

SCIENCE FOR THE PEOPLE

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The American government's latest maneuvers in the Indochina War reaffirm that the calculated genocide is no mistake of foreign policy. The highly mechanized air and sea warfare kills and maims indiscriminately. The use of mines, plastic anti-personnel bombs, people sensors, defoliants, and weather manipulation (as reported in this issue by the Science for Viet Nam group) should emphasize to all of us in science and engineering that our work is used by the U.S. to suppress popular movements around the world. We regret a lack of material related to the latest developments in Indochina. We support and encourage demonstrations to express our continuing abhorrence of the actions of the U.S. government and solidarity with our Vietnamese brothers and sisters.

Three articles in this issue concern health in the United States; they report the priority of profit and self-interest over health. Included is an article about discrimination against women in chemistry. Another article suggests how science education can be made a tool whereby students would learn to critically question and evaluate their environment.

The womens collective which produced the article about women in chemistry, is interested in having an issue of *Science for the People* devoted to women. They would like to hear from people who have suitable articles, information, suggestions or comments.



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 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 SESP 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 SESP/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.



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WOMEN IN CHEMISTRY: PART OF THE 51% MINORITY

In a country where over one half of the population are women, why are only 9% of chemists women? Why do women constitute only 4.2% of all physicists and 0.8% of all engineers? Are we dealing here with those mythical natural interests and capabilities of women? Is the reason irrational discrimination, or is it perhaps a more pervasive social force? Certainly the practice and pattern of discrimination can be well documented in the sciences, but the real problem is indicated by the fact that there really are not that many women who enter science to be discriminated against. Women are excluded in general from the higher paying, "high status" jobs in this culture. The socialization of women tells them that their place is in the home, that their purpose in life is to marry and to raise children. On the other hand, economic reality forces almost all women to work at some point in their lives and at the present time 40% of the women in this country work. Women in our capitalist society form a cheap, flexible labor pool as well as being responsible for all of the unpaid labor in the home. The socialization process assures that women are basically untrained for anything but menial, mind dulling, uncreative jobs. They are not considered to be true members of the work force and are easily drawn in and out of the job market as demand changes. It is in the interest of the economic structure to maintain the present attitudes toward women. The availability of such a group helps keep business costs down and profits up. We wish to focus here on the mechanisms by which women are kept "in their place" using chemistry as an example.

CHANNELING or WHAT'S A NICE GIRL LIKE YOU DOING IN A PLACE LIKE THIS?

One can isolate a number of sociological and psychological forces which channel women away from higher education and away from careers. Each kind of pressure, whether subtle or overt, arises from this society's stereotype of character and roles for women and is reinforced by the need to keep women as a cheap labor force. The chronology is probably familiar to most professional women. The American girl grows up in an environment, both at home and at school, that molds her into a sweet, submissive, agreeable form. It confirms the belief that a woman's proper and natural spheres are domestic and maternal. On the other hand, boys are encouraged toward aggressive, independent, and ambitious behavior and are surrounded by images and actualities of the active adult male. In their early school books, on television shows and ads, and in the home, young girls are bombarded by images of what they are expected to be. For example, in a survey of ads for chemistry sets, investigators found that most pictures showed young boys experimenting, with invisible ink and magic solutions. There was only one picture of a girl. . . making lipstick. By the nature of these social models and prejudices, young girls are not encouraged to develop the traits of the scientist, such as self reliance, inquisitiveness, creativity, or analytical ability. As Rossi notes, "If we want more women to enter science. . . some quite basic changes must take place in the ways girls are reared. A

childhood model of the quiet, good, sweet girl will not produce many women scientists or scholars, doctors, or engineers."¹

This channeling process intensifies during secondary and college level education. The ambivalence grows, as the possible conflict between personal interests and social expectations becomes more marked. This pressure is reflected in statistics for high school and college graduates and for advanced degrees. For example, Epstein points out that "although there are more girls than boys in high school graduation classes, more boys than girls graduate from college."² And although drop-out rates are similar, "boys are more likely to leave because of academic difficulties or personal adjustments," while girls leave to marry. But then, this is what is expected and thus almost imposed upon women. As Weisstein notes, American women are defined as "inconsistent, emotionally unstable, lacking in a strong conscience or superego, weak, 'nurturant' rather than intelligent, and if they are at all 'normal', suited to the home and the family. . . (However) In a review of the intellectual difference between little boys and little girls, Eleanor Macoby has shown that there are no intellectual differences until about high school, or, if there are, girls are slightly ahead."⁴

A young woman is discouraged from being intelligent or "over-educated" since this economic investment would only make her unmarriageable. After all, "what a man does defines his status, but whom she marries defines a woman's."² As many women scientists will acknowledge, they were especially discouraged from entering science or engineering because these fields are viewed as being beyond women's mental capacities, are incompatible with desirable, womanly attributes, and in the long run, are unproductive for women. Distribution in undergraduate degrees reflects the success of this channeling: men receive almost 9/10 of the degrees in the physical sciences and about 3/4 in biological sciences and mathematics, while women generally choose education, English, and foreign languages. Weisstein concludes that "in light of social expectations about women, what is surprising is not that women end up where society expects they will; what is surprising is that little girls don't get the message that they are supposed to be stupid until high school; and what is even more remarkable is that some women resist this message even after high school, college, and graduate school."⁴ Interestingly, many of the women who have "made-it-through" are either foreign born or are first-generation American. This can be accounted for by the differences between the channeling of middle-class European women and American women.

If a woman successfully challenges these myths and traditions, and enters a graduate school, she encounters another set of barriers. As Epstein suggests, a profession is a microscopic society that depends on "the mutual understanding among its practitioners" and on conformity to "shared norms and attitudes". First, Epstein writes, "the sponsor-protege or master-apprenticeship may inhibit feminine advancement in the professions. The sponsor is most likely a man and will tend to have mixed feelings, among them a nagging sense of impending trouble, about accepting

a woman as a protege. Although the professional man might not object to a female assistant—he might even prefer her—he cannot identify her as someone who will eventually be his successor. He will usually prefer a male candidate in the belief that a woman has less commitment and will easily be deflected from her career by marriage and children. . . . Even if she serves an apprenticeship, the woman faces serious problems in the next step in her career if she does not get the sponsor's support for entree to the inner circles of the profession. . . . He may feel less responsible for her career because he assumes she is not as dependant on a career as a man might be."⁵

Epstein also notes that women are often excluded from the informational interactions and means of recognition which are essential to advancement. And unfortunately, "the only possible antidote for the familiarity and lineage which oil the wheels in professional environments is power through rank, seniority, money. . . women do not often have any of these defenses." The elitism of the professions is evident from Epstein's analysis, but she does show the overwhelming male domination of our present society.

If all of these social pressures fail to discourage a particularly obstinate woman, there is always outright, old-fashioned discrimination to fall back on. Incredible as it seems, loud cries of denial still go up from academics and industry people when this question is raised. However, a rather superficial look at the situation is enough to make the point.



WOMEN IN UNIVERSITIES or IS ANYBODY THERE?

Hiring policies and practices in universities are discriminatory. Most American universities which grant Ph.D's do not have any women chemistry faculty. From a study of 172 schools with a total of 3925 Ph.D faculty members, only 90 were women, or 2.3%. Of these, 39 (or 43%) were of subprofessorial rank (instructor, research associate, etc.).⁶ If there were no discrimination, about 6.3% of all faculty members in chemistry would be women (since 91% of women with Ph.D's were working in the last decade and 6.9% of Ph.D's in high-ranked schools in chemistry were women.⁷ As a striking example one might consider the top five departments of chemistry, which grant 6.9% of their Ph.D's to women. Top universities are training Ph.D women, but they are not hiring them:

1. Harvard 0.00% women faculty
2. Cal Tech 0.00% women faculty
3. Berkeley 0.00% women faculty
4. Stanford 0.00% women faculty
5. MIT 0.00% women faculty

Women are in less "prestigious" universities, colleges, and junior colleges. Of those privileged enough to be employed in top schools, 43% are placed in the lower echelons of university ranking.

If any doubt remains as to whether basic attitudes and hiring decisions are discriminatory, the results of a study involving the chairmen of graduate departments of a physical science discipline in colleges and universities will offer conclusive evidence. If a man and woman of equal qualifications apply for the same position on a faculty, the man is more likely to be hired. If a woman with superior qualifications is among the applicants (with men of average qualifications) she is seriously considered for the position, however with reservation. Important factors to be taken into account are her marital status, number of children, husband's occupation, and of course, her compatibility with the male faculty.⁸ That discrimination does exist on the hiring decision level is evident.

If a woman surpasses the barriers of hiring attitudes, is she then treated with equality with regard to salary? On the professorial level in all colleges and universities in the United States in 1965-66, the median annual salary for men was \$12,768, and for women \$11,649. The gap narrows as one goes down the ladder of prestige, but is there at all levels.⁹ The same inequality appears in promotions. The study by the Committee on Education and Labor in the House of Representatives concluded that promotion possibilities for women in universities are worse than for men. The proportion promoted is lower at *all* ranks studied and for all time periods studied (1920-40, 1950-69).

Since the proportion of women professionals married to men in the same field is very high, the question of nepotism policies in universities becomes important. Many women in this category whose husbands hold university positions are employed as lecturers (sometimes without pay), research associates or forced to find positions in other departments or different (often "inferior") institutions. In a study of the University of California at Berkeley, most

women in such a situation felt that their talents were not fully utilized and that they were qualified for regular positions on the Berkeley faculty. Some of their husbands' comments are rather instructive: "I presume that the University nepotism rules bar her employment here, and so she is consigned to a job vastly inferior in all ways, though her qualifications are equal or superior to my own. . . and better than many of the people the department does hire." Or "She is employed here, at a lower level than in her previous position and in a temporary position. . . She has no facilities for research or support for research here and is forced to use my lab, where she has an established reputation as an independent investigator." Wives with B.A.'s and M.S.'s or M.A.'s are affected by nepotism in many ways: in the Berkeley study, some could not be appointed as lecturers in their husband's fields, though uniquely qualified; several could not be hired as secretaries or researchers even with excellent training and qualifications. More frequently, however, wives were found working as unpaid research or editorial assistants for their husbands.

WOMEN IN INDUSTRY or THE SAME OLD STORY

Although less specific information is available on employment of women chemists outside universities, the same trends are apparent. Women are found in lower ranking positions in both industrial and government laboratories. For example, 75% of the women employed by the National Institutes of Health are in ranks of GS9 or below, and no women are in the two highest ranks, GS16 and 17.¹⁰



Recruiters for industrial positions tend to look for men for the positions offering permanence and good opportunities for advancement. Even when women are hired, promotion is slower. Women are less likely to "advance" into management. Only 6% of the women in natural sciences are found in management while 24% of the men in science are working in managerial positions.¹¹ Starting salaries for women in the chemical industry are slightly lower than those of men and the gap appears to increase with length of employment. Chemical and Engineering News did a study of chemists' salaries in the fall of 1968, which showed that, with seniority held constant, women with Ph.D's made less than men with only B.A.'s. Fringe benefits are often less inclusive for women than for men. In addition, married women often hold a second full-time (unpaid) job as housekeeper. Women with children are particularly handicapped by the lack of adequate child care facilities.

*GRANTS or FROM EACH ACCORDING TO HIS ABILITY—
TO EACH ACCORDING TO HIS SEX*

Grants and awards are of crucial importance in the professional development of scientists under the present system. What is surprising is that women scientists are as productive as their male colleagues in spite of the fact that they have more difficulty in obtaining support for their research. The problems encountered by women in this area are shown by a recent study of grants awarded by the National Science

Foundation, "In the Senior Postdoctoral Fellowship competition recently held by the NSF, 14 of the 395 applicants were women. Fifty-four grants were awarded—none went to women. In a pilot study of grants and awards given by the NSF to university researchers in a physical science discipline for the years 1964-68, women were only awarded less than 0.03% of the grants although they comprise 5 to 8% of the scientists in the discipline. Furthermore, the mean dollar value of the awards received by women was smaller than that of those received by men."⁸ Similar discrimination is shown in the awarding of NIH grants, "Of Postdoctoral and Special Fellowship applications made to NIH in 1970, the rate of disapproval was higher for women than for men. The disapproval rate for men was 38.8% compared with 55.7% for women. The discrepancy was even greater in the disapproval rates for applicants for the Research Career Development Awards for one NIH Institute over the years 1949-1965. Only 21.9% of the men were turned down while 70.8% of the women applicants were rejected. In 1970, women were only 2.5% of the NIH Study Panels which review grant applications."¹⁰ In addition, the representation of women on advisory panels of the NIH and other agencies is not anywhere near the actual proportions of women in the scientific fields. As pointed out by Lewin and Duchin,⁸ "similarly, out of the 827 Sloan Research Fellowships that have been awarded by the Alfred P. Sloan Research Foundation over the past 16 years, only one or two women were among the recipients."



MYTHS, or, IF YOU'RE SO SMART, WHY AREN'T YOU MARRIED?

Though faced with the facts, many people would still deny that the above is real proof of discrimination against women, but only a result of the various characteristics of women in the job market which make them impossible to accept as serious, dedicated and qualified workers. One of the most durable myths is that it is useless to hire or train women since they only marry and leave. Statistics show that women can be expected to remain on the job about the same number of years as men, regardless of educational level. As an example, 91% of the women who received Ph.D.'s in 1957-1958 were employed in 1964. Of these, 80% had not interrupted their career during that period of time.¹² Another stereotype is that women professionals are less productive than men. According to a study, there are no differences in the productivity of men and women scientists.¹³ This is despite the fact that women are discouraged in their professional life and placed in positions which indicate their so-called incapability of competing with men. Furthermore, our culture defines women as incapable of abstract thought. In all doctoral fields, a study has shown that women receiving the doctorate are brighter than their male counterparts.¹⁴ However satisfying this may seem to those who have Ph.D.'s, it is a discouraging fact. For a woman to succeed she must be brighter than her male colleagues, must work harder and still face the fate of seeing her efforts and talents oftentimes remain underutilized or unrewarded.

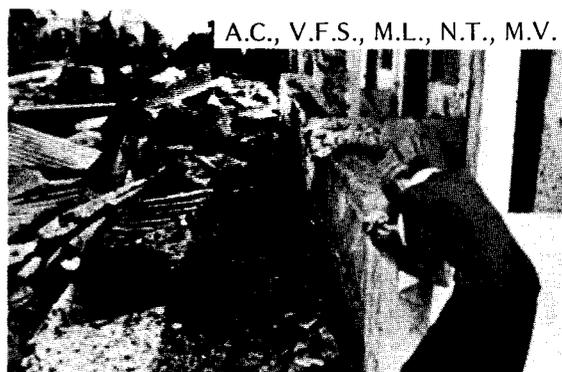
Then there is the "superwoman" stereotype. Women who do succeed are seen as "different" from other women. The woman who manages to get by the socialization barriers and to find a job in spite of discrimination may do so at a great psychological price. She may fall victim to the "superwoman" syndrome, attributing her success to her own superior capabilities and perseverance. She implicitly accepts that a woman must "prove herself" by demonstrating far greater capability than a man for the same recognition. Having joined the elite, she does not see women's problems as societal ones, but as personal ones. She accepts the society's rhetoric that every woman who is truly competent and determined can succeed.

One can write, then, convincing critiques of the social and psychological pressures that discourage women from entering science and other professions. One can also make endless surveys of facts and cases that show the extensive discrimination that women face if they somehow "make it through" to a career. However, the treatment of women is fundamentally tied to the structure of our society. The mere recognition of problems will not resolve them. Nor can one depend on the Goodwill of societal institutions or on the promises of government to produce change. Industrial directors will not spontaneously, out of some humane insight, abandon their discriminatory practices; if the change is not profitable, why make it? Neither will the action (or more precisely, the pronouncements) of the government be anything but pacifiers for dissatisfied women. HEW is, for example, apparently easing up on even the most

villainous institutions. Social change requires social mobilization, or some organization of people, ideas, and tactics. Discrimination against women must be fought wherever it occurs. However, the complete liberation of women will require a basic change in every aspect of the society, from the economic structure to the nuclear family. Sexist attitudes and practices will begin to collapse only when the victims, the women themselves, get together to define the problems and exert strong and visible pressure for radical social change. As our sisters demanded in the 19th century newspaper, *The Revolution*:

*Principle, not policy; Justice not favors—
Men, their rights and nothing more;
Women their rights and nothing less.*

1. For a more complete discussion of the role of women in a capitalist society, see Margaret Benston, "The Political Economy of Women's Liberation," *Monthly Review*, Sept., 1969.
2. A. Rossi, *Science*, May 28, 1965, p. 1201.
3. C.F. Epstein, *Women's Place: Options and Limits in Professional Careers*, Univ. of Calif. Press, Berkeley, 1970, p. 56.
4. N. Weisstein, "Kinder, Kuche and Kirche" in *Sisterhood is Powerful*, ed. by Robin Morgan, Vintage Books, 1970.
5. Epstein, *ibid.*, p. 169.
6. *Chemical and Engineering News*, May 10, 1971, p. 21.
7. *Science*, 172, 1281, 1971.
8. A. Lewin and L. Duchin, *Science*, 173, 892, 1971.
9. These figures and the information in the remainder of this section were taken from: *Discrimination Against Women: Hearings by the Committee on Education and Labor*, House of Representatives, 1970.
10. Extramural Forum of NIH, May 26, 1971.
11. R.H. Bolt, in *Women and the Scientific Profession*, ed. by Matt Seld and Van Aken, MIT Press, Cambridge, Mass., 1965, p. 145.
12. P. Graham, *Science*, 169, 1284, 1970.
13. R. Simon, S. Clark, K. Galway, *Soc. Prob.*, 13, 221, 1967.
14. H.S. Astin, *The Woman Doctorate in America*, Russell Sage, 1969.



WEATHER WARFARE



The United States Government has put the weather into its arsenal of weapons for use against insurgent movements throughout the world.

According to a preliminary report issued by Science for Viet Nam in Chicago, the U.S. military has already employed weather modification techniques in Indochina and is now engaged in top secret research and planning to turn the seasons themselves into weapons for destruction.

At the request of a member of the Union of Vietnamese in France, the Science for Viet Nam group began looking into the military use of weather modification techniques. They discovered that most of the Department of Defense appropriations in the area go to classified projects. But published reports, brought together for the first time by the Chicago collective, indicate some of the extent of Pentagon involvement in geophysical warfare and research.

The "Pentagon Papers", the once top-secret Defense Department history of the Viet Nam War, mentions that the U.S. Military employed weather modification techniques over Laos as early as 1967 under the code name "Operation Popeye".

According to an article by syndicated columnist Jack Anderson, the Air Force last year engaged in rain-making over the Ho Chi Minh trail in a project called "Intermediary Compatriot". The operation flooded the trails and washed out some Laotian villages, Anderson reported. When Rhode Island Senator Claiborne Pell asked the Pentagon to comment on this activity last November the Department of Defense refused to answer, saying the information was classified".

The Science for Viet Nam (SFVN) Collective in Chicago researched the literature on geophysical warfare for three weeks before issuing its preliminary report this week. The report is being sent to other SFVN groups in the United States and other concerned groups throughout the world so that further information can be collected.

The report shows that the Pentagon has made research on geophysical warfare a high priority project and requested \$10.5 million for weather modification projects this year alone. The Defense Department put the whole issue of meteorological warfare into the hands of its Advanced Research Projects Agency (ARPA), an agency established in 1958 to handle "centralized management of selected high-priority projects" including those that "require an especially quick reaction".

The Defense Department claimed in a letter to Senator Pell that "when clouds capable of producing natural rain exists, it is a relatively simple matter to increase the amount of rain which will fall. The amount of increase is frequently of the order of 30% to 50%."

To facilitate work in this area, the Pentagon has engaged the use of the world's fastest computer (the ILLIAC IV) to put together data on the climate of the entire world. This computerized model of the world's weather is being constructed under a project named "Nile Blue" (or "Blue Nile" in some references).

The SFVN report says: "Weather modification could be used to achieve longer-range military, economic, or political effects than we generally think of in conventional warfare. For instance, strategic rain-making could be used

to slow infiltration. Or adjustments of dry and wet weather during growth and harvest times could disrupt the economy and social structure of a small country; it could create famine or at least extreme hardship."

Besides the disastrous effects that rain-making or rain-stopping could have on human society (crop destruction, floods, drought, etc.), the potential ecological effects are equally devastating. Increasing rainfall beyond the watershed capacity of the land could create flooding and landslides. Coupled with a policy of denuding the land with herbicides and bulldozers and bombs (as is being done in Indochina), the increased rainfall would vastly increase the devastation.

At this point there is no way to tell all of the other effects of military tampering with the climate. "In general," the SFVN report says, "weather modification would probably alter the structure of plant and animal communities due to changes in their reproduction, growth and mortality rates in weather-sensitive species. It would probably require several years for the ecological changes to become evident."

The military clearly intends its weather warfare strategy to apply to other areas of the world besides Viet Nam. As the head of the U.S. Naval Research Facility told a panel of meteorologists studying tropical weather dynamics in 1967:

You will appreciate more than I the scientific necessity for early and intensive attention to tropical dynamics. My motives are more prosaic, even selfish. Underdeveloped nations represent potential trouble spots from which a requirement for supporting U.S. Naval operations may arise. These nations are largely within or immediately adjacent to the tropics.

The Chicago Collective of Science for Viet Nam is one of several SFVN groups around the country. The organization was founded a year ago. Its members include non-scientists and scientists, students, faculty and non-academic personnel who work together in trying to build a de-professionalized and collectivized science in this country. Their aim is to counteract the perversion of science for military use and to build a new science for the people.

In pursuit of this goal, Science for Viet Nam groups work on projects on which Vietnamese scientists have asked for cooperation. Groups in various parts of the country work on projects that range from questions related directly to the effects of the war to general scientific questions dealing with agriculture, education and medicine.

The Chicago office coordinates projects and answers information requests.

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AMERICAN CHEMICAL SOCIETY MEETING

SESPA attended its first meeting of the American Chemical Society this year. The immediate reaction of the lower echelon officials was of hostility. Denied the right even to put up a literature table, some of us circulated among the arriving chemists armed with leaflets and other "subversive" goodies, while others cornered the manager of the meeting. The reasons for their overreaction soon became apparent. The manager knew some of our names in advance and even knew some of our rather disorganized plans. Besides, his counterpart at the AAAS had lost his job after the Philadelphia actions. At one point he threatened to "take whatever action necessary" to keep us from politicizing the meeting. But the ACS Board of Directors was smarter than that. The implicit threat that we might cause a disruption bringing unwanted bad publicity was not to be taken lightly. We didn't have, of course, the personnel to do this but they were taking no chances. No less than R. W. Cairns, Chairman of the ACS Board of Directors, came personally to give us our officially sanctioned literature table (an unprecedented concession to "outsiders") and to wish us well in our endeavor. No doubt the average ACS member could not gain an audience with the distinguished Dr. Cairns, but then the average member represents no threat . . . yet.

Traditionally the ACS has been a spokesman for the chemical industry with little thought for the working chemist. However as unemployment rises and job security declines chemists are acquiring the peculiar idea that their professional society should do something for them. In response to this increasing disaffection the Boston meeting featured a Symposium on Professionalism which SESPA attended. The panel consisted of an AFL-CIO spokesman, J. Golodner, who argued for unionization of chemists, and three ACS officials who were anti-union spokesmen for management (and who, incidently, insisted that there was no essential dichotomy of interests between management and workers). During Golodner's talk he enumerated a list of means the establishment uses to maintain the status quo—techniques which, interestingly enough, the ACS officials then used when questioned by SESPA members and others concerning the society's inaction on lay-offs.

A SESPA planning meeting immediately followed the Symposium on Professionalism and was attended by many curious chemists as well as several ACS Council members who tried to channel our efforts into a newly created Member Advisory Board (MAB). Of the some 112,000 members

of the ACS only one solitary person has fallen for this ploy and utilized MAB. Unfortunately our meeting was dominated by the pushy ACS officials and the possibility of any serious planning was lost in the deluge of liberal rhetoric.

On the second day of the conference a talk with a reporter told us why the ACS seemed to know so much about us and our plans in advance—the FBI had given them the names of most of our ACS Collective and warned that we were contemplating major disruptions. The fact that the ACS had been nervously expecting SESPA to appear at the last three meetings (cf. *Science* 167, 151, 1972) led them to accept this bit of espionage unquestioningly and explained their obvious fear of disruption.

Undaunted, we engaged in a series of useful actions throughout the week, from leafleting and postering the ACS Awards Dinner (a formal affair) to a “War Symposium” featuring the NARMIC slide show and a talk by John Froines. This coincided with the escalation of the war and drew many newly aroused chemists. In addition a petition on the posture of the ACS with regard to the Defense Department signed by the requisite number of members was submitted to the ACS Council.

Another major action was at an open forum entitled “Improvement of Nutritional Status in the Developing Countries” sponsored by the Agency for International Development (AID, read CIA), and the League for International Food Education (LIFE), set up and solely funded by AID. We wrote a three page leaflet challenging the real goals and function of AID and calling for a critical evaluation of AID’s attempt to tap the technical resources of well-intentioned chemists. SESPA members successfully channeled the entire meeting into a discussion of the political issues underlying the actions of AID and LIFE, pointing out that the only people with the education or resources to avail themselves of help from LIFE are foreign exploiters or local capitalists, the very people who keep the poor hungry and suppressed.

We learned very early in the meeting that the ACS is a “men’s” club. Sexism was everywhere, from ads at the exposition to treatment of women at discussions (one of the best examples being “now listen here, little girl!”—spoken to a 34 year old woman!) At the beginning of the week we proposed the formation of a women’s caucus. The ACS does have a women’s committee; it seems to serve as a luncheon group. However, the level of consciousness of the women in general was higher than in the past. An open meeting after this year’s luncheon began low-keyed but ended in a heated discussion of examples of discrimination and insistence on action. The committee’s only response was to remind women of the roster for women seeking employment and to refer discrimination complaints to the male-dominated Professional Relations Committee. The response to our caucus was favorable and a meeting of the caucus drew up a list of demands to be presented to the ACS. The potential seems to exist for an effective women’s caucus in the ACS. At the next meeting we plan not only to try to reach more women chemists but also to try to encourage active participation by the wives of men chemists.

The ACS Collective is small but we learned some important lessons at the Boston meeting. We found that the ACS makes strenuous efforts to lead us into their organizational structure, forcing us to utilize needed energy in resisting their diversionary co-optation—no small problem in any radical organizing effort and one which Marx warned about. They were not, however, completely unresponsive to our pressures. Each action we took pushed them a little further than the previous boundary. They were ultimately reluctant to push back for fear of disruptions and thus although these small stepwise advances were not our planned intentions, we did manage to make inroads into the ACS for future use. After the dire warnings from the FBI, our low profile necessitated by our small numbers left the ACS officials with very ambivalent feelings about us. However we stimulated much needed dialogue with many of the general members and generated interest in our future activities. Our effectiveness as a collective increased as the meeting progressed and as we realized that each individual must assume personal responsibility and not look for a central leadership.

We are already thinking about the next national meeting in New York, August 27-Sept. 1, 1972. We realize that a considerable amount of background work needs to be done for the actions to be more effective. We strongly urge anyone interested in being involved to contact the ACS Collective, c/o SESPA

ACS Collective



US THE ETHICAL DRUG INDUSTRY

The prescription drug industry, with the complicity of protecting and supporting institutions of its corporate capitalist complex; the government and the FDA, the doctors and the AMA, the advertising media, has made the technology of drugs and health care a destructive one, a technology designed to promote the best interests of a small elite in lieu of, and at the expense of, the majority of people. There is a direct link between market structure and the shape that this technology does and must take, a cause and effect between corporate capitalism and a repressive scientific estate.

When discussing the drug industry, it is important to distinguish it from other industries. First of all, the demand for drugs is inelastic, drugs are needed regardless of the price, and even when people have very little money as in times of depression, the need for drugs is still the same. Note that the profits of many drug companies in times of depression, have been as high or even higher (lack of money for food and inadequate living conditions leading to illness) as in normal times. Thus, when demand is inelastic, there is much room for exploitation, the idea of charging as much as the market will bear.

Drugs are often matters of life and death; the use of an unproven or untested drug can obviously be dangerous. What must also be seen as dangerous is the use of an ineffective drug. To substitute a drug mistakenly believed to be efficacious for another cure or even bed rest will often lead to a worsening of the condition or even death. Take, for example, the case of Altador (furaladone) of Eaton Laboratories, a division of Norwich Pharmaceutical Company, which was offered for use against infection, and when used by patients with severe staphylococcal infections might well have led to mortality from lack of effective treatment

when efficacious drugs were available.¹ The unnecessary or over-use of a drug may also lead to unforeseen results. The rash prescribing of antibiotics to combat even the common cold (useless) and minor infection (unnecessary) in the 1950's resulted in resistant strains of bacteria-like invigorated staphylococcus which caused epidemics between 1954-1958.² It is the industry that fosters the overuse of drugs, through heavy and often false advertising. The problem is compounded by the fact that the consumer of drugs is not the purchasing agent. The doctor who makes out the prescription decides what drug and from what company (unless generically prescribed, which is not often the case) and with the current anti-substitution laws, this is the drug the patient receives.

The drug industry is by examination of its own data, an oligopoly. Although the Pharmaceutical Drug Industry says that "the US drug industry is one of the least concentrated of all American industries. . . government figures show 1325 firms in the drug industry," by its own figures, the twenty largest companies account for over 75% of new drugs prescribed. It also shows the four largest firms accounting for 38% of the same.³ Yet these figures underestimate the real concentration of the industry. It is necessary to divide the total market into specific markets determined by the drugs themselves. In recent government anti-trust actions, this has been the case. The merger between Continental Airlines Inc. and Western Airlines was blocked by the Civil Aeronautics Board because it was determined that these would be a monopoly in the specific Pacific airline market.⁴ The merger between Proctor and Gamble, Co. and Chlorox was blocked by the federal trade commission (supported by the Supreme court of the US, 1967) because it was said that there would be unfair con-

centration in specific markets.⁵ Relating this to the drug industry, the leading five firms in twenty therapeutic markets accounted for between 56 and 98% of sales.⁶ In eight out of nine sulfa drug markets, one firm accounted for 100% of sales, and in only six out of the 51 products were there more than four competitors.⁷

As Bernard D. Nossiter said, in the *Mythmakers* "there is nothing in the logic or practice of concentrated corporate industries that guides or compels socially responsible decision making." Nothing supports this better than the developments in the drug industry. Before, and during World War II the structure of the drug industry was such that there was a fairly small number of well established firms competing in a limited number of areas in which the technology had long been completed, what we might call products of "old technology." These firms mostly engaged in a defensive research, designed to keep the company abreast of developments in areas where they had products to protect rather than designed to open vast new areas. The firms had profitable and stable product lines that were insulated from the pressures of technological competition. In 1947, these "old technology" drugs still accounted for more than 80% of ethical sales, and two-thirds even up till 1954.⁸ Certain firms, like Pfizer and Merck, were bulk manufacturers of drugs who sold to other drug makers who repackaged and relabeled the drugs and then retailed them. For a while this was very profitable. Yet after the war new entries especially into the penicillin and streptomycin markets was caused by a readily-acquired technology. This increased price competition, dropped prices to the marginal

cost level (i.e. eliminated excess profits) and caused excess capacity.⁹ From this point on, the shape of technology within the industry completely changed. The firms that were hurt the most by the new competitive pressures were the first to adopt new "offensive" research postures, with growth as the main rule. The impetus was to create new markets, yet also to create technology and economic control together in order to secure a strong market position. As the "new technology" firms began to make great sales and profit advances, especially in antibiotics and the post-war miracle drugs, the oldest established firms, such as Lilly, Abbot and Parke-Davis raised their research expenditures from 4% of sales dollars, recognized to be "defensive" research, to 8% and above.¹⁰

The "new" technology can best be described as leaning heavily towards "applied" research, the attempt to create many new products slightly differentiated from others, and to exploit the minor differences in the marketing strategies with advertising and other forms of non-price competition. Molecular manipulation, duplicating the molecular structure of new drugs or synthesizing variations of compounds in the hope that one of them will prove pharmacologically active, became the rule. An example would be the adrenal steroid hormones, which were altered by molecular manipulation to reduce the actual milligram weight of the pill, but with no change in the efficacy or side effects. The "new" drugs were prescribed and distributed anyway, to "protect" the patient from side effects.¹¹ This is not to say that "applied" research has no socially beneficial purpose. It may be pointed out that, for example,



adrenal cortex steroid compound A is useless, while cortisone derived from it through applied research is a most important drug.¹² It is also not suggested that basic research has been completely abandoned. Yet when a new drug breakthrough is accomplished, imitations from this creative technology closely follow, as the tetracycline-aureomycin-terramycin cycle suggests.¹³ Even big business apologists, such as Schumpeter, recognize the "creative destruction" of old products and old markets at a furious pace.¹⁴ Inevitably, research is used systematically as a competitive weapon, where more research guarantees more sales. Professor Dale A. Console, formerly medical director at E.R. Squibb, puts it this way; "The problem arises out of the fact that they (the drug companies) market so many of their failures. Between these failures, which are presented as new drugs, and the useless modification of old drugs. . . most of the research results in a treadmill which moves at a rapid pace, but goes nowhere. Since so much depends on novelty, drugs change like women's hemlines and rapid obsolescence is simply a sign of motion, not progress as apologists would have us believe. . . I doubt that there are many other industries in which research is so free of risks. Most depend on selling for their successes. If an automobile does not have a motor, no amount of advertising can make it appear to have one. On the other hand, with a little luck, proper timing and a good promotion program, a bag of asafetida with a unique chemical side chain can be made to look like a wonder drug. The illusion may not last, but it frequently lasts long enough. By the time the doctor learns what the company knew at the beginning, it has two new products to take the place of the old one."¹⁵ It is significant that the industry does only 30% of the total research done in this country, and only 10% of the research considered to be basic, where and immediate pecuniary reward is not expected.¹⁶

There are certain structural factors internal to industry and external institutional factors essential to the "new" technology. One was the forward and vertical integration by the industry into retail pharmacy and hospital markets, i.e., the inclusion of research, production, and marketing under one roof, thus eliminating the wholesaler. This, along with the closing of competition from imitations of packagers or integrated firms under licensing agreements led to a direct control by the firm over pricing. Patent protection also insured the firm that if it could make a fairly creative modification, it could be the sole seller of it for seventeen years. Product differentiation, under these circumstances, flourishes, its effect on scientific progress is easily seen. P.M. Costello, in his paper "Technological Progress in the Ethical Drug Industry",¹⁷ studied a sample of 528 new drugs between 1945-1965; drugs of new chemical structures excluding combinations of old drugs and new dosage forms, which are sounded on the assumed lower order of scientific ability. Progress is defined where improvements over earlier drugs occurs, anything from less side effects to major breakthroughs. Non-progress occurs when a new drug does not exhibit any improvements over earlier drugs. The drugs were rated as to their technical efficiency relative to a particular problem, and no weight

was given to sales volume (no disparity between a drug treating a disease of high incidence as compared to one treating a disease of low incidence). Of the 528 new drugs, 465 of them represented product differentiation, (innovations of no progress) and only 63 represented advances or technological progress.

There is considerable debate on the correlation between structure and performance in industry. One main argument put up by Schumpeter is that only firms with some degree of market power have the resources to innovate (in this case innovate suggests technological progress). This is countered by the theory that innovation is a means for competitive firms to escape the rigors of competition.¹⁸ Yet we can compare progress under different market structures. To examine the role of patents, which assure a market position, a position of considerable market power, let us look at the findings of the Senate Subcommittee on Antitrust and Monopoly's investigation. These findings list the origins of basic drug inventions that constitute breakthroughs (basic research) according to the commercial/non-commercial classification, and the existence of patent protection. A great number of the US discoveries, such as the Salk vaccine and bacitracin were funded and developed outside of the commercial sector, by public agencies and institutions. The US discoveries, even including those from the non-commercial sector in all product categories besides antibiotics, are easily surpassed by discoveries in those foreign countries which do not award patents on pharmaceuticals.¹⁹ Thus, we can see that patent protection is no guarantee of innovation, nor is its absence a barrier to invention.

If we examine the antibiotics market, it can be divided up into the narrow spectrum market (the competitive segment) and the broad spectrum market (the monopolized segment). Between 1945-1965, 30% of new drugs in the narrow spectrum market and 50% of those in the broad market represented technological progress. Yet the total of new drugs introduced in the broad spectrum market was four, as compared to 34 in the narrow market.²⁰ Thus, where competition remains a force innovations of significance continue. In the broad market, only when the basis of monopoly is threatened by competition is research resumed. As an example, in 1945 Lederle quit its antibiotic research after its discovery of chlortetracycline. It resumed the research in 1952 when Pfizer discovered tetracycline and threatened Lederle's hegemony.²¹

That research and development in the pharmaceutical drug industry is concerned with new products rather than new processes in an attempt to achieve scientific or chemical product differentiation can best be explained through the use of profit and price theory under oligopoly. Under perfect or normal competition, where economic profits are minimal or non-existent (economic profit means profit over all costs, including opportunity cost of investments), new processes that cut costs puts the firm in a good competitive position, they allow him to stay in business. Under oligopoly, non-price competition is the rule, with coop-

continued on page 28

PERCEPTION, LEARNING AND SCIENCE EDUCATION

In a recent issue of *Science for the People*, the Science Teaching Group offered a critique of science courses in the schools.¹ The critique emphasized the role of traditional science education in maintaining the economic and social status quo. This is accomplished by fostering the myth of an apolitical, benevolent science, isolated from all social and economic considerations. For the scientist-to-be, scientific training involves a submersion in technical material designed to produce those skills which will maximize research productivity. The science education received by the non-science student usually produces only confusion and a sense of inadequacy, limiting his desire to become better informed on the subject and reinforcing the idea that science policy has to be formulated by the "experts," who are the only ones who understand it.

The Science Teaching Group offers a number of modifications to current science education which are designed to eliminate these perversions. Their suggested modifications are excellent and the sooner they are accomplished, the better. However, it seems to me that insisting on presentation of science as a framework of thought and delineating the relationship of this framework to other aspects of life offers a much broader opportunity for dispelling the social and economic myths on which our society is largely based. This possibility follows from an evaluation of the nature of perception, the relationship of perception to learning, and the part that education concerning the *substance* of science can play in strengthening perception and making more accurate the learning that follows from it.

Though much is yet to be learned about the nature of human perception, information developed during the past thirty years makes it possible to draw several well-supported conclusions. It will be useful to review, very briefly, some of the evidence which allows a clearer definition of the way in which we perceive. Slightly more than three decades ago, Adelbert Ames, Jr., began creation of a series of demonstrations intended to clarify the nature of perception. Among the best-known are those

which involve so-called distorted rooms.² In one version of a distorted room, the right side is smaller than the left, the floor, back and ceiling slanting away from the right side to meet the left. The floor therefore slants down to the left, the ceiling up to the left, and the back away to the left. The windows are trapezoidal and the more distant are larger. A metal ball hangs from the ceiling in the right-hand corner and a larger but otherwise similar one hangs from the ceiling in the left-hand corner. The room is either viewed monocularly through a peephole in the front wall or the front wall is removed and the room viewed through glasses which create the equivalent of monocular vision. In either case, the interior of the room produces the same pattern on the observer's retina as a normal rectangular room.

Kelley has described his experience with the distorted room:

You are asked to touch the left-hand ball with a stick. You put the stick where it appears to be. This does not touch the ball, so you extend the stick farther and farther until you finally touch the ball. Now you are asked to touch the other ball quickly. You far overreach and hit the back wall with the stick. Finally you withdraw the stick enough to touch the right-hand ball.

The only way you could know that your perception was faulty was by action. You could look at the room for hours and never gain a bit more knowledge about it.³

As active exploration of the room proceeds, the appearance of the room gradually changes until it is seen as the distorted room that it really is.

The distorted room is seen as a "normal" room because the observer's past experiences have led him, unconsciously, to the assumption that rooms are always rectangular. This assumption dominates his perception. Only the active exploration of the room referred to can show the actual shape of the room.



Ames and his associates concluded from the distorted room experiments and their other demonstrations that :

- (1) Visual perception is intimately related to assumptions held by the perceiver and rooted in his past experience ; frequently , many of these assumptions are held without the perceiver's knowledge.
- (2) False assumptions can be made conscious, and corrected, only by active exploration of the precept to which they are applied.

In recent years, numerous studies of human perception, not necessarily limited to visual perception, have provided further evidence in support of Ames' conclusions. These include studies of cultural influences on perception of illusion figures,^{4,5} of police training on expectation of violence and crime,⁶ of the relationship of activity to perceptual learning in both animals and human beings,⁷ and of self-fulfilling assumptions.⁸ Similarly, the observations made by those outstanding observers of perceiving and learning children, Maria Montessori and John Holt, lend support to Ames' conclusions.

Knowledge comes to us as we interact with our environment; that is, learning is accomplished through the process of perception. The ability to learn about reality is dependent on the capacity of the individual to relinquish what he has previously held and accept new information and concepts as his perception becomes increasingly sharpened and freed of false (and perhaps simultaneously hidden) assumptions. Conversely, when the educational system, the media, and other institutions of society cause the assumptive world of the individual to ossify patterns of thought cannot readily be relinquished and the ability to control thought (socialize values) is heightened enormously.

Present educational practice offers a remarkable contrast to the prescription for learning indicated by studies of the nature of perception. The traditional school environment is organized to encourage an attitude which severely limits the perceptions the student is allowed to build. Thus it is emphasized that knowledge consists of invariant "facts" which are known by an authority (the teacher or the textbook) and which the student must come to know—this after all that has been written about the conflict between Aristotelian and empirical science. The issue of questioning the "knowledge" imparted and the assumptive base upon which it rests is avoided by simply never raising it, though if traditional schooling were dedicated to learning major importance would be attached to questioning the assertions of authorities and the assumptions implicit in those assertions.

While traditional schooling avoids development in the student of a questioning attitude, a knowledge that frameworks of thought rest on assumptions which require examination, it is equally adamant in precluding active exploration of the environment. In a classroom, all but the most limited movement is forbidden. When movement *is* allowed it is subjected to a collection of rules, regulations and orders that render it movement in name alone. And the second-class status of such "nonverbal" subjects as art and shop is imparted to the student very early in his academic career. This second-class status persists beyond the school and into the workplace, further damaging the dignity attached to manual skills.

These patterns are essential to traditional schooling if it is to continue to accomplish its purpose—preservation of the value system held by those possessing property, wealth, power.⁹ For discussing the "conflict between the free world and communism" or "America's high standard of living" can lead only in the direction of "desirable" conclusions when the assumptions on which these expressions rest are never subjected to extensive, penetrating questioning. The importance of this investigation into assumptions, the procedures to be followed in making this investigation a meaningful one, and, for that matter, the opportunity to carry out such an investigation, are not at all a part of our basic program of education. The inability to seriously question the status quo makes the status quo unassailable.

Similarly, the minimization of *active* pursuit of knowledge, with its corollary separation of education into "academic" (middle-and upper-class) and "vocational" (lower-class) components, perpetuates the status quo. A school system which emphasizes passive receipt of knowledge by students, with their ability to parrot what they have passively received as the measure of their scholastic ability, is unlikely to equip citizens of this society with the tools necessary to effect meaningful change. Likewise, the channeling implicit in the academic/vocational dichotomy perpetuates the barriers to social mobility which characterize our society and are essential to its present way of functioning. For example, IQ, scholastic aptitude, and other tests that measure achievement in school (and "fitness" for continued schooling) evaluate the skills and reasoning patterns characteristic of upper-and middle-class culture, as learned in up-

per-and middle-class homes and taught in upper-and middle-class schools. They are the gateway to jobs with greater financial rewards and prestige. The skills learned to cope with a lower-class environment and reinforced by the emphasis on vocational education in lower-class schools, are ignored on these tests. Those best conditioned to "follow orders" are also those best prepared to achieve some measure of status.

Current education in science (and mathematics) conforms to this pattern. To the extent that science is shown to be a method of arriving at the truth, the areas that it deals with are carefully segregated from all other aspects of the student's education. Inordinate emphasis is placed on the glorification of research, as if that were the whole science. In the advanced grades and in college, courses in science and mathematics focus on learning certain procedures, because these procedures are vital to doing research. Philosophical or cultural aspects of scientific studies are usually connected to the lives of "great scientists". The student is likely to come away with the idea that science is a fit pursuit only for the very gifted, rather than with the awareness of what it can offer him in his search to understand the influences which dominate his life.

The role that science and mathematics education could play in contributing to an overall meaningful education stands in sharp contrast. It appears that even among those committed to radical reform in education, the possibilities inherent in science education in the lower grades have been largely overlooked. It may not be possible to teach vector mechanics in the fifth grade, but the concept of science as a method of reaching the truth about matters which are important and may be complex is accessible to students at that level.¹⁰ The distinction between truth and validity can easily be developed using illustrations which are both interesting and enjoyable, sure ingredients to engage the student's attention. Once it is clear that truth is related to that which exists or occurs in the real world, the need to actively examine the real world can be developed. It must, of course, be taken seriously and be made part of the student's experience. Similarly, the use of logic in establishing the validity of reasoning processes can be an excellent tool for clarifying hidden or vague assumptions.

The student can be exposed to the idea that assertions are hypotheses, to be tested by reference to the real world. The hypotheses examined can be "scientific" ones but must not be limited to *only* scientific ones. If scientific method, with its nonauthoritarian and empirical foundation, represents a powerful tool for examining the natural world, if sound logic is an essential tool in examining complex scientific relationships, their application to social, political, and economic questions is generally more vital and frequently easier to grasp. Given some of the background suggested here, a group of ten-year-olds can make amazing discoveries when considering such propositions as "The U.S. is conducting massive bombing raids in Southeast Asia to preserve democracy for the people there," or "The free enterprise system produces excellent health care delivery."

A.H.

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WHAT DO HEALTH MAINTENANCE ORGANIZATIONS MAINTAIN?

It is no secret that the United States lags behind more than a dozen countries in some of the most general indicators of the health of a population: in infant mortality, in life expectancy, in the mortality of mothers. Yet in 1969 some \$63 billion were spent on health services¹, a larger sum than anywhere else in the world for a comparable population.

However, comparative international statistics do not make relatively long-standing concern take on crisis proportions. The health crisis, now recognized as a reality, manifests itself and is perceived in the ever-rising cost of medical care which is requiring an increasingly high proportion of wages and government funds. Federal health spending rose from \$3.5 billion in 1960 to \$18.5 billion in 1970. During the last three years of the 1960's doctor's fees rose twice as fast as consumer prices (12% annual increase) and hospital costs increased five times faster (30% annual increase).²

So far the government has responded to the crisis by cutting health expenditures considerably, notably Medicaid which was to cover the health care of the poor under 65. National health insurance is looked upon by the Administration as the specter haunting the 70's and to be avoided by all means. At the same time the need for some reform is acknowledged and in the President's Health Message of February 1971 better health care for all was promised. How could it be otherwise? As its alternative to a national health insurance program the Administration has devised the concept of the "Health Maintenance Organization" (HMO).

An HMO is a health care organization—non-profit or for profit—which provides comprehensive services to a voluntarily enrolled membership generally at a prepaid fixed fee. Usually an HMO is affiliated with one or several hospitals. It may be funded privately or publicly or by a combination of both. Doctors can practice full-time or part-time and keep a fixed-fee private practice at the same time. Paramedical personnel, particularly nurses and nutritionists make up a large proportion of the staff. One of the manifestations of the health crisis is that emergency wards of hospitals are increasingly utilized by many people for non-emergencies in the absence of a private physician or for lack of funds or both, since the two are not unrelated. It is hoped that HMO's will take some of the pressure off the hospitals. Already the statistics show that HMO patients have fewer admissions to and shorter stays in hospitals.³ In fact, there is one quite different feature in the operation of an HMO related also to the lower utilization of hospitals: for an HMO to make money it is desirable to provide fewer services and to keep the patient out of the office, since he or she is pre-paying a set amount every month. This is in contrast to the fixed-fee practice of private physicians which tends to provide too much service at high prices and in effect discourages people from coming before they are really sick.

The most frequently cited case of a large and successful HMO-like organization is the Kaiser Plan in California. Some 2.2 million people on the West Coast are enrolled in it and taken care of by a staff of two thousand physicians

and other health personnel. The average annual cost per member is \$150 and physicians average salaries range from \$38,000 to \$40,000. The Kaiser Plan is not the only type of comprehensive care facility. Under OEO, Neighborhood Health Centers were established in urban areas. However, services are provided free of charge to the poor whereas HMO's in their drive to be self-sustaining tend to favor the employed and the non-poor as members.

The concept of an HMO is still vague enough to leave considerable leeway for liberal and conservative interpretations. Thus Leonard Cronkhite, head of Health, Inc., an HMO in Boston, favors "an independent, non-profit corporation that would have on its board representation from a broad base of community interests, including the medical, government, business, and community sectors."⁴

As for Leonard Cronkhite's own HMO, Health, Inc., here is the story of its operation during the first year. Cronkhite, former member of Health, Education and Welfare Secretary Finch's Committee on Health Care and currently director and vice-president of Children's Hospital Medical Center, set up Health, Inc. as a model for HMO's in general. Governor Sargent of Massachusetts incorporated the Cronkhite concept of a network of HMO's throughout the state as his health plan during his campaign for reelection in 1970.

Given that Health, Inc. was to serve as a model it might be expected that a special effort would have been made to make it work. After Governor Sargent's endorsement, five companies lent their business expertise: Raytheon Company (one of the State's two largest defense con-

tractors. See also article in July 1971 *Science for the People*), Stop and Shop, Boston Company, Cabot Corporation and New England Life Insurance Company. Five Harvard teaching hospitals offered their cooperation and the Harvard School of Public Health promised to train nutritionists within the community. The Kellogg Company (known for its non-nutritious cereals) provided \$250,000, another \$100,000 were contributed by foundations and other sources, some \$125,000 came from HEW, and \$93,000 from OEO originally intended for a clinic for Spanish-speaking people in Springfield, Massachusetts. When those people rejected the plan, and in fact literally kicked Cronkhite out because they had set up a community-controlled health center already, the money stayed with Health, Inc.

Health, Inc. opened for business on February 1, 1971. Two hundred and fifty thousand dollars for the remodeling of a laboratory into a health center had come from Children's Hospital, of which Cronkhite is Director and Vice-President.

The following promises were made in a brochure sent to future patients:

- One doctor—your doctor—in charge of the health care of your entire family.
- Open 24 hours every day.
- Complete medical and surgical care.
- Preventive care and health education.
- Everyone who joins Health, Inc. automatically becomes a member of the Consumer Council and has a voice in how the family care unit is operated, the services it offers, and other matters of importance.



By the end of the year these promises were still unfulfilled. There is a high turnover rate of doctors, the center is not open 24 hours a day, surgical care was never provided, rather surgical patients get referred to the affiliated hospitals where they have to pay full fees. In fact, at Health, Inc. all care is provided on a fee-for-service basis. Although there has been talk about Health, Inc. becoming prepaid no date has been set. The current form of financing has the same disadvantages that have already driven indigent patients away from private physicians and into the emergency wards of hospitals; it means, in effect, that people can't seek medical care when they do not have the funds to pay for it. Prepayment is not the answer either for in the absence of large-scale government funding it would simply make HMO's inaccessible to the poor.

Most Health, Inc. patients receive Medicaid; there is also an arrangement whereby the Division of Child Guardianship contributes \$40 for each enrolled child and the State also pays \$30 per child for the medical services to the Division of Youth Services which administers correctional facilities for young people. These prepayment figures are up to two times as high as the monthly premiums paid by single patients of the Harvard Community Health Plan, a prepaid health service primarily for middle-class employed people, as is the Kaiser Plan.

From the beginning there was great pressure to make Health, Inc. financially viable. This was to be achieved by not establishing promised services, by cutting existing services (e.g. preventive care—which never existed—and nutrition counseling—which was cut) and by underpaying paramedical personnel and nurses to the point where many were frustrated and exploited and eventually fired for protesting the situation. In addition to all these measures Health, Inc.'s enrollment did not meet the projected figures, further increasing pressure within the organization.

What about consumer participation? Cronkwhite's discussion of the consumer council in *Hospitals*, Journal of the American Hospital Association (March 16, 1971) sounds quite different from the brochure cited above; it is also quite different in tone from his statement in the liberal *New England Journal of Medicine*⁵, further evidence of how different vested interests are presented with different descriptions,

*... The rampant consumerism, especially on the part of Blacks, that has afflicted everyone from East Baltimore to Roxbury and our attempts to come to grips with this. Publicly, we have taken the posture to maintain stalwartly that consumers can never be satisfied unless providers are satisfied. ... A consumer council in each operating unit provide technical advice to consumers on how to organize themselves to be an effective voice. In addition one person from each operating unit is elected to the corporate board. The community will not hire and fire anyone nor will it have operational or fiscal control.*⁶

No wonder minority groups are not flocking to such HMO's and even actively resist its establishment as the people did in Springfield.

HEALTH BIBLIOGRAPHY

A bibliography on the *Politics of Health Care* was published in March, 1972 by the New England Free Press, 791 Tremont Street, Boston, Mass., 02118 (617) 536-9219. The bibliography is built around radical analyses of many aspects of health care; it contains over 350 annotated entries (24 pages). It contains section on:

1. Power in the Health System (medical empires, AMA, HMO's)
2. Health Economics/Health Capitalism (Blue Cross, Medicaid, National Health Insurance, drug and other profit-making industries)
3. Health Workers and Professionalism (medical education, hierarchies among hospital workers, unions)
4. Consumer/Community Control of Health Services (including patient's rights)
5. Women and the Health System (as health workers and consumers, population control, women and their bodies)
6. Mental Health (including community mental health centers and radical therapy)
7. Health in our Oppressive Environment (Occupational Health, Diseases of Oppression, Technology)
8. Health and War (the Army, Indochina War, CBW)
9. Other Countries (Sweden, Britain, China, Cuba, USSR)
10. Strategies for Change
11. Periodicals/Resources

All for just 30 cents per copy from the New England Free Press or Boston MCHR (Medical Committee for Human Rights), P.O. Box 382, Prudential Station, Boston, Mass. 02199. Edited by Ken Rosenberg and Gordon Schiff of Boston MCHR.

If Health, Inc. is a model for anything it is a model for the inherent impossibility of providing good health care and profits at the same time. In the words of Matthew Goode, an administrator, fired after the first half year, "The commitment was never to effective care, but that X number of dollars could be generated by seeing X number of patients."⁷

The failure of the people to flock to Health, Inc. is an indication that the management did not know its market and that it projected its own values on the poor it set out to attract. A new business to be competitive and to capture as much as possible of the market has to offer its services at lower prices. Health, Inc. charges \$16 per visit. Poor people are more likely to forego medical care if the price is high than middle-and high-income people. More-

over, companies operating for profit can't be competitive if one of their essential categories of labor (in this case physicians) is in short supply.

The management of Health, Inc. may not have been the most competent in the world, but to blame the failure of Health, Inc. to provide decent care on poor business practices is missing the point. In order to understand the role of HMO's we have to examine them in a broader historical context as a compromise measure taken to convince the people that something is being done about the health care crisis and to convince such interest groups as physicians that things are essentially going to remain the same.

In the course of more than half a century hospitals and biomedical research, both private and governmental, have become the primary focus of the medical establishment. The beginning of a shift in emphasis toward the largely neglected sector of health care for the general population occurred only in the 1960's when the Great Society program shifted its emphasis from civil rights to the war on poverty. The institution of such programs as Medicare and Medicaid greatly magnified the role of the federal government in health care. The government stepped in where the private sector did not find it profitable to operate. That is not an uncommon practice. Other examples are the funding of highway construction, research and development, public housing, etc. Yet there is little indication that health care has improved or become more equitably distributed.

The inflationary rise in medical costs is primarily manifest in the sharply increased physicians incomes and corporate profits of medical-technical companies and to a much lesser extent in the slight increases over time of the substandard wages of hospital workers. Physicians are the best-paid professionals in the country. In Washington, D.C., with a predominantly black and poor population, doctors' incomes ranged from \$38,848 to \$85,000.⁸ Secretary Finch and Assistant Secretary for Health Egeberg in July 1969 characterized the situation as "inflation in medical costs, causing vast increases in government health expenditures for little return, raising private health insurance premiums and reducing the purchasing power of the health dollar of our citizens." Clearly it was not the people in need of health care but the doctors, hospitals, hospital and medical equipment producers, drug companies, i.e. the Medical Industrial Complex,⁹ that profited from the bonanza of Medicare and Medicaid funds. In fact, these two programs "did not lead to any significant increase in consumer utilization of hospital services where the price increases have been concentrated. . . Medicaid, Medicare, Blue Cross give doctors and hospitals almost unrestricted freedom to set their own prices."¹⁰

The Administration is trying to fight inflation through cutbacks in government spending, at the same time it is under pressure from such diverse groups as labor unions, liberal politicians and bureaucrats to provide better services.

In the midst of this situation the HMO is held out as a new kind of corporation based on the philosophy that private business methods can take care of all problems. The

government has taken pains to reassure the medical profession that HMO's are not going to represent a monolithic structure into which all providers and consumers will be forced. It is emphasized that HMO's are merely additional competitors in the market, that such competitions will keep costs down and improve the quality of health care. There are two important aspects of HMO's that serve to pacify the medical community: (1) the internal structure of the HMO's is so flexible that doctors can easily maintain their privileges and material advantages and (2) HMO's are by no means conceived of as a replacement for existing institutions of medical care. These two aspects also make it amply clear that HMO's are going to be quite ineffectual in improving the health care of the people of this country and even if they were designed for providing medical care for a large proportion of the people they would still operate with considerable inducements for "cutting corners". In other words, despite the sales talks about how much improved care in HMO's will be, the government hastens to add that this kind of care is not intended to be available to all. It is merely introduced to take some of the steam off popular discontent, sharpen the competitive aspects of medical practice and curb some of the inflationary excesses.

Initially the AMA voiced some skepticism about this new type of organization. However, the criticisms were quite mild as compared to the charges of "totalitarianism" leveled against Medicare and the forceful campaign mounted against its enactment. Health maintenance organizations, cautioned the *American Medical News* in June 1971, should first be tested on a small scale for their viability before wholesale implementation. It may be that the diminished power of the AMA in favor of such rising industries as the hospital equipment manufacturers had something to do with their seeming acquiescence. However, upon closer inspection, HMO's do not attack the vested interests of

Mrs. Sklar, housewife, expatient at Kaiser Hospital, Oakland:

. . . you should try to visit Berkeley Free Clinic—because there in the clinic they try to educate you about your own body, they try to tell you how it functions, they try to demystify medicine. . . any kind of health program must service the people.

The problem with Kaiser is that it doesn't service the people; its purpose is to make money.

I feel that the Government, instead of serving the interest of Kaiser and Blue Cross and the AMA—the Government must serve the people—and what else is Government for?

Sen. Kennedy: "Very truthful. I want to thank you very much for coming here this morning."

from Hearings before the Subcommittee on Health of the Committee on Labor and Public Welfare, U.S. Senate, May 17, 1971, Part 11, p. 2397.

The Health Group of the Women's Center needs:

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Or any other thing related to women's health
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Contact: Women's Center, 46 Pleasant Street, Cambridge, Massachusetts 02139; telephone: 617-354-8807. Or send it:

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WOMEN'S HEALTH LITERATURE

Available at the Women's Liberation Center, 36 West 22 Street, New York, N.Y. 10010; for mail order, write to the address given for each item.

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from: New England Free Press
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Boston, Mass.
individual copies: \$.30+\$.15 postage
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individual copies: contribution
bulk rate: \$45 per 1000

The Malefeasance of Health

from: Health-PAC
17 Murray Street
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Bibliography for *Women and Their Bodies* Course

from: Literature and Education Collective
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Women's Health and Abortion Project Pamphlets

from: same as above

- A. Gynecological Checkup
- B. Vaginal Infections
- C. Vacuum Aspiration Abortions
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- E. Venereal Disease

individual copies: each pamphlet \$.10
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Women's Health Packet

from: same as above
(includes *Birth Control Handbook*, *The Malefeasance of Health*, *Bibliography*, and WHAP Pamphlets, as well as other literature)
individual copies: \$1.00
bulk rate: each pamphlet \$.05

Abortion Law Repeal (Sort Of)

by Lucinda Cisler
individual copies: \$.15

COMING SOON

The Disease of Love—A V.D. Handbook

from: Birth Control Handbook
individual copies: contribution
bulk rate: \$45 per 1000

the medical profession and are not perceived by the AMA as doing so. Over time HMO's have received rather favorable opinions. *Medical Economics*, a journal that tells doctors how to spend their excess money in real estate and in the Bahamas and how to beat malpractice suits, even carried an article on "Hard Evidence That HMO's Really Work" (June 7, 1971). Physicians may be the last ones to recognize the stabilization of medical costs as being in their interest, but they are aware of the existing crisis and rather than accepting the governmental controls that would come with universal health insurance they will settle for the new type of corporation advocated by the government because it is actually designed to remove government controls. The seemingly ever-present fear of the AMA that eventually a limit may be placed on their fees is once again averted. The fixed salary which HMO physicians receive are comparable to a doctor's income derived from fees-for-service.

The vested interest of the medical profession is, despite the humanitarian potential of medicine, not inspired by humanitarian considerations. The concept of health as a right of all requires inexpensive or free and adequate preventive and curative care; it is not compatible with maintaining the position of the highest-paid profession. So far any changes in the health care system have basically accommodated the needs of physicians. As a consequence, no radical changes have been made in the direction of health as a human right and physicians will in fact resist any such radical change.¹¹

The AMA which in 1964 spent twice as much (\$23 million)¹² money on lobbying as the AFL-CIO is now losing some of its power in favor of other segments of the Medical-Industrial Complex, but the government continues to try to appease the doctors and is still quite responsive to the AMA.

None of the authors examined—with the notable exception of MCHR and Health PAC—suggest any basic changes, but merely reforms. Profit-making in the realm of

health care continues to be taken for granted. Even non-profit corporations emphasizing a self-sustaining operation are intent on maximizing income.

The dominant thoughts are expressed as follows:

Under the existing chaotic state of affairs the goal of adequate care for all citizens seems utterly unattainable. Although millions of people are still denied adequate care, the proportion of our G.N.P. devoted to medicine has already climbed to 6.8% from 4.5% twenty years ago, and promises to keep right on increasing. In this situation, the public and Congress are certain to resist any proposals to shift massive new resources to medical care, especially in view of all the country's other unmet needs in such fields as housing, welfare, and urban transportation.

The only hope, therefore is to get more value from the money spent on medical care—to remove the glaring inefficiencies, to bring the proper incentives into play, and to make a maximum effort to supplement doctors with lower-paid para-professionals.¹³

The solution suggested here, then, is to streamline the business aspects of American health care. In this context the "proper incentives" are monetary incentives. However, these measures are hardly designed to lead to the state-controlled, inexpensive or free medical care which is available to everyone in the British or Swedish welfare states.

Some American liberals are interested in establishing a health system based on these European models, though it is unlikely that this is going to happen soon. Furthermore, the socialized medical care of Europe functions within predominantly capitalist societies in which social injustice and exploitation are as much the order of the day as it is here. The difference is merely that in these countries strong often socialist working class movements were able to force their governments to make greater concessions at the turn of the century.



Nowhere in capitalist countries—whether they be Sweden, England, Germany or the United States—is health care truly people-oriented. Medical knowledge is used to keep people ignorant and defenseless. Physicians exercise their power like witch doctors and are virtually unaccountable to anyone.

What is needed are militant struggles for complete control by the people of the health care system, including demystification of medicine and opposition to hospital empire building. Wherever such struggles are occurring in this country—and there are many in the form of free people's health clinics and community resistance to hospital expansion into residential neighborhoods—there are opportunities for people to articulate and fight for their needs. Such demands cannot be co-opted by giving token participation to handpicked community leaders and they will lead to demands for control of other institutions as well. B.F.

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REPORT OF THE 16th ANNUAL BIOPHYSICAL SOCIETY MEETING

At the 16th Annual Meeting of the Biophysical Society in Toronto, Canada, February 24-27, attended by some 1200 scientists in the area of biophysics, biochemistry, biology and medically related disciplines, one of the special symposia of major significance was that on the *Social Responsibility of Scientists*. This symposium drew an audience of more than 250 scientists to hear a panel on the subject of: *Scientists, the Anti-draft Program and Repatriation*. The discussants were Professor Lee Lorch of York University, Toronto; Jack Colhoun, editor of *Amex-Canada*, a publication of the exiled American draft-resisters residing in Canada (incidentally, *Amex-Canada* subscriptions are available from *Amex-Canada*, P.O. Box 198, Station D, Toronto 165, Ontario, Canada); Earl Nestman, a graduate student at York University who himself is an expatriate; and Rev. John Morgan of the First Unitarian Congress in Toronto and Paul Copeland, lawyer. These men spoke of the problems and hardships faced by American youth who, because of their convictions of the immorality of the Vietnam War, are self-exiled in Canada and other countries of the World; they spoke of the injustice of denying these expatriates the right to return to the country of their birth to live or to visit; and they described like injustices against their Brother draft-resisters who chose not to leave the United States and are now wasting in this country's jails. The point was also made that deserters, like draft-resisters, are deserving of the same consideration since deserters generally come from lower economic levels than resisters and therefore did not have

the educational background to permit them to solidify their ideas prior to accepting enforced military service. Furthermore, these individuals had neither the resources nor the counsel available to permit them to make alternative decisions at the time they were selected for induction. Present amnesty laws never take the deserters into consideration and are therefore another example of socio-economic discrimination; it is a sad reflection of the bigoted thought patterns of our social system.

At the end of the session, in order to determine audience sentiment, Dr. Alfred Strickholm of Indiana University, chairman of the symposium requested a show of hands to signify agreement with the principle of amnesty for these young Americans. Almost 100% (vote was 200 yes to 5 no's) of the largely American audience of scientists attending that session raised their hands in the affirmative. Yet when a resolution recommending amnesty was presented to the body of biophysicists at their business meeting, the motion was tabled before discussion could be heard. This says little for the social concern and sensitivity of this group.

It is now generally agreed that the United States intervention in and conduct of the Vietnam War is immoral and should never have occurred. If so, then all that these draft resisters can be accused of, in the words of the cartoonist, Jules Pfeiffer, is "premature morality".

BRING OUR BROTHERS HOME FROM ABROAD AND
HOME FROM THE JAILS, NOW! J.G.

CANCER — A POLITICAL AND SOCIAL PROBLEM

President Nixon and Congressional liberals alike have made much mileage out of the recently approved *Conquest of Cancer* program. Under the plan \$1.5 billion (over 5 years) has been appropriated for scientific research to *conquer* cancer. The plan, however, does nothing about the environmental conditions that cause cancer. There is much debate as to whether the research will be of any benefit in attacking cancer. However, the World Health Organization has recently estimated that seventy five percent of cancer cases are environmentally caused, and hence potentially preventable. The route of preventing cancer deaths by improving peoples' living conditions and environments is not politically spectacular, and does not get across the message that American technology and businesslike technique can solve any problem. In fact such a procedure would be threatening to both corporate profits and the American social system.

Air pollution is one significant cause of cancer. Cancers of the stomach, prostate, esophagus, and lung are all partly produced by contaminants in the air. Major studies of the relation between air contaminants and cancer incidence have been performed in Nashville and Buffalo. In each instance the city was divided into separate sections according to the level of particulate air pollution in the section. Other things being equal, the incidence of stomach cancer and prostatic cancer was 1.5 to 3 times higher for residents of the most polluted area than for residents of the least polluted area. For cancer of the esophagus the ratio was five to one. It is also worth noting that people in the lowest economic grouping had twice the stomach cancer incidence of those people in the highest grouping who lived in the same sector of the city. A person in the lowest economic group residing in the most polluted area had about three times the chance of contracting stomach cancer as

someone in the top economic group, living in the cleanest area. Breathing dirty air and being poor, then, are significant factors responsible for many cancer deaths.

Logically an all out effort to conquer cancer would include an all out effort to clean up the air. In fact, no mention of air pollution is included in releases about the cancer war, and actual efforts to combat air pollution have been woefully inadequate. Local air pollution boards tend to be dominated by the industries they are supposed to regulate. As a result they prefer granting variances to enforcing existing regulation. These regulations are themselves frequently inadequate. California's new set of regulations is among the best in the nation, but it includes no standards on hydrocarbons, a class of pollutants known to contain several carcinogenic (cancer producing) agents.

Automobiles are the largest contributor of hydrocarbons. New regulations on emissions will come into effect in three or four years. But the regulations will affect cars only when sold, and in the past cars with as few as 12,000 miles have fallen hopelessly short of meeting the existing standards. Moreover, auto companies plan to increase the number of cars on the road significantly. If they have their way any decreases in emissions by individual cars will be more than offset by heavier traffic. The real ways to attack the auto pollution problem involve fundamental changes, such as switching to a non-polluting external combustion engine, and the construction of efficient, cheap public transit systems. Neither of these measures suits either the auto manufacturers or the oil companies.

Industrial air is another prime source of cancer producing chemicals. Historically many of the early carcinogenic agents to be identified were associated with various industrial jobs. Among the agents known to be producing occupational cancers now are asbestos, radiation, chromates,

nickel, and coal tar pitch volatiles. Statistics from the Metropolitan Life Statistical Bulletin show that industrial workers have about twice the lung cancer death rate of middle class people. For all cancers industrial workers have a 38% higher death rate.

Government agencies have in general done a wretched job in protecting workers' health. The Occupational Health and Safety Administration is in charge of inspecting plants to make sure they meet Federal Standards. But O.S.H.A. receives funds to hire sufficient inspectors so that each workplace can be visited on the average once in 284 years. The head of the agency, George Guenther, a former textile executive, has repeatedly expressed concern that complaints by workers may not be *responsible*.

But even if Federal Standards were strictly enforced there still would be many occupationally induced cancers. Many threshold limits (the maximum permissible concentration in air) are set at levels convenient to the corporations, levels known to be high enough to produce some cancers. Many other chemicals are introduced annually into the industrial environment without any knowledge of their toxicity. The general philosophy of setting standards for toxic chemicals, is that the chemical is assumed safe until someone can prove it dangerous. Dr. H.E. Stockinger, chief of the Laboratory of Toxicology for the National Institute for Occupational Health and Safety, summed up this view in a recent Science Magazine article. According to Stockinger, *unrealistic* standards are ruinous to industry, unnecessarily severe standards must be avoided, and all criteria must be completely documented. Since Stockinger opposes reliance on animal data, the only method of documenting a standard completely that is acceptable to him, is to find numerous deaths among people exposed to the chemical.

The handling of the asbestos hazard is a good illustration of this philosophy in action. For a long time asbes-

tos had been suspected of producing cancer, but its potential as a carcinogenic agent had not been considered in establishing the former threshold limit value. A recent study of asbestos workers in New York revealed lung cancer rates 7 to 10 times that of the population in general, as well as significantly elevated rates for other types of cancers. The response of O.S.H.A. was to cut the permissible concentration of asbestos in industrial air by 60%. Experts in occupational health think that this change will do little or no good at all in preventing cancer deaths. Since the cancer rate was so high to begin with, a 99% reduction would be appropriate. Union people now want the standard cut by another 60%, but think that a permissible level of 0 is both feasible and necessary. The O.S.H.A. apparently thinks that any further protection for the 5 million workers exposed to asbestos, is too expensive for the corporations involved. A recent inspection of a plant in Texas uncovered asbestos air concentrations fifteen times that permitted by present law. The O.S.H.A. cracked down, imposing a \$300 fine.

Uranium miners have met a similar fate at the hands of a different Government agency, the Atomic Energy Commission. They have had lung cancer rates just a little lower than those of the asbestos workers. The Atomic Energy Commission bitterly fought against any cuts in radiation standards, and even commissioned the Arthur D. Little Company to study the economic impact of lower standards on corporations using uranium. Indeed the study did reveal that better health for miners would cost the companies something, but would not be prohibitive. The result is a somewhat lower permissible level of radiation exposure. But this level is still so high that biophysicist John Gofman estimates that a miner exposed to the permissible level of radiation for twenty years will have his risk of contracting cancer doubled. In general Government efforts to prevent



occupational cancers have been something short of an all out attack on cancer.

Some additional recent studies have revealed the inadequacy of current standards. Coke workers at a steel plant were found to contract bladder cancer at eight times the rate of the general population. Standards on the relevant carcinogens were enforced, but they are outrageously inadequate. At a chemical plant in Redwood City six lung cancer cases among workers have been attributed to exposures to bichromethyl ether. These few studies indicate only a small fraction of the cancer cases caused by the present system of dealing with health hazards.

Uterine cancer, the second biggest cancer among the cancers that affect women, is another significant disease to consider. Women in the lower economic groups bear the brunt of the disease, with death rates from three to ten times greater than women in higher economic groups. For example in New York a study showed that black people have more than three times the incidence of uterine cancer than for white people. Overall death rates in the U.S. for non-whites are about twenty percent higher than for whites. For Puerto Ricans the ratio is about seven to one. A study in Britain revealed that wives of laborers have three times the risk of contracting uterine cancer than British women in general have, while wives of professional men have only one fifth the risk of the general population.

Some moralistic and right wing doctors have blamed this situation on the *promiscuity* of the lower classes. The truth is that uterine cancer is strongly correlated with prostitution, venereal disease, vaginal infection, and improper hygiene. A rise in the standard of living for poor people, with an accompanying increase in access to good medical care and information, would be a significant step in preventing uterine cancer. The general elimination of the oppression of women in our society would also be a giant move toward eliminating uterine cancer deaths. In an article in "Prevention of Cancer" (Butterworth, 1967) Dr. R.I.K. Elliot estimates that 80% of the incidence of uterine cancer could be eliminated through the improvement of hygiene.

Cancer of the uterus is also one cancer that responds to treatment. If detected early enough, an estimated 50% to 95% of the cases can be cured. But many poor women are not screened regularly, and would have no access to treatment if cancer were found. Clearly many, or most uterine cancer deaths could be eliminated through social change, and the extension of existing medical methods to everyone.

There are many other known or suspected cancer producing hazards affecting Americans. In most cases the appropriate Government agency cannot obtain sufficient funds to make a proper check of the carcinogenic potential of the hazard. Apparently this is because a positive result would require action not to the liking of some corporation. The Nixon Administration has put up about \$30 million to study environmental carcinogens, but in "Evaluation of Environmental Carcinogens" (U.S.P.H.S. Report to the Surgeon General, April 22, 1970) it is estimated that \$1 billion is needed to test adequately carcinogens now affecting people. Moreover 25 new chemicals are added to

the environment daily.

Cancer, like many other health problems results in large measure from the environmental and social conditions in which people live. Its solution requires social change, not merely the great American know-how that is advertised as the cure to all our problems. People will have to get together and use their political power if they want to deal with the problem.

J.S.

Ethical Drugs continued from page 12

eration, price leadership and division of markets. With the competition between products at the same or similar levels, the need is to keep innovating products, rather than processes. To fall behind is to lose demand and thus profits. Of course, it is price competition which is the biggest threat to the corporate establishment. Any large firm would rather grant a license to another large one rather than to the small ones who might introduce price competition. Pricing agreements, patents and advertising act as barriers to entry of small firms. It has been a popular theme of the corporate giants to discredit the research facilities and the quality of the products of the smaller firms. William S. Comanor found economies of scale in research at the lower end of size distribution of firms and diseconomies (increasing cost or inefficiencies) with the movement to larger firms. The larger firms employed a high ratio of supporting personnel to the professionals in the research staff, which was not significant for technological progress. As a whole, the percentage of the research staffs holding doctoral degrees in the industry was only 38%, as compared to 55% in government and 91% in universities and research institutes. Firm size did have a positive correlation with research and development output, and also with the expected gains from research. Thus, for the large firms research input equals a product output and expected gains within a reasonable time.

We might also look at the bureaucracy of the corporation to provide insight on the technology of the drug industry. In any large corporation, the timing of a decision may be more important than its correctness. Professor Galbraith maintains that the corporate planning process is such that at certain critical points, it may be better to make a wrong decision that can later be overcome than to disrupt the organization by making no decision at all.²³ Thus, there is pressure to research and market at the earliest date, without regard to social responsibility, as apologists would have us believe. Rather than being scientists, the researchers for the corporations are businessmen. Their dedication is to the company, not to scientific advance, their goal is to have the fruits of their experiments produce a profit for the company. Examination of the drug industry in the USSR exposes a powerful contrast. Promotional costs are minimal, and research is done by government-sponsored institutes without wasteful duplication of research facilities or products, yet prices are high and new drugs are slow in being marketed. Because of the separation of research and industry in the USSR, delays arise because of commun-

ication and coordination problems. Research accomplishments are not put into production rapidly. The fact that promotion is so minimal has created a void in any dynamic method for disseminating information. The Russian "Medical Worker" of April 4, 1961, reported, "Information about new drugs is given irregularly so that practicing physicians do not know about them and are deprived of the possibility of using them. The process of replacing old-fashioned drugs by new and more efficient ones is too slow."²⁴ Thus, our excessive advertising seems to have some social purpose. The Russian system also separates quality control, or post-production testing, from the industry. Because of this, there is a lag between government approval and the availability of the new drug. If we compare the Russian model against our own, it is necessary to weigh the social costs of the two arrangements. In the US 15,000 new mixtures or dosages are produced a year, of which 12,000 quickly die off as useless or dangerous.²⁵ Great pains are taken to market drugs thoroughly, often with the result of the patient in the role of guinea pig. In Russia, there is a time lag in the marketing of new drugs, with testing done thoroughly and great importance placed on the prevention of drug tragedies such as thalidomide. It seems apparent that the Russian system, with all its problems, is at least aware that it is people who are the final users of its

drugs.

With the technology of product differentiation and competitive creativity, advertising and promotional activities become very important. The product that is merely "new" can only be sold if the consumers can be convinced that the "newest" is the best.²⁶ Doctors, the purchasing agents, are swamped by brand-name advertisements, promising cures for certain afflictions and often failing to note side effects. An example of this misleading of the public is the case of Mer 29, whose manufacturers failed to note its serious side effects when applying for a New Drug Application. This was done in order to get it on the market (where again its side effects were not advertised) to recoup its research and development costs. This was all done with the cooperation of the FDA, whose medical examiner Dr. X. Talbot said of his decision to approve the application, "I released the drug with the knowledge that things might happen later which were not obvious at the time."²⁷

Doctors often do not even know the generic name for the drug they prescribe and rarely know the price variations. Thus, only 10% of drugs are prescribed generically, while prices for brand-name drugs are on the average 2/3 higher than those prescribed generically, and that same differential applies for drugs sold by the 33 largest companies as opposed to the remaining 500 examined.²⁸ High



advertising often misleads the public and their purchasing agents, but also leads to both high profits and higher costs; and since profits are figured over costs there is a double effect on price. Any firm cannot just double their advertisements and thus double their profits. Yet those firms with higher optimum advertisement expenditures will and do earn higher rates of return than those firms in less advantageous positions.

Advertising plays an extremely important role in the drug industry as a barrier to entry. The advertising to sales percentage in the drug industry was 10%, not including the salaries to detail men.²⁹ Most estimates of the total advertising to sales percentage are about 24%. The next highest industry was the perfume industry (15%) while 25 of the 41 industries examined were below 3% and eight others were between 3%-6%.³⁰ The high concentration of the industry means a price advantage in advertising more because advertisers give discounts for larger quantities of advertising. The new entrant must pay high advertising rates, must spend a high actual cost to promote its product or have it accepted by the consumer, yet must spread its costs over fewer units sold, thus perpetuating a vicious cycle.

While the drug industry argues that the huge costs of the detail men are necessary to get information to the doctors, it seems as if the public is paying for the costs of its own exploitation. Dr. Harry F. Dowling says, "It has been said that the majority of practicing physicians obtain their first information about a new drug from a detail man. From extensive personal experience I can say that is neither necessary nor desirable. Speed is not an important object in most cases, since most drugs that are newly marketed do not represent anything new. When a drug is really new, information about it spreads with rapidity by word of mouth among members of the profession and through articles in medical journals."³¹ Yet it seems as though most of the medical profession is extremely willing to befriend the industry. Only 15% of doctors receive the Medical Letter, which systematically and scientifically examines new drugs.³² All receive the government-subsidized journal of the AMA which is heavily advertised by the drug industry. Thus, the people are again paying for their own exploitation. In the 1950's, the AMA and the drug industry had realized that an alliance against any socially-responsible health plan was to their own best interests, and the AMA quickly reversed its previously more responsible position.³³ Doctors have other self-aggrandizing ends in mind when they support the drug industry. Often they are paid for their help in the testing of drugs. Sometimes the payment is only a luncheon, the invitation to present a paper on the drug, prestige, or an appeal to the doctor's ego ("your have been chosen to test. . ."). The doctors realize no prestige will come to them by publishing negative papers. It should also be pointed out that seven out of ten doctors invest in drug companies.³⁴ With this in mind, it is no wonder that they have failed to make any great demands on the industry to be more socially responsible, demands which would mean declines in profits.

The public media has also been extremely helpful to

Genetics Society of America Meeting
Minneapolis, Minnesota
August 27-30, 1972

The Science for Vietnam collectives from Chicago, Northwestern, Wisconsin and Minnesota Universities are planning activities at the GSA meeting. They will be taking part in discussions and presenting papers at their own sessions. The collectives hope to present and talk about programs relating to the deprofessionalization of science, new ideas of ways to help our Indochinese brothers and sisters, etc. Anyone interested in contributing should contact:

Val Woodward
c/o Genetics & Cell Biology
University of Minnesota
St. Paul, Minnesota 55101



the drug industry. In many cases it has engaged in market-building publicity even before the FDA had acted on a new drug application. Arthur J. Snider, science editor of the Chicago Daily News, in October, 1963, said, "My concern would show that 90% of the new drugs we have written about have gone down the drain as failures. We have either been deliberately led down the primrose path or have allowed ourselves through lack of sufficient information to be led down the primrose path."³⁵ The news media has not moved nearly as quickly to cover stories such as Kefauver's uncovering of drug industry abuses. "It is encouraging to be able to record the interest now expressed in drug marketing problems by such conservative newspapers as the Wall Street Journal," said John Lear in the Saturday Review of September 5, 1964. . . " But it may be asked where were the potent organs of the daily press when the drug-makers were pulling political and economic strings to try to prevent the facts from being exposed."³⁶

The results of what has been discussed here, the structure of the prescription drug industry and the scientific estate within it, are high prices to the consumer and high profits for the industry. Although Dr. John M. Firestone, Economics Professor at the City College of NY, in an index of prescription medicine prices showed that they have dipped 8 to 10% since 1960, he also stated that "An index cannot tell us whether a price is too low."³⁸ Dr. Whitney, appearing before the Senate Subcommittee on Competitive Prices said that the price of a drug must be weighed in terms of alternative treatment. If a \$5.00 prescription will save \$100 worth of hospital bills, it is a reasonable price.³⁸ Besides being poor economics, neglecting any link between production costs and price policy, this statement also neglects the social responsibility of the drug industry. Smith, Klein, and French's drug thorazine on which they did no research was shown to be priced many times higher in the US than in other countries. There is a tremendous difference between drugs sold by bidding to hospitals and government-run projects as to retail pharmacies. There is also a large difference between drugs sold by one company to different cities and countries. In some cases, drugs sold to other countries, even including tariffs, are sold at lower prices than are sold to domestic pharmacies. Penicillin-V (Eli-Lily Co.) was produced in the US and sold in the US to druggists at \$18 per 100 125 milligram tablets. This same product was sold to retailers in Australia, Mexico, Venezuela, and Panama at between \$10.75 and \$15.00.³⁹

The drug industry has continually been a high profit industry in comparison to other industries. Overall corporate profits in 1970 fell on the average of 8% while the drug industry's profits may increase by that same percentage.⁴⁰ Profits in 1965 given by the Pharmaceutical Drug Industry were 10.8% of sales and 20.3% of investment.⁴¹ Between 1954 and 1966, 75% of the five leading manufacturers exceeded 15% profits relative to sales. None of the eight largest ever fell below 5%.⁴² These figures show that the ethical drug industry is one of the leading profit-making industries.

Justification for high profit is given by industry



*ON THE TECHNOLOGY OF REPRESSION
AND CONTROL*

OFF CONTROL is a project to investigate and disseminate information on the development and use of people-control technologies.

In addition to the wide spread development of new police weapons and surveillance methods a number of more subtle technologies ranging from computer data banks, photo I.D. cards, lie detector tests, psychosurgery, drugs, and behavior modification technologies are being used or developed. These different technologies all have the function, directly or indirectly, of preserving the present political, social, and economic system in which we live. In their totality they present a sinister threat to the struggle for radical change in our society.

Project OFF CONTROL will bring together information on all these and other related technologies and analyze their use within the present political context. Much of this technology flourishes because of its acceptance by an uninformed and unconscious public. Project OFF CONTROL hopes to raise consciousness about the use of people-control technology. Many media forms will be used to provide resource and educational materials to teachers and to community and movements groups. Project OFF CONTROL hopes also to take an activist role in opposing the institutionalization of these dangerous repressive technologies.

OFF CONTROL is presently an infant. It needs information, it needs help. If you are interested or have suggestions, please write:

OFF CONTROL
c/o Science for the People
9 Walden Street
Jamaica Plain, Mass. 02130 (Pat or Al)

spokesmen who argue that high profits are necessary to attract the capital needed to maintain the industry's high level of research. They also offer the argument that the drug industry is a high risk industry and that high risks justify high profits. We have already seen that research accounts for a much lower percentage of costs than does advertising, and rather than being a burden shouldered for the benefit of society, is greatly responsible for the profits in the drug industry. Mr. George S. Squibb, formerly vice-president of Squibb, states that profits, now 20% of research, could be 12% without forcing out smaller competitors or decreasing the research done by the industry.⁴³

That there is high risk in the drug industry can be disputed in many ways. The high rate of obsolescence of drugs can be said to mean high risks, yet in very few cases have research costs not been recouped before a drug has been made obsolete. The same holds true for the risk of a developed drug being proved either ineffective or unsafe and being taken off the market, or not having its new drug application approved. High advertising often allows a company to recoup its costs before the drug is taken off the market, or as in the case of Mer-29, the side effects are not stated or proved till later. The high variation for profits between all drug firms is not satisfactory proof of high risk for in a high risk industry, some profits might be very high, but others must be very low (the whole idea of high risk), and the average would not be so high. Drs. Fisher and Hull of the Rand Corporation showed that between 1959-1964, drug industries had average profits of \$18.32 of investment, and attributed only 1.68% to risk, the risk premium.⁴⁴ Also, it seems obvious that an investor, when faced with an option of investing in an industry with intra-industry profits varying from 10-20%, although the variation is much higher, will invest. Thus, the drug industry has very little effort in getting capital, and its risks seem minimal.

The Food and Drug Administration has caused further deterioration to an already sick situation, by making the public believe that the drug industry is heavily and scientifically regulated. Yet the most unanimous criticism of the FDA has to be its unscientific and unsystematic methods. Even Barron's, the voice of the corporate interest, gives testimony to that; although it is interesting that they never complained when the unscientific "witch doctors" at the FDA were acting in the best interests of the industry, when the industry was virtually self-regulated and self-inspected. The FDA has never defined an "expert" qualified to test within the industry, and it is little wonder, for the FDA seems to have its testing results determined beforehand. Political pressure rather than scientific evidence is basically the rule. As an example, with the advent of Ralph Nader and consumerism, the FDA, in one great showing of public responsibility and based on experiments with 12 rats, banned "forthwith" the use of cyclamates in the production of foods and beverages. Make no mistake, un-scientism has generally been the tool to allow the drug industry's exploitation of the public, to give it a stamp of approval. It is a common occurrence for the FDA to approve New Drug Applications, such as the recent one for L-Dopa, in an extremely short time (to allow the firm

to immediately recoup its investment, or profit from it) with the assumption that more testing will be done.⁴⁵ Apparently, the FDA accepts the Hussey-Stetler Test of Time, which drugs spokesmen state to be the best test for safety and efficacy of drugs,⁴⁶ but which relegates the public to the role of guinea pig.

The government and the Department of Justice have not only allowed the corporate interests to maintain their degree of market control, but have been agreeable to their augmenting this control. In a speech in Atlanta on June 6, 1969, Attorney General Mitchell said, "The Department of Justice may very well oppose any merger among the top 200 manufacturing firms or firms of comparable size in other industries. . . the Department will *probably* oppose any merger by one of the top 200 manufacturing firms of any producer in any concentrated industry."⁴⁷ Yet, of course, the Justice Department has not followed through on this statement. There have been three very recent mergers of large drug firms, which will either further concentrate the industry or give certain leading ethical drug companies more capital with which to exploit the smaller firms and the public. Merck and National Starch and Chemical merged and the expectation is that 5 cents a share will be added to Merck's annual earnings.⁴⁸ In a merger approved December 11, 1970, Schering (ethical)-Plough (proprietary) merged, where the total value of the company will now be about 1.5 billion dollars.⁴⁹ The merger of two major pharmaceutical companies, Warner Lambert Co. and Parke-Davis and Co. was allowed to go through over the objection of the Departments Anti-trust Chief Richard W. McLaren. Warner Lambert has been a major client of both President Nixon and Attorney General Mitchell's law firm.⁵⁰

The ethical drug industry with the support of the FDA and the health establishment has proven its inability to provide basic drug and health care. The drive for profits of this capitalist industry must come ahead of how it serves the consumers of drugs. The profit motivation of the drug industry has led to the production of vast amounts of useless and dangerous new drugs; as well as to the marketing of drugs at prices discriminatory to the poor. J.F.

FOOTNOTES

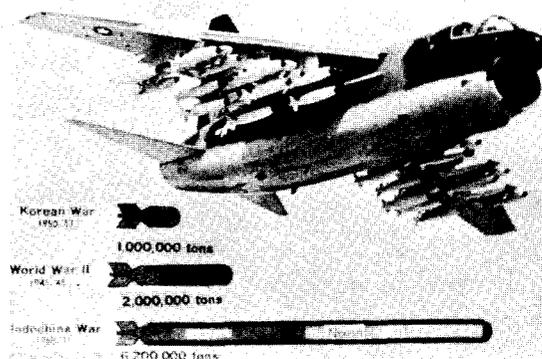
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IMPORTANT INFORMATION FOR PEOPLE INVESTIGATING WAR RESEARCH

In accordance with recent legislation, Department of Defense (DOD) descriptions of all DOD funded research are available as a matter of public record. The DOD descriptions are written by a DOD project manager and are often more revealing than the investigator's own abstract of his research project. These descriptions, for example, give rather complete details of military applications of the research both present and potential. Often the investigator himself has not seen the DOD abstracts.

The U.S. government releases this information through the *Smithsonian Science Information Exchange* which has all government research projects stored on magnetic tape and can search through the tape according to various criteria (funding agency, university, investigator, etc.) There is a charge of \$50 for the first 100 contracts and \$10 for each additional 100 (per search). To order the information, or obtain a description of the service, write or call:

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It is probably best to order through an organization.

LETTERS

Sisters & Brothers of SESPA,

In general, your magazine is interesting—sometimes useful. However, we wanted to point out that the cartoon by D. Savard of page 14 of your March 1972 edition is racist in the extreme. We fail to see how anyone can find humor in such characterizations of the heroic Vietnamese people. It is the U.S. government that wants us to see *Gooks* in our sleep. Movement publications should be combating these racist stereotypes.
All Power to the People.

Chris Robinson

Dear Comrades,

I have received now 3 batches of *SFP*—III, 5; III, 4; and IV, 7. Also a wonderfully confusing bill informing me that I owe either \$7.50 or \$15.00, but neither of these can be right so I enclose a check for \$37.50 covering all 65 magazines at \$.50 each.

Stewart Newman and I are trying to organize *Science for the People* here, so I hope I can sell the mags. Can you send me some buttons—not too many because the locals are not much on buttons.

I have never been anywhere where Marxism is so *respectable* as Britain. Half of the people in the Univ. of Sussex over the age of 40 are *former* members of the C.P. The Student Union representing every student on the Campus is 100% Marxist as far as I can tell from its meetings. The fight is between C.P., I.S., and Maoist groups. Yet the left is in bad shape because it is so *respectable*. I have the feeling that it is 100% "radical chic". There is virtually no attempt to do real agitation if it involves the slightest bit of unpleasantness. The most they will do is make a polite demonstration in front of the U.S. Embassy, and I do mean polite. On the other hand there is remarkable workers' solidarity. The miner's strike proved that and as a result the gov't was defeated.

Fraternally
Dick Lewontin



SESPA AT THE EASTERN PSYCHOLOGICAL ASSOCIATION MEETING

Although the Eastern Psychological Association's meetings at the end of April preceded the newest major escalation of the war in Southeast Asia, we had decided to concentrate our small forces around the war issue, despite other pressing psychological issues. Our focus was on generating debate around two anti-war resolutions, showing the NARMIC slide show on the automated battlefield continuously, and collecting for medical aid to Indochina.

We held up Roger Brown's presidential address for over an hour by forcing the debate over resolutions condemning the war and ousting EPA members directly engaged in activities supporting the war effort. We also supported debate over the gay liberation movement's demands at the same business meeting.

On the first day, we moved the SESPA table directly in front of the army's booth among advertisers and, despite repeated threats from various levels of authority, maintained that position until closing, talking to many people and collecting medical aid funds. Other locations were used the next two days; our collection totalling \$450.00 for medical aid. We also sold \$60.00 of SESPA literature.

The NARMIC slide show (American Friends Service Committee) is an excellent organizing tool for science meetings of all kinds. We stressed the psychological aspects of the military's goals and thus made it clear how relevant the issue was, since we had been told (what's new?) that the war is irrelevant to the profession!

On the whole, we felt that the tactics of changing locations, continuous slide shows, and involving people through donations were successful in reaching large numbers of people. Our efforts at generating debate in symposium sessions on high school psychology teaching (an APA "Master Plan" of "Modules" which kids can be "put through efficiently") and radical psychology (radical changes in management procedures for better control of people) were less successful, as we encountered distressingly apathetic audiences and intensely hostile panels, who actively squelched debate. This situation seemed to reflect the effects of the big stick on professionals who have dared to consider the political aspects of their professions in recent years, and suggests that we will have to develop new ways to reach and encourage them.

LOCAL ADDRESSES FOR SESPA/SCIENCE FOR THE PEOPLE

ALBUQUERQUE	c/o Fred Cagle, Geology Dept., Univ. of New Mexico, Albuquerque, N.M. 87106	DETROIT	c/o William J. Steffy, 1279 W. Forest Detroit, Michigan 48201	NEW YORK	c/o Marion Greif, 534 E. 88th St., Apt. 3E, NYC, N.Y. 10028
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ANN ARBOR	c/o John Vandermeer, 2315 Parkwood Ann Arbor, Michigan 48104	EVANSTON	c/o Dave Culver, Dept. of Biological Sciences, Northwestern University, Evanston, Illinois 60201		c/o Rod Wallace, Pupin Lab, Columbia Univ., New York, New York 10027
ATLANTA	c/o Jane Johnson, Fernbank Science Center, 156 Heaton Park Dr., Atlanta, Ga., 30307	FAYETTEVILLE	c/o Joe Neal, Univ. of Arkansas, Box 1635, Fayetteville, Arkansas 72701	OSSINING	c/o Ed Walker, Spring Valley Road, Ossining, New York 10562
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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