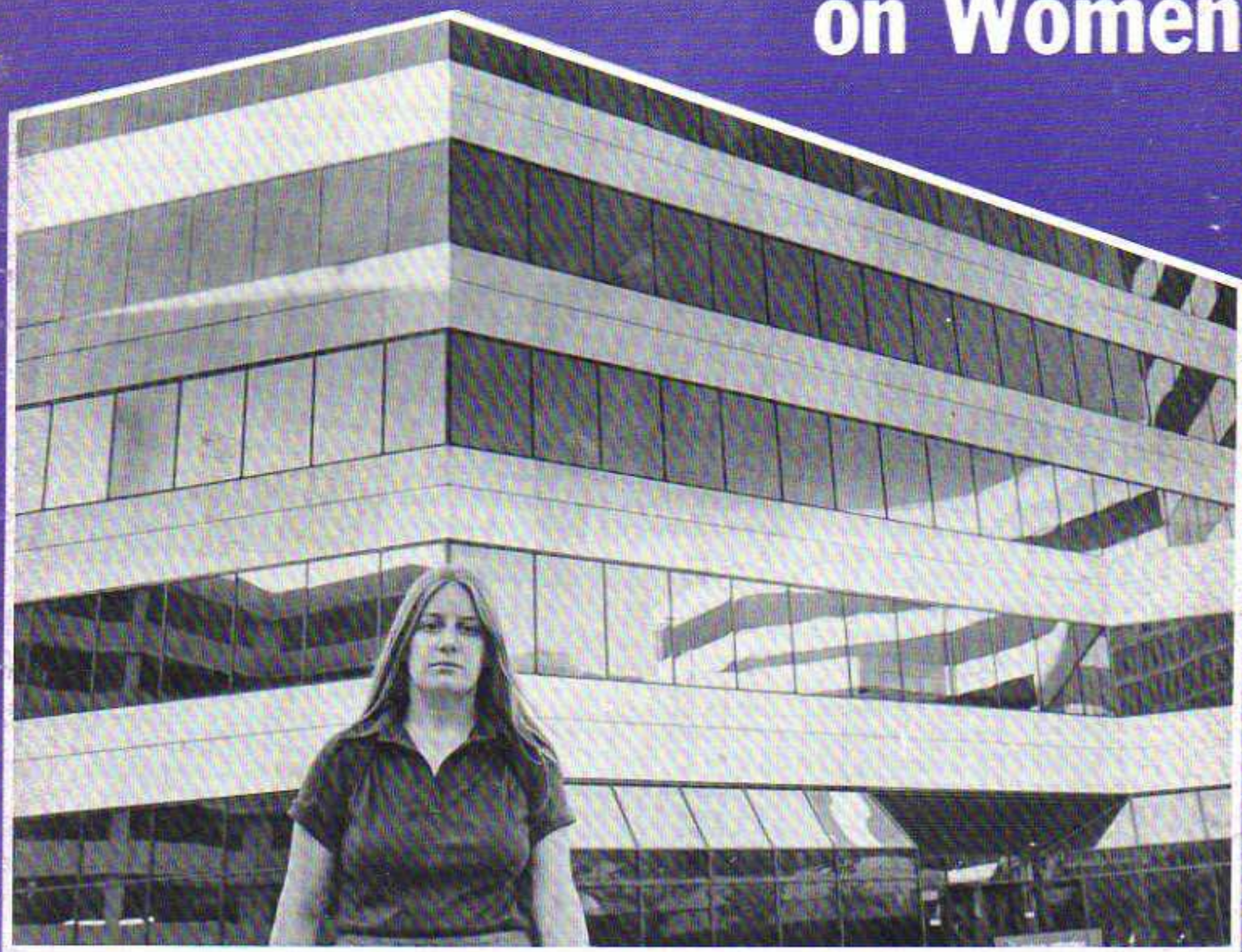


SCIENCE FOR THE PEOPLE

Vol. 13 No. 5

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Science and the Attack on Women



Girls, Boys and Math Toxic Shock Syndrome
Creationism Disabled People
Women Empowering Women

about this issue

The topics of oppression, continued reactionary backlash, and the important achievements of progressive groups are featured in this issue of *Science for the People*. Two articles detail struggles of disabled people, an oppressed group which rarely receives attention, even in this, the Year of the Disabled. The backlash inherent in such theories as scientific creationism and genetic inferiority receives careful analysis in articles which point out the theories' many weaknesses. The failures of industry and government to address the dangers of tampons are examined. And in the face of recent attacks on the progressive science movement, some important successes—the Boston Women's Health Book Collective, an international conference on radical science journals, and a conference on reproductive technology—are discussed and celebrated.

More than most other groups struggling for social gains, the lives of the disabled are intimately connected with their access to and control of science—particularly medicine and technology. Miriam Struck's article criticizes the treatment and rehabilitation system for the disabled, showing how the very institutions dedicated to serving them perpetuate and even magnify the common negative stereotypes of the disabled. The author raises the need for twofold change: (1) greatly increased power of the disabled to set their own rehabilitation priorities, and (2) political education of rehab workers on the realities of disabled people's lives. Finally Adrienne Aron reports on how disabled people in revolutionary Nicaragua have formed a self-help organization providing supplies, counseling, job training, and active mutual support.

Like the disabled, women have long been defined and limited by misconceptions about their physical attributes. Women have been engaged in many efforts to redefine their positions in society and get control of the institutions which affect their lives. Barbara Beckwith's history of the Boston Women's Health Book Collective (BWHBC) celebrates the outstanding achievements of this group in educating and empowering great numbers of women on their health needs and rights. The BWHBC's successful political collective work is also valuable as an inspiration and model for other feminist groups.

The need for more work on basic women's health needs is shown by Charlotte Oram and Judith Beck's history of the tampon industry in light of the recent exposure of toxic-shock syndrome. The authors show that despite some changes in regulations of the most

dangerous products, the continuing hazards of a medical device used exclusively and almost universally by women are hardly being dealt with by industry and government agencies. Finally, Marian Lowe reviews a book relating the proceedings of a recent conference on women's reproductive issues. She gives an overview of the conference's topics and offers a critique of the political directions taken in related discussions, at this conference and elsewhere.

To the immediacy of women's health issues is added a more abstract but crucially important issue. John Durkin and Jon Beckwith analyze the recent media furor over research studies which purport to show that girls are inherently less able at mathematics than boys. The authors offer both opposing information to the widely publicized reports, and an analysis of why the attack on women is so virulent at the present time.

Steve Gould, in his commentary on scientific creationism, holds that although their scientific arguments are sometimes ridiculous, the fundamentalist-inspired perpetrators of this movement can cause serious damage to progressive science. The author's opinions and warnings come from a unique perspective, since his own widely known research on evolution has been misconstrued by scientific creationists as support for their cause.

Finally, Bruno Vitale reports and comments on last April's radical science journals conference in Italy, at which *Science for the People* was represented. He reaffirms basic goals of the radical science movement and the important role of publications such as *SftP*.

This issue of *Science for the People*, as all other issues, aims to provoke discussion, to raise controversy, and to inspire action. We want to receive reader responses and opinions. In this new fall season, join us in mutual support as we enter new and continuing struggles around science and technology.

UPCOMING ISSUES OF *SCIENCE FOR THE PEOPLE*

The SftP East Coast Editorial Committee is now soliciting articles for the March/April 1982 special issue on science and racism. Material should be sent to: Boston Editorial Committee, *Science for the People*, 897 Main St., Cambridge, MA 02139.

The SftP Midwest Editorial Committee is planning a special issue on Feminist Science for July/August 1982. They are seeking ideas, articles, review and commentaries. Material should be sent to: Midwest Editorial Committee, *Science for the People*, 4318 Michigan Union, Ann Arbor, MI 48109.

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DEPARTMENTS:

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letters

GENETIC SCREENING

Editor's Note:

Many companies have begun screening workers for susceptibility to workplace health hazards recently. Research that shows genetic influences on susceptibility to various poisons is part of this trend, and raises serious questions about scientific ethics. The following letter concerns a report about one such study.

This letter was sent to *Science* in response to one of their news articles. *Science* was not willing to publish it. We are printing it without modification so as to point out the serious ethical questions involved in this kind of research.

Dear *Science* Editors:

I am writing to comment on your account of the proposal to screen for cancer susceptibility by looking for mutations in the gene coding for hypoxanthineguanine phosphotransferase (HGPRT).¹ As I understand it, people working in a factory where they are exposed to a known carcinogen (methyl chloroform, or 1,1,1-trichloroethane) will be tested for their susceptibility to induced degenerative changes in their DNA. These people will then be monitored in order to see whether those identified by the test as susceptible will later develop cancer. This monitoring would have to be done over a long period of time, since cancer may take years to develop.

A number of ethical questions come to mind, concerning the workers involved, their families, their job security and their working conditions. 1) Will those workers identified as susceptible be so informed, and warned to leave their jobs, or will Dr. Shaw's group wait until the last iota of proof is in, despite mortality which may result? 2) Will Dr. Shaw's group check for stillborn or malformed children as well, since methyl chloroform is known to produce malformations, due probably to its mutagenic activity?² Will explanations be given to those workers who have had or will have malformed children? 3) Since the scientists involved are aware that methyl chloroform is mutagenic and carcinogenic, will they advise the company to install proper ventilation, protection, etc., to reduce

the risks of cancer, despite the fact that the experimental conditions would be thereby altered? 4) Will the results of this research be used to deny jobs to people with "cancer susceptibility" in a time of high unemployment? 5) Will the tests be used to permit employers to avoid reducing levels of carcinogens in the workplace by assuring workers that susceptible people have been eliminated?

Science has published several articles and papers recently on occupational health and safety standards, in which ethical questions were raised. These issues should not be ignored when presenting science news items.

Karen Al-Aidroos
Professor of Genetics
Montreal, Quebec

REFERENCES

1. G.B. Kolata, *Science*, 207, p. 967, 1980.
2. National Institute for Occupational Safety and Health. Recommended Standard for Occupational Exposure to 1,1,1,-Trichloroethane. U.S. Department of Health, Education and Welfare. 1979.

TECHNOLOGY IN INDIA

Dear *SftP*:

I have read and re-read Bandyopadhyay and Shiva's paper—"Western or Indigenous Science," (*SftP* March/April, 1981) trying to find out what they wanted to say and how coherent their message was with *Science* for the People. I think now that what they wanted to say is, at best, obscure and that the part which is explicit enough is contradictory with the very basis of a radical social critique of science.

There are sentences in the article with which it is impossible not to agree: "The characteristic of contemporary technological change in India is that it is forced on people without their conscious acceptance. . . ." There are a few words of warning about the danger of falling into a "nostalgic attempt to recreate the past." And then, we are told that "the traditional systems of science and technology offer a set of alternatives that are quickly vanishing." So we expect concrete examples of these systems of science and technology. What we get is Ayurvedic and Yoga systems of health care, and traditional fishing technologies.

About traditional health systems the authors state that, "the destruction of the social systems of indigenous medicine was not the result of its inferior

effectiveness in health care, which was never ascertained. . . . Traditional systems, on the other hand, are decentralized and to a large extent allow better control by individuals over their own health." Here are two points, one of fact, one of principle: whoever has seen (as I have seen, in Madras, and as the authors have necessarily seen) people dying in the streets, unnoticed, quickly forgotten, cannot believe that such a "system" was ever intended for common, working people—who had for centuries no health care at all (but for dearly paid magic); who believes (as I do believe, and as the authors probably believe) that social institutions—as the health institutions and therapies—are class-determined and ideology-ridden, cannot see this ideological dependence only in western medicine and refuse to see it in traditional practices. Traditional practices perpetuate the traditional class-caste divisions in India: only a few—Brahmins—know; no one knows from which practice this knowledge comes, but one knows that it is imposed on those who are victim to it. You can drink herb tea, instead of swallowing a pill, and still be totally in the dark about the origin and validity of the tradition that led to the use of that herb, ignorant of its possible after effects. . . .

The authors state that "traditionally the fishing community of India has been satisfying the need for marine food of the entire coastal region. They have done so over the centuries, with their own technologies which were ecologically stable." This sentence should be read in the context of another sentence before it: "The indigenous scientific and technological framework which has supported the Indian people successfully. . . ." This sounds very much like a sort of uncontrolled wishful thinking. I have visited traditional fishing villages south of Madras in 1966, and they were literally starving. Fishing was extremely poor, being restricted to a few hundred yards from the shore—a catch would sometimes add up to a few pounds of fish, after the collective work of most of the village for hours. Selling fish was a big problem, partly because of the difficulty of conservation and partly because of local prejudices (huge posters in Madras proclaimed, vainly—it seemed—that "fish is not meat"). Is

(Continued on p. 31)

news notes

FUTURE MOMS FOR MX MISSILE

"We want nukes/We want war?
We think oil's worth fighting for!"
"Want do we want? Nuclear war!
When do we want it? Now!"

They were hardly the chants typically shouted on the Boston Common. But it was hardly a typical bake sale that the chanters—The Future Moms for the MX Missile—were promoting early this summer. The treats offered to the lunch hour crowd included: Plutonium Fudge, Napalm Crackers, Trilateral Treats, Agent Orange Cake, Bombshell Brownies, and Apocalypse (out of this world) Muffins.

Carrying placards reading, "Another Mother for World Domination" and "More Toys for the Boys," the six local feminists who organized the affair marched, sang and leafleted.

"We got the idea from the Vietnam era saying, 'It will be a great day when the military has to hold a bake sale to buy a bomb...'" said Marian Klausner, one of the participants.

In all, about 350 people accepted literature detailing the \$300 billion cost for the MX, and its power to "destroy Hiroshima 50,000 times." And in the space of two hours, sixty signed a petition prepared by the Council for a Nuclear Weapons Freeze, in Cambridge, calling for a mutual U.S.-Soviet nuclear arms freeze.

The women are planning to repeat the "bake sale" at a later date. They will keep the same sponsors. The list includes: The Peace Resisters League, Science for the Corporate Interests, Union of Concerned Capitalists, National Association for the Advancement

of Rich People, National Grenade Owners Assoc.—and, of course—Mobilization for Extermination.

—*Liberation News Service, Inc.*
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EXPLOITING "NORMA RAE"

Twentieth Century Fox has sold the rights to the name "Norma Rae" to a non-union apparel manufacturer, according to the Clothing and Textile Workers Union.

The manufacturer reportedly plans to use the name on a new line of designer jeans. ACTWU Union Label Director Del Mileski said the jeans will be marketed by Kratex, a New York apparel firm. They will be produced by a non-union contract shop in North Carolina, he said.

"It's ironic that a name that has become synonymous with union organizing and the struggle for justice will be exploited to make profits for non-union companies," Mileski declared.

Crystal Lee Sutton, on whose life the movie, "Norma Rae" was based, said, "It makes me kind of sad. They're just out for the money."

—*PAI/The Carpenter*
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HIGH TECHNOLOGY PROFESSIONALS FOR PEACE

High Technology Professionals for Peace is a recently formed Boston-area group of engineers, programmers and others sympathetic to the issue of getting high tech people out of defense work. High tech people are some of the most keenly aware of the destructiveness and wastefulness of military work. The group serves as a support network for high tech employees concerned about militarism. It is working on outreach to

the large portion of engineering people who are working on military projects, through choice or desperation.

The group, around 25 people now and growing, is circulating a petition which endorses a U.S.-U.S.S.R. nuclear freeze, as a way of attracting new members and gaining publicity in order to become a national organization. An employment agency which offers defense industry employees a cash incentive to change to non-military work is the group's biggest project now. The group also plans to do research on military-to-civilian industrial conversion. You can get in touch with High Technology Professionals for Peace through SftP or write: High Technology Professionals for Peace

c/o American Friends Service
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Science and the Attack on Women

GIRLS, BOYS AND MATH

by Jon Beckwith and John Durkin

"Are Boys Better at Math?" asked the December 7, 1980, *New York Times* article. "Two psychologists said yesterday that boys are better than girls in mathematical reasoning, and they urged educators to accept the possibility that something more than social factors may be responsible."¹ On December 15, *Time* called our attention to "The Gender Factor In Math": "Since the rise of feminism... female underachievement in math has been generally chalked up to sexism... That theory meets its strongest challenge yet in a seven-year study reported in this week's *Science* magazine. According to its authors... males inherently have more mathematical ability than females."² *Newsweek* headlined their article on the subject, "Do Males have a Math Gene?"³ And a few months later, *Discover* magazine began its cover story on "The Sexes and The Brain" with reference to this same study as the most recent support for the position that sex-role differences are inborn. According to the subtitle of this last article: "Men and Women think differently, Science is finding out why."⁴

This is only a sampling of the extensive publicity which followed the publication of a study by Camilla Benbow and Julian Stanley of Johns Hopkins University.⁵ Considering the enormous attention this study was given, it would seem as though some important new scientific insights have been made. But this is simply not the case. When we look more closely we find that this is yet another tempest in a teapot—a case of the skimpiest of scientific data being blown into a major news story with considerable social impact. It is important to look in some detail at this study and the attendant publicity in order to see the influence of social factors on scientific research and its communication to the public. Why and how do particular scientific findings gain such notoriety?

John Durkin is a doctoral candidate in biophysics at Harvard University. Jon Beckwith teaches and does research in genetics at Harvard Medical School. He is a long-time member of Science for the People and is active in the Sociobiology Study Group.

The Study

In a research article entitled "Sex Differences in Mathematical Ability: Fact or Artifact?,"⁶ Benbow and Stanley reported the results of eight years of research conducted by the Study of Mathematically Precocious Youth (SMPY). This group conducts talent searches to identify mathematically gifted children. Benbow and Stanley gave the children in each of several talent searches the Scholastic Aptitude Test (SAT) and found that on the mathematics section the boys, on the average, got higher scores than the girls. Since these children were in the seventh and eighth grades, they had presumably not learned the material covered by the SAT; on this basis, Benbow and Stanley claim that the test measures mathematical ability for these children. Since seventh and eighth graders have taken the same courses, differences in achievement at this level cannot be attributed to boys having received more education. Furthermore, Benbow and Stanley report that the boys and the girls had the same attitude towards mathematics.

They conclude their paper:

We favor the hypothesis that sex differences in achievement in and attitude toward mathematics result from superior male mathematical ability, which may in turn be related to greater male ability in spatial tasks. This male superiority is probably an expression of a combination of both endogenous and exogenous variables. We recognize, however, that our data are consistent with numerous alternative hypotheses. Nonetheless, the hypothesis of differential course-taking was not supported. It also seems likely that putting one's faith in boy-versus-girl socialization processes as the only permissible explanation of the sex difference in mathematics is premature.

Benbow and Stanley's conclusion was taken by the media to mean that innate (or "endogenous" in their words) factors were responsible for the differences in math "ability." This interpretation was reinforced by

Benbow's comment that "women... would be better off accepting the differences"⁶ and by their charge that their critics are practicing "sweep it under the rug' sexual politics."

Socialization and Math Performance

But, what, in fact, have the researchers shown? They have studied children in the upper percentile of math performance. The only socialization process for which they have controlled is the number of mathematics courses taken. Nevertheless, they imply that by eliminating one out of many possible explanations for differential performance, they are allowed to favor "endogenous" factors as playing an important role in determining math performance. It should be immediate-

ly obvious that there are many factors acting on seventh and eighth grade girls which could also explain the results of this study. Benbow and Stanley dismiss these explanations as "the usual arm-chair assumptions." Yet there is a whole body of work examining the impact of female/male socialization on math performance.*

Guidance counselors and teachers often discourage girls from taking math. In one study it was found that "42 percent of girls interested in careers in mathematics or science reported being discouraged by counselors from taking courses in advanced mathematics."⁹ Casserly¹⁰ interviewed guidance counselors and came up with comments of the following type: "I just hate to see a girl get in over her head." Even if the students do go on to further math courses the message conveyed by these advisors is bound to affect their confidence in their mathematical ability.

In addition, girls are socialized to not want to do well in math because boys might not like them or they might be socially ostracized. Interviews with girls have turned up the following typical comments:

'... boys do not like or are afraid of smart girls, especially mathematical whizzes...'¹¹

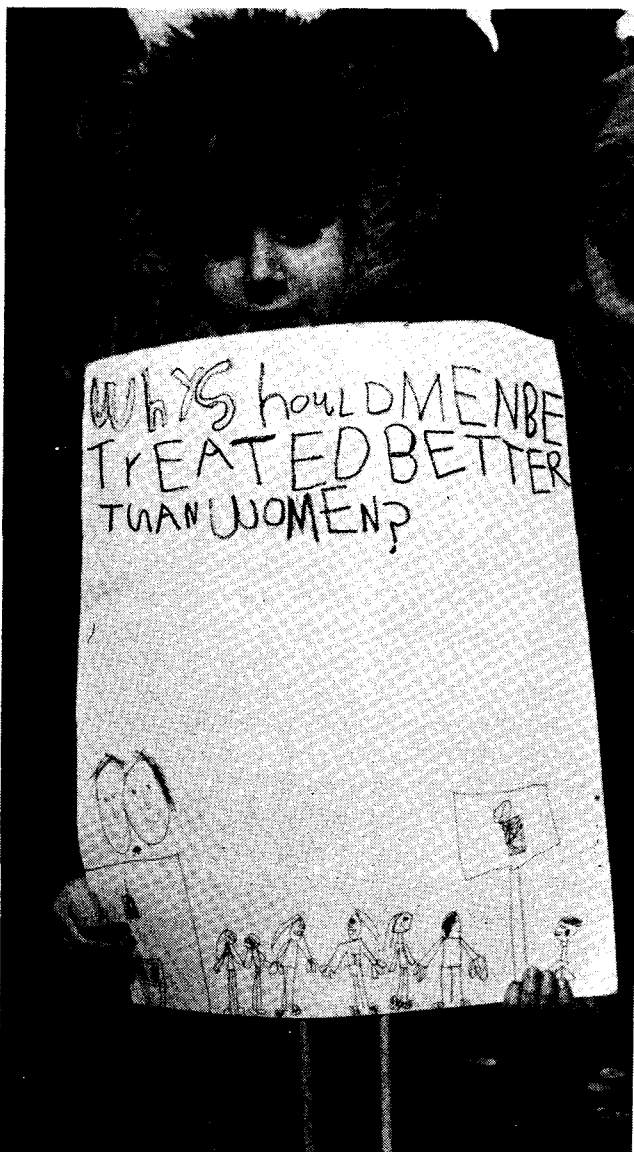
'... girls don't want to be known as science nuts by taking every science course around.'¹⁰

Furthermore, studies have suggested that teenagers associate mathematics with masculinity.¹²

This discouragement process starts early. Ernest¹³, in a survey of elementary and high school teachers, found that 41 percent thought boys did better than girls in math, while none thought girls did better than boys. He suggested that "we may be observing the so-called 'Pygmalion effect' in education, according to which the student performs to some (measurable) extent, in response to the expectations of the teacher." This speaks directly to Benbow and Stanley's claim to have controlled for differential course-taking. Sitting in the same classroom and learning from the same teacher is a different experience for girls and for boys.

Perhaps even more importantly, early childhood socialization and differential upbringing of the sexes could have significant effects on later interest and performance in math. The different kinds of toys boys and girls are given to play with, boys' interest in sports which require various mathematical reasoning powers, and parents' attitudes towards their children's school work could all have significant impact.

*It is particularly surprising that these authors have ignored this work when we consider that Stanley is General Editor for a series of books which include *Women and the Mathematical Mystique*. This book reports on the work of a number of researchers who have documented social factors in school and at home which affect attitudes toward math.



Liberation News Service

Math Ability

Benbow and Stanley claim to have shown that males have more "mathematical reasoning ability," or "mathematical aptitude," than females. These terms carry connotations which the media have failed to examine critically.

"Aptitude" implies something that is fixed. "Girls have less aptitude than boys" implies that there is a barrier to female achievement. (In conversations with associates, one of us has noticed an alternate formulation with the same implication. They often speak of "mental capacity," which one either does or does not achieve depending on one's training.)

The phrase "Mathematical Reasoning Ability" is carefully constructed and sounds quite precise. It implies a single, indivisible trait, a fundamental quality.

It is important to remember, however, that mental ability is not directly measurable. Ernest³⁹ has pointed out that psychologists do not have a consensus even on a *definition* of mathematical reasoning ability. What is observable is performance on a mathematical task. The experiment infers ability from performance. The conclusions one draws therefore depend on which measuring instrument one uses.

Benbow and Stanley chose to use the SAT. There are coaching courses for the SAT which significantly improve the scores of those who take them. In fact, the improvement in the scores of minority group students, who traditionally do worse on these exams, is even greater than the improvement shown by students on the whole. Of course, none of the seventh and eighth graders in the SMPY talent searches have taken these courses. But this malleability points out that performance on a test is the result of a complex interaction between biological substrate (i.e. the brain) and imposed experiences.

Methodologically, the Benbow and Stanley study is hopelessly inadequate to separate out these influences (with the lone exception of differential course-taking).

As for math ability as a single trait, it should be obvious that skill at solving problems involves many skills, among them "motivation, perseverance, the ability to withstand frustrations, an esthetic sense, courage, intelligence, imagination, and many kinds of competencies including computational, spatial, algebraic, and verbal."³⁹ Note that while some of these skills are taught formally, others have to do with attitudes and self-image. Benbow and Stanley have not controlled for sex differences in these areas.

A final caveat to the use of the SAT in a study in which sex is a variable is the content of the test. Performance in word problems is affected by the problem-solver's familiarity with their content. For example, Graf and Riddell⁴⁰ gave their subjects one of two word problems which were identical computationally. One was about buying fabric, the other about selling stocks. The female subjects solved the stocks problem more slowly than the males. Chipman⁴¹ cites studies by the Educational Testing Service which found similar sex biases in the contents of the SAT mathematical word problems. Eliminating bias is a recurrent problem in the design of tests. For example, the Stanford-Binet I.Q. test is believed to be biased against blacks by sampling cultural information more familiar to whites.⁴² To date, this bias has not been corrected. The Stanford-Binet I.Q. test is, however, unbiased sexually. When it was first prepared in 1916, women had higher scores than men. The test was redesigned so men and women had the same mean score.⁴³

Benbow and Stanley have indeed shown a sex difference. But, quite apart from the question of what causes it, it is not clear what they have shown a sex difference in.

Girls agreed that a chemistry set had been the hardest toy for most of them to get.¹⁰

Fox and Cohn¹⁴ cite a study of gifted children which found that the parents of gifted boys often noticed their sons' interest in science at an early age, discussed careers with them, and supplied them with science-related toys and books. Very few noticed their daughters' interest in science.

Yet Benbow and Stanley⁷ "favor the hypothesis that sex differences in achievement in and attitude toward mathematics result from superior male mathematical ability." It is evident even from the way they presented their data that they do not take socialization very seriously. Differential male-female performance was carefully documented; means and standard deviations for boys and girls in each of the talent searches were tabulated, and the relevant statistics were computed. But the claims that these children had taken the same number of courses did not differ significantly in

their attitude toward mathematics were referenced: "C. Benbow and J. Stanley, manuscript in preparation."

They do not report how they assessed attitude towards mathematics, either in the *Science* report or in an expanded account (Benbow and Stanley, manuscript in preparation, kindly sent to us by the authors). This is critical because evaluation of a child's feelings about mathematics depends on what question is asked. Several researchers have simply asked boys and girls "Do you like math?" and reported that girls and boys like math about the same¹³. But other ways of examining such attitudes paint a more complex picture. For example, sociologist Sanford Dornbusch has studied high school students in the San Francisco area in an attempt to discover the causes of student failure:

One of our questions had asked the student: when you get a poor grade, which reason do you think usually causes the bad grade? There were four alternative answers: I had bad luck, I didn't work

hard enough, the teacher didn't like me, and I'm not good at this subject. Most students gave lack of effort as the reason for receiving a poor grade in every subject. However when it came to math, 26 percent of the females gave lack of ability as the basis for a poor grade as compared to 15 percent of the males. . . This pattern was found in no other subject for females and in no subject for males.¹⁵

Fox and Cohn¹⁴, two other investigators at SMPY, examined other facets of these gifted children's characters. They found that, even in the seventh grade, the high-scoring boys have a strong orientation towards investigative careers in mathematics and the sciences, and a strong "theoretical-value orientation." The high-scoring girls tend to have values that are more social than theoretical. Furthermore, the boys much more than the girls seek out extra-curricular experiences in mathematics—studying with a parent or teacher, working mathematical puzzles. Fox and Cohn conclude:

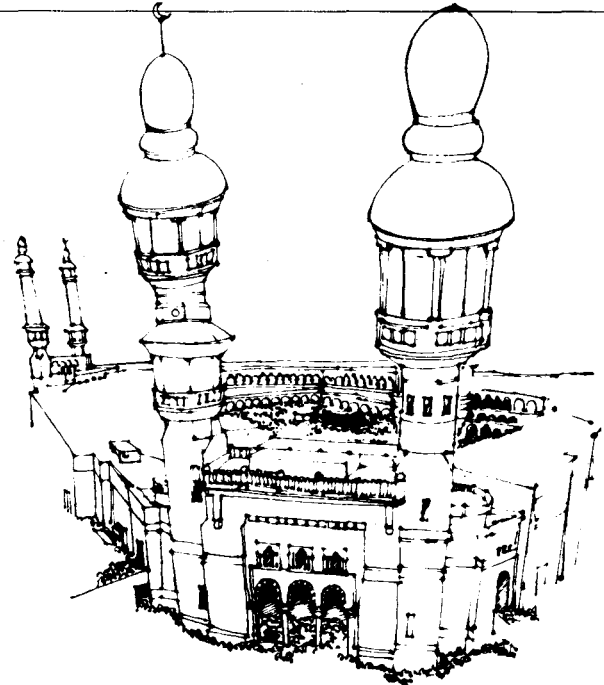
SMPY's study of the characteristics of mathematically precocious adolescents lends some support for the social explanation of sex differences at the higher levels of ability and achievement.

This conclusion is especially striking because their SAT performance data are *exactly the same* as Benbow and Stanley's! (Compare Fox and Cohn's Table 7.1 with Benbow and Stanley's Table I). But, none of us remember seeing articles in the *New York Times* headlined "Are Girls Stifled at Math?" ("Two psychologists said yesterday that seventh and eighth grade girls have already been discouraged from performing well in mathematics, and they urged educators to accept the possibility that something more than genetic factors may be responsible. . ."), or in *Time* headlined "The Male Math Advantage" ("A new study says males may get more breaks than females"). For reasons which had little to do with its scientific merit, the media chose to highlight the Benbow and Stanley article, while they have by and large ignored a host of studies which examine social factors affecting female math performance.

Why the Media Interest

Given the very limited nature of the conclusions the Johns Hopkins researchers were actually able to reach, it is at first surprising to see the extent of the media reaction and their willingness to broadcast the groundless speculations. In part, this may be due to the fact that *Science* chose not only to publish this article, but also to

(Continued on p. 32)



WHAT IS HAPPENING IN THE MIDDLE EAST?

Warships crammed with tanks and heavy artillery are poised off the Persian Gulf, ready to "marry up" with Marine brigades trained in the California desert. In Washington, the CIA predicts the downfall of the Saudi regime, while the Pentagon prepares to prop it up. Military specialists are dispatched to Egypt, Saudi Arabia and Oman. President Reagan calls for a "ground presence" of US troops and praises Israel's "combat-ready and combat-experienced military" as a "strategic asset."

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BORN AGAIN CREATIONISM

by Steve Gould

The Resurgence of Creationism

Evolution is one of the best established, and surely one of the most exciting, concepts of science. Until recently, biologists tended to regard its persistent fundamentalist opposition in America as the dying fringes of a kooky movement, a peculiarly American form of Yahooism conjuring up images of foolish old Bryan, a dying man at the Scopes trial,* crucified by Clarence Darrow on a cross of fact.

The laughter has ceased abruptly. Arkansas just passed an "equal time" law requiring that "scientific creationism" be granted the same exposure as evolution in high school biology curricula. Letter columns and editorials are filled with commentary about resurgent creationism. The new creationist leaders, with their advanced degrees in science and their legalistic skills, may be dishonest in argument and even malevolent, but they are surely clever and polished in rhetoric, for all the continued foolishness of their claims.

When a movement, purporting to represent science, rises from obscurity to prominence, we generally assume that some fresh information or exciting theoretical development lies behind the renewed fervor. "Scientific" creationism certainly presents itself in this light, with "disproofs" of radioactive dating, "evidence" of human footprints preserved on bedding planes with trilobites, and arguments about why the second law of thermodynamics makes evolution impossible—all served up in handsome volumes with such catchy titles as *Evolution*, *The Fossils Say No!*, and *The Handy Dandy Evolution Refuter*, published by Seagraves and Company, the folks who gave you the recent trial in Sacramento.

Creationists claim that evolution is impossible because the second law of thermodynamics holds that order must decrease through time. They should under-

*Steve Gould is a professor of paleontology at Harvard University. He has written two books, *Ever Since Darwin* and *The Panda's Thumb*.*

stand by now—and I assume they do and merely raise the point dishonestly as a debating tactic—that the second law applies only to closed systems receiving no input of energy. Since the sun has been a source of vast input for more than 4 billion years, the earth is not a closed system, and order may increase.

But the creationists have nothing new to offer. The "footprints," some potholes, and some carved for profit, have been kicking around since Scopes' time. The thermodynamic pseudoargument, based on a willful decision to ignore the difference between closed and open systems, is another oldie but baddie. No, creationism's resurgence is politics pure and simple. Creationism is part of the program of the evangelical right in America—and this movement, considered peripheral a decade ago, has become central in Reaganland.

Tactics of Creationists

The creationists lost a series of court battles between 1975 and 1978, when several statutes for "equal time" were tossed out because they violated the principle of the separation of church and state. At this point, creationists shifted gears and began to argue that their claims represented a purely scientific alternative to evolution (with only fortuitous correlation with Genesis, I assume). Yet if one simply consults their pre-1978 writings, the speciousness of such a claim is apparent—as in Duane Gish's** statement: "We cannot discover by scientific investigations anything about the creative processes used by the Creator."

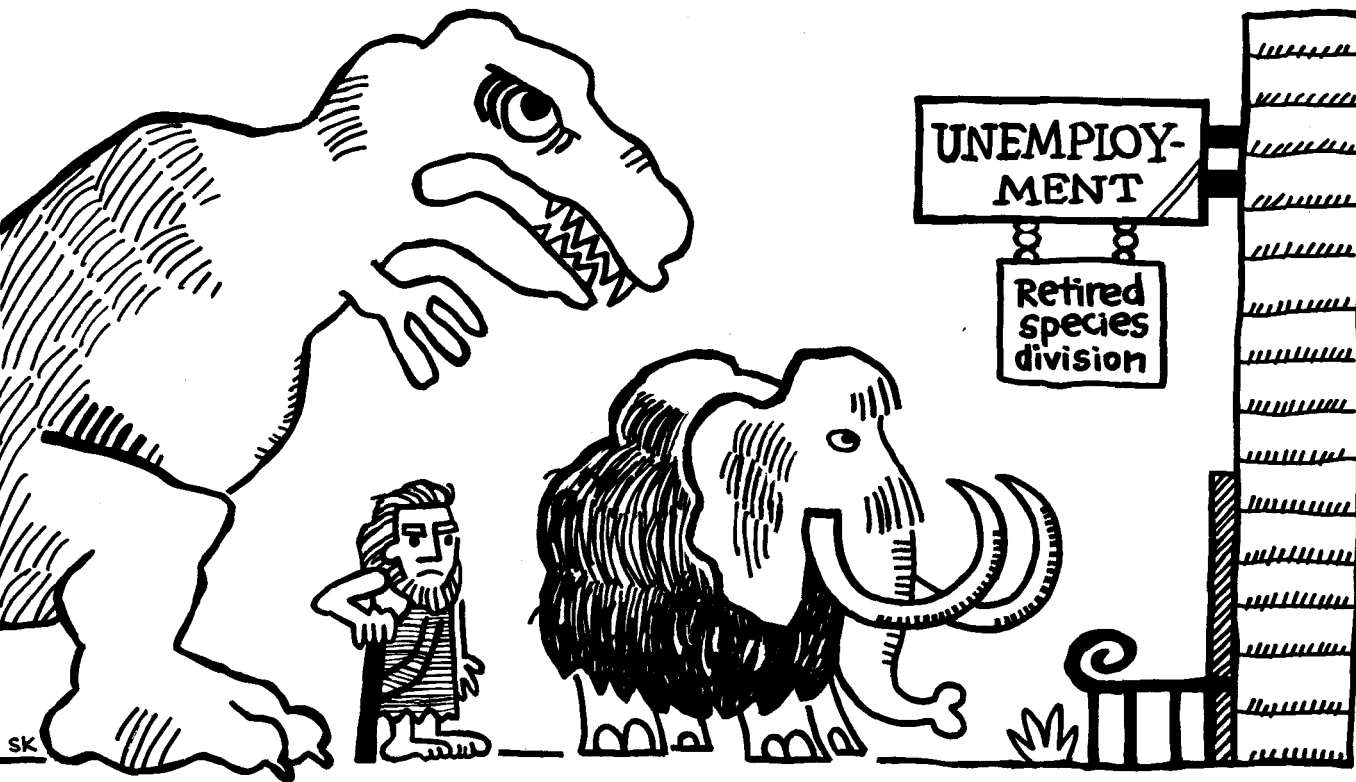
Nonetheless, creationists are back in court with their new act—with some success, at least in Arkansas (though I assume the courts will declare this bill uncon-

*In 1925, John Scopes, a high school teacher in Dayton, Tennessee, was convicted under a state anti-evolution law for teaching that humans had descended from "a low order of animals." Although the conviction was later quashed on a technicality, the trial had a chilling effect on the teaching of evolution throughout the nation and Tennessee's law remained on the books until its repeal in 1967.

**Duane Gish, a director of the Institute for Creationist Research in San Diego. He holds a PhD in biology and is the leading "intellectual" of the creationist movement.

stitutional in time). Sometimes, creationists also use the courts as publicity machines to garner attention and inspire contributions. Seagraves and his lawyers never intended to win their recent case in Sacramento. They set up the state for a big battle, won national media atten-

tion, and then successfully petitioned the judge to restrict the case to such a tiny issue that their defeat scarcely mattered. As a sidelight to a correct perception (and cowardly decision) about the politics involved, I was originally scheduled to testify for the State in this trial but was dropped as a witness by the Attorney General because he felt that my leftist politics might enhance the impression that evolution is some kind of commie plot (even with such supporters as the Catholic mystic Teilhard de Chardin and the Russian Orthodox Theodosius Dobzhansky).



Steve Karian

Retired from the Books by the Right Wing Creationists

I am less worried about the court strategy (where, I suspect, creationists will continue to be unsuccessful despite their new claims for "science") than the school board strategy—the county by county attempt to introduce creationist texts curricula by lobbying locally within communities. Their successes here are abetted by the cowardice (or call it good business sense!) of text-

Why the Right Advocates Creationism

I can understand how certain aspects of the harsh version (not Darwin's) of Darwinism might offend some people's concept of meaning for human life—the claim that some organisms are merely selected to increase the representation of their genes in future generations, and that all else flows from this metaphorical struggle among individuals. But the fact of evolution is a very different thing from this or any other interpretive theory of its mechanism.

I do not see how the mere fact of evolution—the claim that all creatures are connected by ties of genealogy, or descent with modification as Darwin called it—can threaten any particular view of ethics or morality. Indeed, the fact of evolution has been embraced by ideologues of all shades. I suppose that evolution might pose some marginal threat to certain theo-

(Continued on p. 37)

The Safety Factor

TAMPONS: LOOKING BEYOND TOXIC SHOCK

by Judith Beck and Charlotte Oram

She had been little more than a child—she had been healthy—now she was a statistic—one of many who died within days after the onset of an illness that could have been avoided. That's the ultimate consequence. Then there are those who have lost fingers and toes. There are others whose vital organs have been affected, who will require years of medical treatment. They all had one thing in common: the onset of the syndrome was during a menstrual period.

If they had known the warning symptoms of toxic-shock syndrome; if they had known that tampons were somehow involved, could all this have been avoided? Yes—according to the Center for Disease Control of the Public Health Service. By not using tampons, women can almost entirely eliminate their risk of contracting toxic-shock syndrome.

On October 20, 1980, the Food and Drug Administration proposed a regulation requiring warning labels on all tampon packages, and notices on shelves in the market place where tampons are sold. Unfortunately they have not made it mandatory. The voluntary efforts of the manufacturers in warning the public on the hazards of tampon use have proved to be haphazard at best. Some packages contain warnings—others do not. Their advertising continues as though the question of tampon safety had never been raised. It is business as usual.

Woman Health International (WHI) submit that the FDA's regulatory power should be exercised beyond mere recommendation of warnings when there is a threat to life and limb, and should bypass protracted hearings when time is a vital factor.

Tampons Before Toxic Shock

In the late 1970's, long before toxic-shock became an issue, WHI was troubled that so little was known about the ingredients of a product placed inside the body and used universally. We sought from the tampon manufacturers specific information on the fiber and chemical content of their product. Bland and reassuring replies devoid of specifics were received, along with the

assertion of their "proprietary right" to withhold trade secrets. We asked the Food and Drug Administration to supply the basic information—but they cited their inability to breach the manufacturers' proprietary rights.

We turned to the medical research community, requesting of medical schools in the United States and Canada the status of any research done on tampons. The negative response only confirmed that the tampon as a possible traumatizing agent for half the population had not been envisioned.

We contacted women's organizations, nursing schools and nurse-midwifery schools all over the country to alert them to the sweeping significance of what had become by then the tampon problem—and urged them to highlight it in their publications and to pressure the Food and Drug Administration and House Subcommittee on Health and the Environment to take action requiring complete labeling of contents.

Our coverage of the extant medical literature on the subject resulted in a June 1980 report distributed and presented to the Food and Drug Administration OB-GYN Advisory Panel meeting on October 10, 1980. The report was titled "Forty-seven Years Later—Are Tampons Really Safe?"

What our research revealed—and what is never referred to in industry advertising—were warnings about possible adverse reactions. In 1938, doctors conducting the first absorbency test warned of possible damage due to irritation by a foreign body in the vagina.¹ In 1942, Dr. Barton, in the *British Medical Journal*, cautioned that cervicitis and vaginitis might occur as a result of local irritation from impurities or chemicals, and that infection of the genital passage could be caused by bacteria carried into the vulva on the applicator.²

In 1943, Singleton and Vanorden objected that tampons had been put on the market without the usual laboratory and animal experimentation.³ In the same

Judith Beck and Charlotte Oram are researchers for Woman Health International.

journal, Dr. A.A. Taft pointed out that vaginal tampons provide warmth and moisture, which are the necessary factors for germination of spores and fungi. Dr. Taft had learned from manufacturers that tampons were not sterilized, since that would impede absorption, but depend on chemical treatment to eliminate the organisms present in raw cotton.⁴

The Chemical Factor

It's been taken for granted much too long that the vaginal tract is relatively impervious to chemicals. Spermicides and douches have been used that contain mercury, radium and boric acid, all toxic substances that can be absorbed by the body and can cause birth defects. There were warnings as far back as 1918 when Dr. David Macht wrote an article entitled "Absorption of Drugs and Poisons Through the Vagina."⁵ The article described in detail his experiments with dogs and offered convincing evidence that the vagina was capable of absorbing toxins, with misery and even death as a result. Nobody listened. Animal studies were not considered accurate enough to determine standards.



On January 19, 1981, the Council on Environmental Quality published a report entitled "Chemical Hazards to Human Reproduction" which postulated that animals are a much more accurate indicator of real human hazards—at least as far as reproduction is concerned—than scientists have generally believed. Chemicals which are known from other evidence to be hazardous to human reproduction were used in laboratory animals. A strong similarity was found not only in the way the chemicals produce damage, but also in the doses that cause the damage. The report urges more research,

What Is Toxic Shock Syndrome?

Although the medical community was alerted to toxic-shock syndrome in 1978, it was not until May of 1980 that the high occurrence of TSS among menstruating women was made public. Toxic-shock syndrome occurs mainly in women under 30 years of age; one-third of all cases are women 15 to 19 years old. However, TSS has stricken females from 6 to 61 years old.

Although toxic-shock syndrome has occurred in men, 99% of cases occur in women, and 99% of these women had onset of TSS during a menstrual period. Studies have shown that TSS occurs in 6 to 15 per 100,000 menstruating women. In June 1980 a report was published linking toxic-shock syndrome to tampons.

One brand of tampon, in particular, was associated with toxic-shock syndrome—Rely, which was subsequently withdrawn from the market. However, no brand of tampon is without risk of inducing TSS. Use of sea sponges as menstrual devices does not appear any less likely to induce TSS than use of tampons.

The symptoms of toxic-shock syndrome, all present with the disease, are (1) sudden onset of high fever, usually over 104°, (2) vomiting and diarrhea, (3) rapid drop in blood pressure (below 90 systolic for adults), (4) sunburn-like rash which later peels off in scales, especially on palms and soles. The acute phase lasts 4 to 5 days, and convalescence takes one to two weeks. About 10% of reported cases have been fatal. Most TSS deaths occur within a week of onset of the disease.

Toxic-shock syndrome is now believed to be caused by the *Staphylococcus aureum* bacterium, which enters the body through a wound. In cases of TSS in menstruating women, use of tampons apparently causes or facilitates entry of *S. aureum* through the vagina. The U.S. Center for Disease Control (CDC) acknowledges that "Tampons play a contributing role in the development of TSS, but do not cause the syndrome."

Toxic-shock victims may be treated in the acute phase by hospitalization in intensive-care units, where they are given intravenous fluids and medications to raise blood pressure. Some doctors use certain antibiotics after ascertainment of the disease by bacterial cultures. It has not, however, been proven that antibiotics cure the disease or even improve the outcome, although they do appear to prevent its recurrence. The CDC does not recommend that women without symptoms be routinely cultured for *S. aureum*.

Women can almost entirely eliminate risk of toxic-shock by not using tampons. Risk can be reduced by using tampons only intermittently, that is by using an alternative device for part of the menstrual period. If a woman develops a high fever or vomiting and diarrhea while using tampons during her period, she should discontinue tampon use and seek immediate medical attention.

Source: Center for Disease Control, *Morbidity & Mortality Weekly Report*, January 30, 1981.

pointing out that fewer than 5% of the 55,000 chemical substances in commercial production in the United States have been tested for their effect on reproduction.

The December 12, 1980 issues of the *Journal of the American Medical Association* published an article on "Vaginal Absorption of Povidine-iodine," in which the author warned that the "vagina is a highly absorptive organ" and this commonly used vaginal disinfectant can produce an overload of iodine which can affect the thyroid and is particularly dangerous to the fetus.⁶

Through research on patent applications of the 1970's, we found that manufacturers were apparently using substances such as acetic acid, polyvinyl alcohol, ethers, methylcellulose and phenol, among other chemicals. We found that phenol (a coal-tar derivative) and acetic acid are listed by the Toxic Substances Control Sourcebook as possible toxic substances.

There is evidence in the medical literature of terrible consequences to animals injected with polyvinyl alcohol and methylcellulose. When Toxic Shock Syndrome (TSS) erupted, it was suggested that carboxymethylcellulose, used in "Rely" and other superabsorbent tampons, might well be the factor linked to TSS.

While TSS is a rare disease, there are many other illnesses affecting women which might be due to chemicals and polymers in tampons.

Our alarm concerning tampon safety was reinforced from another quarter. Complaints from consumers, doctors, and other health professionals in 1979-80 to the FDA's Device Experience Network (DEN) revealed that tampons, regardless of brand, produce mucosal alterations in the vaginal area, drying, microulcers (very small ulcers), hemorrhaging and dermatitis. The following is a sample of comments:

1) Dr. states that in last 2 years he has treated more cases of vaginal ulcerations... These are about 1 inch in diameter... and bleed on contact and in every case have been associated with the use of medicated tampons. [Playtex deodorant]

2) Have seen 5 patients with very serious vaginal ulcers related to use of this product. [Playtex] Have notified manufacturer who said they would have their medical director get in touch, but have received no further response.

3) Complainant's physician attributes use of Tampax's new "Slender Tampon" to having caused a vaginal ulcer... Four other patients developed abrasive ulcers while using the same product. Problem... is that it is so compressed, the tip is extremely hard and rough, causing abrasion.

4) Consumer originally purchased these (super-plus) tampons because they are more absorbent. [Tampax] Since she has started using them she

Glossary of Medical Terms

1. Bacterial endocarditis—inflammation of the lining of the heart and its valves produced by bacterial infection
2. Cervicitis—inflammation of the cervix
3. Colposcope—an instrument designed to facilitate visual inspection of the vagina
4. Mucosal—pertaining to the mucous membrane which lines the cavities and passages of the body communicating directly or indirectly to the exterior
5. Neonatal—relating to or affecting the newborn during the first month after birth
6. Staphylococcus—a genus of bacteria that generally appear as parasites on skin and mucous membranes (staphylococcus aureus is a member of the family)
7. Vaginitis—inflammation of the vagina—there are several forms

noticed her period increased from 4 days to 5½ days... during the second month of use, she noticed that her period increased from 5½ to 7 days and she has been using more of the product. She also experienced irritation and spotting in the vaginal area.

It passes all understanding that the safety of this medical device—the tampon—escaped serious attention not only from practicing physicians but also from manufacturers and government regulators alike, when so vital an area as the birth canal was involved.

New Questions—New Research

A study by Drs. Friedrich and Siegesmund, reported in *The Journal of Obstetrics and Gynecology* of February, 1980, supported by a grant from the Kimberly-Clark Corporation, is revealing of the complications inherent in evaluating industry-supported research.⁷

The summary of the report, entitled "Tampon-Associated Vaginal Ulcerations," says that through the use of colposcopic examination (examination using a magnifying instrument) it was found that tampons produced changes in the vagina such as drying of the mucosa, epithelial layering and microulcerations, usually of a temporary nature. The authors concluded:

Tampon products containing superabsorbents are significantly more likely to produce microulcerations than are conventional tampons when worn at times other than during active menstruation. Chronic production of these alterations could lead to clinically obvious lesions of the vagina, and should now be considered in the... diagnosis of vaginal ulcers.

Drs. Friedrich and Siegesmund are quite proper to extol the technique of colposcopy to detect injuries obscured to the naked eye. They may be correct in con-

cluding that many of these lesions are temporary—although their experimentation did not extend beyond two cycles of menses. But what of the danger of spread of infection present during the transitional healing process? What of the effects of a protracted series of ulcerations over years or even decades? What of concern for the legions of women who do not have the benefit of refined techniques of vaginal examination? Is it any wonder that literature available to the public gives rise to more questions than answers?

These were some of the questions Woman Health International put to the Food and Drug Administration OB-GYN Advisory Panel at a meeting on October 10, 1980, called for the purpose of exploring toxic-shock syndrome and the tampon connection. At the same meeting, an expert witness, Dr. Douglas Barns of the Mary Bassett Hospital, Cooperstown, New York, described the appearance of gross vaginal ulcers in patients. Other experts testified in the same vein. In all cases, the patients used tampons.

The Center for Disease Control (CDC) follow-up on Toxic-Shock Syndrome, September 19, 1980, dramatically established one brand, "Rely," as statistically at high risk (71%) in association with TSS. Other tampon brands were involved in 28% of the cases. The CDC suggests a possibility that tampons are associated with TSS because they serve as a proxy for some as yet uncharacterized risk factor. In the same publication CDC states that studies suggest tampons play a contributing role by traumatizing the vaginal mucosa and thus facilitating local infection with staphylococcus aureus and absorption of toxin from the vagina.

An observation, frightening in scope, springs from the mere mention of the "proxy" role of the tampon in toxic-shock syndrome. If TSS, why not other diseases which might result from bacteria entering the bloodstream through tampon-induced lacerations in the vagina?

In the American Heart Association's descriptive pamphlet on how Bacterial Endocarditis strikes persons with structural abnormalities of the heart or great vessels, the American Heart Association recommends a regimen of antibiotic treatment for patients with these defects who are about to be exposed to potential sources of bacterial seeding. The regimen is prescribed for even such simple procedures as having one's teeth cleaned by the dentist. Mucosa of the mouth is much like mucosa of the vagina. Has the bacterial endocarditis-prone woman been warned of possible complications from the use of tampons?

An article on neonatal infections by Giuseppe A. Botta of the University of Genova in September, 1979,⁸ states that adhesions of group B streptococci to the

human vagina have been recognized as the causative agent of serious neonatal infections. Can group B streptococci remain adherent to vaginal epithelial cells or adhesions over a long period of time, thereby exposing the newborn to B streptococci during the delivery process? Dr. Botta says 'yes.' "Once it is established, the carrier condition can persist for a long time (months or years) and obviously during pregnancy." Shouldn't we raise the question of possible tampon origin?

RELY, IT EVEN ABSORBS THE WORRY.

—from the cover of the rely tampon box.

We note, also, failures of the tampon industry, itself, to responsibly inform the public about limitations or hazards to their product. We quote from the educational pamphlets of two companies: "Menstrual odor is formed outside the body when the flow comes in contact with air" and "You can avoid menstrual odor entirely when you wear a tampon. Because it is worn internally where no air is present—no odor can form at all." Why, then, are deodorants added to tampons? Why introduce one more foreign substance inside the body? What of the superabsorbent tampon? The earlier cited industry-supported Friedrich/Siegesmund study mentions that tampon products containing superabsorbents are significantly more likely to produce microulcerations than are conventional tampons. Yet, superabsorbents are promoted by the manufacturers as the answer to every woman's prayer.

Who knows how many illnesses or diseases in the past forty-eight years may have been related to tampon-induced abrasions and lacerations?

Other Countries—Other Procedures

Other countries have reported instances of toxic-shock syndrome—Canada among them. The government there was quick to act. As of December 1, 1980, manufacturers are *required* to have warning labels on the outside of all packages sold and to include an information package insert.¹⁰

Japan, on the other hand, reports that they have had no cases of toxic-shock syndrome. It is worth noting that in Japan standards for commercial tampons have been in force since at least 1969,¹¹ and the National Institute of Hygiene regularly subjects these articles to rigorous tests. In Japan no superabsorbent or deodorant tampons are permitted and they do sterilize tampons with ethylene oxide gas (EOG). This practice was stopped in the United States for reasons which are not clear, since EOG is still in use for other medical products and as a fumigant for foods. Note, in this connection, that in the United States, tampons are designated by the United States Pharmacopeia as a "non-sterile pharmaceutical product," requiring "special treatment" to render them microbiologically acceptable for use.¹²

The FDA and Regulation

Dr. Harvey Washington Wiley, a physician and chemist, is acknowledged as the individual most responsible for the development of the Food and Drug Administration. Dr. Wiley espoused the principle that the right of the consumer was the first thing to be considered. He felt that the bureau's job with respect to industry was one of enforcement rather than persuasion. In 1912, five years after he became head of the newly-formed agency, he resigned in bitter protest after political pressure had blocked his efforts at regulation.¹³

In 1974, forty years after tampons had been on the market, the FDA started monitoring their manufacture. We found a doctrine called "the history of safe use" was in operation at the FDA. Simply stated, this means that if a product has been on the market a long time, with no known adverse effect, it is considered safe.

Warnings in the medical literature concerning tampons (we have quoted only a few) had been steadfastly ignored. Possibly of greater significance, there has been a dearth of adequate testing. From 1938 (when 95 women participated in a study to determine the absorbency effectiveness of the then new product)¹³ to 1967 (when 187 women in Bath, England were examined for possible alterations of the vagina due to tampon use)¹⁴, the reports revealed that less than two thousand women were actually examined to determine possible damaging effects. This is a far cry from the criterion suggested by Dr. Robert Wheatley in 1965 who declared:

We hasten to point out that in order to obtain significant statistics regarding an uncommon lesion [injury] it would be necessary to analyze thousands of cases.¹⁵

In 1978 the FDA proposed that tampons be classified as a Class II medical device. It was not until February

1980 that the final regulation went into effect. To understand the complexity of medical device categories, let us briefly define them:

Class I: *General Controls.* Products subject only to general controls, such as registration of manufacturers, recordkeeping, etc. Examples: tongue depressors, arm slings.

Class II: *Performance Standards.* Devices for which enough information exists to establish a standard are required to meet performance standards for components, labeling, etc. Examples: hard contact lenses, tampons.

Class III: *Premarket Approval.* All implanted and life-supporting or life-sustaining devices are required to have FDA approval for safety and effectiveness before they can be marketed (premarket approval can be required of other devices if general controls are insufficient and information is lacking to establish a performance standard). Examples: heart pacemakers, contraceptive devices.¹⁶

FDA-Proposed Warning Label

"WARNING: Tampons have been associated with Toxic-Shock Syndrome, a rare disease that can be fatal. You can almost entirely avoid the risk of getting this disease by not using tampons. You can reduce the risk by using tampons on and off during your period. If you have a fever of 102° or more, and vomit or get diarrhea during your period, remove the tampon at once and see a doctor right away."

Unfortunately there is a loophole in the law that is over-used and abused, particularly in the case of Class II, the category designated for tampons. It is called "the Grandfather Clause." It allows for small changes of a device without review or testing. By spacing minor changes over a period of time, the manufacturers have been able to make substantial changes in tampons without challenge. "Rely" is a case in point. Although "Rely" was the most radically changed tampon, other manufacturers followed suit.

Given the history of tampons to date, Class II is hardly an adequate classification. Since premarket testing is essential if there is ever to be a safe tampon, the tampon should become subject to the controls of Class III. The tampon already meets the criteria of Class III: (a) it is used internally; (b) it has been linked to a very serious disease; and (c) it has been shown to cause trauma to the vaginal area.

Politics of the Tampon Industry

The giant tampon industry evolved from a small beginning. In 1933 Dr. Earl Haas, a Denver physician, patented a cotton device which he called a tampon—to

be worn internally to absorb the menstrual flow. According to Dr. Haas it was designed to absorb the fluid, not to block the flow. He sold the rights to a company called Tampax, Inc. Tampax became a multi-million dollar industry with its one product—tampons. According to *Forbes*, May 29, 1978, Tampax is one of the most profitable companies in American industry.

When companies like Johnson & Johnson (O.B.), Esmark (Playtex), Kimberly-Clark (Kotex), Purex (Pursettes) and then Procter & Gamble with "Rely," entered the market, the competition became fierce. Millions of dollars were spent in promotion and advertising to capture the market. The vast sums spent for research were



Health Advocate/cpf

for a bigger and better tampon—not a safer or a sterile one. Absorbency became the by-word. Procter & Gamble was so proud of "Rely," it advertised it "even absorbed the worry." Now that "Rely" has been taken off the market, Procter & Gamble is spending millions of dollars in research to vindicate its product and to discredit the Federal Center for Disease Control findings. It is now estimated that the tampon industry has reached the one billion dollar a year mark in the United States and about the same overseas (*Wall Street Journal*, June 26, 1981).

There is much at stake here, but we feel that profit considerations should have no place in the equation. No one has been able to say that tampons, regardless of brand, are not related to Toxic-Shock Syndrome (TSS).

The Food and Drug Administration seems to be bowing to industry pressure, delaying again the mandating of TSS warning labels on and in tampon packages. The process to issue warnings, started by FDA in October of 1980 was at that time considered top priority. The sub-

sequent delaying tactics are not surprising. With the stakes so high, with the administration openly bent on the scuttling of regulations, we can realistically assume that the outcome for timely labeling looks bleak.

Unfortunately, women are the pawns. The advertising directed at them does not focus on safety, and does not even allow them an informed choice. They are not told the contents of these products. They are not told the risks involved in their use. They *are* told that tampons are convenient, comfortable, and do not give away the "secret."

Fifty Million Women Can't Be Wronged

If women are to become a force for change, they must make their demands known. A grass-roots write-in campaign should be directed to the Commissioner of the Food and Drug Administration, to the manufacturers and to elected officials.

The address for the FDA is: Dr. Arthur Hull Hayes, 5600 Fishers Lane, Rockville, MD. 20857.

Woman Health International recommends the following:

1. *Labeling*, to include
 - a. Fibers—type and grade
 - b. Additives—to both tampon and inserter; used for *any* purpose including fragrance box, with circling of the particular size carried within
 - d. Warnings and Cautions—in layperson language
 - e. Medical Contraindications—prominent placement in or on box
2. *Product Alteration*—immediate removal of superabsorbent additives, deodorants or any known *toxic* substance
3. *Research Program*—independent research, supported by government funding, to accompany industry research, both dedicated to produce a safe effective tampon or substitute device; parallel investigation of the synergistic long term effects of exposure to chemicals and fibers used in tampons and hygiene products for the past forty-seven years
4. *Monitoring*—spot checks and inspections of worker health, materials quality and production practices of manufacturing plants to be done more frequently than the two-year random inspections now authorized by FDA
5. *Ethics*—prohibition of sale for export of sub-standard or unlabeled tampon products □

Woman Health International

We are a volunteer, non-funded organization with a fluid membership. Our primary concerns are with health issues that affect women. To that end we devote our time to research and to disseminating our findings with the hope of bringing about change where change is necessary. Where threats to health are evident we seek redress from government, industry and the medical profession.

WHI has distributed information here and abroad to interested organizations, to lawyers who request it, to the press, to students, to scientific magazines, to medical researchers, legislators and regulatory agencies.

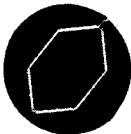
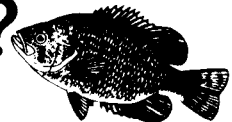
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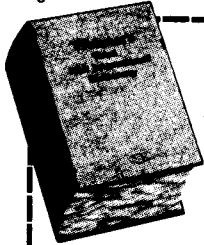
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New Roots

Women's Health Book Collective

WOMEN EMPOWERING WOMEN

by Barbara Beckwith

Much of the struggle for social and political change is necessarily a struggle *against*—against sexism, racism, technological abuse, imperialism. But it is also a struggle *for*. We can sustain ourselves by looking at examples of groups who have succeeded in making positive change despite reactionary forces, internal problems, and backlash.

The Boston Women's Health Book Collective, authors of the book *Our Bodies, Ourselves*, is just such a model. The collective has, in the last ten years, helped to radically change the consciousness of women of all classes about their bodies and their health, and has empowered women to take action *for* their health in many ways.

Birth and Growth

The seeding event which eventually grew into the collective was a discussion group on "Women and their Bodies" at a Women's Liberation Conference at Emmanuel College in Boston twelve years ago (1969). The group continued meeting after the conference. Their goal as to write a reference list of "good doctors" to distribute to other women. However, after talking and comparing experiences, they found that no such list could be compiled. Instead, they could only share stories of doctors handing out birth control pills without mentioning side effects, inducing labor simply to make the timing of birth more convenient to them, and dealing with women patients with condescension and judgmental insensitivity. "Dear, don't worry" was the ordinary reaction of doctors to women's questions about their bodies or medication.

It would be ten years before the reasons for such demeaning behavior by doctors toward women would be documented in such books as Ehrenreich & English's *For Her Own Good*, Shapiro's *Getting Doctored* and Ruzek's *The Women's Health Movement: Feminist Alternatives to Medical Control*. These books would trace the clinical practices, medical shop talk, medical texts and prescription drug advertising which together perpetrate the image of women as neurotic, indulging in psychosomatic ailments, and needing psychoactive drugs instead of medical information and treatment.

The Boston Women's Health Book Collective

The Boston Women's Health Book Collective's office is at 465 Mt. Auburn Street, Watertown, MA 02172. Their health information files are available for use by teachers, students of all ages, journalists, nurses, physicians, midwives, consumer advocates and individuals with specific concerns.

They also produce a quarterly health packet of newspaper clippings, copies of scientific reports, and listings of new resources. The packet is sent to 700 different health groups in the U.S. and abroad.

A third edition of *Nuestros Cuerpos, Nuestras Vida* (the Spanish version of *Our Bodies, Ourselves*) is now being printed. 30,000 copies of the book have already been distributed.

New *Our Bodies, Ourselves* t-shirts with slogans, "Don't Ban Our Bodies and Stop Censorship" encircling a picture of the books are available. All sizes for \$7 (regular), \$8 (French cut). Write, BWHBC, Box 192, West Somerville, MA 02144.

Since these books had not been published in 1969, the women's health discussion group decided to find out what they wanted to know about their bodies for themselves, by themselves. Each took a topic such as birth control, natural childbirth, masturbation, VD, abortion, post-partum depression or rape. They went to other women, they talked to nurses and doctors. They did research in medical texts and journals, where vital information is ordinarily kept inaccessible to the public. None had expertise in doing research or experience in any health-related field. However, they did trust they could find reliable information and learn the necessary research skills as they went.

Each woman shared what she had learned in discussion with the rest of the group. From the very begin-

Barbara Beckwith is a former member of Science for the People. She is currently doing freelance work for feminist and political publications in the Boston area.

This article was compiled with permission from the Boston Women's Health Book Collective, from articles in Heresies, New Roots, New Age, plus interviews of members and excerpts from letters in the Health Book Collective's files.

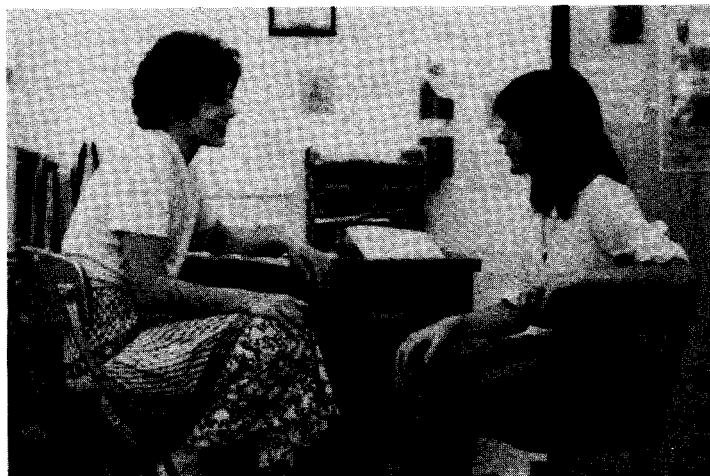
ning, personal experience was integral to their analysis, as it enabled them to develop a critique of the information and health care they were getting.

The women were committed from the start to sharing whatever they learned with as many people as possible. They began a series of informal evening courses for friends and their friends. Instead of the traditional presentation-comments-questions style of teaching, they developed a more interactive format which allowed everyone to speak up and be heard. By using discussion rather than lecture, they as leaders gained new information and insights each time they gave the course. To expand the network of information further, they encouraged anyone taking the course to start a new group, using mimeographed copies of the material.

By 1971, those few women in the group who had family money (half the group was of working class or lower middle class background and did not have money) together put up \$1,000 for a newsprint publication of their papers by the New England Free Press, for sale around the Boston area for 75¢. Within two years, 250,000 copies of "Women and their Bodies" had been sold. Not a cent had been spent on advertising. Royalties from this publication allowed them to reprint this book to sell at 30¢.

For the first two years, the group fluctuated in size, then solidified into a committed group of twelve women who wanted to expand and develop their core writings into a book. They incorporated as a collective of twelve; ten years later eleven of those women are still members, and the twelfth has moved to California to start a new group. Three books have been written by different combinations of collective members: *Our Bodies, Ourselves*, *Ourselves and Our Children*, and *Changing Bodies, Changing Lives*, a recently published book about sex and relationships for teenagers. All three use the format of factual information interwoven with extensive quotations from personal interviews and discussion groups. Women, men, and children from all over the country share their varied but frank feelings and experiences. The result is a set of books which validate individual feeling and experience as an important source of information and which support the right of people to information which experts usually monopolize.

In retrospect, the Collective's decision to publish with a commercial publisher in order to reach as many women as possible seems a logical one. However, it took the group eight months of discussion to reach consensus on this decision because of concerns about publishing with a profit-making capitalist company. The agreement that they did reach with Simon and Schuster was unprecedented. The Collective insisted upon and won the right to retain the copyright themselves, to set a ceiling



Matthew Barton

Judy Norsigian, member of the Collective meets with a teenager.

on the book's price, and to keep control of the layout, advertising and editorial decisions. Most importantly they won a 75% discount for clinics and other non-profit health organizations. The book has now sold over 2,000,000 copies. At present, the Collective is "networking" the book internationally by arranging with publishers to give women's groups in different countries complete control over translation and editing.

With the royalties, the Collective supports a variety of women's health projects. They contributed \$15,000 to start Healthright Newsletter. The Collective helped produce the film "Taking Our Bodies Back," gave money to the Wounded Knee Health Collective, and co-sponsored the 1975 Boston Conference on Women in Health. In addition, they co-produced health information booklets with a group in Cuernavaca, Mexico, as well as the first edition of the International Women and Health Resource Guide.

They were also able to start paying themselves for the work they were doing, which until then had been voluntary labor. In 1973, one woman was paid to be coordinator. By 1977, all members were paid hourly for the work that they did for the Collective. As one member commented,

We couldn't do now (volunteer our labor) what we did then. It now takes two to support a family, or two jobs for a woman head of a household. Since we are women, we are all one class that is economically discriminated against.

Internal Processes

In order to last 11 years, a group needs remarkable solidarity and commitment from its members. While *Our Bodies, Ourselves* has made them financially able to support themselves, the Boston Women's Health Book Collective continues because members have committed themselves to a life-long process of working

Matthew Barton



Women's Health Book Collective Office



Matthew Barton

together. They have not ignored but have worked through internal problems which are similar to those of every group.

The Collective has been remarkably open about such group dynamics. In an extensive article in *Heresies* magazine, they have written about their "Working Together, Growing Together":

Learning to function as a nonhierarchical group presented us with some painful issues involving power. In the political groups run by men where many of us had been active, we had seen how all women and less powerful men had very little to say in what went on. In not wanting to repeat that misuse of power, we took on an unspoken ideal of leaderlessness, which just brushed power conflicts underneath. We have learned that every group has leaders; the important thing is how they lead.

One woman in the group was particularly active in the first publishing project and in fact did many hours of work singlehandedly. The group needed her energy

and perseverance for the book to come out well. Yet over the months she held an increasing influence in all aspects of their work without consciously intending to.

Because of her engaging personality and assertiveness she became the consistently dominant figure in the group. She was, for instance, better able than anyone else to sway the group's decisions or to come in after a decision had been made and turn it around.

Tensions arose, but it was a long time before they were expressed and then they took the form of intense individual conflicts. But it was really a whole group issue.

Our self-doubts and feelings of inadequacy made us give her more power than she perhaps even wanted. Finally all of us were able to talk about our anger toward her and why we tended to invest her with power. Our support for her to leave her big sister role came as much from our caring for her as it did from our need to be free of her domination.

Gradually, a stronger sense of self-respect and equality has developed among members. As they emerged from that struggle with their group intact and their friendships deepened, they realized that power can be sharing, that there can be power without dominance.

Another part of the group's strength is their closeness to each other through 11 years of personal as well as political sharing. Their inner connectedness has grown steadily as they look after each other's children, have family picnics, play music together, meet for meals and spend long hours in searching conversation. They have seen each other through five new babies, some dramatic affairs, a wedding, three divorces, one case of hot flashes, four parents' deaths and the illnesses of several others, one child going off to college and eight entering adolescence, and some crucial professional decisions.

The Years Ahead

The impact of the Boston Women's Health Book Collective cannot be measured in specific gains or accomplishments. In interviews, they steadfastly refuse to take special credit for changes in health care across the country. They maintain that what progress has been made is because of the continuing effort of vast numbers of women. This entire network has made gains in restoring the practice of midwifery, in home birthings and home-style hospital birthings, and in women's increased awareness of the hazards of various contraceptives. *Our Bodies, Ourselves* may have helped raise women's consciousness originally, but now it is all those women (individually and collectively) speaking up for

their rights who have won changes. The Collective's part of that network is a commitment to disseminating as much health information to as many individuals and groups as possible.

Still, the monolithic medical establishment remains entrenched in America. Therefore, a vast amount of the work the Collective must do is a struggle *against* as well as *for*. The struggle continues to get the Dalkon Shield (a type of IUD) removed from the market, alert women to the hazards of estrogen therapy during menopause, publicize and take action against the extent of sterilization abuse, reverse the rising caesarian birth rate and the continued induction of labor for non-medical reasons. In addition, the Collective must now fight Jerry Falwell and the Moral Majority's backlash against *Our Bodies, Ourselves*, which the Moral Majority calls "pornographic sex education." In Belfast, Maine, the case to keep the book on high school library shelves won. But in Milwaukee, only students with parents' signed permission may read the book. The Collective welcomes support in letters to congresspeople about book-banning, especially from groups who have found the book useful. Information about towns where the issue has been brought up is also sought by the Collective.

Despite these ongoing struggles, the Collective receives support daily from women in an ever-widening national and international network. A Chilean health worker writes about the Spanish edition of *Our Bodies, Ourselves*:

It was probably the first time these women have seen a book especially written by and for women. The pictures themselves were of great impact, and a positive one. Two women took upon themselves the task of organizing some reading sessions (many of the women do not read or can read very little) where the different themes could be discussed.

Another health worker from Honduras wrote:

People here, men and women, are almost completely uneducated about the body and its functions, but, once past the giggles, are eager to learn. I haven't seen the book since it arrived. It's been passed from co-worker to co-worker and each has invariably read the information on birth control and come to work whispering "Is that true?" while handing the book on to the next person. If I could give some copies to other health and nutrition workers, both the workers and the women's groups they deal with would benefit.

The long-range impact of the Boston Women's Health Book Collective and *Our Bodies, Ourselves* is enormous. The book alone has given women legitimacy by giving them a voice, by creating a language for them

to speak about their reality. As Belita Cowan of the National Women's Health Network wrote:

OBOB has touched the life of every woman in the country, whether she realizes it or not. It changed our thinking so that we could regard birth as a normal function, not as a disease. It allowed a national network of groups to develop. The knowledge in the book is very powerful. It gives women that sense of entitlement, that they have a right to know.

In an era of reaction, leftists can take heart from this group, who began as "non-experts," trusting their own experience enough to determine what information made sense when held up to the experiences of their lives. The network of information they were part of starting has grown into a national and increasingly international consciousness of medical abuses, alternative forms of health care, and possible changes that can be made. There is still much to fight AGAINST, but there is also much that has been and can be fought FOR.

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Birth Control and Controlling Birth & The Custom-Made Child

Edited by H.B. Holmes, B.B. Hoskins and M. Gross. The Humana Press, Inc., Crescent Manor, P.O. Box 2148, Clifton, N.J. 07015. \$7.95 (paperback) \$14.95 (hardcover).

These two volumes are the proceedings of a conference titled "Ethical Issues in Human Reproduction Technology: Analysis by Women" held at Hampshire College in Amherst, Massachusetts in June, 1979. These books make an important contribution to the growing dialogue around issues of science and science policy.

The nine sessions of the conference were each devoted to one topic. Following the format of the conference, the two volumes are divided into nine sections, each of which consists of short formal papers, responses to those papers and discussions. The first volume, *Birth Control and Controlling Birth*, covers the following issues: the ethics of contraception development and deployment, sterilization abuse, technology and childbirth, policy making for cesarean births and abortions. *The Custom-Made Child* includes the topics Diethylstilbesterol, prenatal diagnosis, the handicapped neonate, sex preselection and manipulative reproductive technologies.

Although one can learn a great deal about current issues in reproductive technology from these books, they are not meant to be a place to seek specific information on various technologies. The aims of the conference (and presumably also of the published material) are set out in the preface as:

1. To identify the ethical issues involved in setting priorities in research on human reproduction and in the application of such research.

2. To determine which values have heretofore been considered in resolution of conflicts.

3. To discover any alternative applicable social values that are now being offered by women.

4. To recommend new approaches for assessing values and determining policy.

These goals are extremely important and ambitious. Although the conference did not provide clear cut answers, it did succeed in the crucial task of raising new and compelling questions about the political and ethical implications of current and future technologies. These books are important as learning tools; by allowing us to assess the strengths and limitations of this conference, they suggest future paths of analysis and debate.

In reading these volumes, it is apparent that the conference suffered from two shortcomings. First, the participants, although representing a wide range of political views, were predominantly health care professionals. Academics were heavily represented as were individuals working in alternative health care organizations. The lack of health care consumers involved resulted in discussions which tended to focus on the problems of *other* people. Although this issue was raised, there was no serious exploration of how consumers could have been incorporated into the conference.

The second major weakness of the conference was the lack of explicit discussion of political issues or of political differences. We do find the statement in the introduction that "the political is ethical," and there are hints throughout the books that the ethical is also political. Nonetheless, there is little recognition of the connections between values and power. Too much of the political analysis of values in science and technology policy stops with the idea of

"male-controlled." In the future, we need to develop further the emerging analysis of the nature of masculine values in science and to assess how those values are related to science done in a capitalist society.

In the session on sex preselection political differences were most clearly articulated resulting in the most exciting discussions of the conference. The issue of sex preselection more than any other reveals the failure of classical liberal solutions of individual choice. All of the studies to date reveal that male children are preferred to female children, and even for those couples that prefer a sexually balanced family, there is a desire for a male first child. With the availability of technologies that allow selection of the sex of a child, the social, political and biological implications of individual rights and individual choice become extremely complex and traditional liberal solutions begin to breakdown. It is around such issues that feminists will have to develop new analyses and these books will help to initiate that process.

As one might expect, the material in these books is uneven. Some of the formal papers are quite conventional. Others such as those by Punnett on women-controlled research or by Ruzek on ethical issues in childbirth technology, raise new insights and propose values from a woman's perspective.

Overall, the books are well edited and enjoyable to read. Much of the most interesting material appears in the discussions, and because of this, issues raised in one section are sometimes not followed up or connected to other issues until later discussions. Because of the importance of the discussions, this is a work in which it is best to read each section as a whole. I found the sections on contraception, depo-provera, sterilization abuse, prenatal diagnosis and sex preselection to be particularly valuable. These are important books, and they should be read by anyone interested in ideas relating to the development and use of new health care technologies. □

Marian Lowe teaches chemistry and women's studies at Boston University. She has been involved in Science for the People.

Attitudes Towards the Disabled

‘‘DISABLED DOESN’T MEAN UNABLE’’

by Miriam Struck

Disabled people are handicapped not by their limitations, but by attitudes of able bodied people. Attitudinal barriers are, as one disabled person has said, ‘‘the worst barrier that I have had to overcome.’’¹ They are the most formidable because they are expressed in every day experiences with the able bodied and in the services provided to the disabled.

Disabled people have been called the hidden minority.² There are an estimated 36 million disabled people in this country according to the 1970 U.S. Census. This includes children and adults, the physically disabled, the mentally ill, the mentally retarded, the visually impaired, the hearing impaired, the temporarily injured, and those with chronic disorders.

This article will provide an introduction to disabled people’s struggle to live full lives. As an able bodied therapist, I cannot know what it is like to be disabled in a society that requires normality. I can, however, try to understand. Most of my experiences with disabled people have been within the context of services provided in hospitals and schools for disabled children. This article will discuss the medicalization of services for the disabled. In particular, it will emphasize the negative attitudes of many health care professionals and how they affect integration of the disabled into society. Finally, it will provide examples of struggles of disabled people in the social sphere.

Social Attitudes Towards Disabled People

The disabled can best describe what it is like to be discriminated against because of disability. The following are a few personal accounts:

Fifty-five years of my life have been spent on crutches and at times in a wheelchair. Access to public and private places has always presented untold problems.³

I went to a restaurant and was seated in a banquet room by myself. I said, ‘Gee, I’d kind of like to be

Miriam Struck is a long term member of Science for the People. She is an occupational therapist currently working with high risk infants and developmentally disabled adolescents in Washington, D.C.

in the other room with the rest of the people, it wasn’t crowded in there. I always wanted to be honored at a banquet, but it loses something without the audience.’ The manager made this crack that, well, he didn’t want the other customers to be frightened.⁴

Nothing angers me more than when I’m clothes shopping and the sales lady doesn’t talk to me but will talk to my mother. People do that constantly to me. They think I can’t talk and am not responsible for myself.⁵

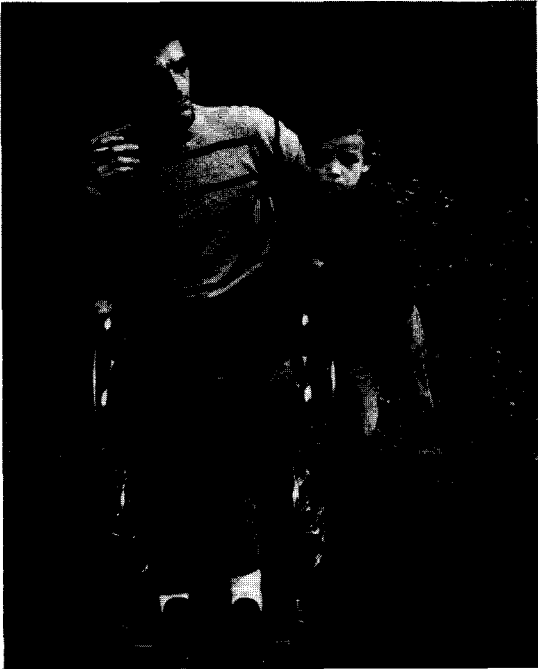
As a disabled individual, I learned quickly that acceptance of myself depended on how well I could assimilate into a non-disabled world. I felt isolated and insecure when I met with situations in which I couldn’t compete and win in the same ways that other people did.⁶

The few disabled individuals who make it in the able-bodied world are greeted with patronizing praise—despite their disability they accomplished something. Helen Keller is a good example. Few people know that she was exploited. For a period in her life she was forced to make a living as a vaudeville act. Her political convictions and tireless crusading for socialism are seldom recognized. She wrote books and articles on socialism, notably, *Out of the Dark*, now long out of print. Yet those facts are obscured by the media; Helen Keller is portrayed as yet another courageous disabled person struggling to overcome her limitations.

The majority of disabled people are not ‘‘success stories.’’ They are just people trying to survive in an able-bodied world.

Surviving in the Medical System

The medical system impacts upon every aspect of a disabled person’s life. A medical diagnosis and determination of future problems, for example, are often required for an individual to qualify for state vocational rehabilitation services. These examinations are also absolute requirements for consideration for Social Security Disability (SSDI) Benefits. Often, a person trying to keep their SSDI must submit to dehumanizing medical evaluations.



Disabled Coal Miner

The medical model of treatment in which a patient enters sick, allows things to be done to them, and leaves cured, does not fit with disability.⁷ This model of treatment fits best with acute, life threatening illnesses. Nonetheless, the model is often applied to the disabled. The disabled do not "get well." They are not cured.

Services for the disabled are usually provided within the confines of rehabilitation units in hospitals or centers sponsored by hospitals. Treatment is typically organized into a hierarchical team with a doctor as prescriber and director of treatment and allied health personnel, such as physical therapists, occupational therapists, nurses, and social workers as providers of direct treatment.⁸

A typical length of stay in a rehabilitation unit is three months. This is due to funding restrictions of third party payers, such as commercial health insurance companies and Medicare. Experiences vary from person to person and center to center. Usually a client is assigned a treatment team on their first day in the unit. Treatment is geared toward enabling the client either to become more manageable for others or to take care of their every day needs such as feeding, dressing and operating a wheelchair. Each team member provides bits of training to meet these goals. Nurses usually take care of the client's medication and personal care such as hygiene. The physical therapist can provide strengthening exercises for mobility. The occupational therapist generally concentrates on promoting strength and coordination of the arms and hands. In addition, she/he re-trains the patient in activities necessary for daily life, such as dressing, feeding and cooking. Three months of

lifting weights, sanding blocks, taking off and putting on one's shirt, and stacking cones everyday can be monotonous and boring. As one client told me:

I found occupational therapy a waste of time, I guess, because it was so frustrating. I couldn't see results fast enough. I couldn't see I was getting better.⁹

Attitudes in the Rehabilitation Unit

Attitudes toward the disabled affect the relationship between therapist and client which affects the services provided. The attitudes of fifty rehabilitation professionals were surveyed by Singleton, Cole and Long.¹⁰ The sample included nurses, psychiatrists, and occupational therapy professionals and fifteen spinal cord injured patients. The respondents were asked to rate their own attitudes toward spinal cord injured individuals and to rate perceived attitudes of members of each discipline. The results showed that the negative attitudes toward the disabled that are evident in society are also held by rehabilitation professionals. However, these professionals do not perceive themselves or their colleagues to be generating negative attitudes. They think the problem is in other disciplines and in the general public. A professional who has negative attitudes toward disabled people will probably not participate in programs to change treatment approaches or public attitudes.

An example of negative attitudes of rehabilitation personnel is the interpretation of a patient's refusal to participate in predetermined treatment programs. They label them "noncompliant," "hostile," "unmotivated," or "disinterested." The rehabilitation personnel interpret lack of motivation as something internal to the individual, a personality trait. They do not examine the few rewards they offer in the rehabilitation setting.

The organization of the hospital is a deterrent to patient motivation and participation. The hospital system prevents patient participation in decision-making and allows little autonomous, self-directed behavior. Within the hospital, motivation is often synonymous with cooperation with staff-determined goals.

By continually planning for the rehabilitation client, not completely informing them of their options and conditions, professionals place the patients in a position analogous to childhood.¹¹ Every aspect of the clients' lives are subject to therapeutic control, inspection and interpretation. The hospital environment is essentially one of deprivation. The patient is put through the motions of habit training within a social vacuum. The rehabilitation client becomes frustrated at the double message given by rehabilitation personnel—we make the decisions but you have to be independent. Some clients

are not given complete information on their disabilities and their treatment program. Overtly, they are expected to accept responsibility for self-care, yet covertly they are not included in the decision-making process regarding their own bodies.

Some rehabilitation personnel make the erroneous assumption that complaints concerning treatment emanate from individuals denying their disability and displacing their hostility onto the rehabilitation system. But these people *have* accepted responsibility for their own lives and rightfully resent any efforts to interfere with them.¹² A patient who *rebels* against treatment is highly motivated.

Rehabilitation programs are viewed by rehabilitation personnel as preparation for community life. Frequently, disabled people are sent back into a world which does not care about them and is not designed for them. This world prevents them from doing some of the most simple activities of daily life.



Disabled Student Center/UMass, Boston

The Employment Blues

Occupational therapists know how important work is to their client's self-esteem, social status and economic independence. Yet we can do little to help them get a job. Vocational services are poorly funded or nonexistent. At this writing, the recent budget cuts have completely eliminated all funds for vocational rehabilitation. Job training cannot be adequately provided in the hospital. To compound problems, attitudes and economic conditions make the disabled unlikely to be hired.

A quadriplegic woman described her employment problems this way:

I would like to work but there are so many barriers that I have to overcome first. I'd need someone

here every day to help me get up, dressed and toileted. I would need an attendant at work to take me to the bathroom and feed me. I would lose my social security and Medicaid. Transportation is also a problem. My vocational counselor actually said to me, 'Are you able to do it?' Well, that depressed me even more.¹³

Surveys done in 1972 by the Social Security Administration showed that only 6% of the severely disabled were employed full time. Severely disabled men had a one in five chance of securing part-time employment, and less than one in seven chance of securing full time employment. Only one in ten women were working full time.¹⁴ Labor market success is further reduced for the following reasons: employer preference for the able bodied when available; employer belief that the disabled create higher costs for medical premiums and worker's compensation; employer fear of involuntary absenteeism and turnover; and social stereotypes of the disabled. These conditions force the disabled to compete among themselves for the limited number of jobs available to them. Macroeconomic conditions have a tremendous impact on an entire population trying to secure jobs. The health of the economy affects everyone, but the impact is greatest for those groups in the labor force that are least prepared for work and least desired by employers.

The contradiction of this discrimination became evident during World War II. Disabled workers were recruited and hired to take the place of able bodied workers who were off fighting. An estimated 80% of U.S. industries hired the disabled. Lower turnover and absenteeism, fewer accidents and higher production rates were reported for this period. Nonetheless, the disabled were quickly fired and replaced with able-bodied veterans at the end of the war.¹⁵

Over the last twenty years some legislative changes have facilitated disabled entrance into the workplace. The Architectural Barrier Act of 1968 and the Rehabilitation Act of 1973 and its Section 504 provide some rights and protection against abuses of the past. The disabled should be credited for their struggles and protests to get these bills passed.

Section 504 stipulates the hiring of, "qualified handicapped individuals who are capable of performing activities required by the job with *reasonable accommodation*. - † Reasonable accommodations can include making the building accessible with ramps and elevators, lowering drinking fountains, rearranging work stations, and providing readers or interpreters. Many employers resist these modifications. They claim it will cost too much or cause their able bodied workers to leave. A study by Du Pont in 1973 disputed these



Disabled person's demonstration at the John F. Kennedy Building in Boston.

beliefs. The study showed that: the cost in adjusting work areas was minimal, the accident rate did not go up, able bodied employees did not resent the "special" treatment the disabled received, attendance was high, and job performance was better or average as compared with able bodied employees.¹⁷ Rosanne Bright, a physically disabled woman, writes:

It is apparent that (abled bodied employers) do not realize that many of us cannot function in their world without reasonable accommodation. The great question is, does society want to pay us to be non-contributors because of the things we cannot do (SSI, food stamps, etc.) or are they willing to pay us for the contributions that we can make?¹⁸

These acts are under threat of repeal because of the antiregulatory fever in Washington. The Architecture and Transportation Barriers Compliance Board, that was created to set and enforce general standards for compliance, is slated for extinction by the Office of Management and Budget. Recently, the board was pressured by the Administration to throw out the guidelines they have been working on for the last 20 months. The Administration won. A representative for the disabled on the board angrily said:

There is no difference between putting up a sign that says 'Whites Only' and putting steps up, effectively saying 'Able Bodied Only' . . . I guess the federal members of this board are prepared to let into federal buildings only those handicapped people who can climb Mount Ranier.¹⁹

The Education for All Handicapped Children Act of 1975 (P.L. 94-142) placed disabled children in classrooms with able bodied children. The advantages are great for both groups. Disabled children are not institutionalized and are provided with "free and appropriate education in the least restrictive environment."²⁰ They are thus provided with the knowledge and experiences necessary to live productive lives. Able bodied children learn that the disabled are not freaks and are not to be feared. Yet, for all its advantages, P.L. 94-142 is threatened with repeal and drastic reduction in funding.

Reaching Across the Barriers

For those of us who are able bodied, we can try to understand and support the struggles of the disabled. I would like to see rehabilitation workers get involved in alternative forms of services. One example of this is the new community adjustment program provided by United Cerebral Palsy of Pittsburgh. At this program, disabled people both teach and take classes from each other to develop skills to survive in an able bodied world. At this writing, the program is threatened by the recent budget cuts.

Able bodied people should take the advice given by one disabled woman:

Nondisabled people must move beyond their fears and hesitations about building warm, close relationships with disabled people. They must begin to ask the questions that will provide them with the answers and the information needed to under-

stand disabilities and disabled people who have the same needs, desires, goals and fears as they do.²¹

Although negative attitudes towards the disabled constitute ominous barriers, changing those attitudes is not easy, and is not enough. Those attitudes have a long history and they are the consequence of economic and political decisions. Eliminating requirements to make transportation systems and buildings accessible automatically isolates the disabled, forcing them back into the attic. Denying them job protection and educational and medical benefits perpetrates their economic oppression.

Political activism on the part of the disabled and able bodied rehabilitation professionals and friends of the movement is critical. Only through such activism can we force society to accept responsibility for the disabled. □

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Nicaragua

DISABILITY, AFTER THE REVOLUTION

by Adrienne Aron

Disability is no fun, even after a revolution takes power. But in Nicaragua, where the Sandinista government is committed to integrating the disabled into the revolutionary process, a hope exists among the disabled that could not have existed before.

Concern for disability often increases sharply after a war, when the number of disabled rises dramatically and the need for equipment is seen very clearly. Nicaragua fits the classic pattern: a devastating war, tens of thousands dead, upward of 100,000 wounded (many of them disabled), and desperate shortages of everything except determination. This determination explains the existence of the Che Guevara Organization of Disabled Revolutionaries, formed last year by people who were flat on their backs at the Aldo Chavarría Rehabilitation Center in Managua.

Left over from the old order and inhabited by patients who, for the most part, owed their disabilities to the barbaric Somoza regime, the Aldo Chavarría resembled other rehabilitation centers of the Third World. It was understaffed; many of the workers were neither caring nor competent; the food was horrible; wheelchairs and prosthetics were insufficient in number; and the patients suffered from neglect (pressure sores), poverty (juice bottles as urine collectors for the incontinent), and immobility, all of which compounded the desolation of spirit characteristic of the newly disabled. Everybody just waited to get out, but life on the outside held few promises.

Then, during a visit last year from wheelchair rider Bruce Curtis of the U.S., spirits lifted. Inspired by this indefatigable advocate of disability rights, Curtis gained instant celebrity by having the only motorized chair in all Nicaragua, a group of patients with spinal cord injuries organized in the hospital and resolved to create an independent living center for disabled Nicaraguans. With Curtis' help, the fledgling Che Guevara Organization of Disabled Revolutionaries (ORD) applied for, and received, a seed grant from USAID and set up an office in a building formerly owned by a Somocista. Today, less than a year after Curtis' first visit the ORD has a growing list of names of disabled compatriots, disability centers, government leaders, media and health

Adrienne Aron is a member of the East Bay chapter of SftP and lives in Berkeley.



Raf Hotchkiss

Reynerio, one of the wheelchair riding mechanics of the O.R.D., tests the first Nicaraguan prototype of a lightweight folding chair.

care workers who have lent support to the organization. In their inventory are a hand controlled van with a power lift, wheelchairs, braille, catheters, leg bags, crutches and more gifts from the Disabled International Support Effort, a U.S. based group of disabled people committed to the struggle for independent living.

Can a revolution transform years and years of backward thinking and experience? Héctor Segovia of the ORD feels very strongly that it can, but that it will take time. For the present the disabled are tolerating the indignity of being offered alms while waiting on the streetcorner for a taxi. They swallow their anger at the fact that no university in Nicaragua is wheelchair accessible, and look for ways to cope with the traditional tendency of Latin families to overprotect disabled relatives, thereby discouraging their independence and self-sufficiency. With the Sandinistas in power, these sacrifices are not so difficult, for they differ greatly from what was endured in the past and what is forecast for the future. Under Somoza, one's very life was at risk just *being* on the streets, for it was on these streets that savage attacks were made by the National Guard and countless permanent injuries were inflicted. Before the revolution only 18% of Nicaraguan children were allowed to attend school at all, and the vast majority of the people were so poor that families sent their disabled members out to beg. The Sandinistas have already shown their intention of caring for and integrating the disabled of the country.

Only a few doors away from the mansion once occupied by Somoza's mother, the Center for the Blind has been installed, providing living quarters and vocational training for people who before had lived in dwellings resembling chicken coops. During the International Solidarity Encounter that took place in Managua earlier this year, wheelchairs were in the vanguard of the mass demonstration and rally, for the ORD leaders were invited to head the march in support of the people's struggle in El Salvador. The ORD has established relations with those ministries of the government responsible for health care, social welfare, construction, and transportation—opening the possibility of improved medical services, greater public awareness of disability, and greater accessibility of buildings, roads, and vehicles.



Ralf Hotchkiss

Ralf Hotchkiss, U.S. engineer riding his 4-wheel-drive chair, works with members of O.R.D. to fabricate the prototype Nicaraguan wheelchair.

Owing to the dire economic straits of Nicaragua at this time, the government is able to provide little in the way of financial support to the disability movement. When Somoza fled, the country was left in ruins, with \$1.6 billion in debts and a national treasury whose total assets amounted to less than the value of Ronald Reagan's personal estate. Nonetheless, the government has made an effort to integrate the disabled into the decision-making process, and to lend moral support. The Ministry of Culture, for example, has offered to assist the ORD in developing educational billboards that will raise public consciousness about disability. Similarly, the Ministry of Social Welfare has reproduced as postcards several paintings by Arnaldo Toribio Cerda; on the card he is identified as an artist who was born in 1957, finished three years of high school, fought in Diriamba during the insurrection, and has been a paraplegic since 1978. "It's not one's disability that counts," the card asserts, "but one's ability."

That principle, of ability counting most, extends itself into all aspects of Nicaraguan life, where shortage produces ingenuity instead of resignation, and improvisations triumph over complaints. Undaunted by the government's shortage of funds, the disabled are moving ahead on their modest grant monies to execute important projects.

With the help of Ralf Hotchkiss, a disabled U.S. engineer and wheelchair designer, the ORD is setting up a shop for wheelchair fabrication and repair. The hope is that revenues generated by the shop will support the organization, meanwhile facilitating independent living for others by providing them with services and equipment much needed in Nicaragua today. Local artisans were drafted to assist in launching the project. Using inexpensive native materials and the principle that nothing is impossible, they produced a wheelchair prototype in lightning time under Hotchkiss' supervision. Manufacture moved from a paper plan to a living possibility.

The ORD is also conducting workshops for the disabled who are still hospitalized, counseling people on self-care, sexuality, mobility, and other independent living skills. Prior to the first group visit of the Disabled International Support Effort, no real discussions of these topics had ever been sustained, but following the road paved by their disabled friends from the U.S., the ORD has bypassed the one-way street that started at injury and ended at despair.

Compared to their counterparts in the United States, the disabled of Nicaragua are poorly equipped and poorly attended. They lack many of the basics that allow for a healthy life: proper medical attention, cushions that prevent pressure sores, sterile and correctly fitted catheters, information on preventing diseases and problems to which disabled people are vulnerable. They lack virtually all the necessities for a highly mobile life: accessible buildings and vehicles, curb cuts, graded and maintained pavements and sidewalks, adequate public transportation. But they have a spirit, born with the revolution, that is impressive.

The disabled of Nicaragua have a collective history of which they can be proud. Many of them became disabled while fighting the dictatorship. A good many blind people used their disability as a disguise of innocence while smuggling messages and arms to the Sandinistas during the insurrection. They now have a government that they can trust to include the disabled in decisions and be self-critical of its own leftover paternalism. And now, through the efforts of the ORD, the disabled also have each other, and a chance to live—as their motto announces—in full conviction of being builders of their homeland. □

letters

(Continued from p. 4)

this what the authors meant by "supported Indian people successfully..."? And then, no internal market existed for fish—so that hundreds of millions of Indians living in the interior regions had no idea about fish—is this, too, technological success?

I would like to end my criticism with a quotation from an extraordinary book by a Trinidad Indian, V.S. Naipaul: *India: A Wounded Civilization* (1976): "The street-sweeper in Jainur City uses his fingers alone to lift dust from the street into his cart (the dust blowing away in the process, returning to the street). The woman brushing the causeway of the great dam in Rajasthan before the top layer of concrete is put on uses a tiny strip of rag held between her thumb and middle finger. Veiled... earning her 5 cents, she does with her finger dabs in a day that a child could do with a single push of a long-handled broom. She is not expected to do more; she is hardly a person..." (p. 75); and again: "Intermediate technology should mean a leap ahead, a leap beyond accepted solutions, new ways of perceiving coincident needs and resources. In India it has circled back to something very like the old sentimentality about poverty and the old ways..." (p. 29).

I hope there will be some debate about these issues, and that the principles of a concrete, active social critique of science will be made clear enough to allow us to fight against, not only the ideology shaping our own institutions of science, but also the remnants of the past—with feudal and slave ideology clinging to them.

Bruno Vitale
Naples, Italy

Authors' Response:

Bruno Vitale's claim that our very brief paper on science and technology in India is "contradictory with the very basis of radical social critique of science" instigates an elaboration of our basic arguments. Vitale's reading of our paper seems to be based on two basic misunderstandings. The first seems to originate from the change by the editors in the title of our paper from "Vanishing Alternatives in Science and Technology for the Indian People" to the present one. We had intentionally given the original title to stress that the alternatives we were considering were alternatives available as

real options to the poorer people of India, which have their roots in the local socio-cultural traditions but are, nevertheless, contemporary options. Most imported modern technology which displace and substitute the traditional ones do not become real options for the large majority either as producers or, to a large extent, as consumers. It is important to note that though there has been the introduction of nuclear, hydroelectric, and thermoelectric sources for energy in India, these sources have, in no way provided alternative energy sources to the traditional source of bio-mass, and in many places they may have destroyed these sources. It is to these options, available to the poor in India, that we have addressed ourselves.

The second misunderstanding is a common one among many radicals who subscribe to the superficial understanding of a social determination of science and technology. The society-technology linkages are neither unidirectional in determination nor historically uniform in their nature. Certain technologies by their very nature, when introduced in particular natural and social environments exclude people's participation and control, others could exist in alienating or non-alienating situations. As Narendra Singh says in *Economics and the Crisis of Ecology*, "Energy-prodigal technology, being compatible with nothing but privilege, is critically and radically different from energy-parsimonious technology which could be perfectly compatible with a variety of social formations, equitable and inequitable alike." The hand mill, for example, or even the water mill, now known to have been in existence millenia before the Middle Ages and in many countries, could not have been historically associated with feudalism alone. It may not therefore have 'given' us 'society with feudal lord,' though Marx thought it did. In contrast, the steam-mill certainly gave us 'society with the industrial capitalist' who is bearer and embodiment above all of escalating privilege and is now seeking security in the 'nuclear-mill.'

Vitale's lack of perception of the qualitatively different nature of the class determination of technologies is illustrated by his comments on our illustrations of the societal role of traditional technologies. His statement that traditional practices perpetuate the traditional class caste divisions in India

overlooks the flexibility with which the health care systems like Ayurveda and Yoga have existed in different social formations. Their existence precedes the creation of the Brahminical caste hierarchy and are today options adopted by many senior executives in the Indian capitalist sector. They could, moreover, fit in extremely well in more equitable societies of the future. The revival of acupuncture in China is a corresponding example from another similar social structure. Vitale also missed the point that we quoted these two systems merely as illustrations and not as exhaustive descriptions of traditional health care practices in India. Among the options not mentioned by us are the very location specific folk remedies in which the people's participation is guaranteed at all levels—in the creation of knowledge and the production and consumption of medicines. The fact that in every major Indian city people starve and live on pavements is no indication that these people had no health care for centuries. It is instead, a symbol of the very political nature of health which is related, besides health care systems, to food and environment. With the life support systems of the millions of rural poor in India completely destroyed, they are compelled to crowd on the city pavements not because health care was not available to them, but because the preconditions for health, adequate food and nutrition, have been taken away from them. It is surprising that radicals fail to see these interconnections.

Vitale has missed our basic argument that modern technologies, very often, reduce to a mechanism for transfer of resources to the privilege from the poor. It is true that fishing communities in India have been poor by Western standards. However, the poverty that Vitale saw in Madras in 1966 has worsened, as reported in many studies, with the large scale introduction of mechanized fishing in the last decade. At no point have we stated that traditional technologies generated material affluence, or were free of class-caste affiliations. What we do hold is that while traditional technologies could at least offer a possibility of survival for the poor, the current modernization is a sure way of denying their right to survive. An increased market network associated with modernization is more often than not, a further squeeze on the material base

for living of the Indian poor. Studies on dairy development, social forestry, sheep breeding and many other development projects have adequately indicated that widening market networks only guarantee the availability of commodities to the urban rich at the cost of rural poor, whose purchasing power is almost non-existent. Vitale seems to be disturbed with the lack of market mechanism in the traditional fishing sector. However, that is what had so far been defending the poor fishermen from their present destitution.

For a people's science and technology it is essential to begin with alter-

natives available to people. It is only by the development and improvement of such alternatives that improvement in the material conditions of living of the group of people can be improved. The chance of a trickle down effect of benefits of modern technology is not the same for countries like India today as it was for the industrialized nations during the industrial revolution. Two conditions that allowed an improvement in the standards of living of all sections of those societies were the control over colonies and the settlement of poorer people in new lands like America and Australia. Neither of

these conditions operate in India today. Patterns of technological development that worked in uplifting the poor in the West can have exactly the opposite effect in the Third World countries with a dual society. Therefore, alternative patterns of development have to be searched for, and in this attempt, liberation from the oppressive future of a western style of modernization is as urgent a task as the other liberation from the "oppressive past."

V. Shiva and J. Bandyopadhyaya
Bangalore, India

Girls, Boys and Math (Continued from p. 9)

accompany it with a news story with the provocative title "Math and Sex: Are Girls Born with Less Ability?"⁶

However, this publicity does not seem surprising if we examine the trends in science reporting and scientific research on male-female differences of the last few years. Increasingly, we find scientists suggesting that women's current place in society—intellectually, economically, sexually, and in power relationships in general—is a natural consequence of differences in male and female biology. These claims are rapidly picked up by the mass media.

Sociobiologists suggest the "mother nature is sexist,"¹⁶ and that such social facts as the sexual double standard^{17, 18}, heterosexual rape^{19, 20} and the dearth of women in "science, government and business"²¹ are a consequence of natural selection which operated on males and females differently. Others propose that evidence exists for different brain structure in men and women, which in turn leads to the different sex roles found in society (including differential math performance)^{4, 22, 23}. Or, it is suggested that the different hormonal make-up of men and women can explain the social differences we observe.^{4, 23}

Not all of these proposals are ridiculous in themselves. It is conceivable that differences in biology influence human male and female behavior. However, in the specific examples cited above, as in the Benbow-Stanley study, there is simply no evidence to support the conclusions put forth. Sociobiology has been widely criticized as speculation built on the social biases of the scientists involved²⁴⁻²⁸. The whole field of brain lateralization is in disarray, with the claims of strictly determined functions for different brain hemispheres very much up in the air.^{29, 30} Even the most prominent researchers

in the hormone work admit the difficulty of separating the influence of early childhood socialization from biological factors.^{31, 32}

Thus, the current widespread research activity in these fields and the considerable publicity it has received cannot be explained on the basis of any new scientific breakthrough or insights. An explanation for the phenomena is found elsewhere. In all cases mentioned, the supposed new insights into the roots of particular behaviors correlate strikingly with the issues which have been raised by the women's movement in the last 10 to 15 years. Demands for equal rights and affirmative action are now met with the argument that biology limits women's possibilities in comparison to men's. Increased consciousness of the problem of rape and its connection to power relationships between men and women, are met with statements that rape is a natural consequence of man's need to spread his genes as widely as possible. And now a scientific rationale is offered for taking away from women the choice to have an abortion.³³

Seen in this light, sex role research is most easily explained as a social and political phenomenon, not a scientific one. Once again the scientific community has come forth with an apology for the status quo (in this case, male domination), and once again, it has done so with great success. There is no deliberate conspiracy to promote such research. Rather, it is a natural result of the domination of science funding, science and the media by the more privileged sectors of the society, and, in particular, by white males. For the scientists, the very choice of questions to be asked is influenced by their social biases. Further, the assumptions which underlie studies into these complex areas of human behavior inevitably reflect the prejudices of those doing the studies. For instance, Benbow and Stanley assume (although it is not stated) that 1) course-taking is the major environmental factor affecting differential math performance

Association for Women in Mathematics

by Alice T. Schafer

At the beginning of the 1970's, some women mathematicians began to talk openly about the discrimination faced by women in the mathematical community. A group of women mathematicians and graduate students began to meet to discuss common problems and solutions. In January 1971, women attending a meeting of the American Mathematical Society (AMS) in Atlantic City decided to form the Association for Women in Mathematics (AWM), with Mary W. Gray of American University as its first president. The purpose was to encourage women to enter and be active in careers in mathematics and to promote equal opportunity and equal treatment for women in the mathematical community. Within a few months the Boston area group voted to join the new organization.

The AWM has grown from a small, grass roots movement to a membership of about 1100 women and men from all parts of the United States and several other countries. The AWM holds two national meetings a year in conjunction with the AMS and the Mathematical Association of America (MAA). Regional meetings are held throughout the year in different parts of the country. (The Northeast meeting will be held at Amherst College, Massachusetts, on October 17, 1981.) In the decade since its founding, the AWM's efforts have led to greater participation of women in the mathematical community, especially as speakers at mathematics meetings and as members of committees of the mathematical societies.

Many of AWM's programs have been aimed at helping women in college, graduate school, and careers in mathematics and related fields. But discrimination against women in mathematics has not been limited to such women. From elementary school through high school, girls have often not

been encouraged to continue the study of mathematics, and in many cases they have been actively discouraged. By the middle 70's, a few programs designed to combat this problem were being developed. On a national level, the MAA started a Women and Mathematics program which sent women lecturers to secondary schools. AWM is now sponsoring a program in the Boston area.¹ In 1978, at a national meeting of the National Council of Teachers of Mathematics, a group of women formed the Women and Mathematics Education organization, dedicated to promoting mathematics education of girls and women.²

On local and regional levels, many other programs have been established with the aim of educating girls, women, teachers and counselors to the importance of mathematics in nearly all fields today, and of encouraging girls and women to enter careers in mathematics and the sciences. One of the most successful of these has been the Math/Science Network of the San Francisco Bay area. The Network, working under a grant from the Carnegie Corporation, covers both pre-collegiate and collegiate programs. Among these programs are the development of several films on women in science and an Equals program in teacher training, which has produced several publications.³ In the 70's, many colleges and universities developed special mathematics courses and programs for women students. Among them, Wellesley College for women developed a one-semester course, A Discovery Course in Mathematics and its Applications, especially designed for students who had dropped mathematics study before entering college and planned to take no mathematics or quantitative techniques courses in college.⁴

The AWM also sponsors a Speakers' Bureau which offers to high schools, colleges, and universities women

speakers on technical or non-technical math-related subjects. AWM members receive a bimonthly newsletter with current articles and notes on employment, education, and women mathematicians past and present. The AWM also publishes a brochure, "Careers for Women in Mathematics," written especially for high school students.⁵

One of the most valuable contributions that the AWM has made to women mathematicians is to ensure that women who face discrimination in the mathematical community know that there are those who care, who understand their predicament, and who will try to help.

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1. For information on the Boston area WAM program, contact Abby Tanenbaum, WAM Regional Coordinator, 10 Crosby Rd., Lexington, MA 02181. Phone: (617) 862-7340.
2. For information on WME, contact Prof. Joanne Becker, School of Education, 2303 James Hall, Brooklyn College, CUNY, Brooklyn, NY 11210.
3. Lawrence Hall of Science publications include: *The Sky's the Limit in Math-Related Careers* (\$3), *I'm Madly in Love with Electricity* (\$2), and *Use Equals to Promote the Participation of Women in Mathematics* (\$5) (methods and materials for use by elementary and secondary educators). For more information on Network programs, contact Nancy Kreinberg, Lawrence Hall of Science, U. of California, Berkeley, CA 94720.
4. A few copies of a booklet developed for this course are available from the Mathematics Dept., Wellesley College, Wellesley, MA 02181 (\$2 for mailing).
5. For membership, Speakers' Bureau, and other information, contact Margaret Munroe, Administrative Assistant, AWM, Women's Research Center, 828 Washington St., Wellesley College, Wellesley, MA 02181. Phone: (617) 235-0320, x430. (Careers booklets: single copies free; orders of 10 or more, 10¢ each.)

Alice Schafer is a Professor of Mathematics at Wellesley College.

and 2) the SAT tests are unbiased measures of ability. Those assumptions require a particular outlook on society.

Genetics and Behavior

Even if some of these studies had come up with evidence for a genetic or biological component to a difference in social behavior or performance between males and females, it would tell us nothing about whether those differences could be changed.³⁴ A genetic contribution to a behavior is defined only for the environment in which it is measured. A new environment may change that behavior dramatically, even though there were genes influencing it.



For *Newsweek* to state in reference to the Benbow-Stanley study: "...if they [the differences] are genetic, we must learn to accept them"³⁵ reflects this wide-spread misconception. It is like saying that we must accept near-sightedness because it is genetic and forget about developing eye glasses; or that children born with the genetic disease phenylketonuria are doomed to mental retardation, when in fact they can be treated successfully with a phenylalanine-free diet.

If we wish to strive for a world in which men and women contribute equally in all social domains, there is nothing which genetics can tell us which would hinder those efforts. If there *are* inborn traits affecting math ability in which any group has an advantage, people weak in these traits could be helped through education. As Tomizuka and Tobias suggest:

If spatial visualization contributes to mathematical reasoning, teach it. Improve math teaching overall, and eliminate all the factors in the culture that discourage children of both sexes and all races from pursuing mathematical study with pleasure and reasonable expectations of success.¹²

In fact, programs instituted to raise the performance of girls in math have met with success.³⁵⁻³⁷

The publicity these studies have received indicates the current receptivity to these ideas in influential circles. They are bound to affect parents, teachers and students who read about them. One of us recently talked with a high school science class about the Benbow and Stanley study. One girl who had already read about the study said that she felt like she should no longer try to improve her grade in math. It seems likely that such publicity can only worsen the differential treatment which boys and girls receive. The arguments for affirmative action, particularly in math- and science-related fields, will be viewed as unworkable if these claims are accepted. Math performance has been characterized as a "critical filter" in shutting off opportunities for women and non-Asian minority students.³⁸ "Competence in mathematics is an important prerequisite for a wide variety of careers, particularly those of a professional nature. In addition to careers in mathematics and the natural sciences, careers in business and the social sciences are requiring a strong background in mathematics because of their increasing use of statistics and computer technology."³⁶

Any deficit in math background or attitudes that women cannot do math is likely to narrow women's options even more. More broadly, the current scientific attack on women can only reinforce the political attack by reactionary forces. The Benbow and Stanley study, like the other scientific attacks on women, provides an apparently objective rationale for keeping women in their place. We must expose the fallacies underlying this work and its political content, in order to cut out an important underpinning for regressive social policies. □

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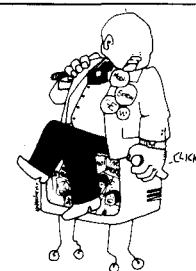
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International Meeting of Radical Science Journals

by Bruno Vitale

The meeting of representatives from the 'critique of science' journals—mostly from Europe—is now becoming an Easter tradition (like Easter eggs). This year *Sapere* (Italy) acted as host at the fourth meeting, which took place in a countryside collective-house (Cooperative Marcella) near Milan. Pino and Teresa De Luca and Sisa Visco-Gilardi opened their home to comrades from *Cahiers Galilee* (Belgium), *Forum* (Germany), *Naturkampen* (Denmark), *Revoluon* (Holland), *Radical Science Journal* (Britain), *Science for People* (Britain), *Science for the People*, *Shashtra Gathi* (Kerala, India) and *Wechsel Wirkung* (Germany). All together 21 comrades attended the meeting, which was preceded by an open Seminar in Milan on the theme: "Science Critique: Social Control and Environmental Control."

The journals started meeting four years ago, for a very simple reason: we knew of each other's existence; we (sometimes) read each other's issues (when the language was not a barrier) and we were at least in part aware of the similarities and differences in our approaches. However, we knew very little of the reasons, the motivations, and the contexts which made each journal what it was or was trying to be. Even if one allowed for the different political situations in the different countries, it was hard to understand how the different editorial strategies had been defined. We were wondering if we could understand more; and if, by an analysis of the relation between the socio-political context and 'critique of science' policies, we

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could learn how to move slowly toward a common attack on the ways science and technology are being imposed on working people.

It would be hard to say, four years later, if at least part of this objective has been met. We know each other better, of course; on a personal level—having met several times and having discussed



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together almost everything; and as journals—having exchanged material, subscriptions, prepublication drafts, etc. But the main questions are still open: why do we do what we are trying to do? Why was a given approach (independent publication/going through a publisher; closed/open collective; centralized/decentralized editorial collectives; inclusion/exclusion of medial and social sciences...) chosen? and What is (if it exists) our common goal?

Two lines interweave in a complex pattern through all of our writing and acting as (would be) radical scientists: an awareness of the non-neutral character of scientific knowledge and of scientific institutions, of their relevance in the context of capital accumulation and social control, of the power that they give to the ruling classes; and an awareness of the possibility of using, in specific contexts, scientific knowledge as a *tool for action* in the class struggle against the ruling classes.

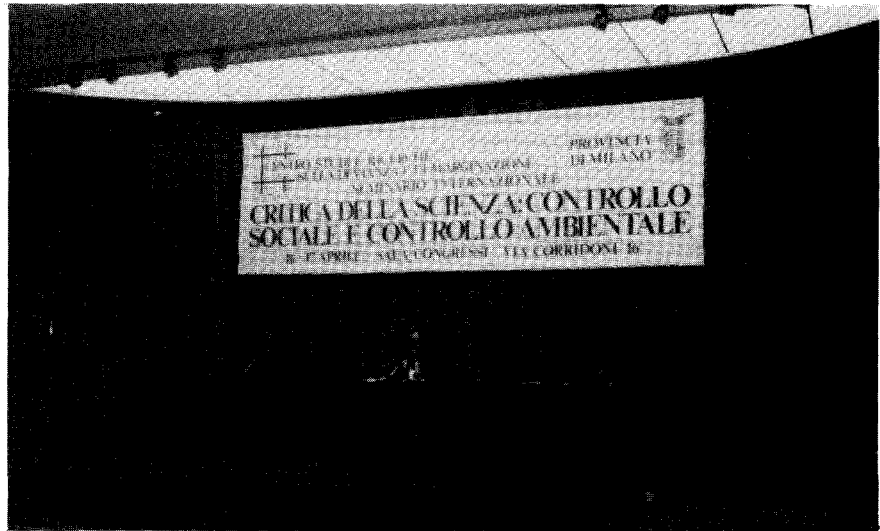
The presence (often not clearly recognized) of these two somewhat contradictory lines has been overshadowing our discussion (to say that the contradiction is dialectical sounds nice but is, as yet, of little help). In practice—in social practice, in our day by day choices, in verifying our models—a more conscious resolution of this contradiction could help radical scientists to find their way towards a more useful political engagement. These two lines are not static: their complex dimensions make them subtle and sometimes cloudy. We tried, this year, to focus them a bit more.

The first line leads to a clear cut attitude: science is not the answer to the problems of working people. If one tries to go beyond that one asks: should radical scientists leave their laboratories? Do they have a useful role there? Can they oppose from the inside the logic of scientific institutions? Can they act as catalysing factor in bringing social awareness to colleagues? Should they consider blocking, denouncing, and sabotaging the very research their laboratories are engaged in? It is clear that there is no single answer to these problems; but specific answers have to be found for specific situations. This is the only way out

of *science of despair* in which our activity (if limited only to denunciation and protest) would merge and be paralyzed.

The second line too leads to a clear cut answer: scientific knowledge is sometimes a very concrete and powerful tool for attacking and transforming reality. Only too often the working people are kept in the dark about production processes, environmental damage, and health screenings to which they are exposed. Then again one tries to go beyond that: scientific knowledge is not necessarily that which is looked for and found in the institutional laboratories. It is knowledge on which one can act, and it can be reliable and communally grasped. It should come out of the meeting of the large body of known facts and models with working peoples' experiences and feelings. How do we find these meeting grounds? How do we become sensitive to the possibility of creating them? This would lead to some sort of *science of hope*.

This year, for the first time, comrades from the U.S. and India attended



Terri Goldberg

"Critique of Science: Social and Environmental Control"

the meeting and gave new dimensions to it: from inside the most complete expression of imperialist power; from inside the huge contradictions and struggles of (under) developing countries. The theme: science imperialism and dependent countries will stay with us for years to come.

We have not seen yet the possibility of reaching a common program, or defining a common strategy; and yet most participants continue to feel the need for a common, positive action. We will work towards this goal at the meeting next year, near Milan during the Easter weekend. □

Born Again Creationism

(Continued from p. 11)

cratic views of "right" behavior that presuppose a personal, ever-watchful God scrutinizing every bedroom and barroom in the country. But then even such a God might have established laws of the universe at the beginning (long ago) and let them govern unmolested thereafter, if only because He knew the outcome of their operation anyway. I also suppose that a general attitude of authoritarianism might be threatened by a set of facts contrary to the literal statements in a book said to be the ultimate source of all authority. But still, right wing ideology of all kinds can flourish without Christian fundamentalism (witness Nazism), and I can only conclude that the link of right wing politics to fundamentalism, (a link wanting in Europe where rightest ideology certainly flourishes) is a historical peculiarity of American culture.

A Paradox and Conclusion

It would be easy, but desperately wrong, merely to dismiss the creationist revival as a form of unreasoned stupidity. One may have contempt—indeed I do—for the TV preachers who fill their coffers by upholding Genesis against the world. But the growing audience for such appeals must have a reason for their allegiance. And here we encounter the greatest paradox in the upsurge of creationism: its grass-roots support, or so it

seems to me, arises from correct perceptions and legitimate frustrations directed at the wrong target. It is true that educational authority has become more centralized, that community options have been reduced, and local opinion often haughtily disregarded by bureaucratic professionals at a state or national level. It is certainly true—and this magazine is virtually dedicated to saying so—that American science, as an institution, has ignored, indeed often been contemptuous of, the needs and feelings of poor, or rural, or minority peoples. Thus, when a conclusion of science is imposed upon local schools by decisions of educators in distant cities who claim to know what's good for everyone, then the seeds of local rebellion are sown—and clever demagogues have always known how to reap the whirlwind (and bring in the cash as well as the sheaves). Still, evolution, or any fact of the world for that matter, cannot be the enemy.

As a professional evolutionist, I am inevitably drawn into this battle. Other leftists might dismiss it as unimportant if not a bit ludicrous. But I remind everyone that creationism is just one part—perhaps a relatively small one—of the coherent political program of the evangelical right in America. The other parts—from anti-ERA, to anti-abortion, to militant (if not military) anti-communism—are more easily appreciated as threats. All parts are of a piece; all are surrogates, one for the other. We are all in this together. □

resources

WOMEN AND HEALTH

"The Valium and Breast Cancer Affair; Lessons Relating to the Involvement of Women in Health Care Research and Policy," D.F. Horrobin, *International Journal of Women's Studies* (Volume 4, #1, January/February 1981). Published five times per year, \$22.50/year. Available from Eden Press Women's Publications (245 Victoria Avenue, Suite 12; Montreal, P.Q. H3Z 2M6 CANADA).

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Women, Health and Reproduction, Helen Roberts, Editor, Routledge & Kegan Paul (9 Park Street; Boston, MA 02108), 1981, 208 pp., \$11.95 (paper).

SOCIAL DARWINISM

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SCIENCE ANXIETY

Science Anxiety: Fear of Science and How to Overcome It, Jeffrey V. Mallow, Thomond Press/Elsevier

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CREATIONISTS AGAINST SCIENCE

Science Textbook Controversies and The Politics of Equal Time, Dorothy Nelkin, MIT Press, (28 Carleton Street; Cambridge, MA 02142), 1978, 174 pp., \$4.95 paperback. The emotional legacy of the Scopes trial lives on in this account of the recent battles between evolutionists and creationists over science teaching in the public schools.

"Common Creationist Attacks of Geology," Christopher Gregory Weber, *Creation/Evolution*, Fall 1980, (953 8th Avenue, Suite 209; San Diego, CA 92101), Fall 1980 issue, 15 pp. This new journal is performing a much-needed public service in straightforwardly answering creationist contentions.

SOCIOBIOLOGY

Sociobiology Examined, edited by Ashley Montagu, Oxford University Press (200 Madison Avenue; New York, NY 10016), 1980, 355 pp., \$5.95 paperback. A collection of sixteen essays.

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Women in Geology: Proceedings of the First Northeastern Women's Geoscientists Conference, Susan D. Halsey, Barbara McCaslin, Wendy L. Carey and William D. Romey, Editors, Ash Lad Press (P.O. Box 396; Canton, NY 13617), 1976, 81 pp., \$2.00 plus \$1.00 postage, paperback. Several papers on role models are reproduced, plus more.

BLACK ANTHROPOLOGY

"Black Anthropology, Part 1," *Black Scholar* (Volume 11, #7, September/October 1980). **"Black Anthropology, Part 2,"** *Black Scholar* (Volume 11, #8, November/December 1980). These two special issues contain several articles on the general topic of Black anthropology. Single copy price is \$3.00. **Black Scholar: Journal of Black Studies and Research** (P.O. Box 908; Sausalito, CA 94966). Bi-monthly, \$16.00/year.

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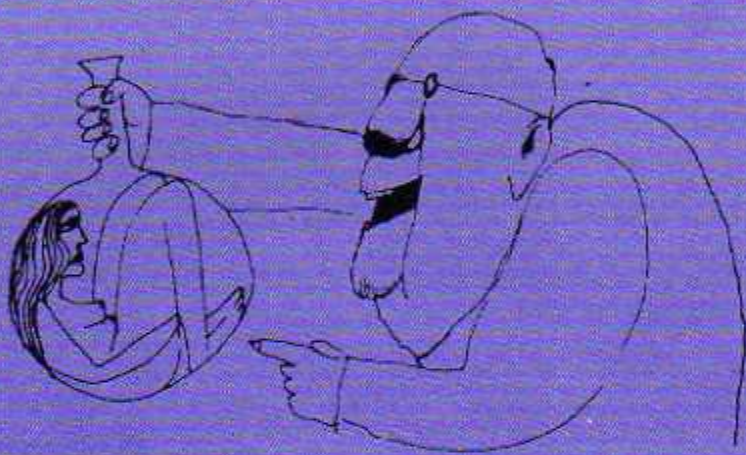
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