SCIENCE FOR THE PEOPLE

50¢

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SCIENCE TEACHING

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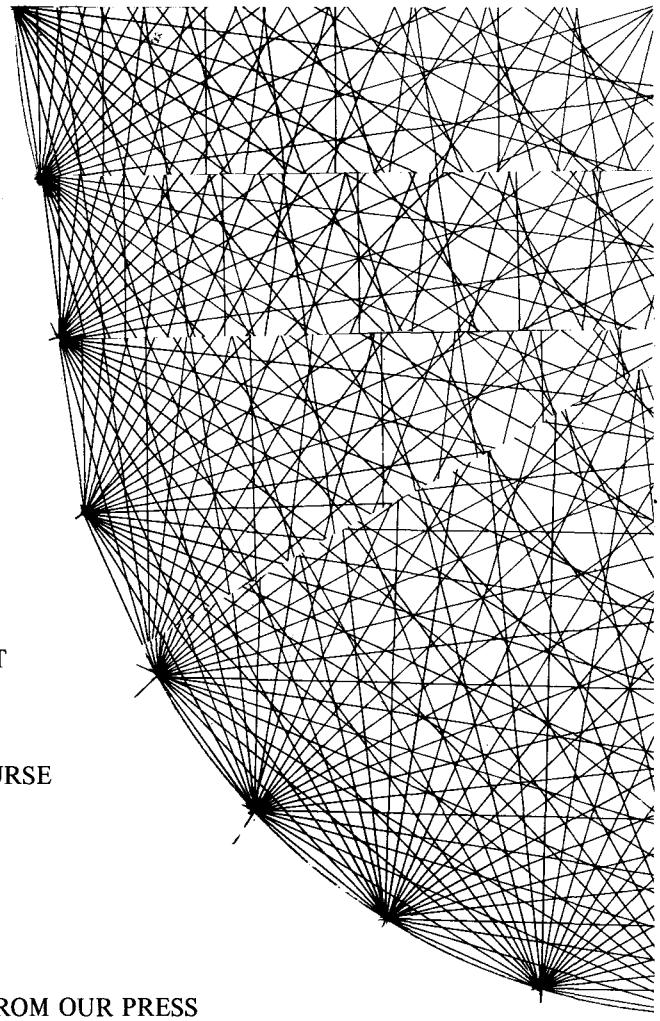
INSIDE



EDITORIAL PRACTICE

Each issue of *Science for the People* is prepared by a collective, assembled from volunteers by a committee made up of the collectives of the past calendar year. A collective carries out all editorial, production, and distribution functions for one issue. The following is a distillation of the actual practice of the past collectives. **Due dates**: Articles received by the first week of an odd-numbered month can generally be considered for the magazine to be issued on the 15th of the next month. **Form**: One of the ways you can help is to submit double-spaced typewritten manuscripts with ample margins. If you can send six copies, that helps even more. One of the few founding principles of *SESPA* is that articles must be signed (a pseudonym is acceptable). **Criteria for acceptance**: *SESPA Newsletter*, predecessor to *Science for the People*, was pledged to print everything submitted. It is no longer feasible to continue this policy, although the practice thus far has been to print all articles descriptive of *SESPA/Science for the People* activities. Considerably more discrimination is applied to analytical articles. These are expected to reflect the general political outlook of *Science for the People*. All articles are judged on the basis of length, style, subject and content. **Editorial Procedure**: The content of each issue is determined by unanimous consent of the collective. Where extensive rewriting of an article is required, the preference of the collective is to discuss the changes with the author. If this is not practical, reasons for rejection are sent to the author. An attempt is made to convey suggestions for improvement. If an article is late or excluded for lack of space, or if it has non-unanimous support, it is generally passed on to the next collective. **Editorial statements**: Unsigned articles are statements of the editorial collective. **Opportunities for participation**: Volunteers for editorial collectives should be aware that each issue requires a substantial contribution of time and energy for an eight-week period. Help is always appreciated and provides an opportunity for the helper to learn, and for the collective to get to know a prospective member. There are presently plans to move the magazine production to other cities. This will increase the opportunity for participation. For legal purposes *Science for the People* has become incorporated.

ABOUT THIS ISSUE

The January 1972 issue of *Science for the People* suggested that there was an interest in seeing an issue on "Science Teaching from a Radical Perspective," and with the appropriate back-to-school month staring us in the face, we looked at each other and said, "Hey, let's put out an issue on science teaching from a radical perspective!"

We have covered most of the suggestions listed in the box of the January issue—critiques of present methods and curricula, ideas and reports of new approaches which have been tried, and resources for new teaching materials and methods. Although most of these articles deal with teaching at a college level, the basic philosophy of science teaching expressed in them could be applied as well to students of any age.

Once we have rejected the dry, irrelevant, "objective" science teaching prevalent in schools today, where do we turn? Many "free school" alternatives would be content to make science "fun" by turning science into field trips and building clever gizmos (the Mr. Wizard approach). This approach helps to loosen up the sterility of science, but doesn't begin to explain its social and political implications. The relevance of science teaching lies in the world outside of the classroom.

The articles included are not only descriptions of courses given but also include the dynamics of the student-teacher relationship, for method as well as content is in need of revision.

As if to emphasize the non-objectivity of university science, we have an article on the JASON project, in which our universities' "finest" do their duty to their country by designing anti-personnel flechettes.

Now federal employees are joining students in demanding that the institutions of which they are a part show some response to moral demands made upon them as can be seen in the NIH/NIMH Vietnam Committee Moratorium Report.

Also in this issue, the SESPA spirit spreads worldwide; included is correspondence from Ireland, Hanoi, the Philippines, Paris and occupied Viet Nam.

A Word About the Collective: The two survivors of the original seven collective members are not science teachers by any means. One of us is a secretary in a university science department, and the other is a computer programmer. But we proceeded undaunted to put out this issue, with a combination of ingorance and dedication. Our ignorance has since decreased.

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Pirated scraps of Alphabet, here and there

in memoriam
COLLEEN MEIER

August 3 at age 26

A founder of *Science for the People,* part of the Helen Keller Collective, veteran of many actions for peace and against the misuse of science, biochemist and graduate student, a woman of generous spirit victimized by a competitive and insensate system. We pledge to you Colleen, not only to continue the struggle against this degrading system but also to learn from our collective failure how to be better human beings to one another.

LETTERS

Dear Roger,

I received three issues of your magazine. I would be interested in contributing articles for publication. Is there any particular subject matter that your magazine prefers? Hopefully, I would like to submit an essay on the prison dilemma in hopes of promoting change. Do you have any suggestions as to how I could relate such an article to the general message of your publication? If you send me some suggestions for a proposed article, I shall begin composing it immediately.

There are no official regulations governing the mail, I mail out my letters sealed. Incoming letters are opened and checked for contraband. Sometimes they are read, but they aren't supposed to commit such an act. As long as the contents of your letter aren't obscene, advocate the commission of a felony, or otherwise violate federal postal regulations, there should be no problems. If there are, I can always file a lawsuite, which is something the officials want to avoid.

Thanks for the issues of your magazine.

Fraternally,
L.M.
Oregon State Correctional Institution

Statement of Ly Van Sau, Spokesman for the Provisional Revolutionary Government Delegation to the Paris conference on Vietnam:

All Nixon's words about a "Generation of Peace" are mere words. The present situation is that Nixon has engaged in a dangerous new escalation of the war which is openly aimed at the people. It is not possible that a blockade will have an effect on a battlefield two thousand kms to the south. The purpose of this escalation is to make the people suffer, to intimidate them. Such a policy is one of genocide.

The most dangerous aspect of Nixon's current policy is that he plays with the string of patriotism, with the string of national chauvinism. He will not be the first President to lose a war. He will not be the first to abdicate the international role of the United States, the role of international *gendarme.*

Nixon is using slander to justify his criminal acts. It is not true that we are seeking to impose a "communist" regime on South Vietnam. What we want is an *independent* South Vietnam. If Nixon really wants to "stop Communism." why doesn't he fight it in the biggest countries? Nixon claims that *we* sabotaged the Paris conference. This is not true. We are here to negotiate.

The reaction of Nixon is caused by the defeat of the Saigon army. Why has the Saigon army been defeated? It has been defeated not because it has been outnumbered, nor because it lacks modern weapons, air support or naval support. It has been defeated because it is impossible to make a people fight against its own kith and kin.

The genocidal bombing of Hanoi and Haiphong is just another way to prolong the war. It will not save "Vietnamization" from defeat. Its defeat is evident. "Vietnamization" is just a word in the Pentagon. "Vietnamization" will not be saved by mining NINE ports on the coast of North Vietnam nor by the heavy bombing of land-communication routes.

Nixon's whole rationale is that *might makes right.* He must destroy a country that he cannot conquer. Nixon is acting like a gangster: he is violating all international laws and all international conventions. Yet Nixon has called the Vietnamese people "outlaws." *If to fight for justice is to be an* outlaw *then millions of people around the world are asking for such a glorious title.*

While attacking the Vietnamese people, Nixon is attacking the people of the U.S. For our American friends, the responsibility is now very great. *All these crimes are being committed in your name, in the name of* democracy, *in the name of* freedom. The situation is now very serious, but we want to tell you that no matter how high the escalation of the war, the Vietnamese people will never cease fighting. We will never be defeated.

We hope that every one of you will do the best your conscience will allow. The Vietnamese people are not struggling for themselves alone but for *you* also. The more difficult your condition in America, the more glorious will be your struggle for justice and freedom. Your task is now very heavy. We think that sometimes you have a

feeling of hopelessness and incapacity in the face of the tremendous crimes your government is committing in your name. We fully understand your position in your own country. When someone gives us a brick of gold, it is not more precious to us than a few grains. For us, the quality is important, not the quantity. Gold is gold, whether a brick or a few grains. Your friendship is gold to us, we cherish your support.

Paris
9 May 1972

Dear Friends,

I have just come across a copy of *Science for the People* for this month, and I feel that we should correspond with you. Your magazine's great, and it's good to know there are a lot of scientists and engineers in the heartland of imperialism who object to imperialist exploitation and aggression against Third World peoples and countries.

We in the Philippines have the *Samahan ng mga Makabayang Siyentipiko* (Organization of Patriotic Scientists), whose members are scientists, engineers, technical workers, science teachers and students. We are well aware that the problems of Philippine science are inseparably bound up with the problems of Philippine society, and that these are traceable to the ruthless exploitation of our people by U.S. imperialism and its local allies. We have thus taken a firm political stand, that of resolutely opposing the continued domination of our country by the enemies of the people. In this struggle we are united with a broad movement of workers, peasants, intellectuals and other patriotic elements fighting for national independence and genuine democracy.

We recognize that the struggle against U.S. imperialism is not merely the struggle of the Filipino people; it is also that of the peoples of many countries of the world, including the people of the United States. We thus unite with militant movements in all countries oppressed by U.S. imperialism, and we unite with SESPA.

The task of making science serve the people is one of making it serve the revolutionary struggles of the people; only with the liberation of the people from imperialist and feudal fetters can science be completely put in the service of the people. This is why our movement is mainly a political movement, aimed at destroying the old society and establishing in its place a new society that shall guarantee the full development of science and technology and making these serve the people's needs.

We hope to continue communication with you. Please send us further issues of your magazine and other literature. We also intend to come out with a journal soon, and we may be able to exchange information later. We would welcome your suggestions on how we could improve mutual relations.

Also, our organization and the Philippine revolutionary movement welcomes any help that could be extended to us. The struggle shall be a long and arduous one, but the Filipino people shall carry it staunchly through to the end. With the support of the world's peoples, we shall surely triumph!

For the struggle,
Ernesto Guerrero

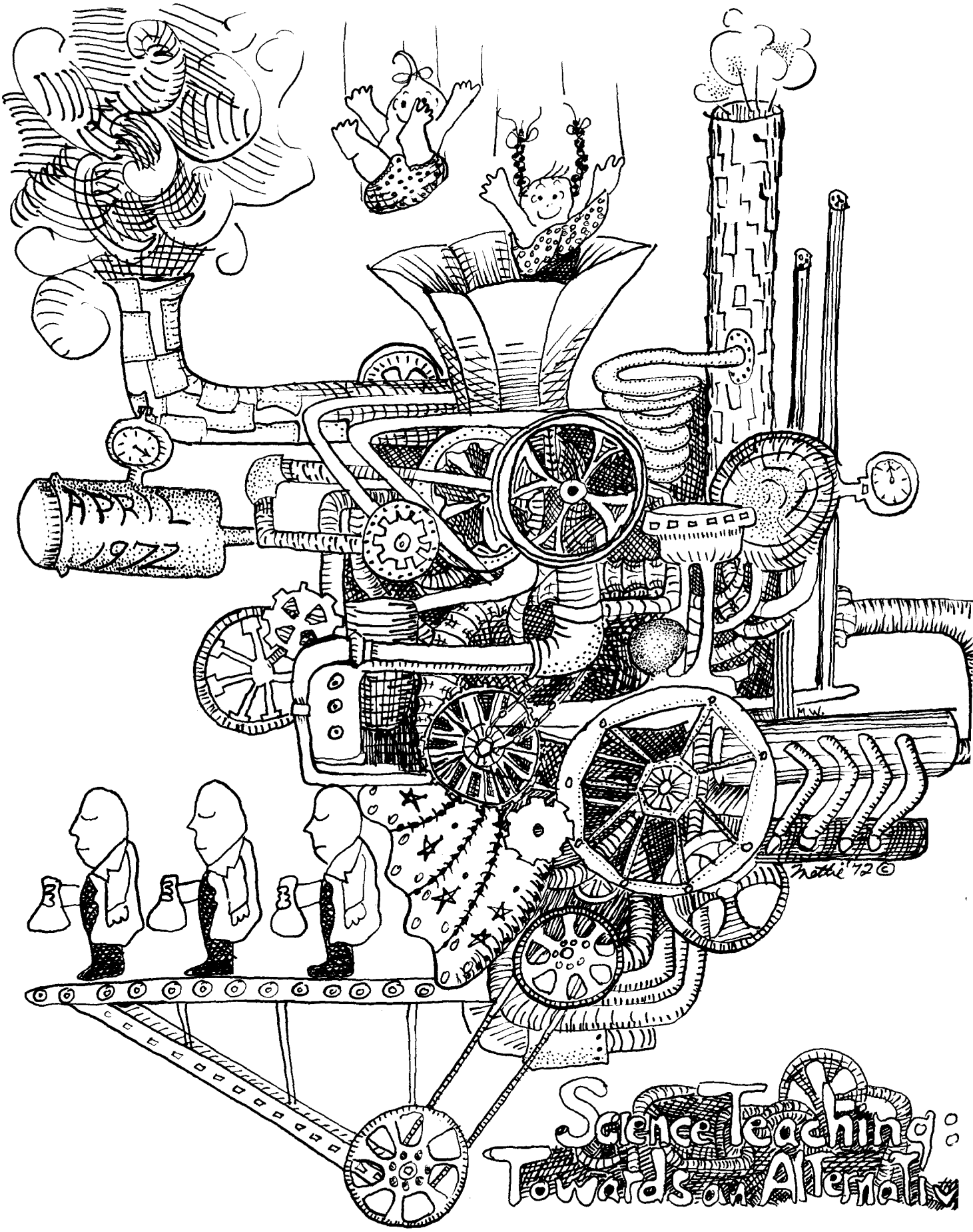
Dear friends,

On behalf of the Committee we thank you very much for the papers you sent us last year.

We highly appreciate your informative paper which is very useful for us. It has had very good articles on the Vietnam war, thus helping the American people understand the situation in Indochina and laying bare the reactionary, deceptive nature of the U.S. government's war policy.

We hope that in 1972 we shall receive your paper on a more regular basis. With best wishes and warm greetings,

Yours sincerely,
Tran Trong Quat, Secretary
Hanoi
Vietnam Committee For Solidarity With The American People


APRIL
'72
Science Teaching:
Towards an Alternative

We begin our special issue on science teaching with excerpts from the pamphlet Science Teaching: Towards an Alternative. *This general critique of science teaching was distributed at the April meeting of the National Science Teachers Association in New York. The activities of the SESPA Science Teaching Group at the meeting are described in the next article (*Up Against the NSTA, *p. 11). The eight-page pamphlet with the cover illustrated on the opposite page (by Mettie) is available from SESPA at 15 cents/copy or less for quantity orders.*

In the last few years many of us have begun to question various aspects of our jobs as teachers. In part this has been due to an awakening consciousness among all teachers about the authoritarian nature of schools and the socializing function they perform. It has been due also to the broad recognition now that continued growth of science and technology may be at best a mixed blessing in our present society. And it has been due also to our difficulty to motivate students and interest them in the science we teach. Of course, all these problems are related to one another in the end, and we have been trying to uncover the basic thread tying them together, and in so doing to find alternatives that will make our teaching more rewarding.

What kind of students leave our classrooms? Are they critical, free-thinking individuals who have learned to respect and understand one another and to work together and act for their common good? Or are they mute, compliant youngsters who have learned how to respect authority and to compete with each other for the limited positions they are being schooled to fill? Granted these are stereotypes, but is it not the nature of the schools and of the curriculum to produce the latter, and does it not require the exceptional teacher, working against the educational system, to produce the former? Our experience, our frustrations, leave little doubt in our minds.

The reason lies simply in the fact that an educational system reflects the purposes of the society it serves. In America we have a highly competitive society built around certain myths of freedom, choice, democracy, and justice in which most people because of the nature of the social and economic system live, in fact, in a state of financial insecurity and political impotence. The schools are meant to maintain that system. They generate and reinforce the popular belief that poverty and alienation are the result of people's own stupidity—rather than products of this society's social and economic structures. But that's not the worst of it. The schools perpetuate the social class, race and sex role divisions in American society. Through IQ, aptitude and personality testing, through a multitude of teaching mechanisms and many other discriminatory means, students are ticked off, one against the other, according to the system's definition of ability and achievement. The school's occupational channelling thus fosters competition among youngsters for positions in what many people now recognize as an irrational, hierarchical, and largely oppressive occupational structure. And of course, in providing these functions, it is not the role of the schools to shatter the Great American Dream with nightmares of genocide, poverty, racism, sexism, political repression, and other forms of institutional violence and injustice.

To make these rather general statements more specific, suppose we look at science education *per se.* How are the materials, methods, and curricula geared toward perpetuating the values and structure of our present society? Consider first the training of the scientist. In the classroom and laboratory the myth of an apolitical, benevolent science prevails. Graduate school, and often undergraduate education, involves a near total submersion of the student in technical material with little if any historical or philosophical perspective. Research productivity is the measure of worth as the student acquires skill in a specialized field. Technical questions are isolated from their social and economic context (e.g., the use of science) except for perhaps consideration of the prestige and financial status of the researcher. Thus the end product of this training is a narrow specialist—one taught to perform scientific miracles without considering their political implications—a reliable tool of the power structure.

Another aspect of this training is an ingrained sense of elitism. Courses are designed to select and seperate out potential scientists from their fellow students. Those who succeed are led to view themselves as members of an elite intellectual class. They take patronizing and condescending views of other people's opinions and aspirations, an attitude which reveals an underlying commitment to undemocratic structures. The elitism emerges for example when scientists attribute social problems to incompetence and irrationality —with the implication that a few intelligent people who really understand technology could solve all the problems (technocracy).

The training just described is, of course, only the final stage of a very long educational process begun in grade school. Not surprisingly, the early educational experience is instrumental in developing those values and attitudes which become important later on. We find that elementary and high school science teaching strongly reflect the character and needs of the advanced training programs. This is not surprising since part of their function is to recruit and prepare individuals for scientific careers.

Note for example the large number of curriculum reforms and new programs which have been generated in the U.S. since Sputnik. This large-scale curriculum development was funded as part of a broad program of support of science through agencies such as NSF, NASA, NIH,

and the large foundations, and was closely coordinated with increased levels of support by the Pentagon. These programs were designed to produce the technical manpower necessary for the development of an ever more sophisticated war machine.

But the effect of such programs has been to profoundly influence how science is taught in the schools. The curricula are geared to preparing students for professional study. They emphasized basic theory and mathematics to the near exclusion of practical science, that is, the understanding of how everyday things work. For example the PSSC physics curriculum was designed for a narrow segment of high school students for the purpose of getting them to think like scientists and thus instill in them the values of working physicists. It was designed largely at MIT by a group of physicists with long experience in designing nuclear weaponry, whose familiarity with science education was almost exclusively in training professional research scientists.

This emphasis of science curricula on "pure science" (removed from everyday experience) as opposed to practical science constitutes in effect a rigid tracking system in schools. The division between "academic" students who take chemistry in preparation for college, and those who take shop instead, is complete. The chemistry student does not learn how to harden a steel tool, and the shop student does not learn about crystal structure. In ways like this, the framework for extreme division of labor and perpetuation of the social class structure is built into schools. One result is that the future scientist is denied freedom as well as the mechanic. She is dependent on the existence of a class of workers to perform such tasks for her, and she learns quite early in school that this is the way things should be.

Of course, the number of women who become scientists is very small, as is the number of blacks, chicanos, puertorriquenos, indians, and other oppressed peoples. Aside form the obvious form of discrimination which places these minority children in schools that afford every impediment to learning, there are also the additional biases on the part of teachers themselves. Blacks, puertorriquenos, chicanos, and indians. for example, are often assumed not to have the intelligence or industry to become scientists; women are supposed to be too emotional for the rational processes of science. All these myths become self-fulfilling prophesies. These youngsters are not encouraged or helped to become scientists and so they don't.

The prejudice against the children of the oppressed is revealed when teachers consider the student who performs well to be an anomaly—someone who is exceptional and unlike the others. Another form of prejudice is that against the use of non-standard English or cultural behavior patterns that are incompatible with the norms that the school system is geared to establish. Thus, although a child may have ability, teachers may discount it because they evaluate the child's overt behavior as unsuited to an up and coming professional.

For women the discrimination begins with the opinions of teachers and counsellors that some vocations are "unfeminine". Girls are thus channelled into secretarial or domestic skills or into the liberal arts, while the mechanical world is left to men. In this way most women grow up to confront an increasingly mechanized world with no real understanding of how machines work, the result being a helplessness which allows them to be dependent on and dominated by men.

For students who don't pursue scientific studies, the curriculum is structured in such a way as to leave them feeling mystified, frustrated, and helpless against the enormous power of technology and those who control it. In many of the materials available there is a "hidden curriculum" which conveys the social myths that perpetuate the control of people through technology. For example, in "educational" films provided by oil companies, the telephone company, or NASA, scientists are portrayed as infallible experts. The message, though never spoken openly, is clear: the corporations and the military, through the enormous power of technology, are omnipotent. You are utterly dependent upon their benevolence. Scientists are high priests who work in closed and forbidden sanctuaries such as government and industrial laboratories. Their speech is ritualized, devoid of humor and meant to impress people with the awesome nature of their projects, such as sending a man to the moon. This is an old ritual that has been performed since at least the time of the pyramids. In all societies in which power has been concentrated in the hands of a very few, the rulers have found it useful to display their power through a high priesthood of "experts" who maintain their privileged position because they intimidate people with mystifying rites. And we are right to be frightened, because in this case the holy objects may be capable of destroying life on earth.

SOCIAL ASPECTS OF SCIENCE

One characteristic of most science curricula is their limitation to purely technical or descriptive material. Contrast this to most of science which is characterized by its important social ramifications. We are living in an age when the atomic bomb is already taken for granted, and science now raises the possibilities of genetic engineering, behavior control technology, complete automation of work, and universal tagging and manipulation of people. Yet these problems and the whole question of the use of science in our society are rarely broached as part of the standard science education. For people to have a real understanding of science and how it affects their lives, they must view it in its social context.

Over the last few years, in light of the Indochina war, the space program, and the emergence of environmental pollution problems, those who spoke of "pure" science have come to recognize that all science is tied in one way or another to applications. We now realize that here in America science and technology are developed to serve the profit and stability needs of corporate enterprise. Each year, for example, billions of dollars of government and industrial funding are spent on research and development. Research and development for what? To develop techno-

logy for health, housing, and transportation? On the contrary, this work is directed toward the development of more sophisticated weapons and counterinsurgency technology (to protect corporate economic interests abroad) and towards automation, information handling technology, and technologically-induced obsolescence (to maintain the viability of the economic system at home). The use of this technology results in death and destruction, in the waste of natural and human resources, in the fouling of the environment, and in the increased manipulation of society.

Control over science ultimately rests in the hands of a powerful ruling elite which directs American corporations, and in a government which functions in its behalf. Science and technology are used as tools for extending the present social and economic system: they have served to increase the wealth and power of the few at the expense of the many. In this context science can never be considered politically neutral.

The number of examples of how science has been used directly against people is limitless. In Southeast Asia infrared devices, computer monitoring systems, anti-personnel weapons, and biochemical warfare are used to crush every popular liberation movement. In the United States, a whole new catalogue of surveillance devices, riot control weapons, instant identification systems, data banks and other counterinsurgency technology are being used or are under development to suppress "dissidents." who most often are people like us all. While these examples are perhaps obvious, we are beginning to realize the more subtle ways in which science is used to rationalize the social order. Take for example the use of social science to justify in "scientific" terms the oppression engendered by the class structure of our society—"scientists" like Herrnstein claiming that social standing is based on genetic differences and Jensen asserting that blacks are inherently inferior. These are rather grotesque instances of the generally more pervasive use of modern social science to "explain" social injustice.

Faced with the political character of science, the least we can do as science teachers is to help clarify these social relationships. To accomplish this task requires not only that we make available to students information on how science is used, but that we also foster and help students develop what critical attitude which characterizes real science. We must help to expose the scientific and human irrationality of a system which reduces people to objects, which consumes their human and natural resources in fits of ecocidal insanity, and which pits people against one another when all could prosper.

TOWARDS AN ALTERNATIVE

What we realized finally is that as science teachers we are caught in a double bind: not only are we part of an educational system which functions to socialize people into the society, but in addition, we are part of the scientific and technological complex which serves to maintain the existing distribution of economic and political power. This situation makes it difficult to pose alternatives to our present teaching practice. On the broadest level, if educational and scientific institutions did not serve these purposes, they would not be supported. In the same fashion, if we as teachers don't serve such purposes, we too would not be supported! Or to put it differently, we are highly constrained in our schools by the material we must teach (often packaged curricula) and the format in which we must teach it. How much liberty do we have, for instance, to not give tests, to not award grades, to not teach the required curriculum? All these structural features are part of what education is all about—especially in large schools or school systems with a sizeable bureaucracy. The fact of the matter is that we teachers have relatively little freedom to do what we and our students might decide is most desirable. After all, we do not control the appropriation of educational resources.

We are left with the frustration and exasperation of unwittingly or unwantingly contributing to the maintenance of authoritarian structures, social class divisions, elitism, mystification, powerlessness, and alienation of people from science. But we know that science and technology could provide the tools for people's liberation. We can envision a society in which science teaching would help free people from want and help provide the know-how which would enable people to reach the fullest of their human potential. But that is a very different society from the one in which we live. It is a society that won't just happen. We must work to make it happen.

Our role as science teachers in that struggle for change has many facets. First we can help people master the technological world around us. To a large extent people's feelings of powerlessness stem from the fact that they don't know how to do things for themselves. Their ignorance forces them to rely upon others, upon the experts who know. But people can learn how to eat good foods and how to take care of their bodies so they remain healthy and don't rely upon doctors. Women can learn to do their own pregnancy testing. Students can learn the facts about drugs. People can learn how their automobiles and refrigerators work so they don't rely upon repairmen. The importance of self-reliance has been brought home to us by the legendary resourcefulness and ingenuity of the Vietnamese people in the fact of American aggression. Their strength is a measure of their confidence in themselves.

Second, as science teachers we can make it our practice always to raise amongst our students the social aspects of scientific studies. How empty, for example, is the discussion of ecology without discussing the politics and economics of consumption and waste? How can we mention transistors and computers without discussing the national data bank and the automated battlefield? What is the meaning of cell biology and genetics without talking about the health care delivery system, ethnic weapons, genetic manipulation and sickle cell anemia? Of what significance is the subject of energy without a discussion of electrical power demands, pollution and radioactive waste disposal? How can the study of human anatomy ignore the questions

of contraception, abortion, and the discrimination in many forms against women? How can mechanics and machines be considered independently of automation and the alienation of people in advanced industrial society? How can chemistry be taught without reference to the activities of oil companies in the third world, the marketing practices of the pharmaceutical drug industry, and the variety of chemical additives appearing in our foods?

Third, we can seek to expose the hidden curricula in our methods and to uncover the ideological and political premises of the materials we have used in our teaching. Students can be tremendously helpful in cutting through ideological bullshit. But in addition to such critiques, which increase our understanding of our role as teacher, it is important to gather and prepare new materials to use as a substitute for those in present use. There is now a substantial alternative collection of written materials and films dealing with education and problems of technology which science teachers will find useful. (*See the bibliography which is interspersed throughout the teaching section.)*

The alternative, then, in science teaching lies, for the present in our practice–in how we teach, in what we teach, in how we relate to our students, our fellow teachers, and to everyone else, of course, Let there be no illusion: fundamentally changing the way science is taught in our schools and used in our society is only possible as part of a fundamental change in its political and economic structures. This won't occur without a struggle. But as teachers, we can be exemplary in our practice, in our critical attitudes, in our democratic spirit, and in encouraging others to their fullest abilities. We can work with students and scientists as part of a national and local organizing effort to share materials and work together, to make science and the schools serve the people.

CURRENT PROJECTS

This past year we in the SESPA Science Teaching Group have initiated several projects with the help of contributing to the effort to develop real alternative in science education. We will briefly describe these projects here in this pamphlet to give you an idea of their flavor, but more information is readily available.

Two of the teachers in our group have been using the recently developed hip biology curriculum Ideas and Investigations in Science (IIS). In the last several months we have been analyzing this curriculum, its effectiveness as a teaching tool and the social and political messages conveyed by it. Despite many new and positive features in IIS, this curriculum still fosters the same cultural values and ideology found in older teaching materials. The scientist is presented as the usual stereotyped infallible expert. Social issues are introduced in the curriculum, but usually with a very heavy bias toward the values of the dominant class. The usual sexism which permeates our present educational system is also present here. Finally the curriculum was designed for slow learners and the unmotivated, it thus serves as another tool to facilitate the tracking of students. We are seeking ways to use the positive features of the curriculum in conjunction with our own resources and questions to confront problems we have raised earlier in this pamphlet.

Along much the same line, several teachers in our group have been analyzing the Project Physics course material. We have selected this particular curriculum because it, more than any other, attempts to deal with social and cultural aspects of physics. The emphasis, however, seems to be that the most important cultural phenomena associated with science are the lives and work of the great scientists, and their interaction with literary, artistic, and philosophical currents. This emphasis unfortunately stresses the elite intellectual traditions of science rather than its important social and productive functions in western society. To date most of our work has been done on analyzing the assembling alternate materials for Unit 3: "The Triumph of Mechanics." We hope to eventually cover all the units.

One exciting project has centered around the controversy over the Herrnstein IQ article which appeared this fall in *Atlantic* magazine. Teachers in our group have asked students to read this article and have then video-taped the classroom discussion. These tapes indicate that students can often see through the mask of science and get to the heart of what is really being said. In this case Herrnstein's racism was clearly exposed. But the tapes also reveal some of the attitudes and prejudices of the students with respect to science and scientists. We hope people will take the opportunity to see these tapes.

Resource material other than the textbooks currently in use is essential to teach the social and political implications of science. Such alternative teaching materials are presently available in the form of pamphlets such as *The Earth Belongs to the People*, which analyzes the ecological problem in a socio-economic context, magazines, audio-visual aides, and paperback books. Although a list has been gathered for this issue, we still need your comments and additions to the material, and soon an annotated version may be compiled. We would appreciate your help in our search for alternative resources. Should you know of material you think would be helpful, please write to us. Another important, and as yet unused resource, is the "people resource." In order to demystify the scientist to the students, a list of people actively engaged in research who are willing to speak with students in the Boston area, or have them visit their labs, is being compiled. The task of gathering new information is large, but without the availability of new resources, the dogma of the past will only continue.

More detailed reports of the IIS and Project Physics curriculum studies are available through the Boston chapter office. We hope that people will continue to send ideas and materials here, so that we can eventually compile a more complete booklet on all aspects of radical science teaching. By working together and struggling together now we will form the bonds for the future.

–Boston SESPA Teaching Group

UP AGAINST THE NSTA

April 1972. New York City. The annual National Science Teachers Association convention. Science for the People was there again, our second organized action, this year as official participants in the program (see Science for the People, July 1971 vol. III No. 3, for a discussion of our actions at the 1971 convention in Washington, D.C.) We were better organized this year, with more people, many of whom had been working together now for a year, with a more appropriate selection of literature and materials, and with a clearer sense of who we were dealing with based on our previous experience. On the other hand, NSTA was also better prepared for us with the convention topic, ostensibly the relevance of science–"Alternative *To* Science or Alternative *In* Science?"–and with us as part of their program.

As a result of these and other factors our approach and impact were different in many ways from last year. Our shock value–the impact we had simply by virtue of being a "radical" group–was less. They knew us by now. But this also helped us to avoid being merely a spectacle, a side-show attracting only the curious and the bored. Those who came to us came to deal with substantive questions in a way that was less possible last year. Though we saw fewer people in our workshops and planning sessions, we were able to stimulate the formation of an SFP chapter among New York teachers and scientists.

Two major themes ran through all of our activities. First, we tried to communicate our analysis of the social and political implications of science teaching. We wanted to demonstrate that present science curricula and teaching materials are heavily weighted with a hidden curriculum which helps to prepetuate the cultural and political values of the class which dominates this society. Further, we wanted to discuss with teachers the need for integration of political and economic factors in science teaching. Second, we used all possible opportunities to illustrate the destructive nature of the usual authoritarian classroom structure which corresponds to the apparatus of oppression in this society, in general.

There were some immediate results of our efforts at the convention, and there were weaknesses and failures which we have tried to analyze collectively to avoid next year at NSTA and in other organizing. By presenting this article on our actions in SFP we hope to stimulate others to criticize and inform us also. It is important that there be more dialogue within the revolutionary movement and within the pages of SFP on how to increase the number of scientific workers participating in radical political activities. We hope the recap of our experiences will contribute to that dialogue.

GETTING READY

Last spring, following the NSTA convention, the Boston Science Teaching group held an area wide meeting to tell local teachers what had happened and to begin organizing continuing projects. The results was little more than a mailing list. Concurrently we arranged with NSTA officials to have three of our members on panels at this year's convention, to have a room for films and workshops throughout the convention, and to be listed in the program.

In the fall we tried again with a large meeting and fared better. Based on our mailing list and on word-of-mouth contacts we re-formed and broke up into task-oriented groups. It became obvious to us that to maintain people's involvement, theory had to be manifestly connected to practice. Teachers who are overburdened with extra duties, lesson preparation, and frustration with their jobs will simply not find the time for political activity unless it feeds back directly into their work. Not surprisingly, those groups which dealt with curriculum analysis and development–for example, IIS Biology and the Herrnstein IQ study groups–generated the most enthusiasm and the most concrete results.

However, we also became sensitive to the danger of becoming national producers of alternate curricula competing with but not confronting the established producers.

It therefore seems to us necessary to concentrate on encouraging teachers to see the need for analysing curricula and to give them the means to do their own critiques. Further that the most valuable work they can do is to pass this on to their students and to have them do the analysis. In this way we do not make the error of handing down our views to the students, but rather give to them the power and the motivation to arrive at their own conclusions.

In this context, we found both in the fall and at the convention, that conventional materials can often be more effective than radical ones in generating a radical critique; that is, to expose the racism, sexism, and exploitation manifest in "traditional" texts and films can be the best means of beginning a broad social and political analysis. A major effort to create new curricula could be enormously time-consuming and of questionable effectiveness. On the other hand, we can offer workshops on making these critiques and occasionally develop our own materials on particular issues.

In addition to the need to merge theory with practice, we grew to see the need to merge our political lives with our social and personal lives. Many of our meetings began over dinner and ended with wine or grass. Interspersed through our political discussions was talk of our jobs and our home lives. Many of us have become close friends and see each other often outside of scheduled meetings. We think these interpersonal connections enhance our political effectiveness as a group and will ensure our continuing work together. It has also helped us to see in practice that shit-work need not be alienating if the conditions under which it's done and the ends which it serves coincide with our collective needs.

In January, a sub-group formed to coordinate preparations for NSTA. We met weekly to draw up plans to attend specific sessions; to gather literature, films, and equipment; to rewrite our introductory pamphlet; and to develop tactics. We discussed guerilla theater, none of which was actually used, though we still think it offers interesting possibilities. Individuals were assigned responsibility for various sessions and reports were made on issues we hoped to raise and tactics we intended to use.

Ten forty-three,
In exactly TWO MINUTES
I'll ring the
FIRST BELL and
they'll all
stand still!

All, that is, except
your potential DEVIATE!
Your fledgling REBEL!
Your incipient BOAT-ROCKER!
They'll try to move all right!
THEY'LL have to
learn the HARD
way not to move!

So I'll SCREAM at 'em
and take their NAMES
and give them FIVE
DETENSIONS and EXTRA
HOMEWORK! Next time
they won't move
after the first
bell!

Because when they've
learned not to question
the FIRST BELL, they'll
learn not to question
their TEXTS! Their
TEACHERS! Their
COURSES!
EXAMINATIONS!

They'll grow up to accept
TAXES! URBAN
REDEVELOPMENT! POL—
LUTION! INFLATION!
NATIONAL DATA BANKS!
CORRUPTION! RACIAL
DISCRIMINATION! UNEM—
PLOYMENT! EMPLOYMENT!
SLAVERY! GENOCIDE!

Non-movement
after
the first
bell is
the
backbone
of Western
Civilization!

-Something Else-

Tasks at the convention, such as mimeographing leaflets, peopling literature tables, staffing our activities center, scrounging equipment, and so on were also assigned. And we tried to coordinate our preparations with groups at Stony Brook, Cornell, and NYC who planned to join us. To avoid the confusion and last-minute scrouging of the previous year, we determined to be well-prepared. It turned out that we weren't nearly as organized as we could have been, but more on that later.

SFP IN NYC

Finally on April 6th and 7th, we in Boston headed en masse to New York's plush Americana Hotel where we met some of our brothers and sisters from Ithaca, Stony Brook, and Washington who came also to be part of the SFP actions. We started out as a relatively diverse group, but in the course of our actions coalesced and grew together. And as we grew together so in turn did the actions. In fact the interactions of the SFP activities with the regular NSTA events had an exciting dynamic to it—our actions beginning calmly but slowly building to a climax after a couple of days. The most distinguishing feature over all of the SFP activities was their wide diversity (made possible by the number of our people) ranging from literature tables, to film workshops, to heavy rap sessions, to a strong presence at regular sessions, to outright disruptions, to well, you name it.

For example in the opening days of the meeting, we distributed close to 4,000 copies of our pamphlet *Science Teaching Towards an Alternative*, which many people found interesting and provocative as well as explaining what SFP and the Science Teaching Group are all about. Nearly 1,000 copies of smaller leaflets on the hidden curriculum in a high school biology (IIS) and physics (Project Physics) curriculum were also distributed. NSTA had "kindly" given us a suite to keep as a base for our activities. We had on display there a large collection of alternate literature (much of it for distribution); but we also had literature tables set up at various other locations in the two hotels. Despite the fact that the room turned out to be so far away from the central convention as to be almost unfindable, and despite the fact that our tables were occasionally hassled and shut down, we still managed to attract a lot of seriously interested people. In fact, we sold much more literature than anticipated, essentially selling out the woman's pamphlet, *Our Bodies, Ourselves*; a pamphlet on Heroin and Imperialism entitled *The Opium Trail*; and a radical ecology analysis, *The Earth Belongs to the People*. And in our suite which was also used for films, workshops, and rap sessions we showed over the course of the convention the NARMIC slide/tape on the electronic battlefield; a film version of *The Earth Belongs to the People; The Mystery of Life,* a really heavy CBS documentary on genetics; a film on the military-industrial complex; *The Opium Trail*; and a videotape of a classroom discussion on the Herrnstein IQ article. All of these films and the literature have political and economic analysis inextricably tied up in the discussion of the scientific or technical material usually taught in a "neutral" way in the science classroom.

While some of us took turns staffing the suite and tables, others went to raise political issues at sessions and lectures. It was this type of action which provoked the most controversy. At the first session on Friday morning, "Turning on the Educationally Uninvolved" by Harry Wong (designer of IIS Biology and proponent of the "Sesame Street approach" to curricula)—the Bob Hope of the teaching establishment—assured us that turning on uninvolved children is purely a problem of using the correct Madison Avenue techniques. Before he spoke we placed on the chairs copies of our IIS critique and a leaflet entitled *Turning Them On To What?* which people read as they came in, assuming them to be connected with the performance. Although our leaflet reached a lot of people, the very mild tone of our presence didn't stimulate much interest. We realized afterward that we should have been prepared to confront him more actively, possibly with guerrilla theater, but at least with verbal challenges from the floor.

In the afternoon one of our people gave a presentation on open education, and in the evening, we held an open house in our suite where we talked in small groups about our program and plans for the convention. By mid-evening, the open house became a planning session for the next day's activities. The Boston group went over its plans to attend specific sessions but there was some disagreement over the use of confrontation tactics, with the group failing to reach consensus. At this point the Science for the People contingent had swelled to thirty members from Boston, Stony Brook, Washington, Cornell, New York, and Detroit. One of the New York group was a media freak, and brought his videotape apparatus with him. He stayed with us for the whole convention, taping our discussions, actions and sessions and the response of people at the convention to our activities. He showed these tapes on a monitor at our literature table and in our suite, generating a good deal of interest and helping us to evaluate our performance. The presence of the camera at sessions also tended to act as a restraining force on our most vocal opposition.

Early Saturday morning the first of the confrontations occured. At a session sponsored by Union Carbide, two of us attempted to display placards questioning the company's war-related work. The placards were taken from us and we were forcibly ejected from the meeting. A subsequent argument with an NSTA official developed in which he petulantly demanded to know why we were acting this way when we had what we wanted (our own room off on the fifth floor); but the incident was dropped when we left the area. Meanwhile, we had run off over 4,500 leaflets announcing the SFP workshops on the NSTA photocopy machine when it burned out leaving us (and everyone else) with no further means to make up leaflets or notices.

In the afternoon tension between us and the NSTA increased through several other incidents. One of our literature tables was closed down at the Sheraton and a

disruption took place at a session on lasers. When several SFP people tried to raise questions about military uses of lasers and the politics of technology, they were shouted down and threatened with arrest.

Simultaneously, however, others were attending sessions on genetics, drugs, and community/school relations. At the last, one of our people was on the panel. Through a preliminary conference the panel agreed to give short talks and then to move to the floor for an open discussion which lasted three hours and moved from typical questions on schools to broad questions of the possibilities of change in a capitalist bureaucracy. In the other sessions, more muted approaches were used—questions were asked and pamphlets were distributed.

That evening we had another open meeting to evaluate the day's activities (events) and plan for Sunday. It was clear that the NSTA viewed problems in schools as failures of technique. Their interest was to arm teachers with an arsenal of gadgetry and props in order to circumvent potentially threatening losses of control and motivation of the students. It was by now becoming clearer to us that our task was to expose the bankruptcy of this approach and to persuade teachers to join us in opposing it and in developing alternative approaches. The principal organizing tools which we had were issues we brought into the convention and the structure of the convention itself. If we could establish our points with reference to the NSTA meeting, it remained only to connect the way the convention was run with what happens in the schools.

The question of the appropriate tactics was raised once again. There were those who felt that disruptions alienated potential allies, and there were others who felt that passive acceptance of the forms of the convention contradicted our basic position. It was suggested that some of us were more concerned with being correct than with being effective, and it became clearer that tactics were not independent of concrete situations. If, for example, we had tried to force a restructuring of the afternoon's school/community session (as we had planned), the three-hour discussion could not have taken place. On the other hand, in sessions where we had tried to cooperate and ask questions only in the assigned time, the issues were often ignored or dismissed as out of hand.

With Sunday morning came perhaps the most choatic confrontation with the NSTA leaders, one which illustrated the contradiction between NSTA rhetoric and NSTA practice. It occurred at the "open forum" of the NSTA Issues Committee, billed as an NSTA Listens session. Last year this session had been our most fruitful action and we were not to be disappointed this time either. Prior to the meeting we rearranged the chairs into a circle with the enthusiastic help of the NSTA members who had come early. But when Morris Lerner–president of NSTA–came in, he freaked out, ordered the chairs put back, suggested those without badges (only us) should leave, and ruled that only written issues could be discussed. Undaunted, we quickly wrote up resolutions on the war, tracking and sexism, and a demand for open-structure of all NSTA sessions.

But these were then swept under the rug by Lerner, who tried to concentrate on the resolutions he and his clique had prepared on federal subsidies for curriculum development and other non-controversial topics. Having decided that he alone was responsible for determining which issues were worth discussion, he ruled that resolutions on the war and tracking did not merit consideration. The many questions from the floor about the authoritarian structure of this "Open Forum"(!) were ruled out of order. However, the audience didn't permit him to get away with this. In fact it was one of the persons in our group who had been opposed to disruption the previous evening who stood up and most eloquently exposed the repression that Lerner was attempting to impose. This attempt to manipulate the meeting backfired as most of the audience rejected the closed nature of the open forum. The disruption of this meeting (and it was thoroughly disrupted) was particularly effective because the other side was forced to precipitate it, and the audience itself participated in it.

By coincidence SESPA was officially scheduled to hold a panel on curriculum alternatives at the hour when the issues meeting broke down and was adjourned. We invited everyone to attend and over a hundred people came, including not only sympathizers but also several who sought revenge by disrupting our meeting. They immediately asked who the chair was in order to focus their attack and in a brilliant tactical move one of our people proposed a rotating chair and called on one of our attackers first. Finding himself in temporary control of the meeting, his anger diffused and he initiated a discussion on democratizing meetings. As the meeting developed, we talked about racism, economics, power, the war–all the issues we had hoped to raise earlier. Where the disruption of the first meeting had raised questions, our follow-up meeting focused those questions on basic political answers.

The day's activity was rounded out by three more sessions which deserve mention before some final criticisms and observations. Sunday afternoon there was a second confrontation at the laser session (a series of three) as SFP people again raised questions of the political aspects of laser development and use. Several SFP people were ejected by hotel security guards. By contrast, a session on "Teaching the social implication of science in the classroom" was turned voluntarily into a discussion group. This panel which was billed as "science teachers talking about their classroom experiences," turned out to consist of three academics (!), including one SFP person. With the agreement of the chairman, two of the panelists limited their presentations to a few minutes and opened up the discussion to teachers in the audience. After this was over, teachers thanked us for saving what otherwise would have been a deadly session. And last, on Sunday evening Barry Commoner, speaking in tails at a $12 a plate dinner, talked to a General Session about the social and political implications of science teaching. He said that science can't be taught without politics and economics can't be taught without mentioning Vietnam. That was our line! He got a standing ovation, while the hotel

managers were outside threatening to shut down our literature table! Enough said!

AFTER-THOUGHTS

What did our presence at this year's NSTA convention achieve? Nearly all of us left New York with the feeling that we had made a significant impact on the teachers and on NSTA itself. In fact, raising the issue of open structure meeting has resulted in NSTA leadership indicating that the format of a good many of next year's session will be changed. However, perhaps the most important result of our actions there was the formation of a New York City Science for the People chapter which will deal with issues of science teaching. In addition to a few people from NYC who worked with us from the beginning, a much larger number had contact with us over the several days we were thre. Finally, on Sunday about ten people got together in our suite and decided to start a NYC group. Comprised of scientists, engineers, nurses and science teachers, they have had several meetings since the convention. In addition to NYC contacts, we also met a number of others who were interested in keeping in touch with us. One of the teachers works in Detroit and is already in contact with us in order to organize for next year's convention which will be held in that city.

We believe that the materials we brought with us contributed in an important way to raising consciousness among teachers. The surprisingly large sale of pamphlets with radical analyses described earlier should have enough effect in itself to have made the trip to NSTA worth it. Although, because of our location, we did not attract large numbers of people to our film-workshops, the few times we did have 30-40 people there, we engaged in valuable discussions following the films.

A number of teachers told us that is was a relief and pleasant surprise to get away from the rigidly organized speaker (panel) audience structure of essentially all the sessions at the convention to our open, free-wheeling and collectively directed workshops. In planning for NSTA, we had not considered this as a main issue to be brought out at the convention, but teachers there quickly made it clear to us that this was a major concern. What really appeared ironic was the widespread liberal discussion of open classroom structure in the schools which did not have any impact on the structure of the meeting itself.

The most serious questions about our success at the convention arise from a discussion of tactics. It is clear that we were not united on the more "extreme" examples of disruption. On the one hand our intervention in the laser session forced the speaker to confront the issues of the military uses of lasers. He eventually, without further prodding began to bring this out himself. The heat generated by our activities there significantly raised our visi-

(continued on page 26)

IIS: HIP TEACHING OF THE HIDDEN CURRICULUM

Originally prepared for and distributed at the NSTA activities in New York, the booklet criticizes the IIS (*Ideas and Investigations in Science,* Prentice Hall, 1971) curriculum. Although it deals with the "relevant" issues and has succeeded in capturing the interest of students, it exhibits a hidden curriculum which has not changed with the innovations in techniques and material. It holds up the astronauts as heroes and "militants" as people to be stood up to. It refers to "success" and "the establishment" in ways which set up the acceptable models for students to strive for. For the full critique, write to

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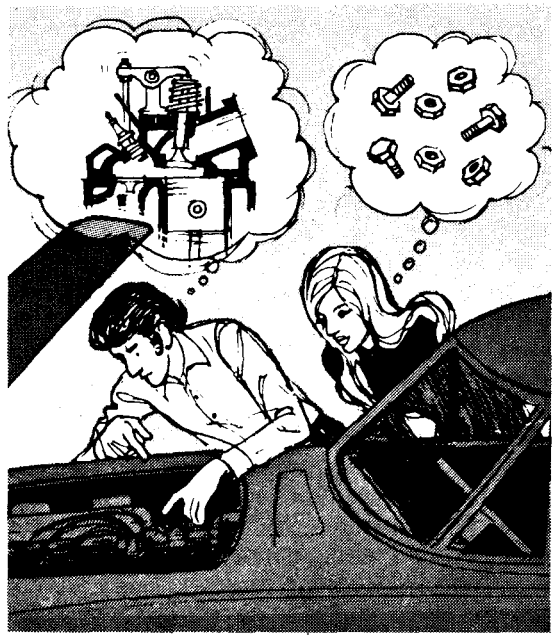
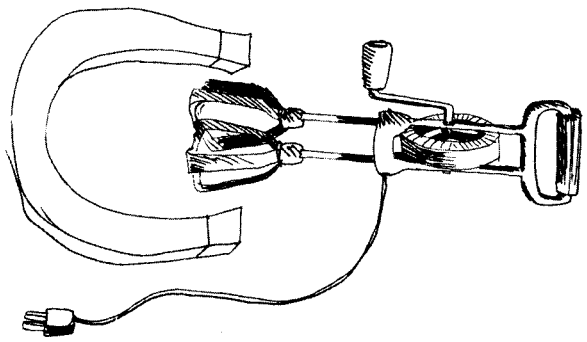


"If you know nothing about cars, you may think like the girl shown. On the other hand, if you know something about cars, you may think like the guy." *from the IIS text*



Objecting to Objectivity:

Good afternoon ladies and gentlemen–this is your pilot speaking. We are flying at an altitude of 35,000 feet and a speed of 700 miles an hour. I have two pieces of news to report, one good and one bad–the bad news is that we are lost, the good news is that we are making excellent time.

–Author unknown

During the second semester of the academic year 1971-1972, an opportunity to create a course dealing with the connections between biology and society arose at Boston University. We had been teaching general biology for a semester to freshmen students in the Division of General Education, a two-year program for first and second year students, where an interdisciplinary approach is supposed to be stressed. The program covers natural sciences (biology and physics), the humanities and the social sciences. As is the case in most academic institutions, the science courses have had difficulty in developing and maintaining student interest or even simply assuring their presence at lectures or smaller class meetings. No wonder. Teachers in general expect students to memorize facts and names while connections are not made between scientific knowledge and real life, and scientific work is made to appear as though happening in a vacuum, beyond and above the social and political conditions of the times. When the courses end, the ritual of exams cleanses the wounds and everyone goes home, relieved. The facts and names are quickly forgotten to make room for the next layer of "knowledge."

At the end of the first semester a proposal was made by a group of teachers: instead of giving another semester of general biology to the freshman class, why not offer areas or study which differed in content, so that students would have some choice in their scientific curriculum, and we could thereby pursue our own interests as well. Students manifesting their discontent with the straight biology course helped to create a receptive atmosphere. Nevertheless, when the proposal was accepted we were surprised. The two other full-time teachers gave courses on human genetics and behavior and ecology. We chose to present a program which we called biology and social issues. Students reacted strongly in favor of the second semester reform and very quickly we found ourselves overwhelmed with applications for our course. Here is the outline of the course we presented:

I. Introduction to Human Embryology and Genetics
   - A. Genetic engineering
     1. Cloning
     2. Somatic cell alteration
     3. Virus therapy
     4. Control of sex
   - B. Physical and social limitations and implications
     1. Human gene maps
     2. Polygenic inheritance
     3. Problems of prenatal diagnosis

II. Reproduction
   - A. Mechanism of hormone action
   - B. Human reproduction
     1. Role of the female sex hormones
     2. Role of the male sex hormones
     3. Pregnancy
   - C. Birth control, sterilization, and abortion
     1. History of contraception, abortion, and infantacide
     2. Theories of how the oral and intrauterine contraceptives work
     3. Current research
     4. Public policies and organizations
   - D. Population growth
     1. Growth curves
     2. Theories of Malthus and Marx
   - E. Social disease, a case study of venereal disease

III. Human Beings as Experimental Animals
   - A. Similarities with other laboratory animals
   - B. Differences
   - C. Ethics and responsibilities
     1. The drug industry
     2. Role of the FDA
     3. Genetic or ethnic weapons

IV. Biological Basis of Some Human Behavior
   - A. Biological theories of territoriality and aggression
   - B. The effect of certain drugs on behavior
   - C. Current theories of controlling behavior by chemical means

V. The Scientific Community
   - A. Methods of scientific communication
   - B. The politics of pure versus applied research
   - C. Who are scientists?
   - D. The future of science

A Course in Biology

We could only accept a third of the freshman class, since there were only two of us engaged in the program. We had 140 students to whom we lectured once each week and met with for small discussion sections (15 to 25 students per section) three hours each week. Another weekly lecture was offered to the entire freshman class by the whole staff as an effort to "tie all the study areas together." This second lecture was uniformly considered by our students to be a waste of time. From our point of view it represented the "price" we had to pay to get the reform accepted.

In the first semester we had covered material on the origin of life, structure and function of the nucleic acids and proteins, genes and heredity, mutation, the biological basis of sex, the cell, cell structure and function. We were therefore in good shape to assume a common core of knowledge and proceed from there.

Each week we lectured on one of the topics that we had announced and handed out articles that covered other aspects of the subject. We had recommended as background reading *The Biological Time Bomb* by Gordon Rattray Taylor and the New England Free Press pamphlet, *Women and Their Bodies.*

We deliberately chose articles that either had appeared in magazines for the general public or were written in a language that did not require special effort to understand. Also some of our articles expressed strong emotions and opinions like population (Dick Gregory's *My Answer to Genocide*) or birth control (*Off The Pill* by Judith Coburn). We found them incredibly effective in exposing the social implications of biological knowledge.

We would like now to illustrate the way we presented the course by describing how we dealt with several different topics.

I. *Control of sex.* We began by giving an idea of the ways in which it can be eventually achieved in humans and a description of the present status of the research. That naturally led into the question of what side effects this knowledge will have if spread freely in our society. We had to question the value or reasons for this kind of research, the need or lack of need for it, the idea of a society which regulates the number of people of a certain sex and the sex imbalances that would result, affecting the whole structure of society.

II. *Current advances in prenatal diagnosis.* We described the primary technique, amniocentesis (taking a sample of amniotic fluid). We then spoke about the cases in which parents might want to abort a fetus after getting information of a genetic disease affecting it or the cases in which social pressures might play a role in trying to affect or obtain a certain type of decision. We looked at genetic counselling and talked about the delicacy and importance of such activity.

III. *Cloning.* Watson's article *The Future of Asexual Reproduction* was an instance where people best grasped the implications of the new biology for the future of mankind, and the absolute necessity for everybody to be informed about what is happening in science today. Just how close are we today to making replicas of humans and test-tube babies? Who is going to decide who will be replicated and how many copies would be made?

As the feelings of helplessness and frustration built up in the fact of the implications of a technology out of control, a way to deal with many of the questions, within the system, was introduced through a discussion of Senate Resolution 75. This is a proposal to form a commission to hold public hearings on questions of biomedical advances and ethical guidelines. We talked about the people and organizations who opposed the resolution, as well as those who favored it. Students offered many excellent revisions, most of which were designed to expand the responsibility of the commission and its availability to the public.

IV. *Reproduction.* On the subject of reproduction and birth control, one of us (R.A.) got, quite frankly, carried away. We discussed the basic biology involved and then got into the ideology of birth control research (almost exclusively devoted to control of the female reproductive system), a clear example of how the values in society influence the direction in which research develops. We carefully discussed the pill and examined the role of the FDA, AMA and drug lobby in suppressing information about known side effects. Virtually every facet of abortion was also exposed. How does a human fetus develop? When is abortion safe, what methods are used and when? How does the system work in New York? Whose rights are involved and how? And many more questions.

V. *Population growth and control.* We approached this historically by reviewing the arguments of Malthus and Marx. An interesting parallel was offered when we examined today's controversy between Ehrlich and Commoner of population and pollution, who argue, respectively (broadly), for "zero population growth" and "zero economic growth." Technology's inability to forsee and deal with its own side effects, already in evidence from genetic engineering and contraception, was again obvious in the environmental crisis and forced us to ask if we really trusted the technology that brought us to this point to extricate us from it.

VI. *Behavior and aggression.* We discussed Lorentz's views on human aggression, Erich Fromm's theory and we presented the AFSC slide show on the electronic battlefield in Viet-Nam, a superb example of how corporations and war profit

ideology exploit the potential for destruction in the human species.

In dealing with behavior, we asked what determines our own behavior, from TV to institutions, the role of obedience in maintaining social structure (Stanley Milgram's experiments on obedience), drugs for children (see article *The Case of Ritalin*) and the revival of psychosurgery. At the same time, other events were developing that would expand our learning environment greatly. After a two-year moratorium Marine Corps recruiters were invited on campus and a peaceful protest was turned into a violent confrontation as the Boston Tactical Police Force was called in by the BU administration to smash the demonstration. They did exactly that, with clubs and attack dogs, and arrested 33 students. By the time we were dealing with human aggression in class, anti-war activities and political retaliation were in full swing. Law and order, and political and domestic violence were seen in context with the immediate events as we moved into war, genocide and VietNam.

For our last lecture we invited Science for the People to talk about their organization and what it tries to accomplish. They discussed the university, the kinds of curriculum that is offered in our society and whose interests scientists serve. As examples of alternative actions we spoke about the Medical Committee on Human Rights, Science for the People, the Free Health clinics and pregnancy and abortion counselling services.

STUDENT VIEWS OF THE COURSE

(If the following student comments seem too favorable, *i.e.*, we chose only the good ones, remember that they chose the course in preference to the other two.–T.S.)

The overwhelming praise students in our track have placed upon this last semester's course suggests that it was the most enjoyable if not the most educational thing DGE has done this year.

Its main virtue, I believe, is obvious. The subject matter was relevant to today. Somethings everyone could relate to and learn from. This, in turn, brought science down to earth, giving DGE's Bio. course more meaning to ordinary unscientific people. It was easily the first science course I've had that actually had some practical value.

I think if more outside speakers were brought in the course would have been more effective. The last "Science for the People" speakers were very good.

It's a crime that the administration is terminating the program. But I suppose that's only fitting for today's anti-educational school system.

have a good life Rita

* * * *

Trying to communicate with a naive, gullible, programmed, brainwashed, scared, confused, and frustrated freshman girl is no easy task to attempt, but I believe that Track C not only accomplished this, but also contributed positively to what can be termed "The Great Growth", which I experienced (and still am experiencing) this year. The greatest strengths of the track were the sincerity and honesty with which topics and students were dealt. Never did I feel any hesitation to question; nor did I feel that my questions or comments would be a "waste of class time". I say that inquiry was encouraged, a refreshing and necessary part of this course because the topics dealt with were, or have been, considered to be controversial. Each comment was valued, and those brought up in lecture clarified and enlarged the subject of discussion.

Articles and reading material were excellent, offering a wide variety of topics, beyond what was discussed in class or lecture. Most were well written and interesting, and the most beneficial to me was Women and Their Bodies: Our Bodies, Our Selves, *because it helped (is helping) me to break down the myth which has controlled my life from birth. This book provided me with just the right amount of biological technology about hormones and body functions so that I understand how the Pill works and the adverse effects that it can cause. One of the weaknesses, however, of this section of the course, was the concentration on women's problems, with little attention given to the difficulties of being a man. I would have liked to have known more about the sexuality of men, and gone more into the psychology of birth control for men (although maybe that's a little out of line of Biology and Social Issues, but we seemed to cover about anything that's interesting). The only other problem of the course was the time element, because it seems we weren't able to deal with drugs as treatment for mental illness; aversion therapy; nor neuro-surgery as much as I would have liked. However, at least we were made aware of these problems, which otherwise would have remained in the archives of society.*

The main benefit of the course for me was that it changed my outlook on science completely. I began with the image of Mendel and his peas, Madame Curie, and Albert Einstein, but instead have left with the idea that science possesses a great potential in helping the world out of the mess it's in, but also, through man's misuse of it, has contributed and speeded up ecological deterioration, and created more Frankensteins than the public is aware of. I also have removed it from the pedistal where it was an untarnished profession of dedicated workers, striving for man's benefit and placed it with all other ungodly employment where competition and economical gain prevail.

The foundation of Track C's strength is in its professors, Rita and Tom, who made an academic course into a relevant learning experience; in all honesty, *I can say, two of the most* human *and* best *instigators of knowledge around. Thank you.*

* * * *

The little blue handbook given to students at B.U. said the aims of DGE were to make the student better able to understand himself and the world in which he lives. This

course met those goals better than any of the courses I have taken. It opened my eyes to new areas, and confirmed some of my thoughts concerning some important social issues. However, nothing is perfect, and there were some aspects of the course which did bother me. Perhaps I am just a male chauvinist, but I thought that too much time was directed towards the study of women and their problems. It might have been more helpful to the students if they were made aware of how much time was to be alloted to covering each aspect of the course, because I sometimes felt that all we were going to cover was the problems of women and their bodies and I asked myself what the hell am I doing here. I felt much of the course was designed for women and not for men, but that proved interesting because it showed me some of the frustrations a woman must feel in a society designed for men.

Also, we dealt with some heavy problems, and the solutions were not readily available to me. This caused me to think the problems over quite a bit, and when I still couldn't find the answers I would become depressed. Isn't there some problem that science has solved that you could make us aware of to show us that something is being done. This would serve to break up the consistency of unsolved problems and help to brighten up our day, rather than have us walk out of class frustrated with our own helplessness of solving the world's problems. However, I've done enough complaining and now is the time to cover the virtues of your course.

My coming to B.U. was an experiment on my part to see if I was still capable of learning, or if the Marine Corps had succeeded in burning out my mind. Also I wanted to see if college had anything interesting to offer me, as I had discovered that high school, the service, and the small amount of employment that was available to me did not. Your course proved successful on both counts because it offered me something interesting and showed me I was still capable of learning.

It seems to me that the Administration (establishment). doesn't want you to teach this course because they are afraid of change, and don't want students to be exposed to these issues. Instead they want us to be exposed to the same crap they learned, so we can grow up to be like them. If they won't let you teach this course here, you ought to go someplace where they will let you teach it, because this is the type of course that students want and need. You keep fighting them in your way, and I'll keep fighting them in my way, and sooner or later we're bound to win.

STATEMENTS BY THE AUTHORS

It is a myth that scientists must be what no human can be—totally objective, free of prejudice, unfeeling. No human is capable of this objectivity. How could I admit to neutrality concerning life, death, starvation or illness? Should scientists be emotionless, like the 7 o'clock news; so stripped of feelings, so impartial that all horrors finally become acceptable as they parade before our senses in the numbing shrouds of objectivity? I will not deny my feelings, not when I find that the study of life itself is creating terrors for the living, not when I know that science has created the means to plunder our minds and steal our genes.

T.S.

For the last 10 years, I have been working as a research scientist. However, in the last couple of years, the questions of elitism in science, science to the service of the ruling class and the position of women in our society have made it very hard for me to keep my aloofness. Gradually I began to feel the need to expand my contacts and my consciousness. Thus my decision to switch to teaching science to undergraduate non-science majors. This course is an attempt to unite my knowledge with my political beliefs.

R.A.

TEACHING BIBLIOGRAPHY

Articles, Books, Laboratory Practices, Movies

A. ARTICLES

1. The Future of Asexual Reproduction, Watson, *Intellectual Digest,* Oct. 71
2. Reservations Concerning Gene Therapy, Fox and Littlefield, *Science,* 16 July 1971
3. From Hippocrates to Senate Resolution 75, Trotter, *Science News,* December 4, 1971
4. Ethnic Weapons, Larson, *Military Review,* Nov. 1970
5. Prenatal Diagnosis of Genetic Diseases, *Scientific American,*
6. Sickle Cell Anemia: An Interesting Pathology, Michaelson, *Ramparts,* October 1971
7. Off the Pill? Coburn, *Ramparts,* June 1970
8. Man and His Environment, Coale, *Science,* Vol. 170
9. Population Care and Control, Snow, *New Republic,* May 1, 1971
10. Population and Poverty, Hilton, *SSRS Review,* Sept. 1970
11. Overpopulated America, Davis, *New Republic,* January 10, 1971
12. My Answer to Genocide, Gregory, *Ebony,* October, 1971
13. Is Pregnancy Really Normal? Hern, *Perspectives (Family Planning),* January 1971
14. A Report on the Abortion Capital of the Country, Edmiston, *New York Sunday Times,* 1971
15. The Conquest of Syphilis, Horn, Chapter 9 of *Away With All Pests* (see books)
16. Experimental Pregnancy, Veatch, *Hastings Center Report, 1971 Institute for Society, Ethics and the Life Sciences*
17. The Myth of the Vaginal Orgasm, Koedt, New England Free Press pamphlet, 791 Tremont St., Boston
18. Psychology Constructs the Female, Weisstein, New England Free Press
19. Child-rearing and Women's Liberation, Wortis, Boston Area Child Care Action Group pamphlet, 12-14 Glenwood, Cambridge, Mass. 02139
20. On Killing Members of One's Own Species, Lorenz, *Bulletin of Atomic Scientists,* October 1970
21. The New American Militarism, Shoup, *Atlantic,* April 1969 1969
22. Science and Social Attitudes, Morison, *Science,* 11 July 1969

MBD...medica
or diagnosabl

What medical practitioner has not, at one time or another, been called upon to examine an impulsive, excitable hyperkinetic child? A child with difficulty in concentrating. Easily frustrated. Overly aggressive. A classroom rebel.

In the absence of any detectable organic pathology, the conduct of such children was, until a few short years ago, usually dismissed as "a phase," spunkiness, or evidence of youthful vitality. But it is now evident that in many of these children the hyperkinetic reaction syndrome exists as a distinct medical entity. This syndrome —now readily diagnosed through patient histories, neurologic signs, and psychometric testing—has been classified by an expert panel convened by the United States Department of Health, Education, and Welfare as Minimal Brain Dysfunction, or MBD.

23. Where Are Our Women in Science? Kundsin, *Harvard Medical Alumni Bulletin,* Winter, 1965
24. Autopsy on Science, Roszak, *New Scientist and Science Journal,* 11 March 1971
25. Education of a Scientific Innocent, Galston, *Yale Review,* 1971
26. Margaret Sanger and Voluntary Motherhood, Sabaroff, *Women, A Journal of Liberation,* Spring 1970
27. The Case of Ritalin: Drugs for Hyperactive Children, Charles, *New Republic,* October 23, 1971
28. Brain Researcher Jose Delgado Asks, "What Kind of Humans Would We Like to Construct?", Scarf, *New York Times Magazine,* November 15, 1970
29. The Erich Fromm Theory of Aggression, Fromm, *New York Times Magazine,* February 27, 1972

B. LABORATORIES

For laboratory practice, we taught students how to do pregnancy tests, sickle-cell anemia testing, and blood typing. The equipment may be ordered from:

1. Carolina Biological Supply Company
   Burlington, N.C. 27215
   (for blood typing kits, basic, $6.95, Rh, $13.95, Chromosome, $6.95.)
2. Organon, Inc.
   West Orange, N.J. 07052
   (for Pregnosticon Dri-Dot Pregnancy Tests–100 for $110.00)
3. Orthodiagnostics
   c/o J.C. Poinier
   Buckboard Road
   Duxbury, Mass. 02332
   (for Pregnancy Test "Gravindex," 200 for $187.00 and Sickel Cell Test "Sickledex," 400 for $190.00)

C. BOOKS

The following were consulted for the preparation of the course

1. *Away With All Pests,* by Joshua S. Horn, Monthly Review Press, New York, 1969–$2.45 (A British surgeon writes about his 14 years in medical practice in China)
2. *The Earth Belongs to the People,* by Guiseppi Slater *et al.,* Peoples Press, San Francisco, 1970–$.75 for paperback booklet (Discusses ecology and resources)
3. *From Now to Zero–Fertility, Contraception and Abortion in America,* by L. Alderidge Westoff and Charles F. Westoff. Little, Brown & Co., Boston
4. *Who Shall Live? Man's Control Over Birth and Death–* a report prepared for the American Friends Service Committee. Hill and Wang, New York–$1.75
5. *Microbes and Morals–the Strange Story of Venereal Disease,* by Theodor Rosebury, Viking Press, New York, $7.95
6. *Marx and Engels on the Population Bomb,* edited by Ronald L. Meek, The Ramparts Press–$1.95
7. *The Closing Circle,* Barry Commoner, Alfred A. Knopf, New York, 1971 (Nature, Man and Technology)
8. *Women and Their Bodies, Our Bodies Our Selves,* New land Free Press 1971, Boston Women's Health Collective–$.35

D. MOVIES

1. *Each Child Wanted,* 1-hour movie, about an unwanted pregnancy and abortion, from the Pregnancy Counselling Service, 5 Joy St., Boston. Contribution, $15
2. *The Earth Belongs to the People,* 15 minutes, about energy and resources, from Newsreel, a group of radical filmmakers

3. *Milgram's Experiment on Obedience,* 1-hour, from the Sociology Department of Harvard University, free
4. *Venereal Disease,* 20 minutes, Educational Films, Dept. SN, 331 N. Maple Drive, Beverly Hills, California, 90210, $25.00
5. *Pregnancy Testing in the '70's,* Pregnancy Counselling, see above, $10.00 contribution

R.A. & T.S.

RESOURCE BIBLIOGRAPHY

Although we have not had a chance to read all of the entries in this bibliography and hence to annotate them constructively, we offer them as possible sources for materials. If you have any comments or criticisms on any of them, please contact us so that we can let the rest of the readership know what will be most useful. Thanks to the Lawrence, Kansas SESPA for some material which we lifted from their 1972 bibliography.

I. RADICAL BIBLIOGRAPHIES

Union for Radical Political Economics
(URPE) Bibliography
2503 Student Activities Building
University of Michigan
Ann Arbor, Michigan 48104 ($5.00)

The Politics of Health Care Bibliography
Boston MCHR
c/o Ken Rosenberg
48 Aldie
Allston, Massachusetts ($ .30)

Literature on the American Working Class
Bay Area Radical Education Project
491 Guerrero Street
San Francisco, California 94110

II. CATALOGUES OF RESOURCES

People's Yellow Pages
Vocations for Social Change
Cambridge, Massachusetts 02139

Source Catalog
Swallow Press, Inc.
1139 S. Wabash Avenue
Chicago, Illinois 60605

III. RADICAL DISTRIBUTORS (ask for listings)

New England Free Press
791 Tremont Street
Boston, Massachusetts 02118

People's Press
968 Valencia Street
San Francisco, California 94110

Bay Area Radical Education Project
P.O. Box 40159
San Francisco, California 94140

GRADING

to each

to her/his

This past year I have been part of a nine-member staff teaching a one year (three quarter) sequence in social science at the University of Chicago. About two hundred students registered for the course. They were divided up into sections of 25 each. The sections met for discussion three hours per week and all 200 attended a one hour lecture weekly. The overwhelming majority of the students were college freshmen. They were required to register for one of three year-long sequences in the social sciences. Our's covered psychology, sociology, and anthropology. All of the readings were primary source material.

Since individual instructors had complete autonomy within their sections, I announced at the beginning of the course that no work would be required in my section. I gave no examinations, but strongly encouraged students to write papers (on a voluntary basis) whenever they felt some enthusiasm for a topic in the readings. During the first quarter, I received at least one paper from almost all of the students. There were no collective papers, even though I had suggested this to them. The fact that reading work, class attendance, and paper assignments were all voluntary enhanced the quality of discussion, removed some of the distance between teacher and student, and in no discernable way reduced the amount of material learned in comparison with the sections of other instructors.

I spent the next to last class period of the quarter discussing with the students how the quarterly grades should be determined. I told them at the beginning of class that I didn't like being put in the position of having to evaluate them, but that the institution required me to attach each of them to a letter by the end of the quarter. I said that we should make a collective decision about how to handle this and that I would abide by whatever decision was made.

according needs ?

What followed immediately was a series of more or less standard comments from the students on what was wrong with the grading system. Then a number of alternatives were suggested, all of which were strenuously objected to by at least some of the students, such as grading on the basis of the voluntary papers, participation in class discussion, and so forth. Someone suggested giving all P's, but that was impossible because the registrar would not accept them for a first year course.

As can be expected, the next suggestion was for all A's. At this point I intervened and argued that although I would do this if they wished it, I felt it was a cop-out on their part. I said first of all that they were asking for change to be imposed from above and not taking any responsibility for it themselves, and secondly that bringing about change in this fashion would jeopardize my position in the university.

I then suggested to them that in order to figure out how to respond to grades they first should analyze the function of grading in the institution, and that the readings they had done in Marx would be particularly useful in doing this. It didn't take the students very long to spontaneously (and excitedly) come up with a property model for understanding grading, with me as middle management, themselves as workers laboring in a piecework fashion for a share of limited wealth (in the form of grades) that I was distributing, and the grades themselves as a very real form of wealth that determined their ability to survive now in the institution and later in the society. They decided that the product they were producing was their own socialization and training into social and economic roles that the University of Chicago specializes in, namely, university educators and basic scientists. I think they were right in not emphasizing the use of grades for in-school tracking, since the latter does not play as significant a role in elite universities as it does in the community

IV. RESEARCH ORGANIZATIONS (ask for lists)

Radical Research Center
Bay Service 2500
Postal Station E
Toronto, Ontario, Canada

Student Research Facility
1132 The Alameda
Berkeley, California 94707

SESPA/Science for the People
9 Walden Street
Jamaica Plain, Massachusetts 02130
Available: 1) Counter-Science: A Strategy of Opposition - *basically a re-issue of the article that appeared in* Liberation *of March 1972 and in the pamphlet* Censored; *2)* Science Teaching: An Alternative *(reprinted in this issue); 3)* IIS: Hip Teaching of the Hidden Curriculum; *4)* Science for the People *magazines.*

American Friends Service Committee
48 Inman Street
Cambridge, Massachusetts 02139
Ask for information on NARMIC, NEARMIC, NACLA, GE Project, AFSC Children's Program, the Automated Battlefield slide show

Indochina Resource Center
1322 18th Street NW
Washington, D.C. 20036

Committee of Concerned Asian Scholars
c/o Jean Boyle
122 Trowbridge Street
Cambridge, Massachusetts 02138

Teacher Organizing Conference of NUC
622 East Diversey
Room 219
Chicago, Illinois 60614

V. FREE SCHOOLS

This Magazine is About Schools
56 Esplanade Street E
Suite 408
Toronto, 215, Ontario, Canada ($1.25)

New Schools Exchange
301 E. Canon Perdido
Santa Barbara, California 93101
Newsletter used by 700 free schools, directory of free schools

Bay Area School
Box 4050

San Francisco, California
Send for catalogue, free-school for grown-ups

VI. TEACHER ORGANIZATIONS

Red Pencil
c/o Phyllis Ewen
131 Magazine Street
Cambridge, Massachusetts 02139
Bulletin put out by radical teachers in the Boston area

NUC
Teacher Organizing Conference
622 W. Diversey
Room 219
Chicago, Illinois 60614

VII. OTHER ALTERNATIVE SCIENCE-RELATED MAGAZINES

The Insurgent Sociologist
Dept. of Sociology
University of Oregon
Eugene, Oregon 97403 ($ .50)

Rough Times (formerly *Radical Therapist*)
P.O. Box 89
W. Somerville, Massachusetts 02144

WONAAC Newsletter (on abortion)
150 5th Avenue
Suite 843
New York, New York 10011 ($ .25)

Science or Society
5 Salisbury Villas
Station Road
Cambridge, England

SSRS (Society for Social Responsibility in Science) Newsletter
221 Rock Hill Road
Bala Cynwyd, Pennsylvania 19004

Physics Free Press
Send to SESPA/Boston for a copy of this paper of mysterious origin

Interrupt
Computer People for Peace
291 Sterling Place
Brooklyn, New York 11238

VIII. FILMS

NET Film Service
Indiana University

colleges. In any case, the discussion was quite animated and nearly everyone participated by the time the analysis had been hammered out.

Then, someone suggested that each student determine for himself and herself how much work they had done during the quarter relative to what they were capable of or relative to how much they had wished to do and grade themselves accordingly. This met with some enthusiasm because they felt that in doing so they would be using the institution and its resources rather than allowing the reverse to take place. However, one student wondered if everyone just wouldn't give themselves A's. His respondent argued that one would have to be of very low "character" to give himself an A knowing that he had no "right" to it. He said that they all had to appreciate that people who put in more effort "deserved" to get a higher grade, and that he would not be happy with anything more than a C because he had not worked very hard.

I asked him why he had used the word, "deserved". Then the fun really began. His reply was such an orthodox reflection of the work ethic that many students began to object, but in a less than articulate fashion. They certainly sensed something wrong, even though they could not get a cogent critique together. At this point, I intervened again saying that I had a suggestion to offer. I claimed that we could do better than the everyone-grade-themselves solution and at the same time speak to the question about "deserved". I reviewed what they had read earlier in the quarter from Marx on the difference between a socialist and communist economic structure. I equated the everyone-grade-themselves solution with socialism in which all workers get paid proportional to the amount and quality of work they perform.

I then told them that I was suggesting that we grade on the basis of communist practice, to each according to his or her needs. I claimed that everyone had a right to survive within the institution if they wished it just as everyone had a right to human survival in the larger society, that the institution, like the material abundance in the society, was the product of the working people of the nation and of the world. I spent some time arguing that those with power/wealth, whether they were university administrators or capitalists, insisted on maintaining the work equals sustenance principle because it served their interests, and that there were other criteria besides how much one produces upon which to measure how much one "deserves", one such criteria being need. Applied to grading, this would mean roughly that students with low grade averages, scholarship students, and students who were majoring in social science would all get A's, while those with high averages, plenty of money, or majors in other fields could take lower grades.

The initial reaction to my proposal was surprise and confusion. The first questions were about mechanical aspects of the grading system, such as, "What should I do if I'm not sure what my other grades are going to be?" or "I haven't decided what to major in yet, so I'm not sure how important the grade in this course will be

for me." To all of these questions I replied that whenever some doubt existed about which of two grades were needed, the student should always opt for the higher of the two.

With issues like these out of the way, the real difficulties of communist practice began to surface. The lip service that some of the students paid to radical innovation was only a thin gloss covering over the usual bourgeois, liberal hang-ups. Before long, objections to grading on the basis of need were raised which ran the gamut from guilt over taking an "undeserved high grade to violations of the achievement ethic to simply wanting the highest grade average possible. But for each student voicing an objection of this sort, there was at least one other ready to point out the contradictions between their objections and their anti-grading value biases which had been articulated in the previous discussion and more generally during their lives as students. What is the rationale for feeling guilty about violating a system that violates you? What is the function of the achievement ethic? Who are you competing with, and for what?

This discussion was not an easy one for most of the students. People on both sides of the argument had to sharpen up their analyses because they were struggling with a real and immediate decision. Unlike abstract value discussions in which most elite university students tend to go along with innovative and iconoclastice norms, genuine self-interest, competitiveness, and fear emerged quite clearly and were very forcefully confronted. Eventually opinion shifted in favor of the need system, and this opinion was reinforced and made more enduring by the students immediately committing themselves to the behavior that was its logical consequence, namely, agreeing to the system of grading on the basis of need. If the system achieved no other end than provoking this discussion, it was well worth it.

Once unanimous agreement was reached on the communist practice solution, one student pointed out that its effectiveness was limited to this one class, that it did nothing to combat the overall system of grading. Others then suggested that if we set an example in this class it could be used to organize campus-wide opposition to grading. While this met with general enthusiasm, a few of the students were pessimistic. They argued that the university was concerned with perpetuating the *status quo* and with producing people who were psychologically fit to function under capitalism. If we did away with "capitalist" grading, the university would feel threatened, see it as an invitation to student rebellion, and consequently prevent it from happening. However, most of the students felt that if the university did make an issue out of the new grading system it would be playing into the hands of those who wanted to organize on its behalf. If there was not significant administrative opposition, at least a nonalienating solution would have been arrived at for this one class. As it turned out, the administration was informed that grades were distributed on the basis of need, but they chose not to oppose it, perhaps because I am on a one year contract and they preferred to wait me out. Because of either a lack

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American Documentary Films
336 W. 84th Street
New York, New York 10024

Kansas Media Project
504 Louisiana
Lawrence, Kansas
The Accusation, Struggle for Life, The Earth Belongs to the People, the Schizophrenia of Working for the War.

IX. BOOKS AND LITERATURE

A. *Science, Technology, and Society*

Bertrand Russell, *The Impact of Science on Society*, 1953, Simon & Schuster
J. D. Bernal, *The Social Function of Science*, 1967, MIT Press
Richard Barber, *The Politics of Research*, 1966, Public Affairs Press
M. Brown, ed., *Social Responsibility of the Scientist*, 1969, Free Press
Jacques Ellul, *Technological Society*, 1964, Random House

B. *American Economics and Politics*

Estes Kefauver, *In a Few Hands: Monopoly Power in America*, 1969, Penguin
Baran & Sweezy, *Monopoly Capital: An Essay on the American Economic and Social Order*, 1966, Monthly Rev. Press
G. William Domhoff, *Higher Circle: The Governing Class in America*, 1970, Random House
Felixe Greene, *The Enemy*, 1970
Richard J. Barnet, *The Economy of Death*, 1970, Atheneum
Mintz & Cohen, *America, Inc.*, 1971, Dial Press
Leo Huberman, *We, the People*, 1964, Monthly Review Press
Seymour Melman, *Pentagon Capitalism*, 1970, McGraw-Hill
Julius Lester, *Search for the New Land*, 1969, Dial Press

C. *Scientific Work, Privilege, and Alienation*

Andre Gorz, *Strategy for Labor,* 1967, Beacon Press
C. Wright Mills, *White Collar,* 1956, Oxford University Press
Alan Harrington, *Life in the Crystal Palace,* 1967, Avon
R. D. Laing, *The Politics of Experience,* 1967, Ballantine

D. *Education*

Jonathan Kozol, *Free Schools,* 1972
John Holt, *Notes on American Education: The Destruction of Children,* available from New England Free Press, 791 Tremont St., Boston
Bill Ayers, *Education: An American Problem,* New England Free Press
The University-Military Complex, NACLA (North American Congress on Latin America), P.O. Box 57, Cathedral Park Station, New York, N.Y. 10025
Peter Henig, *Selective Service System Or, The Manpower Channelers,* New England Free Press
Edcentric, $5.00/yr. from Center for Educational Reform, 2115 S. St., N.W., Washington, D.C. 20008

of motivation or an absence of organizing skills, my students never mounted an effective anti-grading campaign on the campus.

With the organizing discussion out of the way, we went around the room and the students one by one told me the grade they felt they needed. There were nine A's, twelve B's, and four C's. They wanted to know if I considered this an adequate distribution and I told them I did. I asked them to spend a few minutes thinking about the decision they had made and we then went around the room once more, only this time everyone gave their reasons for taking a particular grade and everyone had the opportunity to change their minds.

The reasons were too diverse to report here, but one exchange between two of the students was especially interesting. When her turn came, one of the women, Mary, said she needed an A because she wanted to transfer to another school at the end of the year. Her reasons for wanting to transfer were couched in political terms, but it was apparent that she essentially wanted a more pleasant environment. Boulder, Colorado was her target area. Six or seven turns later, Arthur, a militant Black, explained why he needed a C.

Arthur claimed that the university's system of required courses and degree programs was totally irrelevant to his needs. He wanted to help organize radical change in the Black community. His approach to the university was to take advantage of the printed material in its libraries and the expertise on its faculty so that he could gain the knowledge necessary to help bring about that change. Consequently, he did not keep up with required work in any of his courses and intended only to survive in the university as long as he could without doing the standard course

(continued from page 15)

bility at the convention. People who had heard of our actions, but had not been there, came to talk with us. After these sessions several of our people became engaged in long discussions with teachers who had heard the laser talks. However, it is also clear that we antagonized a good number of teachers who had come to learn something about lasers. We might have avoided this by being better prepared, for example, with a leaflet or statement explaining our actions.

It would seem that confrontation, restructuring, or issues by themselves are not enough to change peoples' attitudes. One key factor is to what degree the people are involved in any of these tactics. We should be particularly aware of the concrete conditions within which we act and of the mood, attitudes, and receptivity of the people whom we hope to affect. There is a tendency among some radical groups to smugly hold themselves above the people and act "for" them against whatever power structure is at hand. Whether we are dealing with science teachers, scientists, workers, or students, we have first to identify ourselves with them and their interests before we can move with them toward real change.

As postscript, it should also be added that preparation within the group is also essential. We were weaker here than we had thought in several areas. First our political discussions had not been thorough enough—we might have been able to arrive in New York with less division on the question of tactics. Second, we did not have enough basic information on speakers and sessions and we had not planned our actions (and alternatives) well enough. And finally, we were short of equipment. We should have had our own mimeo machine, typewriters, and projectors. This was an inexcusable oversight and we paid by not being able to leaflet at all on Sunday after the NSTA machine burned out.

That's all of it. We welcome criticism and suggestions either in a future issue of SFP or directly to us. Our group, the NYC group, and a Detroit group are now preparing plans for next year's convention in Detroit and working on a variety of other projects. Inquiries should be sent to Boston Science Teaching Group, c/o Science for the People, 9 Walden Street, Jamaica Plain, Mass. Copies of the pamphlet printed in this issue and the advertised leaflets on the IIS Biology and Harvard Project Physics curricula are avaiable at this address. D.C.

work. When the university regulations caught up with him, he would leave and return to the Black community. He then said that since he had not done most of the readings in this course and had not written a paper, he did not deserve more than a C, and furthermore a C was adequate for his survival.

For a dramatic moment or two no one said anything. Many students had a questioning or confused look on their faces. Their dilemma was quite evident. Here they were being confronted by someone who practiced what some of them preached and most of them endorsed, yet this person, who was in some ways the most politically advanced in the group, had somehow missed the point about "need" and "deserve." Finally, Mary said, "Wait a minute, you don't understand. Your really *need* an A more than any of us. You take my A and I'll take your C." The students rallied in support of Mary, the earlier discussion about communist practice was summarized and reviewed for Arthur, and the trade was accepted.

I would argue that grading on the basis of need is in some ways a more effective method of drawing out the contradictions of grading than simply giving all A's, although the latter is probably better in heavily tracked school systems. Like the all A's approach, determination on the basis of need undermines the rationale for any kind of evaluation with respect to learning. However, it also more sharply points up the artificial competition and trivial achievement that are encouraged in the schools. It not only exposes ruling class manipulation through grading, but also provides students with a vision of an alternative system of distributing wealth that has easily perceived implications beyond their classrooms.

B.Z.

E. *Specific Problem Areas in Science: Ecology, Health, War, etc.*

Vietnam: 1000 Years of Struggle. New England Free Press

War, Inc., from Student Research Facility, 2214 Grove St., Berkeley, Cal. 94204

Autopsy on the A.M.A., from Student Research Facility

Seymour Hersh, *Chemical and Biological Warfare,* 1969, Doubleday

Health P.A.C., *The American Health Empire,* 1971, Vintage

Mintz, *By Prescription Only,* 1967, Beacon

Ralph E. Lapp, *The Weapons Culture,* 1967, Little, Brown

Nick Kotz, *Let Them Eat Promises, The Politics of Hunger in America,* 1970, Prentice-Hall

Jerome Agel, *The Radical Therapist,* 1971, Ballantine

James S. Turner, *The Chemical Feast,* 1970, Grossman

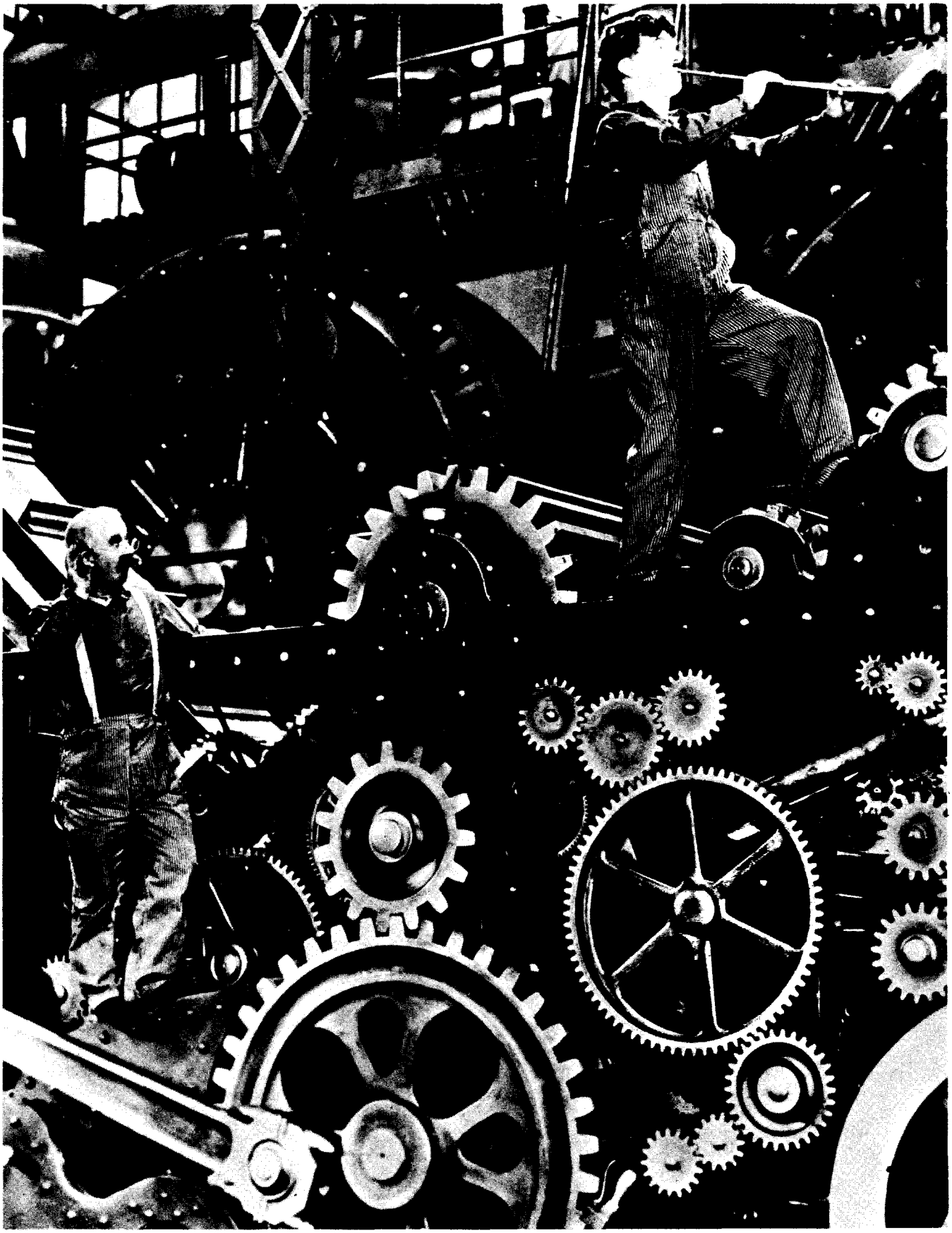
John C. Esposito, *Vanishing Air,* 1970, Grossman

Lewis & Wilson, *Alamogordo Plus Twenty-Five Years,* 1971, Viking

Josue de Castro, *The Black Book of Hunger,* 1970, Beacon

G. R. Taylor, *The Biological Time Bomb,* 1968, World

James Ridgeway, *The Politics of Ecology,* 1970, E. P. Dutton



ACTION AND REACTION: TEACHING PHYSICS IN CONTEXT

COURSE DESCRIPTION

The audience for this course was composed of about 250 sophomores, the vast majority of whom were non-majors in the physical and biological sciences.

The main objective of the first semester was to convey, in a historical sequence, an understanding of the evolutionary and revolutionary aspects of the two main themes in the development of the physical sciences. These are the conceptual structure of the theories, and the institutional framework within which those theories have developed.

Since these themes are coupled to an extent that is dependent on the theory and the historical epoch involved, we felt that a critical method for examining that interaction was an important priority. Through a consideration of some crucial eras in the history of science and technology, we hoped to provide a tool for evaluating the role played by science and technology in contemporary capitalist societies. This seems to be especially important when dealing with students whose attitudes to affairs scientific and technological are largely shaped by the counter-culture ethic, *i.e.*, regarding technology as the demon rather than the entire institutional fabric of capitalism which decides the development and use of technology.

The course began with an analysis of the institutional and conceptual foundation of physics today. In fact, since Al's first lecture came the day after the Attica massacre, it was devoted to how science and technology in this society provide methods for repression, control and murder. It was magnificently received.

The lecture on the institutional aspects of contemporary physics dealt with the nature of the research establishment in the United States, the various kinds of laboratories and employers, the number of physicists, and the size and scope of government agencies and funding. Some attention was devoted to the social relation *within* science (competition, hierarchies, criteria for advancement, professional societies and publications) as well as the social function of basic and applied work.

The first unit of the course included an attempt to describe the assumptions, method and flavor of modern physical science, with some discussion of the role played by theory, experiment, mathematics, technological tools and apparatus and research teams. Journal papers were used to illustrate these different ideas.

We then attempted to trace these two parallel and interacting themes from Greek Cosmology and Astronomy to the Newtonian synthesis. The second topic dealt with the development of astronomical perspectives and cosmological models from its earliest beginnings in Egypt, Babylon and Greece to the Copernical revolution and Kepler's laws. An attempt was made to situate the Copernican revolution in the context of the social upheaval that accompanied the transition from feudalism to capitalism, as well as the "secularisation" of intellectual investigation and the shifting role of church and state.

The third topic was concerned with the theme of motion and movement in the pre-Galilean and Galilean era. This was followed by a section of "Galileo in Context," which treated the social and economic transformation of Europe in the 15th-17th centuries, the breakdown of feudalism and the rise of the merchant class. There was an analysis of questions such as the union of intellect and craftsman from Leonardo to Galileo, Galileo and the Military-Industrial Complex, conflict with the church, and a comparison with the role of science and technology in China in the same period.

The section on the Newtonian revolution was an attempt to embrace a number of different dimensions, *i.e.*, Newtonian dynamics, Universal Gravitation, the Newtonian Synthesis, "Newton in Context" and the philosophical aspects of determinism, causality and the Newtonian World Machine. The discussion of "Newton in Context" centered on the relationship between science and society in 17th century England, and topics such as Francis Bacon, the role of the Royal Society and the utilitarians.

The concluding section of the first semester was concerned with conservation laws, energy and the industrial rev-

olution. This was an examination of concepts such as work, heat and temperature, as well as steam engines, power and the storage and transitions of energy. We concluded with some accounts of the manner in which energy is transmitted, which led into a discussion of waves and wave phenomena.

D.J.

ANALYSIS

While ambitious in design, this course met with only limited success. Billed as a required course in physics for non-science majors it had a lot of student antipathy to contend with. Students came into the course either feeling hostility towards anything scientific, or convinced of the irrelevance of physics to their major interests, or frightened of their inability to handle the mathematical and abstract character of physics. Some students exhibited all of these attitudes!

But the real struggle in the course seemed not to be against feelings of hostility or indifference, but against a certain mental or intellectual idea of what science is all about. To put it succinctly: anything technical was considered rightly physics, anything social, philosophical, historical, political or economic was deemed extraneous. Thus *their* definition of what was physics, and therefore important to our studies, was so narrow as to make it difficult to convey the central theme–that the technical details cannot be considered independently of their social context. Thus students found it difficult to grasp the totality of physical concepts–when and how they emerged, why they flourished for a time, what brings about their downfall. In most students' minds, history, sociology, philosophy, science, etc. were distinct, fragmented disciplines, not merely different aspects of the changing social and productive relations of society.

This fragmented intellectual approach was very difficult to overcome even with the great variety of material in the readings and their emphasis on an integrated view of science. The dichotomy in students' minds between science and everything else apparently has been reinforced by many years in an educational environment built upon disciplines and specialization rather than on broad integrated understanding.

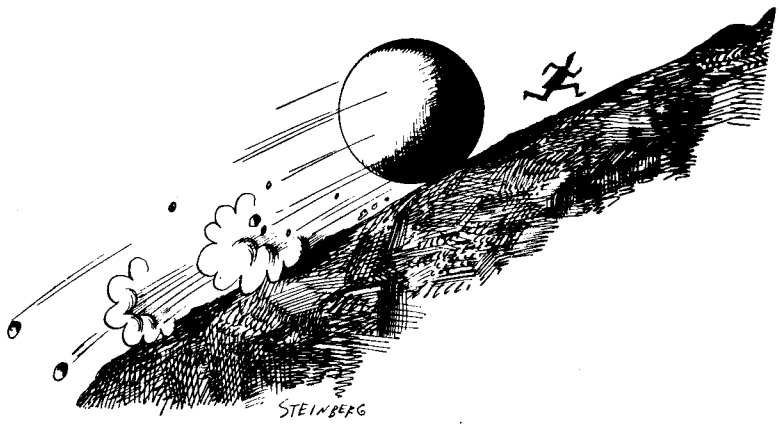
The other major difficulty with a course of this type is more difficult to deal with. That is, that its principal orientation is intellectual rather than practical, that it deals with an understanding of the development of physical ideas rather than with the direct application of these concepts to present day technology. This character of the course raises the question of relevance, and whether such introductory courses in conceptual physics should be given in the first place. For many of us, our knowledge of Newton's laws, for example, is not used much in our day to day lives. Why then is such a course important as part of the *liberal* education and why is it worthwhile for *radicals*?

Its value to the *liberal* education is that it points out the scientific foundation of western civilization, glorifies the achievements of individual scientists, and attempts to outline the rational scientific methodology which has laid the foundations for technological progress. Thus Newton's Laws are of primary interest in the liberal academic tradition. But for the student who questions the values and achievements of this society there is little with apparent value in such an approach.

The value in teaching Newton's Laws does not lie in worshiping Newton's intellectual genius, but rather in understanding the general ideological climate accompanying the birth of capitalism, in seeing the science of the 17th century as being a starting point for the new productive relations by providing a philosophical break from the past, and in viewing 17th century science as an outgrowth of the technology needed for expansion of the industrial and mercantile sectors of the economy. Thus the value of teaching Newton's Laws is in helping to provide an understanding of the function of science in capitalist society. Thus we should not look at science as an end in itself, but should view it in the context of history and the present time.

Such a course finds its relevance, then, in contributing to a different way of viewing science, by emphasizing its social functions, its productive functions, and its ideological functions.

–A.W.



COURSE BIBLIOGRAPHY

I. PHYSICS TODAY, INSTITUTIONAL:

Klaw, *The New Brahmins*, ch. I, II, X
Greenberg, *The Politics of Pure Science*, ch. I, II, VII
Lewinton, "Why I Resigned from the National Academy of Science," *Science for the People*, Vol. 3 No. 4, Sept. 1971.
Censored pamphlet
Derek Price, *Big Science, Little Science*
Materials from American Institute of Physics
National Academy Science study of Physics
Samples from *Science, Scientific American, Physics Today, Science for the People, Physical Review* (xeroxes and mimeoed excerpts for comparison)

II. GREEK COSMOLOGY AND ASTRONOMY:

Butterfield, *Origins of Modern Science*, ch. II, IV

III. AFTER COPERNICUS:

Koestler, *The Sleepwalkers*
Galilei, *Two World Systems*

IV. KEPLER'S LAWS:

Drake, *Discoveries and Opinions of Galileo*—excerpts (Starry Messenger) xerox

V. PRE-GALILEAN MECHANICS:

March, *Physics for Poets*, ch. I, II, IV

VI. GALILEAN MECHANICS:

Galilei, *Two World Systems*—excerpts

VII. GALILEO IN CONTEXT:

Brecht, *Galileo*
Goldsmith & MacKay, eds., *Science and Society*,
Needham, "Science and Society in East and West" (comparative study)
Hessen, *Social and Economic Roots of Newton's Principia*
Santillana, *Crime of Galileo*
Geymonet, *Galileo Galilei*

VIII. NEWTONIAN DYNAMICS

March, ch. III

IX. UNIVERSAL GRAVITATION:

March, ch. V
Feynman, *The Character of Physical Law*, ch. I, II

X. NEWTONIAN SYNTHESIS

Principia, excerpts
Butterfield, "The Scientific Revolution," *Scientific American, 1960*
Butterfield, *The Origins of Modern Science*

XI. NEWTON IN CONTEXT:

Merton, *Science, Technology and Society in 17th Century England*—excerpt
Swift, *Gulliver's Travels*—excerpts
Kemble, *Physical Science, Its Structure and Development*, ch. XI: "Impact of Newtonian Science on the Intellectual World of the 18th Century"
Bernal, *Science in History*
Randall, *The Making of the Modern Mind*, ch. XI-XV

XII. MOMENTUM:

March, ch. III

XIII. POTENTIAL ENERGY:

Project Physics Course No. 3, ch. X
Marx, *The Communist Manifesto*

XIV. HEAT:

Feynman, ch. III

XV. ENERGY IN CONTEXT:

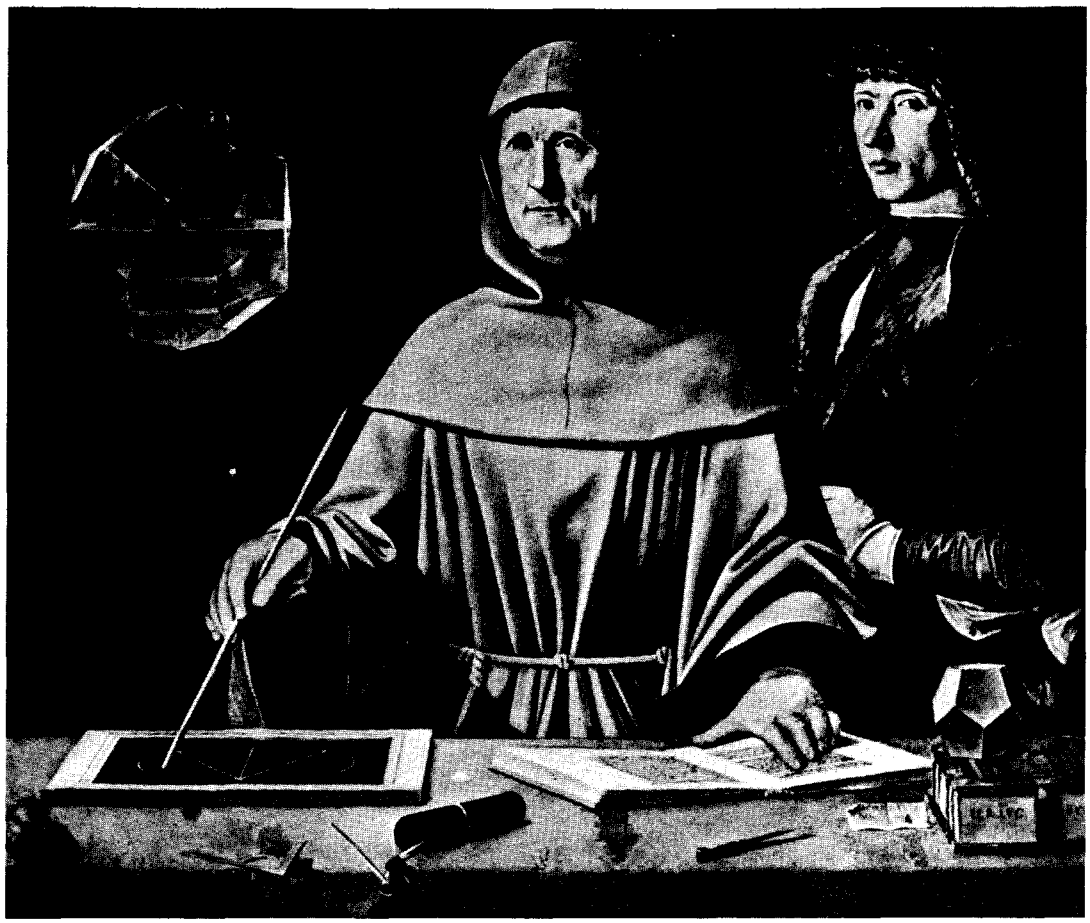
Kemble, ch. XV
Bernal, *Science in History*

XVI. WAVES:

March. ch. VIII
Project Physics No. 3, ch. XII

* * * * * *

BUDGET: $1100
Special Services (xerox, etc.,): $1000



Second semester, Al taught a course on computer technology and its social and political implications. The students actually used a computer terminal and worked with it practically as well as theoretically. Here is his bibliography, which may be of help to some readers.

COMPUTER TECHNOLOGY AND ITS SOCIAL AND POLITICAL IMPLICATIONS

Course Bibliography

1) REQUIRED READING

a) Norbert Wiener, *The Human Use of Human Beings,* (paperback)—a discussion of cybernetics (the science of information and control) and its relevance to many social questions.
b) Kurt Vonnegut, *Player Piano,* (paperback)—a fascinating and perceptive novel dealing with life in the totally automated society, written in the early fifties in response to the advent of the electronic computer, but perfectly relevent to the 1970's.
c) Eric and Marie Josephson, eds., *Man Alone,* (paperback)—a good collection of essays on the various kinds of alienation found in the advanced capitalistic countries, also containing several historical pieces by Marx, etc.
d) John McDermott, *Technology, Opiate of the Intellectuals,* New York Review of Books, July 31, 1969.

Bill Zimmerman *et al., Censored,* available from Science for the People.

National Academy of Sciences, *Technology, Process of Assessment and Choice,* Government Printing Office.

Three articles which discuss the political context of scientific and technological advance. The first two bring out the deficiencies of the liberal analysis in the third.

2) HOW COMPUTERS WORK (in order of increasing technicality)

a) Scientific American, *Information* (a collection of articles, 1966, paperback)
b) Ronald Benry, *Understanding Digital Computers* (paperback)
c) Robert Baron and Albert Piccirilli, *Digital Logic and Computer Operations*
d) Thomas Bartee, *Digital Computer Fundamentals*

These books generally deal with the theory and machinery of the computer, beginning with binary logic and logical operations and then going on to explain the workings of the arithmetic, memory, and control sections of a computer. Some have an introduction to machine language and programming languages. Programming manuals abound on the market.

3) FILMS AND OTHER MEDIA (a virtually untapped resource*)

a) *Metropolis,* (Brandeis University Film Service)
This classic silent film made in 1926 by Fritz Lang depicts the great city of the future and the conflict which arises between the ruling and the working classes. A human-form robot is invented to replace workers but a love affair interferes, etc. Contrived resolution. Fits in well with Wiener's book.
b) *The Industrial Worker,* (Boston University Film Library)
Brings out the nature of work on the automated assembly line and raises excellent questions about the relationship of automation to working conditions, skilled labor, and job security. These remain unanswered by the fluorish of triumphant music and platitudes at the end.
c) *Assembly Line* (Boston University Film Library)
Shows the loneliness and dreariness of a young factory worker's life outside of the plant, and how all life has become depersonalized in the consumer society. Setting

is New York City in the fifties.

d) *Productivity Key to Plenty* (Boston University Film Library)
An excellent statement on the triumph of technology and industry in providing the goods. A propaganda film made in the late forties in response to labor unrest, arguing that automation and machinery are the key to growth and prosperity (and full employment).

e) *Modern Times* (pirate film)
This Charlie Chaplin classic depicts the frustration and desperation of life during the Depression, and how the people were the innocent victims of a collapsed system of industrial production. Another fine statement of life in advanced capitalist countries. Great symbolism and humor.

f) *Right of Privacy* (Boston University Film Library)
This film is an NET documentary made a few years ago. It describes the many ways information is gathered about people, from testing to various forms of investigation, and how computers will be used to set up national data banks. Liberal politics but some good informative material.

g) *The Automated Battlefield* (American Friends Service Committee)
This is an excellent slide show describing the electronic air war which is being waged in Indochina and the reasons for the development of this technology. Brings out the fundamental role of computers.

h) *McDonnel-Douglas Film* (McDonnel-Douglas Project, 4372 Westminister Place, St. Louis, Mo. 63108)
A well-done exploration of the way in which this company controls the economy and lives of the people of St. Louis. Brings out the kinds of labor practices and contract support which keep the company prosperous at the expense of the people.

* The films listed under the Boston University Film Library are generally available from other university film libraries across the country, e.g., the Indiana University Film Center. They can be ordered in advance from most any of these repositories. Many other relevant titles can also be obtained in addition to those described here.

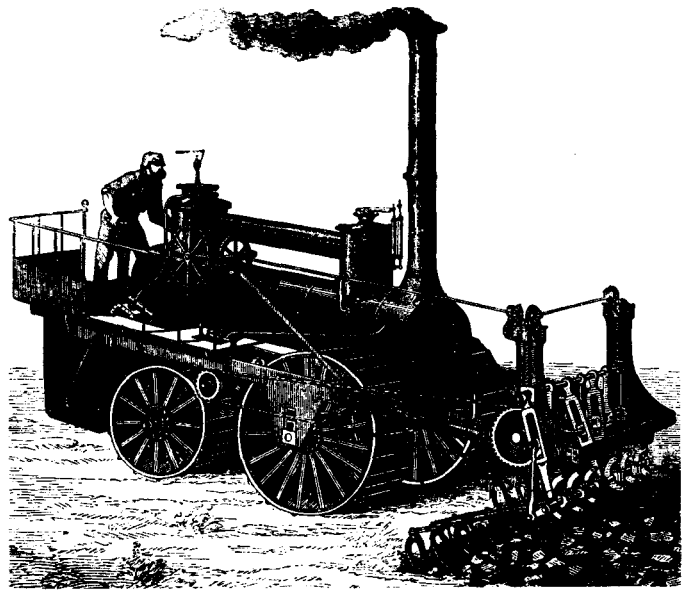
4) ADDITIONAL BIBLIOGRAPHY

a) Material from Computer People for Peace, 291 Sterling Place, Brooklyn, N.Y. 11230–in particular their newsletter, *Interrupt,* and pamphlets such as *Data Banks, Privacy, and Repression.*

b) A useful annotated bibliography, *Implications of Computer Technology,* Research Review No. 7, Harvard Program of Technology and Society

c) Books dealing mainly with computer technology and society:

Robert Boguslaw, *The New Utopians*
Charles Dechert, ed., *The Social Impact of Cybernetics*
Martin Greenberg, ed., *Computers in the World of the Future*



A nineteenth-century French steam cultivator.

James Martin and Adrian Norman, *The Computerized Society*
Plyshyn, *Perspectives on the Computer Revolution*
Tavis, *The Computer Impact*

d) Books dealing with more specific applications of computers

Ashby, *Introduction to Cybernetics*
Feigenbaum and Feldman, *Computers and Thought* (on artificial intelligence)
Hamming, *Computers and Society* (applications)
Oettinger, *Run Computer Run* (computers in education)
Donald Schon, *Technology and Change* (business and industrial use)
Edward Tomeski, *The Executive Use of Computers*

e) Books dealing more generally with technological development:

Raymond Aron, *The Industrial Society*
Murray Bookchin, *Post Scarcity Anarchism*
Tom Burns, ed., *Industrial Man*
Nigel Calder, *Technopolis: Social Control of the Uses of Science*
Jack D. Douglas, ed., *The Technological Threat*
Jacques Ellul, *The Technological Society*
Victor Ferkis, *Technological Man*
Herbert Marcuse, *One Dimensional Man*
Lewis Mumford, *The Myth of the Machine*
Robert Perrucci and Mark Pilisuk, eds., *The Triple Revolution Emerging*
Albert Teich, ed., *Technology and Man's Future*

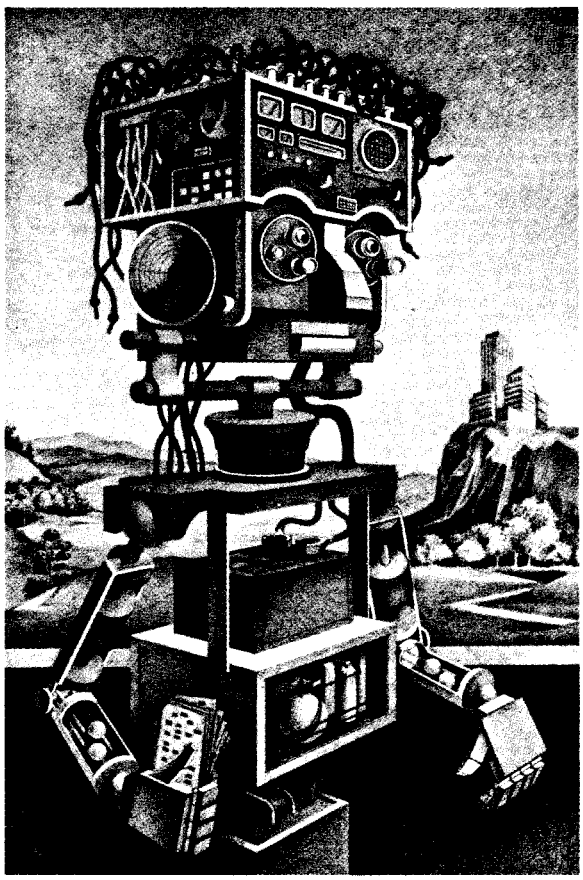
f) Books dealing with alienation and the new working class:

Robert Blauner, *Alienation and Freedom*
Andre Gorz, *Strategy for Labor*
Roszak, *The Making of the Counter-Culture*
Daniel Singer, *Prelude to Revolution*
Slater, *The Pursuit of Lonliness*

g) Assorted articles and pamphlets:

1. Peter Barrer, "Engineers in the Working Class," *Science for the People,* Vol. 3, No. 4, September, 1971
2. Herbert Gintis, "The New Working Class and Revolutionary Youth," *Socialist Revolution,* May/June, 1970
3. Edward Nell, "Automation and the Abolition of the Market," MDS Pamphlet, No. 2, c/o Gottlieb, 411 12th Street, New York City
4. Martin Oppenheimer, "White Collar Revisited: The Making of a New Working Class," *Social Policy,* July/August 1970
5. Stan Robinson, "Fighting the Police Computer System," *Science for the People,* Vol. 3, No. 4, September 1971
6. Robert Theobald, "Cybernation and the Fulfillment of Man," *Liberation,* March, 1965
7. Robert Theobald, "Cybernation and Human Rights," *Liberation,* March 1965
8. Joseph Weizenbaum, "On the Impact of the Computer on Society," *Science,* 176, May 12, 1972.

A.W.



A PRELIMINARY CRITIQUE OF THE PROJECT PHYSICS COURSE

The Boston Area SESPA Science Teaching Group has been analyzing the Project Physics Course material. They have selected this particular curriculum because it, more than any other, attempts to deal with the social and cultural aspects of physics. To date most of the work has been done analyzing Unit 3: *The Triumph of Mechanics.*

As well as criticizing the course (when confronted with the statement, "As more and more people left the farms to work in the factories" they state that it is similar to saying, "As more and more blacks left Africa to work on American plantations . . ."), the group has written an alternate version for some parts of the text, as can be seen below. Anyone interested in further developing this critique and in preparing materials which would provide alternatives to the PPC approach, contact:

Physics Subgroup
SESPA Teaching Group
c/o Science for the People
9 Walden Street
Jamaica Plain, Massachusetts 02130

ORIGINAL VERSION

Watt's invention of the steam engine with separate condenser, so superior to Newcomen's engine, stimulated the development of engines that could do many other kinds of jobs–running machines in factories, driving railway locomotives, steamboats, and so forth. It gave an enormous stimulus to the growth of industry in Europe and America, and thereby helped transform the economic and social structure of Western Civilization.

ALTERNATE VERSION

Watt's idea of the steam engine with separate condenser became a practical reality when Matthew Boulton, a British manufacturer, brought it into production. Because of its increased efficiency over the Newcomen engine, and thus its lower operating cost, it was quickly empolyed in industry. Soon, in addition to running machines in factories, steam engines were being used to drive locomotives, boats and other means of transportation.

The development of steam power was an important element in the social and economic transformation of the west known as the Industrial Revolution. The Industrial Revolution was marked by a rapid expansion of industry and manufacturing and by the creation of a large industrial working class. Large numbers of factory workers swelled the industrial cities as the Enclosure Acts of the 18th and 19th centuries forced them from the countryside.

COMPUTER PEOPLE FOR PEACE

There will be a Fall Joint Conference in the Woods in late September, and CCP is eager to have SESPA people participate. At this time, neither the place nor the time is decided upon, but if you are interested, contact CPP before that time.

Computer People for Peace
291 Sterling Place
Brooklyn, New York 11230

(new address)

Dear Friends,

Just thought we would let you know about what looks like a pretty good deal for J. D. Bernal fans. As many people already know, the four volume set (paperback) of J. D. Bernal's *Science in History* (MIT Press) runs for a retail price of $15.00.

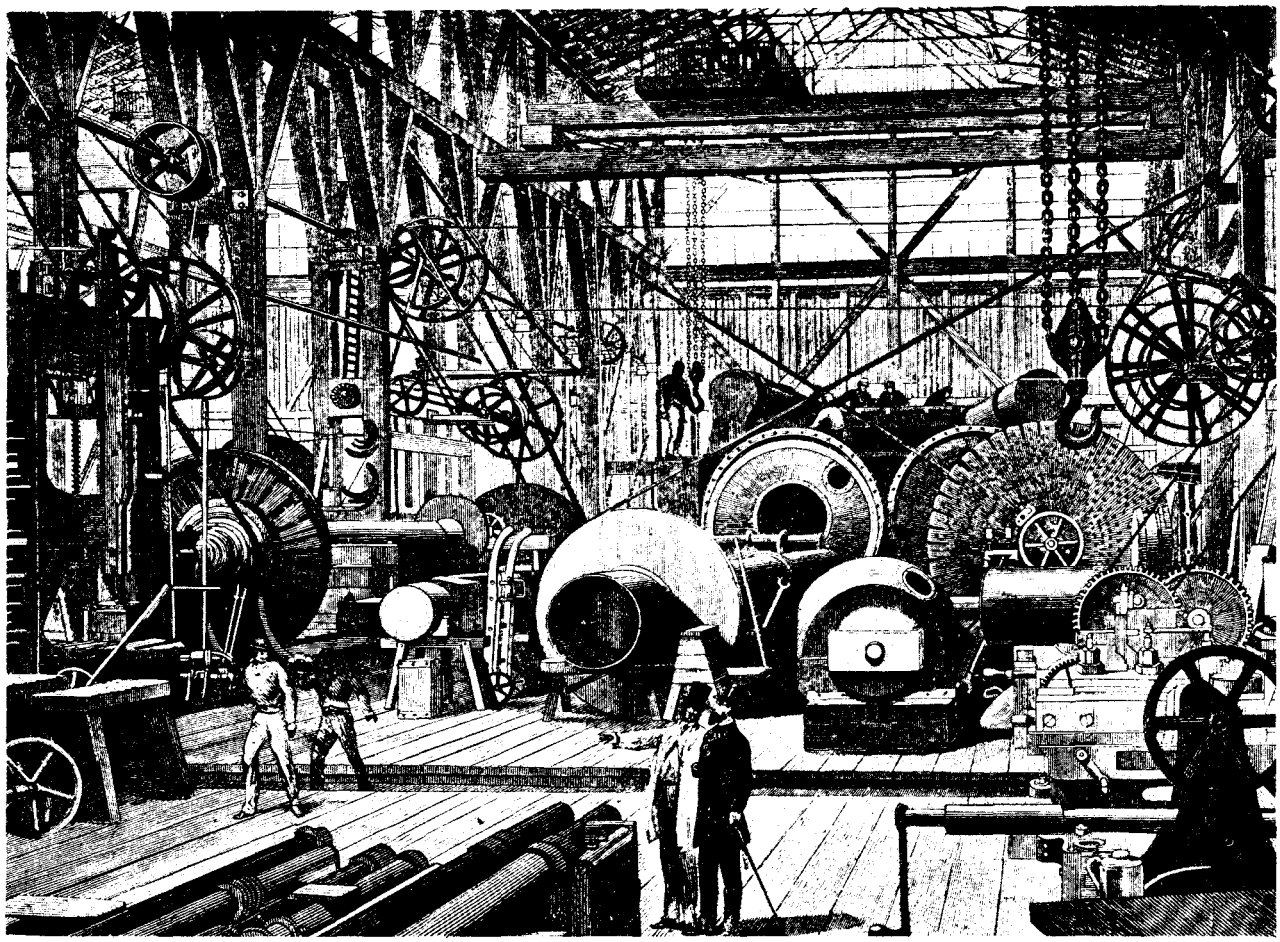
We ran across the following ad:

6287. J. D. Bernal: SCIENCE IN HISTORY, 3rd Edition. Monumental account of science and of history, showing what science has meant in history from the first speculations of the Babylonians and Egyptians to the revolution of our own day in which science permeates every aspect of human life. 1.039 pp; 'slightly hurt.' Pub. at $12.95 Only $2.98

We saw the ad in the latest Marboro Books (205 Moonachie Road, Moonachie, N. J. 07074) mail out. Marboro Books is a "remainder book house" . . . they have several other good deals . . . minimum mail order is $5.00 . . . postage and handling on all orders is $ .75.

Probably no telling how many copies they have left but thought maybe you could put a little note in an issue of *Science for the People* so more people can know about a cheap source for what is probably the best Marxist interpretation of the history of science in the English language.

Sincerely,
Bob Broedel
Co-op Correspondent
Tallahassee, Florida 32304



HASTEN, JASON-GUARD THE NATION

We represent a group from the academic community of New York City. We have been alarmed for some time with the strong and increasingly symbiotic relationship between our universities and the military complex. Recently we constituted a group to attack this relationship and expose its often inhuman ends, ends which we consider completely opposed to the proper purposes and functions of a university. One of our fisrt targets was the Jason Project, and in particular the complicity of Columbia University and faculty members in this project. We have acquired correspondence between the Department of the Army and members of Columbia University. This correspondence, coupled with reports from the Institute of Defense Analysis (IDA) and excerpts from the Congressional Record, has convinced us that our attack on Jason and alarm at university complicity is entirely justified. We are including copies of the documents for you because we believe that a wider knowledge of their contents is most important for the health of our institutions and our country. We would like to invite you to make use of the documents as you see fit. In addition, any suggestions you may have for their use, or any additional data you may have, would be appreciated. Furthermore, if you care to join a public protest against Jason or against the wider issue of university complicity, we welcome your assistance and interest. We also call upon those of you who are scientists to consider whether there are files at your institution which should be open to the public.

Jason scientists in the past have helped create concepts for use in the "automated battlefield." This has been hailed on the floor of the U.S. Senate as " . . . one of the greatest steps forward in warfare since gun powder."[1] It includes a galaxy of automated anti-personnel weapons, which have indeed succeeded in bringing warfare to a new depth of inhumanity. Many of these weapons were developed and tested in the Vietnamese battlefield.

As we read the documents three major points emerge. Even though Jason members claim the contrary, we see that the Defense Department has been able to shape the direction of research undertaken by members of the academic community. An example of this is the increasing importance which Jason played in research on counterinsurgency from 1964 on. IDA Annual Reports document this as follows: "Increased Government attention to such problems as counterinsurgency, insurrection, and infiltration led to the suggestion that Jason members might be able to provide fresh insights into problems that are not entirely in the realm of physical science . . ."[2] The Defense Department's general intent of influencing the direction of research is indicated by the enclosed letter of 28 February 1964, which reveals the existence of an annual Army Research Plan. This indicates " . . . promising areas of research . . . to assure that the Army's effort is well represented in the main stream of scientific research in currently popular areas and in work considered to be rewarding to military requirements. Such research . . . could be considered indigenous to the Army and of relatively little value to the civilian economy . . . (i.e.) the field of military explosives and rocket propellants."

Jason members and Columbia University officials have claimed that Jason members take part in projects as individuals, and that the university is not involved. In fact, the documents clearly indicate that there is both a direct and indirect *quid pro quo* relationship between the military and the university and that this is the intent of both parties. The services the university offers are indicated by the *White House Fact Sheet* of 10 September 1963: " . . . key scientists and other to be contacted are in positions in the scientific community which enable them to monitor thesis and other appropriate research work and to make available to the Army the generated information."[3] Fact 5 points out that " . . . Counsel of the Association of State Universities has been obtained for guidance in expansion of the program."[4] The letter of

15 October 1965 also demonstrates that the university allowed the army to store confidential documents in the Low Memorial Library.[5]

At the same time the Defense Department offers benefits to the university. As in the letter of 26 February 1964, " . . . the possibility exists that from time to time we (the Advanced Technology Group of the Army Research Office) may be able to directly support or to assist the University in getting support from other Army agencies. To this extent then the *assistance we request need not be a unilateral arrangement* (italics added)."[6] On December 18, 1969, Congressman Daddario before the House of Representatives spoke of " . . . the unique dependence of the scientific community upon military support." These quotations show that such a solid structure of interlocking needs exists, that some scientists and some universities have become the pawns of the military.

In attempting to deny any responsibility for the direction and acts of the military complex, Jason members have claimed that "military research would go on" (statement of Professors Ruderman and Foley), unhampered by Jason's absence. In fact, the documents indicate that Defense Department analysts consider the efforts of academic scientists vital and indispensable. This is borne out by the entire *White House Fact Sheet* and the remarks of Congressman Daddario before the House of Representatives on December 18, 1969 as follows: " . . . we must be very careful that, in making program transfers our most talented young people are not adversely affected. It would be especially unfortunate if competition . . . resulted in alienation of these new young talents. *We can ill afford a lost generation of science skills* (italics added)."[7] The moral here is clear: if academic scientists in sufficient number chose to act in concert, they can bring considerable leverage to bear on the direction of the American military machine. Academic scientists cannot evade this responsibility. It is not necessary to cooperate from the inside to bring pressure to bear. Clearly, non-cooperation is what the militarv complex trulv fears.

The poisonous effect of university-military cooperation is clearly evidenced in the documents when they reflect the increasing attempts at secrecy on both sides concerning the details of this cooperation. We note that Columbia University accepted the classified Army Research Plan.[8] We note that IDA reports become increasingly elliptical and after 1968 are hard to come by. Surely if, as some universities claim, no harmful research is being done, then there is no excuse for harboring secret documents.

If, after you read these documents you decide that more work is needed in this cause, we hope you will send us your suggestions, inform us of other facts we lack, and join us in our effort.

(Continued)

JASON: A REPLY

On April 24, 1972, the New York Regional Anti-War Faculty, including professors from twenty colleges and universities in the New York area, members of the Scientists and Engineers for Social and Political Action (SESPA), and other supporters, including Columbia Students, occupied the physics building at Columbia University.

This non-violent act of civil disobedience was a protest against the intensification of the air war in Indochina and the participation of physics professors at Columbia in the activities of the Jason Division, Institute for Defense Analyses.

The civil disobedience at Pupin Hall was not directed against students, faculty, workers or President McGill. There was no demand that anyone be fired. The individuals sought, by dramatic moral witness, to call the university community's attention to the war research of the Jason Division, and to appeal directly to the individual consciences of the Jason members.

THE JASON ADVERTISEMENT

On April 28, *Spectator* carried a full-page advertisement signed by Professors Foley and Ruderman purporting to explain Jason. We urge the university community to read for themselves about Jason in the Senator Gravel Edition, *The Pentagon Papers,* Vol. IV, pp. 114-123. For the present, we offer the following corrections of the Foley-Ruderman statement.

JASON AND THE VIETNAM WAR

Professors Foley and Ruderman implied that Jason did Vietnam war research only once, in 1966. In fact, Jason shifted to Vietnam research in 1964 when "increased Government attention to such problems as counterinsurgency, insurrection, and infiltration led to the suggestion that Jason members might be able to provide fresh insights . . . " (IDA Annual Report, 1966, p. 15). Official IDA reports state that in 1967 "Jason continued to work on technical problems of counterinsurgency, warfare and system studies with relevance to Vietnam." The Vietnam War was a major concern of Jason for at least four years, probably longer, and perhaps to this day.

JASON "CONDEMNATION" OF THE BOMBING

Professors Foley and Ruderman imply that the major work of Jason in 1966 was a condemnation of the bombing of North Vietnam, and that this was done for humanitarian reasons. A crucial correction is in order.

In 1966, Jason scientists did a cold-blooded cost-benefit analysis of the effectiveness of U.S. Bombing of North Vietnam. They were led to reject the bombing strategy because, in their words, "we have not discovered any basis for concluding that the indirect punitive effects of the bombing will prove decisive" in destroying the North Vietnamese will to resist (*Pentagon Papers,* Gravel edition, Vol. IV, p. 117).

So they developed something more effective. At Defense Secretary McNamara's behest, Jason's 47 scientists met in June for ten days of high-level briefings by Pentagon, CIA, State Department and White House officials, then split into four sub-groups to work "from a technical (not a political) point of view" throughout the summer. What they devised was an ingenious combination of heinous weapons: Gravel mines, "button bomblets," SADEYE/BLU-26B clusters, "explosively produced flechettes," and the latest electronic and technological developments–sensors and acoustic sensor monitors–to "win" the war. Jason work was thus seminal in the development of the Electronic Battlefield, the Pentagon strategy for killing Asians at a distance without U.S. casualties (*Pentagon Papers,* Gravel edition, Vol. IV, p. 115).

THE JASON COLLECTIVE

Professors Foley and Ruderman insist that Jason members "work as individuals; there are no collective Jason papers . . . " This is ingenious. The 1066 electronic battlefield project was clearly collective. In fact, IDA annual reports particularly stress the importance of Jason's summer meetings, at which members come together to trade ideas. Available minutes of one such meeting, that of Jason's "Thailand Study Group," which took place in June and July 1967, at Falmouth, Massachusetts, bear this out. The Falmouth meeting saw social and physical scientists and government officials address themselves collectively to the problem of improving counterinsurgency in Thailand. It was there that the noted Cal Tech physicist Murray Gell-Mann suggested ascertaining "what effect increasing police density, or ear cutting, or other negatives have on villager attitudes" (*The Student Mobilizer,* Vol. 3, No. 4, April 2, 1970).

AUTONOMY OF JASON MEMBERS

Jason's two defenders protest that "members invent or choose their own problems . . . There is no pressure to work on particular subjects." Yet one column later they cite the *Pentagon Papers* to the effect that Jason members were "obligated" to develop the electronic battlefield. They thus undermine their own position by admitting, in effect, that the framework in which Jason scientists work dictated that the only way to oppose the bombing was to come up with a more lethal and convincing substitute. The Vietnamese are still paying for that "obligation."

In fact, the initiative for Jason projects often comes from the government. The electronic battlefield study was ordered by Secretary McNamara in April 1966. At the

J. Robert Oppenheimer and General Leslie R. Groves

Falmouth meeting, it was General Maxwell Taylor who laid down the line. After outlining his need for information and analysis relevant to the Thai counterinsurgency effort, he concluded, "I hope you can find a way of setting up a structure in IDA which would draw in the services we need to get this job done" (*The Student Mobilizer,* April 2, 1970).

This then is the context in which the "independence" of Jason members must be understood.

THE QUESTION OF RESPONSIBILITY

Despite their bow to the principle of considering the consequences of one's work, Professors Foley and Ruderman defend the creators of the electronic battlefield solely by vouching for their *motives*. That their work was instrumental in creating a system that rains destruction from afar, is unable to distinguish combatant from civilian, and continues to kill by the thousands for political aims that Americans increasingly abhor, is conveniently ignored. That it did not bring an end to the war is treated as a kind of petty misjudgment on the part of the researchers. Why "condemn and shun" them for it? The answer is clear: because they inexcusably played with the lives of the Vietnamese people, and continue to lend Jason the weight of their intellectual powers. Professors Foley and Ruderman, meanwhile, devote their talents to providing this lethal organization with legitimacy, authority and hence longevity. One shudders to contemplate the future products of their good intentions.

If Jason members really considered the consequences of their actions, they would renounce Jason and, following the example of Daniel Ellsberg, throw their knowledge and experience into the fight to end this brutal war. Considering Jason's record, we think no less should be demanded of them.

The New York Regional Anti-War Faculty
and Student Group (NYRAWFAS)

c/o HDC
156 Fifth Avenue, Room 523
New York, N.Y. 10010

The IDA fact sheet was sent along with the article to SESPA, where it is now on file for any interested friends.

Footnotes

1 Senator Barry Goldwater, *Congressional Record,* September 23, 1970, p. 38483.

2 IDA *Annual Report 1966,* p. 15 and " . . . during 1966 (and 1967) . . . Jason continued work on technical problems of counterinsurgency warfare and system studies with reference to Viet Nam." IDA *Annual Report, 1967,* p. 19 and 1968, p. 26.

3 Quoted from Fact 3. See also Fact 4: " . . . the scientist informally agrees to make copies of the research reports or thesis available as a matter of mutual professional interest and respect."

4 Also see the enclosed letter of 26 February 1964, 3rd paragraph: "A research program leading to the doctorate . . . could conceivably be of such quality as to give rise to new theories and approaches." Also paragraph 5 of the same letter: "We would . . . appreciate your kindness in placing the Advanced Technology Group (of the Army Research Office) on your mailing list to receive periodic publications or *other items relating to R(esearch) and D(evelopment) activities at the University* (italics added).

5 "In view of the fact that the document is *confidential,* I have sent it to the Low Memorial Library rather than directly to you."

6 Letter of 26 February, 1964, 5th paragraph: "We are taking the liberty of forwarding to you on a monthly basis the Army Research and Development News Magazine." See also paragraphs 7 and 8 of the same letter: "At any time you or your colleagues are in the Washington area, we would be more than pleased to have you visit our office for a discussion. This, we trust, would prove *mutually advantageous.* We trust . . . *our association will provide benefits both for the University and the Army Research Office."* (italics added).

7 By virtue of their position on Jason, Jason members have welcomed some of the most important scientific advisors of the government. The IDA *Annual Report 1966* describes how Jason members " . . . rise to positions where their influence on national policy can be closely felt," and "as these men become more involved directly in government groups, the Jason project must refresh itself with new infusions and begin another cycle."

8 See letters of 15 October 1965 and 27 October 1965.

CHAPTER REPORTS

NORTHWESTERN CHAPTER REPORT

At long last there is some news to report from Northwestern. During the student strike this past spring, several of us at N.U. with help from the Chicago Science for Viet Nam collective held a teach-in on war research and new weapons being used in the war. About 80 people (mostly undergraduates) came to the teach-in, and about 12 people from this group formed the nucleus of a SESPA chapter here. We began work on Science for Viet Nam projects, initially concentrating on collecting information on the biology of bamboo, which is of economic importance to the Vietnamese. We also hope to expand our activities when classes begin next fall to include activities around the domestic science scene. We are particularly interested in establishing contacts with people in the large laboratories north of Chicago, such as Abbott. Please send any suggestions of names of people we might contact. The copies of the magazine you sent are very helpful in our organizing efforts. Enclosed is a check to cover part of their cost. We realize we have only made a start here, but at least we have something to build from now.

D.V.

STONY BROOK CHAPTER REPORT

SESPA members at Stony Brook have been active both individually and in an organized way in several projects during the past few weeks. We have a small group that meets frequently to plan and discuss activities and many others who join with us for particular projects or actions. Our campus bookstore now sells *Science for the People* and efforts are underway to convince our science libraries to subscribe to it.

DOD RESEARCH–OFF CAMPUS!

For the second time in two years the Stony Brook Faculty Senate has voted to prohibit new applications for any Department of Defense research grants or contracts. SESPA took a very active role in this campaign. Considerable student and staff support has been generated.

As described in the accompanying leaflet and *Science* article reprint, we have reason to expect the Stony Brook Administration to support those faculty members who choose to violate the DOD ban. SESPA is involved in the effort to educate and mobilize the university community with the goal of enforcing the ban without administration support if necessary. We hope that other SESPA chapters will join in the battle to get university research funding out of the hands of imperialist war-makers.

SEMINAR ON "SCIENCE FOR THE PEOPLE– A RADICAL PERSPECTIVE ON THE ROLE OF SCIENCE"

Two Stony Brook SESPA members organized a weekly seminar in our Experimental College with the above title. Readings and lively discussions took place on such topics as: U.S. and International Science Movements, Scientific Decision-making, Research Support, Environmental Science and Politics, National Priorities. We also visited Brookhaven National Laboratories and engaged in a revealing debate with several top-level scientists (including two NAS members) on the U.S. science establishment.

CHINA STUDY

A Stony Brook study group has been holding weekly educational meetings since the end of March in preparation for the proposed SESPA sponsored trip to China. Even if the trip does not materialize we believe that this activity has been very worthwhile.

NSTA CONFERENCE

Stony Brook was well-represented at the National Science Teacher's Association meeting in New York City in April. We participated in the general SESPA activities which will be described in a forthcoming issue of SFP.

STRIKE-RELATED ACTIVITIES

President Nixon's recent bombing and mining adventures in Vietnam resulted in a moderately successful week-long series of demonstrations at Stony Brook. Several SESPA members were involved in the following activities in connection with the "strike": repeated showings of the NARMIC slide show, both on campus and in a nearby shopping mall; discussions and debates on the DOD research issue and other ways in which the university is a tool of U.S. imperialism; distribution of a leaflet cosponsored by SESPA and the Physics Graduate Student Council on the political and social responsibility of scientists; a demonstration at the universitv Computer Center (which was locked for the occasion and resulted in some window breaking) against University complicity with the war-makers.

Due to lack of space, we are not printing the pamphlet which was mentioned in this article. Anyone who wishes to read it can write to SESPA in Stony Brook; the address is in the back of this magazine.

DOD RESEARCH STONY BROOK ISSUE

On 25 April the faculty senate of the State University of New York at Stony Brook voted to end Department of Defense (DOD) sponsored research at the university. Stony Brook president John S. Toll responded by declaring that before he comments publicly on the matter some procedural issues have to be clarified and, at least until then, there will be no change in university policy on research.

The amount of DOD-sponsored research has declined at Stony Brook in recent years; DOD research grants and contracts now amount to about $200,000 of a total of about $17 million in federally sponsored research at the university.

Wording of the motion passed at the meeting was as follows: "We demand an end to university complicity, both explicit and implicit, with the military: specifically, we call for the prohibition of any applications for new or renewed DOD grants and contracts." The motion carried 70 to 31.

A procedural question arose because the motion was proposed from the floor as an amendment to a resolution urging immediate withdrawal of all U.S. military forces from Southeast Asia. The objection was that the motion on DOD-sponsored research was not included in the agenda circulated before the meeting, as required by faculty senate rules. Partisans of the motion argued that the meeting was called to discuss issues raised by a student strike in protest against the war and that the motion was therefore within the boundaries set for the meeting.

Some faculty members have noted that only about 100 of the approximately 850 faculty members eligible to vote in the faculty senate actually did vote on the question, and they express doubt that so important an issue should be decided by such a small vote. Those backing the motion reply that senate rules require a quorum of 75 and that, until such time as the rules are altered, actions of the senate should stand. Under the rules that govern the state university system in New York, the president of the individual university campus wields ultimate authority over matters such as research policy.

The motion to phase out military-sponsored research at Stony Brook has a history going back to the spring of 1970. The U.S. incursion into Laos and Cambodia occasioned a faculty senate vote to discontinue DOD research. That summer, when the question of renewal of DOD work arose, Toll consulted the graduate council, a subgroup of the senate, and was advised to proceed as usual. That autumn, the ban on DOD-sponsored research was rejected in a mail vote by 270 to 188.

This time proponents of the ban appear to be better organized to bring pressure on Toll to implement the ban. A letter was sent asking him to make public his decision by 4 May. When he declined to do so, a petition backing the ban was circulated and is now said to have some 225 faculty signatures.

Toll at this point has indicated that he will consult university groups, including the Stony Brook council, which acts as a local board of trustees, on the matter. But it is clear that at issue at Stony Brook is not only the future of DOD-sponsored research there, but the thorny question of the power of the faculty to influence operating policy.

from *Science*

DUBLIN CHAPTER REPORT

A Chairde (Friends!)

14 December. With effect from yesterday, we now have one copy of the September issue, also of extra-territorial origin. My mail comes through from the Continent all right, but from the U.S. it is very erratic . . .

I met a man from St. Louis this summer who . . . was working with LNS. Anyway he said I should send you a poem that I've been handing around. . . . .

If you want a Chapter Report: we have a core group of four to six in science (a bacteriologist, a zoologist, a UCD [?] science undergraduate, myself, and in other parts of the country an engineering graduate now teaching, and a medical student, I hope–I haven't seen him for some time) and a multitude of friends of diverse political persuasions in different science and arts subjects, teaching, media, law, manual work . . . . The group as such has not been functioning for the last few months, but this does not matter too much as we run on the basis of individual initiative, and the development of that in ourselves and others. I'm not an organisation man, "later for that," and besides I haven't the time what with teaching and the Diploma course. I go around stirring up argument and discussion in lectures and coffeehouses and staffroom and even (to some people's horros) in class, and spreading information about school democracy (horrors!) and education and science and . . . and often at the end of an argument there goes another copy of Beckwith's concerns, or SFP, or my research paper. Mostly I don't sell things, I give them away, but sometimes people pay anyway. I don't mind because I have enough to go on with and the duplicated stuff is very cheap to produce, though I would prefer something of higher quality. S y n t a x ? I have some (bread) for you, in return for the bread you are forever casting on the waters.

The enclosed you may use in any way you wish, if you wish.

24 December. Further developments: one of us is to speak at a Biology congress on January 3, on the social responsibility of scientists, and the s.r.s. group will be meeting publicly on or about January 17. The base for that seems to be shifting from TCD [?] students to TCD staff, and they are hoping to involve some social scientists (?). Fourth year biochemists in UCD are holding two seminars on the role of the biochemist in society. There was a question on that in last year's final exam, and they pointed out that there were no lectures on that subject, and the answers would tend to be very subjective–"What do you suppose the examiner wants me to say?"–so after some argument it was decided that they themselves should do a little investigation, find out what openings there are for them, what these involve, and what they mean in social terms. It is of course a comment on our educational system that one can set out to be a Biochemist and at the end of one's time in the university still not know what that means.

In the absence of further SFP's, I'm doing trade in photocopies which would be expensive, except that at the moment we get them done free (having friends among the manual workers).

I hear our medical student has joined the Provisional IRA (rumor only, from Jesuit sources).

20 March. January SFP arrived safely a few weeks ago, thanks. I still haven't finished it. Time (so many things cry out to be done and always urgently–seize the day!)! We have a study group going on religion/morals/ethics, etc., and I have to read a paper on Fascism. . . . If you do have an issue on science teaching, please send at lease twice thennumber of copies . . . . The BSSRS have published the text of all the papers and the discussions arising (SFP, III, 2), a Dublin bookshop imported two copies of the book, which I just happened to see, "There's not much market for that sort of thing,"–"Oh, really!" . . . . All is not well with the s.r.s. group, but the congress went well enough, so perhaps things are happening in other places. Come summer I might find out . . . . As for the core, our bacteriologist is moving out into education in the rather critical area of Science Curriculum Development. I hope we will maintain contact with the department (TCD Bacteriology), as there are other good people there, as also in Chemistry and elsewhere.

HND

The soul of man cries out to see
The brutal hand of tyranny
And so his overthrow we plan
Since we by action judge the man

It is not wrong for us to strive
To right our wrongs, and to survive
But through the ages up to now
The question stands unanswered: How?

Answers we seek as, tentative,
We change the world in which we live
But all-too-often pass our days
Imprisoned in our former ways

And all the time we know within
Unreasoned guilty weight of sin
The tyrant's hand upon our head
Is heavy, so we wish him dead

And so in time we play his game,
Meet steel with steel, and act the same
Can anyone , in either rank,
Tell man from man or tank from tank?

If we resent brute force's sway
Then we must seek another way

And make our fundamental plan
To kill the action, not the man

The murdering of murder I
Have taken on myself to try
– – So Hardial said the other day
But has he somehow lost his way?

And "War on war" our Lenin said;
Perhaps his tribe has lost its head
And "Ballots, Bullets, Or . . . " said Jim
Are Connolly's "successors" dim?

This people's war of which we talk
Learn from the sparrows and the hawk
The talons fierce, the beak so grim
They do not need to learn from him

From being often overflown
They know they cannot stand alone
And so as one united wing
They drive him off; and still can sing

We treat the symptoms; sometimes though,
The more we treat the worse they grow
And leave us – as the doctor said –
The sickness cured, the patient dead

Disease is an analogy;
Resistance and immunity
Are all that we can hope to build
Unless each floating spore is killed

PHILOSOPHY

The cause – outside – just cannot win
Without the enemy within
When he is gone, the cause must die
Though lasting long in earth and sky

We build our strenghth through finding out
What the disease is all about
The serum that we take from one
May save the world before we're done

And yet there is a risk, I know
"Live-virus vaccines" still may grow
We live and learn, or try to live
Embittered by the pain we give

Yet softened by the things we share
We have to think, we have to care
We try to help, we help to try
We search the earth, we search the sky,

We search ourselves in hope to find
The remedy for all mankind
And if we do, how shall we know
Unless our practice prove it so?

Perhaps in doing so we find
Our selfishnesses undermined
For other people, it is true,
Have problems just like me and you

And other people plainly see
The wretchedness and misery
The bloody brutalising force,
The inner cancer of remorse

The blindness which assumes that I
Remain unchanging till I die
Or else, mechanical, adapt,
Behaviouristically trapped

The awful worship of success – –
The absolute – – the hopelessness
Inevitable failure brings
Which binds us to the little things

That we achieved along the way . . .
A word, a look has warmed my day
Yet you might think it nothing worth
– –That's us! "We only want the earth."

So hitch your wagon to a star
No longer looking where you are
Or where you're going, travel on
Nor wonder where the world has gone

Forget your friends, and Earth's delights;
Alone you'll set the world to rights
But no; alone you just can't win
Another tyrant lies within.

H.N.D.

A BRIEF HISTORY OF THE VIETNAM MORATORIUM COMMITTEE (VNMC) AT NIH/NIMH

In September 1969 some fifty Federal employees got themselves together to form a group on a government reservation in order to dissent from what was then the war in Vietnam. We gathered several hundred signatures on a petition calling for the right of Dr. Benjamin Spock to address Federal workers at the NIH. The administration denied the petition, and so we went to court. Our ACLU counsel succeeded in convincing the court to grant our petition, as well as our right to exist as a group on the NIH campus. This birth under fire, as it were, is stressed because it concerns some of what follows and describes the existence of the committee now.

At first we conceived our role as principally an educational one to inform our constituents at NIH (in cooperation with other groups in the Federal establishment) about the facts of the war in the hope that the enlightened would then somehow act to end the war. These efforts consisted of a number of lectures by "names" such as Robert Jay Lifton, Howard Levy, and I.F. Stone. Some of us were concerned, at this time, about "how to get the blacks in." There began to emerge, with much mostly prolix discussion, the idea that what we would have to deal with was the existence of an exceedingly unresponsive and repressive social structure, not just the war. At any rate, local black leaders such as Marion Barry and Sterling Tucker were invited, drew good audiences with many black workers, and the moratorium put out much effort in a requiem for Dr. Martin Luther King. Significantly, no blacks joined our group, nor are there any today. We were and are composed of middle class white, mostly suburban "liberal" professionals and office workers in health services. This should have been the tip-off, but our consciousness was just emerging, and we occasionally expressed regrets about the situation.

About this time, in the winter of 1969 to 1970, when we had considerable support, had large attendance at planning sessions, as well as endless debate, a rather critical development occurred. A number of people felt that the VNMC was a real power on "campus" and that we ought to try to influence the Director of NIH "directly". It was proposed that we establish a sub-committee that would meet with the Director at regular intervals, carefully prepare for these meetings in order not to waste the official's time, be in a position to transmit valuable information to the Director exclusively, and in general impress the Administration with the excellence and importance of the VNMC. Also these advocates felt that we should do nothing that might get the Director fired. An actual meeting was set up under these conditions, but the results were, as described by a participant, "murky". Opponents of this proposal were a bit slow in getting started, but their position was something to the effect that the VNMC was created by court order over the official resistance of NIH; that the latter in their bureaucratic roles would prefer not to have us exist, regardless of covert expressions of support; that we were a dissent

group of a maverick character; that this was our strength and that we would lose our credibility with our supporters if we treated with the chief officials in a special elitist manner; that our principal obligation was to "level" with all fellow employees, not to get co-opted. This view won out, and we lost some people. A bit chastened and less concerned with luring this or that group, we continued our activities in educational efforts such as an irregularly published newsletter, the *Rainbow Sign.* The group operated in a loose fashion ideologically and functionally: whoever advocated a project received committee support by majority and was responsible for carrying it out. The items in the newsletter reflected only the author's opinion, not necessarily those of the rest of the members. As an example, the VNMC lent its resources to and aided a group of black custodial employees who were threatened with a decrease of salary increments and, in some cases, actual reduction of pay grades as a result of a bureaucratic steam roller put in action by a "directive" to equalize wage rates throughout the government. The moribund union local here was unresponsive to the situation until the workers themselves organized. Some ferment was cropping up in the entire Federal establishment by this time, and in April 1970 a Federal employees' coalition held a series of workshops on the war, racism, conditions of employment, and the uses to which health and scientific research were put. The VNMC participated, as did Nader's Center for Responsive Law. During this period the committee revealed that the NIH had supported research on the birth-producing defects of defoliants used in Indochina and that public knowledge of the results had been suppressed. The workshops drew about 250 people and was acclaimed by Marcus Raskin as a start on changing the entire Federal Structure. The follow-through was a bit less impressive. Our attention was rapidly turned to the war itself when Cambodia, Jackson State, Kent State, and Augusta became news. We had speakers from both campuses, Dave Dellinger, Rallies on "campus", and we organized lobbying of members of Congress from Maryland. The domestic aspects of the

war–repression, killing of protesters–created an awareness that Tom Hayden was one of the first white radicals to express: that the war was the result of behavior patterns of Americans concerning the treatment of the powerless by the powerful–a fact known by the oppressed groups for an indecent length of time. The mythology of this nation's leaders with such reflexes was carried into practice in south-east Asia, as was explained by Col. W.R. Corson in a talk to us on delusions in Vietnam.

After the Laos "incursion" we lost members and audience. The war was being "wound down" and our scientific researchers returned to "productive" work. There were some incidents to keep us on our toes. An issue of the *Rainbow Sign* with a mock civil service rating questionnaire for Nixon as well as an "obscene" photograph of a peace demonstrator drew angry responses from a few Congressmen and a reproving letter from the director of NIH. Such a letter was placed in the personnel files of some members of the VNMC. It was removed after we met with the director, and later an official reprimand to one of our members was expunged. Much effort was spent in useless matters–not that we had to move to correct injustice, but that the "correction" never really took place. The committee is still harassed. Our program material is occasionally disapproved as "inappropriate" in the initial negotiations. We win out with a threat to go to court but we can do nothing about delaying tactics.

In February 1971, the group joined with other organizations in Maryland to campaign for the passage by the Maryland assembly of an undeclared war bill, similar to that passed by Massachusetts. John Wells, co-author of the Mass. bill, assisted us. The coaliation collected 11,000 signatures, the endorsement of the Democratic Central Committee and Precinct Chairmen of the local county, and conducted intense lobbying of state assemblymen, distributed publicity, and gathered an "imposing array" of witnesses to testify for the bill. The measure did not pass, but some VNMC members did learn that sometimes the minds of the state representatives, who were more accessible than Congressmen, could be changed. So we worked through the "system".

We sponsored two rock concerts at the NIH in order to present the employees with an alternative life style, oriented toward peace and living–freedom from the corporate state existence for an hour at noon. The group also published a study of neglected health needs for the nation; supported the recognition of a black and women's organization at NIH; joined with the Assembly of Scientists, a "respectable", non-dissenting organization, to sue for the abolition of elitist practices in the assignment of parking spaces; and is co-operating with the black organization in the formulation of a prisoner-work release program at the NIH. As a result of the women's group's agitation a day care program is being organized at the NIH. Lately, the wider war in Indochina has raised some opportunities for further collaboration between us and the other employee groups.

What has all this to do with "Science for the People"? I believe, that for the first time it can be said that the Federal structure has been made a bit internally respon-

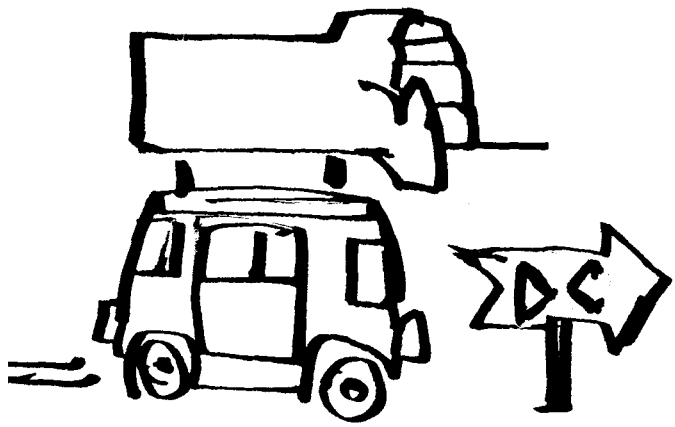
CONFERENCE
CALLED BY THE
WASHINGTON, D.C. CHAPTER
OF SESPA/SCIENCE FOR THE PEOPLE

To be held on Friday and Saturday, November 24 and 25 (Thanksgiving Weekend) at Mt. Airy, Md. to plan actions for the December meetings in Wash. of the American Association for the Advancement of Science (AAAS).

Local groups, please meet and formulate action plans, position papers, displays, symposia, guerilla theater, etc. (Preliminary programs are being mailed to all local groups.) Each local group, please communicate proposals and suggestions to all groups to prepare us all for the conference.

Individuals, please contact nearest local group. Local groups, please contact SESPA/DC–(202) 547 1459 for map and directions and to notify them of number of persons planning to attend. Plenty of room is available; bring sleeping bag and be prepared to share food expenses. Conference will be at farm of C.J. Swet, RFD 4, Mt. Airy, Maryland 21771, Tel. (301) 829 0477.

LET'S GET IT TOGETHER FOR AAAS '72



sive. We do have some power. We can make demands about adequate health care, environmental protection, programs for oppressed groups, and perhaps even about orientation of research which will receive a hearing, as it affects the welfare of the employees at HEW. The effects of this experience may be quite gratifying on an individual basis. One of our members has had to do some hard thinking on pure science vs. applied science, in relation to the newly created cancer authority at the NIH.

Some conclusions about the role of the Moratorium Committee in a government institution may be useful. The long war in part reflects the operation of the unrepresentative government and unresponsive society. We have had to react to this by forming vehicles for the amplification of our dissent. Our position as Federal workers places us a bit uniquely. We wish to discharge our national service obligations proudly, yet we do not want to be associated with the devastating policies of the President; we cannot allow silence to be interpreted as assent or acquiescence to this course. Furthermore, since we are concerned with health and welfare, it is especially obvious to us that the war is a major public health problem, the effects of which are only beginning to occur. Attention to this last matter can lead to some profound changes in the direction that our society may take.

E.S.

A R P A

Anthropologists for Radical Political Action
invites those critical of the present use of Anthropology to join them in taking action.

***** First national meeting to be held on Wednesday November 29 in Toronto (at the meeting of the American Anthropological Association–AAA).**

***** Symposia, countersessions and radical actions at the AAA meetings in Toronto, Nov. 29 to Dec. 3.**

:: Committee on potentially harmful research.
Contact R. Lee, Dept. of Anthro., Rutgers, N.J.

:: Symposium on Imperialism and Colonialism.
Contact S. Barnett, Dept. of Anthro., Princeton.

:: Analysis of Sexism.
Contact Ruth Benedict Collective, P.O. Box 31 Canal Street Station, New York, N.Y. 10013

***** Newsletter will be available at $2.00 per year from ARPA, P.O. Box 444, Storrs, Conn. 66268.**

BERKELEY CHAPTER REPORT

The Berkeley chapter has been participating in ARC (Anti-Racist Coalition) meetings to combat "scientific" racism as expounded by Jensen, Herrnstein, *et al.* A detailed summary of their work, including reprints of Jensen's arguments and selected rebuttals and a discussion of how these issues affect public policy is being published by the group and can be purchased through Berkeley SESPA

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	c/o Ken Ziedman, Scientific Workers for Social Action, Box 1263, Venice, California 90291
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	c/o David Kotelchuck, 49 W. 96th St., Apt. 53, New York, New York 10025
	c/o Rod Wallace, Pupin Lab, Columbia Univ., New York, N. Y. 10027
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AUSTRALIA	c/o Petor Mason, School of Mathematics and Physics, Macquarie Univ., North Ryde, New South Wales 2113
ENGLAND	c/o Gerry McSherry Flat 2, 5 St. Michael's Place Brighton, BN 1, 3 FT Sussex, England
IRELAND	c/o H. N. Dobbs, 8 Ailesbury Grove, Dublin 4, Eire
WEST GERMANY	c/o Claus Offe, Max Planck Institut D 813 Starnberg, Riemerschmidtst. 7

NEWS FROM VIET NAM, VIA PARIS THAT WE DON'T GET FROM OUR PRESS . . . . . .

The bourgeois press is attempting to obscure the true picture of the events in South Viet Nam. They lay great emphasis on the so-called "invasion" from the North and ignored the role of the popular forces in the South.

When the offensive began, the people of Nam Bo, in the delta area, rose up and smashed 100 enemy posts. Regular forces, guerillas, and regional forces accomplished this in co-ordinated action. The Saigon press is covering up such popular uprisings.

There has been very severe repression of movement activities in the cities. In Saigon, 13 faculties of the University went on strike from 5 to 9 April, to demand the release of students who had been arbitratily arrested.

On 23 March, 10 leaders of the students were brought before a military tribunal for trial. A large group of students protested the trial; they marched into the tribunal and one among them read a 45 minute declaration denouncing the U.S. intensification of the war and the fascist policies of Thieu. At the end of the 45 minutes, while the student was still reading, the police broke into the tribunal and clashed with the students. The students slit their own wrists and with their blood wrote slogans on the wall of the tribunal—"Freedom or Death." The police removed all the students, taking them to police headquarters; many had fainted from loss of blood. The tribunal was temporarily suspended. At the same time as the above battle in the tribunal, Buddhist students demonstrated outside the tribunal and battled with police.

Also at the end of March, thousands of students of the faculty of Letters staged a strike opposing U.S. policies and the Thieu regime.

From 25-30 March, students in Hue demonstrated in front of the Municipal Buildings. A number of students were arrested. They have also staged hunger strikes to protest the fascist policies of Thieu.

AFP (French press agency) reports that the Thieu administration built an execution site in Hue to execute without trial anyone making communist propaganda.

In Saigon, Mme. Ngo Ba Thanh, of the Women's Committee for the Right to Live, who had been in jail for some time, was brought to trial on a stretcher. People present in the court demanded that the trial be stopped. Despite her severe illness, Mme. Ngo Ba Thanh rose from her stretcher and held a brief press conference in which she denounced the U.S. and Thieu fascist policies.

The PRG spokesman concluded his remarks in stating that at this time, "we are very proud of the students and intellectuals in Viet Nam who are displaying great heroism and courage. In the liberated areas we have to contend only with the American bombings; but they have a very difficult time contending with the severe and brutal repression of the Thieu administration. We admire them greatly."

KAPITALISTATE

an international bulletin of Marxist studies of the capitalist state.

This is to be a journal of working papers by those studying the modern capitalist and imperialist state with the method of political economy developed by Marx and Engels.

To avoid the centralist tendencies of most journals there are five Coordinating Editors, one each from France, Germany, USA, Italy, and England. These are to be changed each year. There are also to be thirty to forty contributing editors. [*Presumably these social theorists and researchers will rotate themselves into practical work also.*]

Volume I, Number 1, due to come out in the Winter of 1972-73, will include surveys of several current projects, theoretical notes, and a book review and discussion section. Among the articles in the first issue are:

Education, State, and Private Economy (USA)

Current Research on State Capitalism (Italy)

Elements of a Materialist Theory of the State (Germ.)

$8.00 per year (four issues) for individual subscribers; $12.00 per year for institutional subscribers payable to *Kapitalistate*, c/o Jim O'Connor, Dept. of Economics, San Jose State College, San Jose, California 99114

WOMEN'S ISSUE!!

We are still collecting articles for a possible women's issue of *Science for the People.* Anyone wishing to contribute articles, information, suggestions or comments, write:

WOMEN'S COLLECTIVE
c/o Science for the People
9 Walden Street
Jamaica Plain, Massachusetts 02130

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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:

I am a member (check here if subscriber only. [ ])

1. Name:

   Address:

   Telephone:

   Occupation:
   (if student or unemployed please indicate)

   If you are working, do you work in industry [ ], government [ ], university [ ], other _____

2. Local SESPA chapter or other group in which I'm active:

3. I am enclosing money according to the following scheme: (a) regular membership–$10, (b) indigent membership–less than $10, (c) affluent or sacrifice membership–more than $10, (d) completely impoverished–nothing, (e) I have paid already.

4. I will sell ____magazines. This can be done on consignment to bookstores and newsstands, to your colleagues, 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, 9 WALDEN ST., JAMAICA PLAIN, MASS. 02130