety of human behavior is genetically determined, a position which does not follow from his evidence.

2) Another of Wilson's strategies involves a leap of faith from what might be to what is.

As Wilson attempts to shift his arguments smoothly from the nonhuman to human behavior, he encounters a factor which differentiates the two: cultural transmission. Of course, Wilson is not unaware of the problem. He presents (p.550) Dobzhansky's "extreme orthodox view of environmentalism" :

Culture is not inherited through genes; it is acquired by learning from other human beings . . . In a sense human genes have surrendered their primacy in human evolution to an entirely new superorganic agent, culture.

But he ends the paragraph saying "the very opposite could be true." And suddenly in the next sentence, the opposite does come true: Wilson calls for "the necessity of anthropological genetics", that is the study of the process by which culture is inherited through genes. Thus, Wilson's preference for genetic explanations persuades the reader to make this jump.

3) Does Wilson's analysis of studies in non-human behavior provide him with a basis for understanding human behavior? Wilson anticipated difficulties in making the jump from nonhuman to human societies, and attempts to deal with them by *ad hoc* arguments. For example, a major problem exists in Wilson's emphasis on innate biology: how can genetic factors control behavior if social structure within a group can change rapidly over the course of just a few generations? Wilson, of course, does not deny the enormous flexibility and rapid change in human action. But Wilson admits that according to standard population genetics, this period is far too short for the changes observed. He turns instead to the "multiplier effect," which is a concept borrowed from economics. He uses this "effect" in an attempt to show how small genetic changes can be amplified enormously in a limited time span. But nowhere does Wilson present any basis for introducing the multiplier. Further, he relies on the unproven assumption that genes for behavior exist. A crucial point in Wilson's explanation remains purely speculative.

4) Many of Wilson's claims about human nature do not arise from objective observation (either of universals in human behavior or of generalities throughout animal societies), but from a speculative reconstruction of human prehistory. This reconstruction includes the themes of territoriality, big-game hunting with females at home minding the kids and gathering vegetables ("many of the peculiar details of human sexual behavior and domestic life flow easily from this basic division of labor" p.568), and a particular emphasis on warfare between bands and the salutary advantages of genocide. But these arguments have arisen before and have been strongly rebutted both on the basis of historical and anthropological studies. (See, for instance, A. Alland, *The Human Imperative* or M.F.A. Montgagu, *Man and Aggression*).

What Wilson's book illustrates to us is the enormous difficulty in separating out not only the effects of environment (e.g. cultural transmission) but also the personal and social class prejudices of the researcher. Wilson joins the long parade of biological determinists who have served to buttress the institutions of their society by exonerating them from responsibility for social problems.

From what we have seen of the social and political impact of such theories in the past, we feel strongly that we should speak out against them. We take the new field of sociobiology seriously, then, not because we feel that there is scientific significance to its discussion of human behavior, but because it appears to signal a new wave of biological determinist theories.

The Genetic Engineering Group

REFERENCES

1. See March, 1974, issue of *Science for the People*.
2. See the Sept. 1974 and July 1975 issues of *Science for the People*.

continued from page 9

as engineering are in jeopardy by computers, which design products nearly autonomously and then deliver them to a drafting machine which makes a complete set of working drawings.

What are we to think about these latest developments in what some writers call "the second industrial revolution"? Under Capitalism, machinery can take away your job. That's clear. Potentially, of course, it can also provide "leisure", but such "leisure" would have to be fought for and won.

Under socialism, will robotics ultimately prove to be the key to the "workless" society? Is this a desirable concept? Would a well planned social system be able to turn Unimates into "Serve-The-People-Mates? Or are robots only a new form of waste?

Certainly the introduction of robotics under capitalism is an unsettling thing. As with other important technological developments, it may put another lurch in the unsmooth flow of history. Jaeger's prophesy that "these things take care of themselves" can probably have meaning only if the working class is prepared to take care of *itself* in the face of the peculiar logic of machine-oriented capitalism.

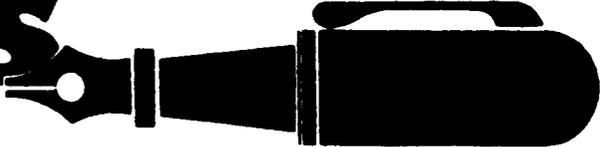
What will be the future of robotics? Will robots increasingly resemble their makers — walking and talking and curtsyng and getting angry? None of this is impossible, but E. William Merrium of B.B. and N. doesn't think that a "truly intelligent robot" is likely before the year 2000.[19]

At the moment it is the threat from the dumb ones that must concern us.

David Chidakel

1. "Robot Technology: Moving Toward Total Systems," R. Glorio, *Manufacturing, Engineering, and Management*, April, 1974, Vol. 72, p. 30.
2. "Robot Power Spreads All Over The World," *Iron Age*, Vol. 214, Nov. 11, 1974, pp. 59-62.
3. "Levi Strauss Legs It Toward Automation," *Business Week*, July 21, 1973, pp. 62-63.
4. Ben B. Seligman, *Most Notorious Victory*, The Free Press, New York, 1966, p. 164.
5. "People vs. Machines," *U.S. News and World Report*, Jan. 29, 1973, p. 44.
6. Robert P. Weeks, *op. cit.*, p. 98.
9. "Education for a Leisure Society," Robert Strom, *The Futurist*, April, 1975, p. 93.
10. Robert P. Weeks, *op. cit.*, p. 187.
11. "Education for a Leisure Society," *op. cit.*, p. 93.
12. "Computer Managed Parts Manufacture," Nathan Cook, *Scientific American*, February, 1975, p. 25.
13. "The Office of the Future," *Business Week*, June 30, 1975, p. 48.
14. Ben B. Seligman, *op. cit.*, p. 171.
15. "The Office of the Future," *Business Week*, June 30, 1975.
16. Ben B. Seligman, *op. cit.*, p. 169.
17. *Ibid.* p. 203.
18. Robert Weeks, *op. cit.*, p. 193.
19. "Robbie the Robot—R.I.P.," David Black, *Harpers*, December 1973, p. 10.

letters



Dear Editorial Committee:

Recognizing that the July issue of *SftP* is the first of several to be published by an ongoing editorial committee (rather than a single-issue effort) I wish to convey my dissatisfaction with much of its contents. I direct my criticism both to the editors and to the authors of some of the articles and letters.

In general I believe that too little of the contents is appropriate for an audience of liberal to radical folks concerned with science-related issues. When articles or letters are received that make political statements that are not likely to be understandable or meaningful to the general readership or are clearly written for the purpose of pushing a sectarian position, it would be wise to refer the authors to the Internal Discussion Bulletin. If the magazine becomes the vehicle for rhetorical political squabbling the efforts of the Distribution Committee to increase circulation will surely be undermined.

To be specific, I found the "political analysis" of *SftP* by Herb Fox and the response written to two other letters by Fox, Lambert and Olivier to be inappropriate and offensive.

Rather than print a narrow personal view of the magazine's history it would have been more in keeping with our practice to celebrate the anniversary of five years of *SftP* by soliciting a critical history to be written *collectively* by several of the people whose struggle has made that feat possible. Herb's history totally ignores the fact that the control exercised by Boston-based magazine collectives has been a constant irritant to many SESPA/SftP members in other cities. Would this situation have been improved if, as Herb suggests, a self-appointed group had used the magazine to *establish* a line for an organization that was clearly composed of people with divergent political views?

If any response to the letters by Bustillo and Clapp was called for, the first three sentences of the Fox, Lambert, Olivier reply should have been sufficient. Instead, after explaining that space limitations in their article prevented an analysis of the lines on busing promoted by other organizations, the respondents were permitted to use the more limited space available in a letter to level sectarian attacks at the Revolutionary Union, the Weather Underground and the Progressive Labor Party under the guise of examining these organizations' positions on busing.

My final, and perhaps most significant objection, is in the choice of a lead article. Purr McEwen has attempted the impossible task of writing an informative article on imperialism as a total system in the limited space of eight

magazine pages. The result is, for the most part, an uncritical piece full of unsupported assertions many of which result from attempts to paraphrase and summarize the major arguments presented by Lenin. My intention here is not to offer a detailed critique of Purr's article, but rather to question its publication. Wouldn't it be better to recognize the limitations of the magazine and refrain from soliciting or accepting articles on themes that can only be treated superficially in the space available?

In struggle,
Ted Goldfarb
Stony Brook, N.Y.

editorial response to Goldfarb letter

We too believe the issues addressed by Ted Goldfarb of the Stony Brook chapter are very important. Opinions within the current Editorial Committee are about as diverse as those stated, or alluded to, in Ted's letter. We hope that debate on these questions within SftP will progress to the point where considerable agreement can be reached in specifying what the character of *SftP* magazine should be. Part of this discussion will take place at the North East Regional Conference in late October where debate on guidelines for the magazine is planned.

Dear Editorial Collective:

In response to Ted Goldfarb's letter, I would like to answer a couple of points. Firstly, *Imperialism: The Common Enemy* was not intended to be an exhaustive study of all aspects of imperialism, nor was it my intention to raise all the points of controversy concerning Lenin's analysis. Rather, I undertook the article because of a sense in the organization that people did not understand what imperialism is, who it affects, or why it is the main enemy of oppressed people around the world. Thus my intention was to lay out the main aspects of imperialism, using the most widely read author in the world, Lenin.

Secondly, Ted's criticism that this subject should not be dealt with in the magazine reflects a conception of the role of the magazine that I feel is incorrect. General political education is as important to the organization as principles of unity. But it is also the case that these types of articles should deal directly with the oppressive use of science and technology. (In retrospect, I feel that this was the major weakness of the imperialism article.) But this discussion of the role of the magazine is best left for the regional conference where it can be taken up thoroughly.

In Struggle,
Purr McEwen
Boston, Mass.

To the editors of *Science for the People*:

Ted Goldfarb criticizes my contribution (Five Years of Science for the People: A Political Analysis; July, 1975) as being a "narrow personal view." He also expresses his preference for a collectively written history and reminds us that one of the consequences of the way things have been run is Boston control.

I unite with his criticism of Boston control. Unfortunately much of the problem still remains. How do we avoid undemocratic dominance by a center? A center (no matter where it is geographically), whether it be an editorial committee or a steering committee, must be bound to principles. If these principles are democratically determined and can be changed through struggle that involves the whole membership, then the center, rather than being an alien force, becomes the instrument of the collective will. "Divergent political views" of which Ted writes would be expressed in the struggle, thereby revealing their unity and contradictions and enabling principled compromise. The magazine, as collective organizer, would play an important role in promoting the debate, not as an end in itself, but as a means to involve everyone in forging unity.

As one of the founders of SESPA and organizer of the Boston Chapter, I could and did use personal recollections to enliven the analysis of the magazine's history. But my primary purpose was to bring out the *principal* contending lines. I had discussions with members in four cities and reviewed all the back issues and internal documents. Ted disagrees with the analysis. He should write what *he* thinks have been the principal contending lines. He should do this collectively, with others with whom he has principled agreement, as I did for the article which I finally authored.

That is the essence: only those who agree in principle can collectively produce something meaningful. And it is those who put forward their line honestly and struggle who build the collectivity.

Summing up to look forward,

Herb Fox
Boston

Comrades,

I regret that *Science for the People* may not be available in D.C. in the immediate future, especially since the last issue suggests that SESPA is supporting unity among anti-imperialist forces through coherent theoretical struggle (Imperialism: The Common Enemy) as well as critical analyses of science and important actions (The XYY Controversy) to expose techno-fascism.

The editorial collective has worked up a good issue, but their collective intelligence failed when they stated that Herb Fox is a Founding Father. Fatherism is an ideology, a states-of-consciousness and language system, and a language analogy system which we can learn about but, hopefully, won't emulate . . .

Struggle,
Ralph Beitel
Washington

Dear Friends,

After reading the article "The Limits to Capitalist Growth," I was somewhat disappointed, particularly with the last part "Blueprints for an Alternative Model," due to my feelings about its importance.

The article's tone is closer to that of a newspaper of a political party than to *Science for the People*, where I would expect authors to support and probe their assertions, and where the "scientific" approach should be used. A sign of the low level of science is the absolute lack of any references for the last part of the article.

First of all, the authors omitted the logical conclusion that a socialist system or society is needed. It would have been an excellent opportunity to develop that conclusion here, since it derives from studies carried out by respected capitalist institutions using quite sophisticated methods to treat the technical and economical data. People that need to be educated about this conclusion would have no reason to distrust the sources.

Second, although the authors are in general opposed to the spirit of the reports (CR1, CR2, EPP), I feel they accept too much of them. For instance,

1) "Industrial production must be greatly developed, if the needs of all people are to be met." Why? Is the current productive system devoted to solving the real needs of the people? Would the actual level of production, if its composition were changed, not suffice for the real needs of the people?

2) "Such 'limits to growth' — as they are perceived by capitalist planners — are real problems. . ." I don't think they are real problems for most of the population of the world. I agree that they are real problems for a minority of the people — whose future enjoyment of privilege depends on their solution — but I don't think the authors, or Science for the People, are concerned about this particular minority.

3) When the authors call for a "world-wide socialist plan of development," it seems to me that they are applying the same technique of world-wide models used in the reports. These models have received a lot of criticism, particularly from a socialist point of view, and seem to be in open contradiction with the democratic, nonhierarchical ideas that the authors defend in the same part of the article.

In general, it seems that the author's comments derive either from a widely known and accepted theory, or from their own personal ideas, because no references are given for the supporting theory, nor is the basic ideology identified. A "socialist system", in the context it is used, means only noncapitalistic. Obviously, not just any socialist system would conveniently solve the problems ambiguously exposed in the article, so a more precise identification is necessary. What are the minimum requirements of their socialist system, concerning property, internal political and social organization, and international alliances? Are there any examples that the authors can think of?

Joaquim Corominas
Boston

The authors reply

Dear Friends,

The main objective of the article "Limits to Capitalist Growth" (*Science for the People*, May 1975) was to analyze some recent capitalist attempts to construct a general model of the world. Since our world — and especially the developed part of it — is still largely dominated by the economic structures, institutions and ideology of capitalism, something may be learned from the capitalist models. Thus, the central purpose of our analysis was to better understand the world we live in, so that we can help to change it.

J.C.'s letter gives three specific examples of why he thinks that "we have accepted too much from the models we are criticizing." While we apologize to our friends for what may have been unclear or confusing in the article, we don't think he has proven his point.

1) To say (as we did) that "food and industrial production must be greatly developed if the needs of all people are to be met" does *not* imply (in fact we have repeatedly stated the opposite) that the capitalist productive system is devoted to meeting the needs of all people *because* the bulk of world production is largely geared to the capitalist advanced nations and to capitalist consumption, it cannot be simply redistributed without a complete transformation in its geographical, technological and social structure. We must not fool ourselves that socialism consists only in cutting more or less equally the capitalist pie.

2) We wrote: "such 'limits to growth' — as they are perceived by the capitalist planners — are real problems *for the future.*" The last three words, italicized here, were omitted in J.C.'s quote. We do not think that a socialist society can avoid coping with such problems as exhaustion of resources, deterioration of the environment, or the growing needs of a growing population. One would hope, however, that such problems are dealt with in a different way.

3) A substantial component of socialist theory and experience is planning. There is indeed a real contradiction between the requirements of central planning discipline and of genuine non-hierarchical democracy, which must be solved dialectically in theory and in practice.

In his comments on the article, J.C. suggests that we could have shown as a logical conclusion, using capitalist data, the need for a socialist society. It should be clear that the need for socialism is not anything which can be demonstrated in the same way as a physical law. At this point in history, however, at least some socialist solutions can be assumed to exist. We have made this assumption at the end of our article. This was not meant to supply detailed socialist answers for the problems of the capitalist world, but simply to point out the need of formulating such answers and of integrating them in a coherent socialist model. We did try to contribute to this formulation by examining the contradictions and shortcomings of the current capitalist answers. This is an important part of beginning to construct socialist solutions since the future must be built out of the present.

We have never pretended to offer our own version of a socialist system and we would like to be criticized for what we *have* done, rather than for what we have not done. Obviously, as the editorial collective has pointed out in its comment on our article (*Science for the People*, "About this Issue", May, 1975) there is more to be done. The task of defining socialism concretely is an extremely difficult and important one. Furthermore, socialism is not a static final state. It is a process to be constantly advanced through the efforts of people to construct it. This process cannot be accomplished by listing a few references or by mentioning in passing one or two historical experiences. An effort to start a new step forward requires at least an honest and open discussion of the present models and experiences.

David Jhirad, Marian Lowe, Paolo Stringini
Boston

Dear SftP,

Please be advised that Los Angeles now has an active SftP chapter. Our first goal is to develop a number of energy presentations oriented toward support of the Calif. Nuclear Initiative. We will not only try to provide technical back-up for the pro-initiative people but also develop our own community programs which will be much more radical in nature. There is a close working relationship between the LAFS, formerly LA-FAS chapter, which was expelled from the national FAS because of deviant activity, e.g. opposition to nuclear-power plant proliferation. We will keep you informed regarding our programs. One thing we hope to be able to do is provide most of the material for one issue of the magazine on the overall energy situation.

Regards,
Shel Plotkin
West Los Angeles

Dear People,

I corresponded with you last year, inquiring about the content of your magazine, subscription rates, etc. At the time, I received two sample copies of *Science for the People*, and the information I needed. However, I was alienated by what appeared to be a rather automatic and often imprecise Marxist language in many of the articles. While I do not expect this situation to have changed much, several factors have motivated me to subscribe to your journal now. First, yours seems to be the only journal focusing on radical change within the field; most of the others appear, in fact, to be quite reactionary. Secondly, I intend to subscribe to *Science* to keep up on current scientific developments, so I will need a continual antidote to their "liberal" line. Finally, I did find the articles (also your book on China) generally well-written and relevant in spite of the above-noted deficiency.

Sincerely,
Bob Hall
Urbana, IL

More letters page 38

Vietnam Rebuilds

Continued from page 23

want to fight against. Examples can be given of scientists sincerely willing to work in such collaborative programs but unwilling to live up to, in a consistent way, this engagement in their personal life, their relations with students and colleagues, their research choices.

We should be aware of this danger and be clear about the connection that we have to make between our SfVN experiences and our activity in the university, the laboratories and the local communities, in the context of our struggle for a socialist society. Science for Vietnam, if correctly approached, can concretely lead in this direction. By helping us in seeing through the capitalist ideology in much of scientific research, it can make us stronger in our everyday fight against this ideology (separation of roles, contempt for technical and manual work, reliance on expertise, etc.). By deepening our understanding of the class roots in much of the scientific choices and priorities it will help clarify the strategy of attack against the class interests that dominate all scientific fields.

FOOTNOTES TO SCIENCE FOR VIETNAM ARTICLE

1. We have, however, a number of copies of the two complete reports, with the detailed lists of the Vietnamese requests and all relevant addresses. These reports are in Italian and can be requested from: Collettivo Scienza per il Vietnam, c/o Anna Ferro Luzzi, Istituto di Scienza della Nutrizione, v. Lancisi 29, Roma, Italy
2. To make contact with the Hoa Binh school write to: Nguyen van Tuong, Ecole de la Jeunesse Socialiste Travailleur, Dong Xa Koi, Chu Ngia Tinh, Hoa Binh, RDV
3. The French Collectives are grouped in the Comite pour la Cooperation scientifique et technique avec le Vietnam, c/o Yvonne Capdeville, C.G.M., C.N.R.S., 91, Gif sur Yvette, France; their Cybernetic group is the Section Informatique, c/o A. Teissonniere, 103, rue Olivier de Serres, 75015 Paris, France. There are Collectives in Holland, Norway, Sweden, Denmark, Germany, Switzerland, England.

HOW AND WHERE TO SEND THE REQUIRED MATERIAL AND BOOKS

1. *Single books, single issues of journals, internal documents, preprints and reprints:* they can be sent as third class mail (both sea route or air mail) directly to the addresses printed above each separate list; registered mail is not accepted by the U.S. Post Office, but printed material seems to arrive regularly to Hanoi.

2. *Collections of books and journals:* they can be sent or delivered directly at the Science for the People Office, 16 Union Sq., Somerville MA 02143; call (617) 776-1058 if there are delivery problems; the material collected will then be sent to Vietnam through Medical Aid to Indochina (contact in Boston is Tom Davidson, (617) 492-0205; the person coordinating the activities of MAI is Francois D'Heurle, Spring Valley Road, Ossining, NY 10562 (914) 941-2216.

3. *Electronic material, computer programmes, and so on are best sent to Vietnam from Europe:* send them to Scienza per il Vietnam, c/o Bruno Vitale, Istituto di Fisica Teorica, Mostra d'Oltremare, pad.nr. 19, Napoli 80125, Italy.

4. requested by: *Bibliothèque Centrale des Sciences et des Techniques*
26, Ly Tuong Kiet,
Hanoi, Rep. Dem. du Vietnam

The following collections are incomplete (in parentheses, the missing issues)—single issues are welcome:

- Acta Metallurgica, New York (1969)
- American Heart Journal, St. Louis (1970-1971)
- American Journal of Botany, New York (1956, 1958)
- American Journal of Cardiology, New York (1970-1971)
- American Journal of Diseases of Children, Chicago (1970-71, 1973)
- American Journal of Medicine, New York (1970, 1972)
- American Journal of Obstetrics and Gynecology, St. Louis (1970-1971)
- American Journal of Pathology, Washington (1968-1971)
- American Journal of Physiology, Boston (1958-1960)
- American Journal of Roentology, New York (1962-1970)
- Analytical Biochemistry, New York (1965)
- Analytical Chemistry, New York (1947-1950, 1955-1961)
- Anatomical Record, Philadelphia (1958-1965)
- Annals of Surgery, Philadelphia (1970-1972)
- Applied Microbiology, Washington (1957-1963)
- Applied Physics Letters, New York (1962-1963)
- Archives of Biochemistry and Biophysics, New York (1954-1958, 1962)
- Archives of Internal Medicine, New York (1970-1971)
- Archives of Surgery, Chicago (1970-1971)
- Cancer Research, Baltimore (1958, 1962-1965, 1967-1971)
- Cancer, Philadelphia (1958-1972)
- Endocrinology, Chicago (1962-1963)
- Gastro-Enterology, New York (1970-1972)
- Journal of the Acoustic Society of America, New York (1957-1962, 1970)
- Journal of the American Chemical Society, Washington (1948, 1957, 1963)
- Journal of the American Medical Association, Chicago (1970-1971)
- Journal of the American Veterinary Medical Association, New York (1965)
- Journal of Animal Science, New York (1965)
- Journal of Applied Physics, Philadelphia (1957, 1969)
- Journal of Applied Physiology, Washington (1963)
- Journal of Bacteriology, Baltimore (1958, 1962, 1963, 1965)
- Journal of Biological Chemistry, Baltimore (1958-1960, 1965)
- Journal of Cell Biology, New York (1965)
- Journal of Chemical Physics, New York (1957-1961)
- Journal of Clinical Endocrinology and Metabolism, Philadelphia (1963-1970)
- Journal of Economic Entomology, Menaska (1934-1936, 1938-1944, 1958-1963)
- Journal of the Electrochemical Society, New York (1970)
- Journal of Experimental Medicine, New York (1970)
- Journal of General Physiology, New York (1965-1966)
- Journal of Geophysical Research, Washington (1958-1964)
- Journal of Immunology, Baltimore (1970)
- Journal of Inorganic and Organic Chemistry, New York (1959)
- Journal of Laboratory and Clinical Medicine, St. Louis (1970-1971)
- Journal of the National Cancer Institute, New York (1970)
- Journal of Neurophysiology, Springfield (1964-1965)
- Journal of Nutrition, Philadelphia (1967-1971)
- Journal of the Optical Society of America, Philadelphia (1962, 1973)

- Journal of Pharmacology and Experimental Therapeutics, Baltimore (1970)
- Journal of Physical Chemistry, New York (1957-1964, 1969-1970)
- Pediatrics, San Francisco (1960-1969)
- Proceedings of the I.E.E.E., New York (1960-1962, 1970)
- Proceedings of the National Academy of Sciences, Chicago (1959-1960)
- Radiology, Easton (1960, 1962, 1972)
- Review of Scientific Instruments, New York (1958-1970)
- Surgery, Chicago (1962-1969)
- Surgery, Gynecology and Obstetrics, Chicago (1962-1969)
- Transactions of the Metallurgical Society of AIME, New York (1964, 1972)
- Virology, New York (1960, 1962-1965)



5. Requested by: *Bibliothèque
Institut Polytechnique
Dai Hoc Bach Khoa
Hanoi, RDV*

The following books are requested; send, if possible, several copies of each; *second-hand copies* (often to be found half-priced at students' bookstores) are welcome:

- Messiah: Quantum Mechanics, Vol. I, II, New York, 1965
- Tinkham: Group Theory and Quantum Mechanics, New York 1964
- Feynman: Statistical Mechanics, New York 1972
- Kittel: Introduction to Solid-State Theory, New York 1967

- Wallis: Lattice Dynamics, New York 1965
- Thor Bak: Statistical Mechanics, New York 1967
- Kroupe; Theory of Crystal Defects, New York 1966
- Gree and Senger: Critical Phenomena, Washington 1966
- Longini: Introductory Quantum Mechanics of the Solid State, New York 1971
- Wallace: Thermodynamics of Crystals, New York 1971
- Wolfe: Applied Solid State Science, New Jersey 1971
- Florey: Statistical Mechanics of Chain Molecules, New York 1969
- Mayer et al.: Ion Implantation in Semiconductors, New York 1970
- Kotkin and Serbo: Ion Implantation in Semiconductors, New York 1972
- Hooper and Graaf: Amorphous Magnets, New York 1972
- Brown and Labes: Liquid Crystals, New York 1972
- Khambata: Introduction to Integrated Semiconductor Circuits, New York 1973
- Keonjiam: Microelectronics, New York 1963
- Herskowitz and Schilling: Semiconductor Device Modelling, New York 1972
- Pridham: Solid-State Circuits, New York 1973
- Berkeley Physics Course, 5 vol.
- PSSC: Text, Teacher's Guides, Laboratory Guide, 3rd ed.

6. Requested by: *Institut de Physique du
Comite d'Etat pour la Science et la Tech-
nique
(att. Nguyen van Hieu pour Department
d'Electronique)
39, Tran Hung Dao, Hanoi, RDV*

New as well as recovered (working!) material is welcome:

	SEMI-CONDUCTORS		TRANSISTORS	
		Quantity		Quantity
Diodes Ge	1N994	(50)	2N1306	(50)
Diodes Si	1N4446	(50)	2N2905A	(50)
	1N3062	(100)	2N2970A	(50)
Rectifiers Si	10D10	(50)	BC214	(50)
	By127	(50)	SX3703	(50)
Zener Diodes	ZPD 1	(20)	2N708	(50)
	ZPD 2, 7	(20)	2N918 Phil.	(50)
	ZPD 5 spec	(20)	2N1893	(50)
	ZPD 6 spec	(20)	2N2369	(50)
	ZPD 10	(20)	BC107-B	(50)
	ZPD 33	(20)	BC108-B	(50)
			BC109-C	(50)
			BSX27	(50)

radical history review

THE QUARTERLY JOURNAL OF
THE MID-ATLANTIC RADICAL
HISTORIANS' ORGANIZATION

\$5 low income, \$10 high in-
come, 50¢ for a sample copy
write Gil Schrank, 107 W.
86 St., N.Y., N.Y. 10024

7. Requested by: Centre de Calcul
Comité d'Etat pour la Science et la Technique
39, Tran Hung Dao
Hanoi, RDV

New as well as recovered (working!) material is welcome:

Integrated circuits:

- 100 units of SFC 400E or SN 7400J,N or TL 7400N or FJH 151 or FLH 101
- 100 units of SFC 403E or SN 7403J,N or TL 7403N or FJH 291 or FLH 291
- 50 units of SFC 410E or SN 7410J,N or TL 7410N or FJH 121 or FLH 111
- 50 units of SFC 420E or SN 7420J,N or TL 7420N or FJH 111 or FLH 121
- 50 units of SFC 440 E or SN 7440J,N or TL 7440 or FJH 141
- 50 units of SFC 450E or SN 7450J,N or TL 7450 or FJH 151 or FLH 151
- 150 units of SFC 472E or SN 7472J,N or TL 7472 or FJH 101 or FLJ 111
- 50 units of SFC 2709E,O or SN 74709L,N or IL 7098 or TAA 521 or muA 7090
- 50 units of SFC 2710C or SN 74710C,N or IL 710S or muA 710C

Subscriptions to the following journals (back issues will be welcome):

- Journal of Data Management
- Business Automation
- Computer-Aided Design
- Computing Survey
- Journal of Computer and System Science
- Artificial Intelligence Journal
- Acta Informatica
- Publications of the ACM

8. Requested by: Institut de Malariologie, Parasitologie et Entomologie
Ministère de la Santé
Bo Y-Te
Duong Giang Vo 138 A
Hanoi, RDV

Anti-malaria drugs:

- Fansidar injectable (Sulfadoxine and Pyrethamine): 5,000 doses
- D.F.D. (Diforyldiaminodiphenylsulfone): 5,000 doses
- Trimethoprim: 5,000 doses
- Menoctone (W.R. 49808): 5,000 doses

Instruments: It would be important if a portable (car-borne) device could be assembled and sent (if possible, in a number of copies, or with detailed instructions and material to assemble more copies) to spray insecticides as aerosol (drop diameter 15-20 microns) and working at room temperature

9. Requested by: Laboratoire d'Hygiène Alimentaire et de la Nutrition
Institut National d'Hygiène et d'épidémiologie
1, Yen-Sanh
Hanoi, RDV

Publications: F.A.O. and W.H.O publications on nutritional science and alimentary hygiene (Codex alimentarius)

Strains for the assay of vitamins and amino-acids:

- Leuconostoc mesenteroides P60 ATCC 8402
- Lactobacillus casei 7469 ATCC
- Lactobacillus arabinosus 17-5 ATCC 8014
- Lactobacillus fermentum 36 ATCC 9833

- Lactobacillus leichmannii ATCC 7830, 4797
- Streptococcus lactis R ATCC 8043
- Neurospora sitophila 299 ATCC 9276
- Neurospora crassa 34486 ATCC
- Leuconostoc citrovorum 8081 ATCC

Media for the assay of vitamins and amino-acids:

- Bacto arginine assay medium (B466) Difco
- Bacto B 12 assay medium UPS (B457) Difco
- Bacto biotin assay medium (B419) Difco
- Bacto CF assay medium (B-) Difco
- Bacto choline assay medium (B460) Difco
- Bacto C.S. vitamin B-12 agar (B399) Difco
- Bacto cystine assay medium (B467) Difco
- Bacto folic acid assay medium (B318) Difco
- Bacto isoleucine assay medium (B437) Difco
- Bacto leucine assay medium (B421) Difco
- Bacto lysine assay medium (B422) Difco
- Bacto methionine assay medium (B423) Difco
- Bacto micro assay culture agar (B319) Difco
- Bacto micro inoculum broth (B320) Difco
- Bacto neurospora culture agar (B321) Difco
- Bacto niacin assay medium (B322) Difco
- Bacto pantothenate assay medium (B323) Difco
- Bacto phenylalanine assay medium (B469) Difco
- Bacto pyridoxine assay medium (B324) Difco
- Bacto riboflavin assay medium (B325) Difco
- Bacto thiamine assay medium (B326) Difco
- Bacto tryptophane assay medium (B327) Difco
- Bacto tyrosine assay medium (B468) Difco

Vitamins:

- ascorbic acid (50 gr)
- Biotin (100 mg)
- Nicotinic acid (100 mg)
- Pyridoxine hydrochloride (10 gr)
- Thiaminium dichloride (10 gr)
- Vitamin A (dry powder) (10 gr)
- Vitamin B-12 (5 gr)
- Vitamin D2 (5 gr)
- Vitamin E (dry powder) (5 gr)
- Beta-caroten (2 gr)
- Riboflavin (10 gr)

10. Requested by: Laboratoire de Physiologie et Biochimie Vegetale
Comité d'Etat pour la Science et la Technique
Institut de Biologie
39, Tran Hung Dao
Hanoi, RDV

Chemicals:

- polyethylene glycol (modopeg NW 1540) (500 gr)
- Dextran T 2000 (200 gr)
- Macerozynie R 10 (100 gr)
- Meicellase (100 gr)
- Onozuka Cellulase (100 gr)
- Zestin (5 gr)
- Calcium penthotenate (1 gr)
- 5.Bromodeoxyuridine (1 gr)
- Thioprolone (1 gr)
- Actinomycine D (1 gr)
- Crotlyglycine (1 gr)
- Aminoethylcysteine (1 gr)
- Riboflavine(10 gr)

Continued from page 19

anti-imperialist tradition, especially our experience in exposing the deceptive use of science and scientists in the service of imperialism, we were able, in a short period, to identify the present day Soviet Union as part of the enemy: imperialism.

A deeper analysis of this strength reveals its other side: the weakness of underestimating the enemy, not seeing that of the two superpowers, the Soviet Union is the rising one. Also, not seeing that revisionism in the U.S., the agent of this rising superpower, is the main danger to our young movement because it cloaks itself in the slogans of socialism and revolution, and falsely claims the legacy of the great Russian revolution. We have to understand that unless we cleanse our movement of this poison, we will lose the battle against imperialism.

To explain more fully these conclusions, I find it useful to break the total experience down into three periods: the pre-symposium period, the symposium itself, and the post symposium evaluation period.

In the pre-symposium period, some people put forward incorrect positions. The general response to our invitation was that no harm would come from our participation and that we could make some good contacts. Another position was that the trip was only a junket: "Wow, a free trip to Moscow". But when some people raised the question of whether we should go, what detente really is, and what kind of a front the W.F.S.W. is, we started reading, had an informal discussion meeting that drafted a position, and finally the excellent general meeting at which the position was adopted. This was excellent. However the few who argued against going at all, did not put forth a clear position on the special danger to everything that SftP has always stood for, of Soviet social-imperialism and revisionism. Basically we agreed that the Soviet Union's pushing of detente was collusion with the U.S. imperialists' use of the phony slogan of "peace", in order to hold back revolutionary struggles for independence and national liberation. In fact, we saw the dying beast of U.S. imperialism as the danger! Now it is more clear that the problem with this position is that the imperialist Soviet Union also says that U.S. imperialism is the main danger and that the Soviet Union in pushing for detente, speaks for the aspiration of the world's people for peace and the suppression of U.S. imperialism. Thus we correctly saw detente as a policy for the suppression of just revolutions but did not recognize it as a policy of rallying the world's peace loving people to an alliance with one imperialist power against the other, while it undermined independence and socialist aspirations through its revisionist C.P.'s and prepared for a world war of imperialist domination.

Our strength at the symposium was based upon our position paper which was able to unite some of the genuine anti-imperialists into a block. But this was only a miniscule force among the participants who endorsed the blatant denial of the revolutionary right of oppressed people, as expressed, for example, by E. Burhop, President of the W.F.S.W., in his opening address. He

stated that the solution to the social injustices in the Third World "requires a veritable social revolution but this must be achieved without war". In this heavy-handed, imperialist-dominated conference, the block was essentially impotent. It operated from a position of unpreparedness, ideological weakness, and isolation — not the way for anti-imperialists to take up the struggle. It would have been better if we had organized an international group of anti-imperialist scientists to openly boycott the conference and issue a strong exposure of Soviet social-imperialism and revisionism.

Finally there is the period since the symposium, at first I tended to focus on my subjective feeling of inadequacy as a public speaker and tactician. But through discussions with friends, more reading, and much reflection I came to realize that my lack of experience was not the decisive factor. I shared with many, a parochial understanding of imperialism and an inadequate assessment of the danger to everything we are fighting for, of such groups as the W.F.S.W. and the Communist Party-U.S.A. Henry Kissinger, Rockefeller and Jensen are imperialists in imperialist clothing. But the C.P.-U.S.A. and the Soviet Union are deceivers, who dress up in the historical garb of the first successful taking of power by the working class. They are Quislings of our movement. Unless we fully discredit them and drive them and their ideas from our movement, we cannot win.

Chuck Garman

Study Guide on Soviet Social-Imperialism

- 1) *On the Transition to Socialism* — Sweezy & Bettelheim; Monthly Review Press
- 2) "Is the Soviet Union Capitalist?" — Nicolaus; *Guardian* series, soon to be a pamphlet from Liberator Press, Box 7128, Chicago, Ill. 60680
- 3) "Social-Imperialism" — Reprints from Peking Review; Yen-an Books, 2506 Haste St., Berkeley, Ca. 94704
- 4) "How Capitalism Has Been Restored in the Soviet Union" — Red Papers #7; Revolutionary Union, Box 3486, Merchandise Mart, Chicago, Ill. 60654
- 5) "Critique of Red Papers 7: Metaphysics Cannot Destroy Revisionism" — Nicolaus; *Class Struggle* #2, Box 1301, Paramount, Ca. 90723
- 6) "Interview with Swedish Communist: The Restoration of Capitalism and the Rise of Social-Imperialism in the Soviet Union", *Class Struggle* #1, see above for address.

REFERENCES

1. Epstein, W., "The Proliferation of Nuclear Weapons," *Scientific American*, Vol. 232, no. 4, April 1975, p. 25.
2. Aldridge, R., "Cruise Missiles: More Pentagon Mischief", *The Nation*, June 14, 1975, p. 711.

A reduction in grain feeding, altering the trend toward large scale monoculture, abandonment of the 'universal cow' idea and a nonwasteful attitude toward our natural resources require major changes in our economic system. These can be brought about whenever enough of us understand the negative effects of the current system and jointly decide to do something about it.

We would like to hear from people who are interested in or doing related research.

REFERENCES

1. Agribusiness Accountability Project (Hightower), *Hard Tomatoes, Hard Times*, Schenkman Publishing Co., 1973.
2. American Breeders Service, *Genetic Mating Service*, 1974.
3. American Breeders Service, *Holstein Sires, Guernsey Sires, Jersey Sires, Ayrshire Sires and Brown Swiss Sires*, 1974.
4. The Commission on Population Growth and the American Future, *Population, Resources and the Environment*, U.S. G.P.O., 1972.
5. Everett, R.W. and Henderson, C.R., *The Northeast A.I. Sire Comparison: Why?* Animal Science Mimeograph Series No. 19, 1972.
6. FAO, *The State of Food and Agriculture*, Fao Rome, 1973.
7. FAO, *Production Yearbook*, 1973.
8. Frank, A.H., *Artificial Insemination in Livestock Breeding*, USDA Circular #567, 1952.
9. Foley, R.C., Bath, D.L., Dickinson, F.N., Tucker, H.A., *Dairy Cattle: Principles, Practices, Problems, Profits*, Lea and Febiger, Philadelphia, 1972.
10. Haraksingh, K., Bhagavan, M.R., Payne, R. and Smith, D., *The Death of the Green Revolution*, Haslemere Declaration Group, Third World First, Birmingham, U.K., 1973.
11. Lush, J.L., *Animal Breeding Plans*, Iowa State University Press, 1945.
12. NCDHIP, *Plans for a National Dairy Records Program*, 1974.
13. Perry, J. and Bartlett, J.W., *Artificial Insemination of Dairy Cows*, Extension Bull. #200, 1939.
14. U.S.D.A., *The National Cooperative Dairy Herd Improvement Handbook*. Agr. Handbook #248, 1973.
15. U.S.D.A., *1973 Annual Summary*, Massachusetts DHIA, 1973.
16. U.S.D.A., *Sire Evaluation Report: Production Comparison of Sires used in Artificial Breeding Studs Serving New England*, Univ. of Mass. Cooperative Extension Program, 1973.
17. U.S.D.A., *1971 ELFAC Dairy Farm Business Analysis*, Northeastern States Cooperative Extension Service. NEC-68, 1972.
18. U.S.D.A., *Dairy Situation*, Economic Research Service, 1974-75.
19. U.S.D.A., *Feed Situation*, Economic Research Service, 1974.
20. U.S.D.A., *Livestock-Feed Relationships*, Economic Research Service Stat. Bull. 530, 1974.
21. U.S.D.A., *Proceedings of Dairy Feed Meetings*, Coop. Extension Service, Univ. of Mass., 1974.
22. U.S.D.A., *Farm Income State Estimates 1949-73* ERS, 1974.
23. U.S.D.A., *Changes in Farm Production and Efficiency* ERS Statistical Bull. #233, 1973.
24. U.S.D.A., *World Agricultural Situation* ERS, 1974.
25. U.S.D.A., *Farm Cost Situation* ERS, 1973.
26. Walters, C., Jr., *Holding Action*, Halcyon House, 1968.
27. Wilcox, C.J., Gaunt, S.N., and Farthing, C.R., *Genetic Interrelationships of Milk Composition and Yield*, Southern Coop. Series Bull. #155, Univ. of Florida, 1971.

The boycott of non-UFW grapes, lettuce and all Gallo wines (Modesto) continues until contracts are signed. This boycott has given farmworkers the opportunity to have elections for their bargaining unit. When they face the growers at the bargaining table, farmworker negotiators will need the power of the boycott to ensure that they win quality contracts with strong protections ending abusive conditions in the fields and labor camps.

There is a nationwide campaign by growers to break the boycott by making people believe that it is now ended and unimportant. Do not believe the lies of the California Farm Bureau, the South Central Growers Association, the California Fruit Exchange or any other group of growers whose interest is in breaking the boycott. The same people who are getting injunctions against us in California are running ads promoting grapes and denouncing the boycott on the east coast. TV advertisements, national mailings to clergy and intense pressure on grocers who support the boycott are part of this.

The farm workers still need your help.

- 1) continue the boycott and tell others the boycott is not over.
- 2) join the UFW in action in your area — there is boycott action in over 60 cities across the US and Canada — picketing, billboarding, leafletting, and more.
- 3) organize fund-raising, awareness-raising events in your church, school, union, community group
- 4) join us fulltime on UFW staff — we work for 5 dollars a week (strike benefits) plus room and board. Staff is always needed in most places, especially in the Northeast.

If you can help, contact the boycott in your area/city or write: United Farmworkers of America, AFL-CIO, p.o. Box 62, Keene, Calif. 93531

FEED, NEED, GREED: WHERE WILL IT LEAD? A CLASSROOM APPROACH

This booklet is divided into four sections of attractive and stimulating narratives complete with illustrations and thought-provoking questions. Student information sharing is through creative group presentations which enable individuals to recognize the complexities of the world food situation and develop an understanding of the roots of the problem.

\$1.25 for less than 25 copies.

\$1.00 for more than 25 copies.

(Price includes postage)

Health & Nutrition Collective,

Science for the People,

16 Union Square, Somerville, Mass. 02143.

LOCAL ADDRESSES FOR SESPA/SCIENCE FOR THE PEOPLE

ARKANSAS

Joe Neal
516 1/2 N. Oak
Little Rock, Ark. 72205

CALIFORNIA

* Berkeley SESPA
Box 4161
Berkeley, CA 94704

Al Weinrub
429 S. 13th St.
San Jose, CA 95112
(408) 998-8744

Al Huebner
P.O. Box 368
Canoga Park, CA 91303
213-347-9992

Sue Conrad
2026 Rose Villa St.
Pasadena, CA 91107
213-793-4767

Shel Plotkin
3318 Colbert Ave.
Los Angeles, CA 90066
213-391-4223

* Palo Alto SESPA
c/o Palo Alto Tenants Union
424 Lytton Ave.
Palo Alto, CA 94306

CONNECTICUT

N. Sadanand
Dept. of Physics
University of Connecticut
Storrs, CT 06268

Neal & Margie Rosen
71 Stanley St.
New Haven, CT 06511

FLORIDA

Gainesville Research Collective
630 NW 34th Place
Gainesville, FL 32601

Tallahassee SESPA
c/o Progressive Technology
P.O. Box 20049
Tallahassee, FL 32304

ILLINOIS

Northside Chicago SESPA
c/o Bob Ogden
1110 Webster
Chicago, IL 60614

INDIANA

Stephen Friend
T163 G.R.C.
Indiana University
Bloomington, IN 46240
812-337-6862

* Chapter — three or more people
meeting regularly

MASSACHUSETTS

Marvin Kalkstein
University Without Walls
Wysocki House
University of Massachusetts
Amherst, MA 01002

* Boston SESPA/SftP
16 Union Square
Somerville, MA 02143
617-776-1058

MICHIGAN

* Ann Arbor SESPA
John Vandermeer
2431 Darrow St.
Ann Arbor, Mich. 48104
313-971-1165

MINNESOTA

* Science for Vietnam/SftP
Minneapolis Collective
1507 University Ave., S.E.
Minneapolis, MN 55414
612-376-7449

MISSOURI

* St. Louis SESPA
c/o Gar Allen
Dept. of Biology
Washington University
St. Louis, MO 63130
314-863-0100, ext. 4387

NEW MEXICO

Jim Tobias
3703 Barcelona SW
Albuquerque, NM 87105

NEW YORK

* N.Y.C. SESPA/SftP
c/o Joe Schwartz
53 Greenwich Ave.
New York, N.Y. 10014
212-989-6304

* Stony Brook SftP
c/o Ted Goldfarb
Chemistry Dept.
SUNY
Stony Brook, N.Y. 11790
516-246-5053

Marvin Resnikoff
174 West Ave.
Buffalo, N.Y. 14201
716-856-6587

OHIO

Jenny Thie
21417 Fulton Ave.
Cincinnati, OH 45206
513-931-3334

PENNSYLVANIA

Les Levidow
4816 Florence Ave.
Philadelphia, PA 19143
215-SA4-5360

WISCONSIN

* Madison Science for the People
c/o Joe Bowman
306 N. Brooks St.
Madison, WI 53715
608-255-8554

AUSTRALIA

Tony Dolk
234 Bobbin Head Rd.
North Turrumurra
New South Wales
2074 Australia

BELGIUM

Gerard Valendue
Centre Galilee
B.P. Galilee 047
B-1348 Louvain-La Neuve
Belgium

CANADA

Bob Cedergren
Dept. of Biochemistry
Univ. of Montreal
Montreal 101
Quebec, Canada

Science Progressiste/Science for the
People
c/o McGill Daily
3480 McTavish St.
Montreal
Quebec, Canada

ENGLAND

Dave Hayes
14 Goodwin Rd.
Sheffield 8, Yorkshire
England

British Society for Social
Responsibility in Science
9 Poland St.
London, W1V 3DG
England
01-437-2728

* Science for the People Group
Brunel University
c/o Mark Piney
63 Hillingdon Hill
Uxbridge, Middlesex
England

IRELAND

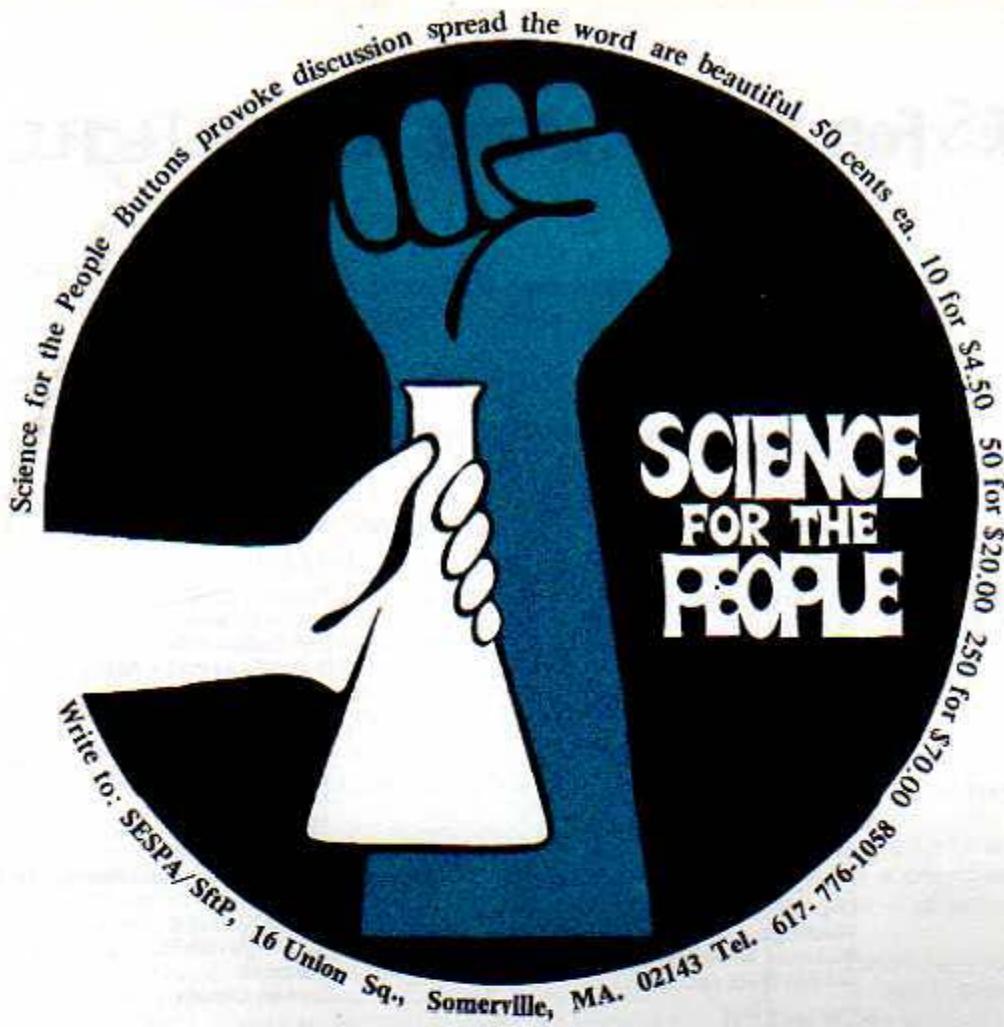
H.N. Dobbs
8 Ailesbury Grove
Dublin 4, Eire

INDIA

D.L. Surendra
3B, Thandava Raya St.
San Thome, MADRAS-4
India

WEST INDIES

C. Raymond Mahadeo
Caroni Research Station
Carapichaima
Trinidad
West Indies



CORRECTION REQUESTED

CHARLES SCHWARTZ 1/76
 PHYSICS DEPT.
 UNIV. OF CALIF.
 BERKELEY, CALIF. 94720

BULK RATE
 U.S. POSTAGE
 PAID
 BOSTON, MASS.
 PERMIT NO. 52696

SUBSCRIPTIONS TO SCIENCE FOR THE PEOPLE AND MEMBERSHIP IN SESPA

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:

Address:

Telephone:

Occupation:
(if student or unemployed please indicate)
2. Local SESPA chapter or other group in which I'm

active. (If none, would you like us to help you start one?)

3. I am enclosing money according to the following scheme:
 - A. Institutional subscription-\$15 for libraries and others. _____
 - B. Individual memberships: (1) regular memberships-\$12, (2) indigent membership-less than \$12, (3) affluent or dedicated revolutionary membership-more than \$12, (4) completely impoverished-nothing, (5) I have already paid. _____
4. I will sell _____ magazines. This can be done on consignment to bookstores and newsstands, to your co-workers, at meetings. (If you want to give some away free because you are organizing and can't pay for them, let us know)
5. I am attaching a list of names and addresses of people who I believe would be interested in the magazine. Please send them complimentary copies.

Please add any comments on the magazine or SESPA or your own circumstances. We welcome criticism, advice, and would like to get to know you.

SEND CHECKS TO: SESPA 16 Union Sq., Somerville, Ma. 02143