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But this appears to be a slim possibility at best, especially in light of the current budgetary exigencies growing out of the Carter Administration's struggle to reduce the budget and control inflation.

If the lab is to be closed for good, many scientists will deplore the loss. The recent report from a November workshop sponsored by the Office of Naval Research concluded that there is a continuing need for the lab, not least because of the role it can play in the monitoring of environmental changes induced by such activities as the construction of roads for mining operations, drilling for oil and gas both on shore and in the Beaufort and Chukchi seas, and the building of an arctic gas pipeline.

Chaired by Dael Wolfle, professor of public affairs at the University of Washington, the workshop brought together more than a dozen arctic specialists and researchers, including Jerry Brown of

the U.S. Army Cold Regions Research and Engineering Laboratory and biologist William S. Benninghoff of the Uni-

Senator Stevens sees the Navy lab as a key resource for the shaping of a much needed national arctic policy.

versity of Michigan. It recommended that the federal government support the lab at a level of some \$8 million to \$10 mil-

lion a year; 80 percent of the money would be spent in serving visiting scientists and engineers, with the rest going for staff research and educational activities.

Senator Stevens and his staff are in the early stages of an effort to promote—possibly through legislation—development of a national policy for the arctic, a region where economic activity and resource management conflicts are very much on the increase. The research lab at Barrow, Stevens feels, could be an important scientific resource in the shaping and carrying out of such a policy.

As of 30 September, all research activities at the lab will be winding down, with the facility moving rapidly to a standby status that will continue through September 1982 against the chance that some other agency or agencies will arrive to put it back in service.

—LUTHER J. CARTER

Physicians Take on Nuclear War

Group keys pitch for disarmament on futility of attempts to recover from a nuclear exchange

Like Californians who have become inured to the prospect of a devastating earthquake, Americans have been living so long under the shadow of possible nuclear war that it has been shoved far back into the corners of most minds.

But world events are now stirring crisis-jaded mentalities. Last spring considerable publicity was accorded a report from the Office of Technology Assessment on "The Effects of Nuclear War," which set forth some of the grisly short- and long-term effects of a U.S.-Soviet nuclear exchange.

An even more immediate and ghastly picture was drawn last month at an open symposium at Harvard Medical School. This meeting, on "the medical consequences of nuclear weapons and nuclear war," produced 2 days of horrifying scenarios about what would happen if a 20-megaton nuclear bomb were to land on Boston. The unanimous conclusion of the speakers was that no adequate medical response would be possible even in the event of a "limited" nuclear exchange, and that civil defense plans are nothing more than a dangerous illusion.

In a nuclear attack on Boston, speakers said, everyone and everything within a 6-mile radius would be destroyed instantly, and half the people within a 20-mile radius would be killed or injured. Winds up to 300 miles an hour would create vast fire storms. Windblown fallout would kill people for hundreds of miles around. Bomb shelters would become ovens. There would be about 10,000 severe burn cases in Boston—unmanageable even if medical personnel and facilities were left intact, since the whole country has no more than 1000 intensive burn care beds. Deaths from infections, starvation, dehydration, and radiation sickness would continue indefinitely; food and water supplies would be poisoned; and the population would be reduced to roving bands competing for food.

The meeting, organized by a group called Physicians for Social Responsibility, seems to have marked the beginning of a crusade of sorts by members of the medical profession, a profession that for some years now has not been distinguished for its political activism.

The purpose of the movement is to try

to penetrate numbed minds with the hideous realities of nuclear war, to try to persuade governments that it is folly to think of nuclear war even as a "rational possibility," and to press harder for disarmament and reduction of international tensions. Vague and idealistic as these goals may sound, they do not emanate from innocent young idealists but from many who constitute the cream of the nation's medical establishment. Those who have enlisted in the cause include some of the leading lights at Harvard, as well as five Nobel Prize winners, including Frederick C. Robbins, dean of Case Western Reserve Medical School and incoming president of the Institute of Medicine, and Salvador Luria of the Massachusetts Institute of Technology Center for Cancer Research.

Following the February meeting, 60 physicians signed a telegram to President Carter and Chairman Brezhnev warning that medical disaster planning for nuclear war is "meaningless," that "there is no effective civil defense," and that "recovery from a nuclear war would be next to impossible." A larger group of more than 600 individuals subsequently spon-

Supplied by Dave Parry

Alternative Alternative

sored a full-page ad to this effect, which ran in the *New York Times* on 2 March.

On 6 March a medical delegation, headed by Howard Hiatt, dean of the Harvard School of Public Health, went to Washington to continue pressing the message. That group included Herbert Abrams, chairman of Harvard's department of radiology, Helen Caldicott of Boston's Children's Hospital Medical Center, Jack Geiger of City College of New York, Alexander Leaf of Harvard, Jerome Frank of Johns Hopkins Medical School, and Eric Chivian, the Harvard psychiatrist who arranged the original symposium. At a press conference in Washington, the group made it clear that things had been moving so swiftly they were not quite sure what to do next. Hiatt, for example, told *Science* that before the symposium he had not given much thought to nuclear disasters but he now intended to spend as much time as his duties would allow in spreading the word that, just as with a deadly disease, "prevention is the name of the game."

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The group held meetings later that day with Lloyd Cutler of the White House staff and A. Bessmertnykh of the Soviet Embassy. They eagerly sought advice from the press on how to be featured on television news programs and talked of testifying before congressional committees.

The group appeared to feel that the American public is ripe for receiving their message. Hiatt professed himself amazed at the public response to the February symposium. And Frank, a psychiatrist who has been concerned with arms control for several decades, vouchsafed that "this is the first real spasm of publicity since the bomb shelter program" of the 1950's.

If the doctors are right, we may be on the verge of a full-scale national debate on civil defense the like of which has not been seen since the 1950's. Chivian, for one, believes that although government civil defense policy is now based on

evacuation rather than bomb shelters, government thinking on the subject is every bit as simplistic and naïve as it was in the height of the shelter-building era.

Impressed with the response to their symposium, concerned physicians plan as their next move to conduct similar meetings at medical schools in a half-dozen cities around the country. They are now negotiating with a foundation in the hope of getting money for that purpose. And Harvard physicians Herbert Abrams, Bernard Lown, and James Muller are working on a plan to set up meetings on a yearly basis between American, Soviet, and Japanese physicians.

So far, the doctors have not attempted to compare their visions of destruction with the scenarios being mapped out by the federal government's disaster planners. But their stance—that there is no way to deal with nuclear war except to prevent it—highlights the ambivalence of the government's position. On the one hand, the government has made it clear that nuclear war must not be disregarded as a possible eventuality; on the other, civil defense planning is virtually nonexistent. (Chivian says that after the Boston symposium people started calling the Boston civil defense office to ask what they should do in the event of an attack, and were told to "go north.")

Science called the Federal Emergency Management Agency (FEMA), the new agency that houses civil defense, to find out what government planners had to say about the doctors' contentions. The reaction at FEMA, which is heavily populated by former career military men, is that the doctors are being naïve in thinking prevention is the only way out. Fred Haase of FEMA's Plans and Preparedness division said, "If you want to look at the worst side of things, sure it can be bad. . . . A nuclear attack would be a real catastrophe, no doubt about that . . . but if you take the worst situation, a lot of people are still going to survive." Nuclear war, in other words, has to be reckoned with as a possibility. "The name of the game," according to Haase, "is the country that can plan now for survival and recovery is the one that's going to fare best in the long run."

The FEMA world view is thus radically different from that of the Physicians for Social Responsibility, and the top policy-makers in the government come out somewhere in between (judged by Cutler's remark at the White House as quoted by Chivian: "Nuclear war should be prevented at all costs—if possible"). The result is that civil defense planning is, as Haase says, in "shambles." There

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Gasohol: A Choice That May Buy Grief

It takes about one-quarter of an acre of cropland to provide food for the average person in the Third World. It would take almost 8 acres to grow enough grain to run an average American automobile entirely on grain-derived ethanol.

Would an American citizen drive his car at direct expense to the nutrition of people elsewhere? That the question can even be raised is the result of the national goal announced by President Carter in January 1980 to produce 500 million gallons of ethanol a year by the end of 1981. Once the distillery capacity for such a production volume is in place, a direct and possibly permanent link will have been created between the world markets for food and for liquid fuels.

The consequences of forging this awesome chain have been explored by Lester Brown of the Worldwatch Institute in Washington, D.C. "The price of oil could eventually set the price of food," is Brown's conclusion. As the United States and other agricultural producers develop the means to convert crops to fuel alcohol, farmers will have the choice of producing food for people or fuel for cars, and in the absence of government controls are likely to do whichever is more profitable. "The stage is set for direct competition between the affluent minority, who own the world's automobiles, and the poorest segments of humanity, for whom getting enough food to stay alive is already a struggle," Brown concludes in a new report.*

Proponents of gasohol, who have built a powerful lobby among farm state senators, contend that alcohol production from corn will not reduce the amount of food available because the protein content of the corn is untouched and can be fed to livestock. Brown observes that starch is also a valuable component of food. In any event, he believes, the worldwide use of crops for energy is "certain to drive food prices upward, thus leading to more severe malnutrition among the poor."

A year ago the Administration's

**Food or Fuel: New Competition for the World's Cropland*. Lester R. Brown. Worldwatch Institute, 1776 Massachusetts Avenue, NW, Washington D.C. 20036. \$2.

gasohol policy was one designed to avoid any entanglement with the food supply. "Through the mid-1980's there appear to be sufficient surplus and waste raw materials to meet any realistic projected level of alcohol production. . . . There does not now appear to be a need to grow additional crops for alcohol production," concluded a Department of Energy review published in June 1979. Cheese whey, citrus wastes, and distressed crops would supply feedstock to distill 660 million gallons of ethanol a year.

In the wake of the January 1980 embargo on Russian grain sales, however, Administration spokesmen talked explicitly of converting the grain to ethanol, and announced plans to increase distillery capacity. These plans had been in preparation before the Russian invasion of Afghanistan, presumably in response to pressure from the gasohol lobby.

What will the distilleries use for feedstock? The embargoed Russian grain is not sitting in a big heap in Kansas: apart from one Administration purchase, the grain is still in private hands, and may yet be sold on world markets. The DOE calculation that 660 million gallons of ethanol could be obtained from wastes and spoiled crops is regarded as a gross overestimate in the Department of Agriculture. It seems likely that the new distilleries will use corn, and world food supply will be the less.

UC-San Diego May Hire Hand That Feeds It

The directorship of the National Science Foundation may soon fall vacant if the present incumbent, Richard Atkinson, accepts the chancellorship of the University of California-San Diego, a post for which he is rumored to be the leader among two contenders.

Atkinson's acceptance would mark the triumph of hope over experience in that he would once again be succeeding William McElroy, his predecessor as director of the NSF. As chancellor of the San Diego campus, McElroy suffered a vote of no confidence from the academic senate for failing to consult with the faculty as much as the faculty would have liked. A few months after the episode he an-

nounced he would step down as chancellor and join the faculty.

The search committee is reported to have named two finalists, Atkinson and anthropologist Robert M. Adams of the University of Chicago. The winner will be announced on 21 March after a meeting of the University of California's board of regents. Atkinson is favored because of his bureaucratic experience and Washington ties.

Why does UC-San Diego have so insatiable an appetite for NSF directors as chancellor-fodder? The university is among the top five recipients of federal research grants, taking in some \$120 million this year. "It would be wrong to say we get this because of McElroy, but it is to our advantage to have someone who can maintain an open line to Washington and who is knowledgeable about the workings of the federal granting agencies," says a campus official.

The RAC of Judgment

Is it permitted to clone the exotoxin of *Pseudomonas* in *Escherichia coli* K12? The NIH guidelines on recombinant DNA exempt from their purview experiments with the genes of bacteria which exchange genes naturally, as *Pseudomonas* and *E. coli* do. On the other hand the guidelines prohibit altogether the cloning of genes specifying a potent toxin. So is the experiment in question exempt or prohibited?

Such is the nature of the judgments now demanded of the group that wrote the guidelines, the NIH's Recombinant DNA Advisory Committee. Dealing at one moment with the jots and tittles of the law, at another with concepts of philosophical fogginess, the RAC struggles to produce decisions that keep abreast of the rapidly evolving world of genetic manipulation. At its meeting this month, much of the RAC's agenda was created by impending commercialization of recombinant DNA activities. Should the Occupational Safety and Health Administration be asked to set regulations for factory workers handling gene spliced organisms? Or should RAC do it? Or should such activities be considered as no more than a minor part of the fermentation industry?

RAC discussed further the guidelines for large-scale activities which it

has in preparation. It also considered a voluntary application from the San Francisco firm Genentech to conduct commercial-scale production of human proinsulin, the hormone thymosin alpha-1, somatostatin, and the human insulin A and B chains, each in quantities of up to 750 liters.

As for cloning *Pseudomonas* exotoxin in *E. coli*, the committee decided that since the toxin is not potent, the experiment should be considered exempt from the guidelines.

Sakharov Expulsion Averted

The March meeting in Moscow of the Soviet Academy of Sciences has come and gone without the question of expelling Andrei D. Sakharov even being raised. Sakharov, exiled to Gorki in the wake of the Afghanistan invasion, had not been invited to the meeting, an omission which raised fears that an attempt would be made by the Soviet authorities to contrive his expulsion.

According to the rumor in Moscow, the president of the Academy was asked by political authorities if Sakharov could be expelled but replied that there was no hope of obtaining the necessary two-thirds majority of members voting in secret ballot, the *New York Times's* Moscow correspondent reported.

The Academy has often shown a degree of independence from authority where its most vital interests are concerned; it refused to expel Nicolai Vavilov after his unsuccessful struggle with Lysenko. Appeals by Sakharov's wife Yelena Bonner and by groups in the West may perhaps have also been noted by Academy members.

Sakharov was not expelled from the Academy as feared, but his situation is still a matter of active concern to scientists in Western countries. A request to scientists in the United States and abroad to observe a 6-month boycott of official scientific interchange with the Soviet Union is being launched by Scientists for Orlov and Shcharanksy. Unless Sakharov is released, the proposed boycott would last from May until November this year. Nearly 2000 members of the American Physical Society recently signed a statement expressing concern over Sakharov's situation.

Nicholas Wade

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is no public education going on, no training of medical professionals for major emergency care, no medical supply stockpiling, and no evacuation planning except on paper. A program providing equipment for setting up 2500 emergency 200-bed hospitals was scrapped by the government in 1973.

FEMA is agitating to have the government develop a "national emergency

health resources management plan and policy," something recommended by the American Medical Association in 1959, but so far nothing has happened. Haase says a lot of thinking about this sort of thing was done in the 1950's and early 1960's but the subject has been quiescent since. "We don't have a single up-to-date publication to mail out." And there are no generally accepted policies within the government covering evacuation,

hospitalization, triage, or treatment principles.

Thus no one would really argue with the doctors when they say the nation is totally unequipped medically to deal with a nuclear attack. The question is, is there any point in trying to become prepared? That is one with which those in the highest levels of government are loathe to grapple.

—CONSTANCE HOLDEN

New Graduate Program in Health Advocacy

So complex and impersonal has the health care system become that patients often need pilots to guide them through their encounters. And as the patients' rights movement has become increasingly organized and sophisticated, it seems we now need licensed pilots.

And so, Sarah Lawrence College of Bronxville, New York, has created a new masters degree program, to commence in the fall: the nation's first graduate program in health advocacy. The curriculum is designed to train health advocates, otherwise known as patient representatives, to set up ombudsman programs in various health settings—primarily hospitals, but also nursing homes, prisons, health maintenance organizations, community health centers, and government health agencies.

Patient ombudsmen have been around for quite some time now. The conception of patients as active participants rather than passive recipients in health care was formally voiced in the Patients' Bill of Rights put out by the American Hospital Association in 1973. An affiliated organization, the National Society of Patient Representatives, was established in 1972. According to Joan Marks, director of the Sarah Lawrence program, there are now 1750 people operating as patient representatives in some 1400 of the nation's 7000 accredited hospitals, most of them in large teaching hospitals. These programs rely heavily on volunteer help. But for them to be truly effective in coping with the medical, legal, and bureaucratic jungle into which today's patient is thrust, the organizers of the Sarah Lawrence program believe that nothing less than professionally trained ombudsmen are required to organize and direct such programs.

The curriculum, to which 20 students will be admitted next fall, is divided into three semesters plus a 5-week summer internship. The courses revolve around law, medicine, economics, and the history and structure of the health care system. Each semester also includes a course on health advocacy.

It was not always obvious to everyone involved that such a calling required a professional degree. One former skeptic is Norma Shaw Hogan, director of the patient representative program at Northwestern Memorial Hospital in Chicago, who is also a member of the Sarah Lawrence program's board of advisers. Hogan, who became a seasoned advocate after 12 years of experience, said she finally concluded that "times are changing" and ripe for the new discipline. "The unique thing is the advocacy component," she says, pointing out that in other programs, such as

health care administration, the system is always implicitly presented from the point of view of the "provider." The health advocate, by contrast, is supposed to be thoroughly versed in looking at the system from the patient's-eye point of view, as well as that of the system.

The health advocate the Sarah Lawrence program is designed to produce will be familiar with the organization and management of delivery systems, federal funding and insurance coverage, the roles of health professionals, basic health law issues, state laws relating to health care, medical ethics, and, of course, patients' rights. There is to be heavy emphasis on communication. According to Hogan, the majority of problems her department deals with are the result of breakdowns in communications.

Graduates are supposed to be equipped to work in a variety of health care settings, and the program is expected to be of use to other professionals as well—it might be taken, for example, by a lawyer specializing in health-related litigation.

It appears that patient representatives are coming to be a downright necessity, at least in large institutions. They perform a wide variety of functions ranging from helping patients retrieve lost possessions to investigating the circumstances when a patient is unhappy enough to be threatening to sue. They interpret hospital policy and procedures to patients (which includes trying to explain why everything is so expensive), recommend procedural changes to hospital staff, operate as a centralized grievance mechanism, and attempt to cut through red tape in filling special needs and requests. For example, in one hospital with a heavily Jewish clientele, says Marks, patient representatives arranged for kosher meals to be served and reimbursed by Blue Cross-Blue Shield. And as a result of patient advocacy programs, some hospitals routinely give patients discharge sheets containing information they may need if the hospital misplaces their records, as is not infrequently done.

Marks says the expansion of patient advocacy programs, despite the tight money situation most hospitals find themselves in, attests to recognition by hospitals that in the long run they will benefit from having such programs, which can serve as "early warning systems" to prevent some problems from becoming chronic.

Sarah Lawrence is something of a pioneer in setting up special programs for health professionals, having a decade ago launched a human genetics program, which trains people in genetic counseling and research.

—CONSTANCE HOLDEN