

F. A. S. NEWSLETTER

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SUGGESTIONS TO FAS

In recent years there has been a drastic reduction in the growth rate of research and development in the United States. Programs in Atomic Energy and Space have leveled off. There has been no significant increase even in health programs and projection of taxation and spending policies suggests no new national commitment calling for growth in research and development activity.

Yet our resources, human and material, in this area grow every year. In view of the enormous gap between the realities of life in the United States and the possibilities given adequate technological developments in such areas as housing, transportation, environmental control, etc., failure to effectively use this national resource is almost criminal.

Opposition to the effective utilization of scientists on such social problems, comes from two different directions. The first is a fairly conventional opposition to any expenditure which promises a modification of the status quo. This conservative opposition is normal, not particularly unreasonable, and except to expose it as self-seeking and [perhaps] basically selfish, FAS has very little to say or do in this direction. The second source of opposition, however, comes from the progressive forces in the community that should be our major ally and here the Federation has both the means and the obligation to play a key rôle. In questioning the national priority which has so long dictated the use of scientific and engineering talents for goals such as defense and space exploration which have had no wide-spread benefits, there seems to have sprung up a liberal anti-technological cult which favors some mythical pre-technological golden age free of industrial pollution and lethal weapons of advanced design. It should be a primary FAS function to emphasize that especially now, but in fact always, life for the bulk of the population in a pre-technological society was and is brutish, and often extremely painful, [for] most people. The only hope for improving the quality of life for any large fraction of our population requires substantial new technological advance rather than a moratorium on progress. In the long run, of course, an investment in research and development in these areas will pay for itself many, many times over and no net expenditure need be envisioned comparable to expenditures such as space where the results are either intangible or long deferred, or defense where one hopes there are no concrete benefits.

Obviously, on social problems research and development expenditures on a significant scale are unlikely to be useful unless backed by substantial national investment. But we have every reason to believe that such investments will be made in any event and without research and development they will be clearly less productive and involve much greater expenditures than would otherwise be necessary.

No doubt we will be asked for specific suggestions as to how to channel investment funds appropriately. An example given at a talk at a local FAS meeting and inserted in the Congressional record is attached. It is obvious that individuals will produce a variety of schemes even if differing only in their estimate of what might be politically feasible.

Men of good-will will differ, of course, on the exact priority

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AAAS Condemns Two Defoliants

The Council of the American Association for the Advancement of Science urged that the use of two defoliants, now used by Americans in Vietnam, be halted. The action was taken at its meeting in Boston in December by a vote of 114 to 51. The council opposed the use of two chemicals known as 2,4,5-trichlorophenoxyacetic acid, or 2,4,5-T; and 2,4-dichlorophenoxyacetic acid, or 2,4-D. Both these chemicals are used domestically for brush and pasture control, and on wheat and corn crops. A study commissioned by the National Cancer Institute has shown that 2,4,5-T causes a marked increase in birth abnormalities in experimental animals, while 2,4-D was found to be potentially dangerous but needing more study. These results raised fears that humans, widely exposed to defoliants, are similarly affected. (After this study was announced, the Defense Department announced that it was limiting use of 2,4,5-T to "areas remote from population" although skeptics have pointed out that little countryside is remote from population in Vietnam.) American forces have defoliated about 7,000 square miles to expose enemy movements. (*N.Y. Times*, 31 December 1969.)

CHROMOSOME STUDY REVEALS ABNORMALITIES IN CRIMINALS

A study of inmates in an institution for "dangerous" sexual offenders has indicated that any abnormality of the sex chromosome may predispose a person to such offenses. Dr. Lawrence Razavi, who did the research, proposed on the basis of his findings, that the current emphasis on double male chromosomes was misplaced, and that the causes of aggression are multiple—including other factors besides chromosomal aberrations, and many types of chromosomal abnormalities.

In a study of sex-determining chromosomes from blood and skin cells of 83 men at the Bridgewater Treatment Center for Sexual Offenders in Massachusetts, Dr. Razavi found the abnormality rate 35 times higher than in the general population. In the blood cells of inmates, he found that percentages of abnormal cells varied radically, from a few to 100 per cent. They also varied from day to day. In recent years, attention has focused on evidence that men with two Y chromosomes, instead of one, are more apt to behave in an antisocial manner. This has figured in several court cases where defenders claimed insanity because of this condition. Dr. Razavi said that none of the sex chromosome abnormalities could be used for specific diagnosis. In some individuals, he said, it appears that only the blood cells are abnormal—not those of the brain or sex glands. Such a person would not behave abnormally, Dr. Razavi said. In other individuals the damage was congenital or occurred to infantile cells that later differentiate to form brain and blood cells. Such a person might be abnormal in behavior.

Dr. Razavi found that a number of the 83 men studied had hand prints with some feminine features, indicating that chromosomal aberration had affected more than their blood. In others this was not the case. Hence Dr. Razavi suggested that hand prints could be used to identify those requiring special attention. (*N.Y. Times*, 31 December 1969.)

UNITED STATES OVERPOPULATION

The following is an abridgement of an article which appeared in the *New Republic* for January 10, 1970, by Wayne H. Davis.

I define as most seriously overpopulated that nation whose people by virtue of their numbers and activities are most rapidly decreasing the ability of the land to support human life. With our large population, our affluence, and our technological monstrosities the United States wins first place by a substantial margin.

Let's compare the U.S. to India, for example. We have 203 million people, whereas she has 540 million on much less land. But look at the impact of people on the land.

The average Indian eats his daily few cups of rice (or perhaps wheat, whose production on American farms contributed to our one percent per year drain in quality of our active farmland), draws his bucket of water from the communal well, and sleeps in a mud hut. In his daily rounds to gather cow dung to burn to cook his rice and warm his feet, his footsteps, along with those of millions of his countrymen, help bring about a slow deterioration of the ability of the land to support people. His contribution to the destruction of the land is minimal.

An American, on the other hand, can be expected to destroy a piece of land on which he builds a home, garage and driveway. He will contribute his share to the 142 million tons of smoke and fumes, seven million junked cars, 20 million tons of paper, 48 billion cans, and 26 billion bottles the overburdened environment must absorb each year. To run his air conditioner we will strip-mine a Kentucky hillside, push the dirt and slate down into the stream, and burn coal in a power generator, whose smokestack contributes to a plume of smoke massive enough to cause cloud seeding and premature precipitation from Gulf winds which should be irrigating the wheat farms of Minnesota.

In his lifetime he will personally pollute three million gallons of water, and industry and agriculture will use ten times this much water in his behalf. To provide these needs the U.S. Army Corps of Engineers will build dams and flood farmlands. He will also use 21,000 gallons of leaded gasoline containing boron, drink 28,000 pounds of milk, and eat 10,000 pounds of meat. [This last] is produced and squandered in a life pattern unknown to Asians. A steer on a Western range eats plants containing minerals necessary for plant life. Some of these are incorporated into the body of the steer which is later shipped for slaughter. After being eaten by man these nutrients are flushed down the toilet into the ocean or buried in the cemetery, the surface of which is

cluttered with boulders called tombstones and has been removed from productivity. The result is a continual drain on the productivity of range land. Add to this the erosion of overgrazed lands, and the effects of the falling water table as we mine Pleistocene deposits of groundwater to irrigate to produce food for more people, and we can see why our land is dying far more rapidly than did the great civilizations of the Middle East, which experienced the same cycle. The average Indian citizen, whose fecal matter goes back to the land, has but a minute fraction of the destructive effect on the land that the affluent American does.

Thus I want to introduce a new term, which I suggest be used in future discussions of human population and ecology. We should speak of our numbers in "Indian equivalents." An Indian equivalent I define as the average number of Indian citizens required to have the same detrimental effect on the land's ability to support human life as would the average American. This value is difficult to determine, but let's take an extremely conservative working figure of 25. To see how conservative this is, imagine the addition of 1000 citizens to your town and 25,000 to an Indian village. Not only would the Americans destroy much more land for homes, highways, and a shopping center, but they would contribute far more to environmental deterioration in hundreds of other ways as well. For example, their demand for steel for new autos might increase the daily pollution equivalent of 130,000 junk autos which *Life* tells us that U.S. Steel Corp. dumps into Lake Michigan. Their demand for textiles would help the cotton industry destroy the life in the Black Warrior River in Alabama with endrin. And they would contribute to the massive industrial pollution of our oceans (we provide one-third to one-half of the world's share) which has caused the precipitous downward trend in our commercial fisheries landings during the past seven years.

The per capita gross national product of the United States is 38 times that of India. Most of our goods and services contribute to the decline in the ability of the environment to support life. Thus it is clear that a figure of 25 for an Indian equivalent is conservative. It has been suggested to me that a more realistic figure would be 500.

In Indian equivalents, therefore, the population of the United States is at least four billion. And the rate of growth is even more alarming. We are growing at one percent per year, a rate which would double our numbers in 70 years. India is growing at 2.5 percent. Using the Indian equivalent of 25, our population growth becomes 10 times as serious as that of India. According to Reinows in their recent book *Moment in the Sun*, just one year's crop of American babies can be expected to use up 25 billion pounds of beef, 200 million pounds of steel and 9.1 billion gallons of gasoline during their collective lifetime. And the demands on water and land for our growing population are expected to be far greater than the supply available in the year 2000. We are destroying our land at a rate of over a million acres a year. We now have only 2.6 agricultural acres per person. By 1975 this will be cut to 2.2, the critical point for the maintenance of what we consider a decent diet, and by the year 2000 we might expect to have 1.2.

You might object that I am playing with statistics in using the Indian equivalent on the rate of growth. I am making the assumption that today's Indian child will live 35 years (the average Indian life span) at today's level of affluence. If he lives an American 70 years, our rate of population growth would be twenty times as serious as India's.

But the assumption of continued affluence at today's level is unfounded. If our numbers continue to rise, our standard of living will fall so sharply that by the year 2000 any surviving Americans might consider today's average Asian to be well off. Our children's destructive effects on their environment will decline as they sink ever lower into poverty.

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FAS NEWSLETTER

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Chairman John Rasmussen

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Editor: Judith Eckerson.

The FAS, founded in 1946, is a national organization of scientists and engineers concerned with the impact of science on national and world affairs.

Sources of information (given in the articles in parentheses) are for further reference. Items reprinted directly from other publications are designated as such in an introductory paragraph.

The United States is in serious economic trouble now. Nothing could be more misleading than today's affluence, which rests precariously on a crumbling foundation. Our productivity, which has been increasing steadily at about 3.2 percent a year since World War II, has been falling during 1969. Our export over import balance has been shrinking steadily from \$7.1 billion in 1964 to \$0.15 billion in the first half of 1969. Our balance of payments deficit for the second quarter was \$3.7 billion, the largest in history. We are now importing iron ore, steel, oil, beef, textiles, cameras, radios and hundreds of other things.

Our economy is based upon the Keynesian concept of a continued growth in population and productivity. It worked in an underpopulated nation with excess resources. It could continue to work only if the earth and its resources were expanding at an annual rate of 4 to 5 percent. Yet neither the number of cars, the economy, the human population, nor anything else can expand indefinitely at an exponential rate in a finite world. We must face this fact *now*. The crisis is here. When Walter Heller says that our economy will expand by 4 percent annually through the latter 1970s he is dreaming. He is in a theoretical world totally unaware of the realities of human ecology. If the economists do not wake up and devise a new system for us now somebody else will have to do it for them.

A civilization is comparable to a living organism. Its longevity is a function of its metabolism. The higher the metabolism (affluence), the shorter the life. Keynesian economics has allowed us an affluent but shortened life span. We have now run our course.

The tragedy facing the United States is even greater and more imminent than that descending upon the hungry nations. The Paddock brothers in their book, *Famine 1975!*, say that India "cannot be saved" no matter how much food we ship her. But India will be here after the United States is gone. Many millions will die in the most colossal famines India has ever known, but the land will survive and she will come back as she always has before. The United States, on the other hand, will be a desolate tangle of concrete and ticky-tacky, of strip-mined moonscape and silt-choked reservoirs. The land and water will be so contaminated with pesticides, herbicides, mercury fungicides, lead, boron, nickel, arsenic and hundreds of other toxic substances, which have been approaching critical levels of concentration in our environment as a result of our numbers and affluence, that it may be unable to sustain human life.

Thus as the curtain gets ready to fall on man's civilization let it come as no surprise that it shall first fall on the United States. And let no one make the mistake of thinking we can save our selves by "cleaning up the environment." Banning DDT is the equivalent of the physician's treating syphilis by putting a bandaid over the first chancre to appear. In either case you can be sure that more serious and widespread trouble will soon appear unless the disease itself is treated. We cannot survive by planning to treat the symptoms such as air pollution, water pollution, soil erosion, etc.

What can we do to slow the rate of destruction of the United States as a land capable of supporting human life? There are two approaches. First, we must reverse the population growth. We have far more people now than we can continue to support at anything near today's level of affluence. American women average slightly over three children each. According to the *Population Bulletin* if we reduced this number to 2.5 there would still be 330 million people in the nation at the end of the century. And even if we reduced this to 1.5 we would have 57 million more people in the year 2000 than we have now. With our present longevity patterns it would take more than 30 years for the population to peak even when reproducing at this rate, which would eventually give us a net decrease in numbers.

Do not make the mistake of thinking that technology will solve our population problem by producing a better contra-

ceptive. Our problem now is that people want too many children. Surveys show the average number of children wanted by the American family is 3.3. There is little difference between the poor and the wealthy, black and white, Catholic and Protestant. Production of children at this rate during the next 30 years would be so catastrophic in effect on our resources and the viability of the nation as to be beyond my ability to contemplate. To prevent this trend we must not only make contraceptives and abortion readily available to everyone, but we must establish a system to put severe economic pressure on those who produce children and reward those who do not. This can be done within our system of taxes and welfare.

The other thing we must do is to pare down our Indian equivalents. Individuals in American society vary tremendously in Indian equivalents. If we plot Indian equivalents versus their reciprocal, the percentage of land surviving a generation, we obtain a linear regression. We can then place individuals and occupation types on this graph. At one end would be the starving blacks of Mississippi; they would approach unity in Indian equivalents, and would have the least destructive effect on the land. At the other end of the graph would be the politicians slicing pork for the barrel, the highway contractors, strip-mine operators, real estate developers, and public enemy number one—the U.S. Army Corps of Engineers.

We must halt land destruction. We must abandon the view of land and minerals as private property to be exploited in any way economically feasible for private financial gain. Land and minerals are resources upon which the very survival of the nation depends, and their use must be planned in the best interests of the people.

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for programs in such areas as environmental pollution, or housing, or health, or urban affairs, but we must all agree that failure to effectively use the technologically trained people in our society on problems of social importance is an intolerable waste of some of our most important resources and a critical drag on progress. (Contributed by Herbert H. Hyman and G. Roy Ringo, of the Chicago Chapter.)

The following is an abridgement of Dr. Hyman's speech, which was reprinted in the Congressional Record on July 9, 1969.

Let me start by listing a few of the problems facing all of us in this country today. Obviously, the first and most overwhelming is the ending of any actual combat and the prevention of any escalation, most particularly the prevention of escalation to nuclear war. In this area the FAS has historically taken its strongest positions. It is on the whole reasonably well united, and I'm afraid very ineffectual. The reason is simple enough.

The overwhelming emotional motivations which affect people in this area are those of nationalism or some sophisticated or modified version of nationalism. In this area scientists as a whole are uniquely out of tune with the bulk of all populations. Their orientation is international, their thinking is international; they simply do not, on the whole, understand the motivations that affect most of the people and while there isn't the slightest doubt that in this area nationalism poses terrible threats to the survival of the national

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units themselves, it is simply naïve to expect scientists to have much influence in this direction except in the very long run. Our best hope there is to fight vigorously for maximum international interchange of people, materials, ideas, cultural activities, anything and everything we can do. It isn't very much, it isn't going to work very fast, but internationalist appeals of any kind in the present state of affairs consist of people talking to the already convinced and will have no impact on politicians trying to get elected let alone the public at large. In dealing with one specific aspect of this problem, the influence of the military industrial complex, scientists might play a very important rôle. Unfortunately, they have been pulled in both directions. The most important contribution FAS can make is to fight for alternate support for science. I'll be more specific very shortly.

The second broad problem facing this country is the problem of racial antagonisms. Again it is important for those of us who have not on the whole been particularly guilty of any such antagonisms to pay a little attention to the psychological factors involved. I think we may take it for granted that most individuals are interested in a reasonably short term advantage for themselves and the particular groups with which they identify. Such groups may be racial, religious, ethnic, cultural, or job-oriented. All of us, for example, are concerned about the status and influence of scientists as scientists. Most of us are relatively less concerned about our status or lack of status as black or white or yellow or as part of a specific ethnic group within the American mix, although many of us do share a specific, ethnic concern. . . . The only significant contribution the FAS can make immediately and directly to the racial problem is to urge as many black scientists as possible to encourage their fellow young men and women to look upon science as a reasonably unprejudiced and satisfying way of life, and to recognize that it is appropriate and in fact desirable for black scientists who wish to support a variety of black centered activities, to do so freely and effectively without sacrificing their identification with and participation in their rôle as scientists. We all take for granted that scientific values are relatively free of ethical and cultural bias. I would strongly urge black scientists to fight vigorously against any attempt to down-grade mathematical and scientific studies for culturally deprived or minority groups in a transitory attempt to concentrate on ethically centered activities. Here the rôle of the FAS as an FAS can only be a peripheral one.

The third broad problem area is that of poverty: the American anomaly of bewilderingly large segments of very poor in a society which has more total wealth than man has ever accumulated. Here our rôle is clearcut and unequivocal. We must point out that the existence of poverty, of an enormous excess of child mortality, of malnutrition and hunger, is a disgrace to the country as a whole and completely intolerable in American society. At the same time we must recognize that for the hard-working and thrifty working class taxpayers who are far from affluence, the simple hand-out which makes not working relatively more profitable than working is itself politically untenable. We cannot in American society completely divorce the rewards of productivity from productive effort. Scientists are particularly able to advocate the only possible solution to this dilemma, namely, a progress sharing scheme.

We know that in the next generation our increasing productivity will, in fact, double our true per capita income. We know that this increase will not be due to individuals working harder or suddenly becoming smarter or more efficient or to any brilliant managerial insights. It is simply the routine payoff for continuing support of science and technology. We also know that if we were to take half this gain and distribute it uniformly instead of with the peculiar

bias with which it will otherwise be distributed, we would completely eliminate poverty in the grinding and absolute sense from the United States. Now each person will have his own pet mechanism for actually doing this job once he is convinced it can or should be done.

My own is a rather simple device. I would like to put an increasing progress sharing tax on all income no matter how derived. A tax on all income that increased by 1% per year would build up quite a respectable trust fund. For this part of the discussion one might assume this fund is invested in government bonds just as our present social security fund is, although I'll later point out a more effective use for the fund. In any event if we distributed say 20% of the trust fund each year uniformly to all individuals, we can see that in 20 or 25 years everyone would be getting a reasonable minimum stipend from this fund. In addition, of course, any working man would continue to receive whatever he earned. The existing welfare system would gradually wither away. There are a number of related social benefits which would clearly result from such a system, but I haven't the time to go into them. . . . The important principles I would stress are first, an increasing general distribution, not of existing income but of the future income to be derived from technical progress, a distribution to all so as to not place any special burden on the middle income individual. The marginal worker would exactly preserve his relative position vis a vis the existing unemployed since he would share equally in the redistribution program and keep his earned income. This scheme is not the main point of my talk although I strongly favor such a program and think the FAS should adopt a policy in favor of such a program.

I'm much more concerned with the problem I consider basic to the further development of our society, assuming we are lucky enough to avoid nuclear destruction, the problem of generational conflict, and its siamese twin, the problem of sustained progress.

We're all in favor of progress defined as "the long thin line that leads to *me*." Unfortunately, whenever progress in some reasonably generalized sense boils down to a significant change in the way of life for any identifiable group, it usually doesn't matter that there are potential advantages even for the group itself. The opposition is vigorous, and to the extent that the group has any power within society as a whole, progress is drastically delayed, or often prevented entirely. It doesn't do any good to complain about the individuals standing in the way of progress—the poor, the uninfluential we can simply run over. Those with status, financial power or political power are pretty much immune. The result, of course, is quite predictable. When we examine any existing aspect of our society, our schools, our transportation system, our political system, any existing manufacturing establishment—you name it, it doesn't matter. Any impartial examination will show that the system is illogical, designed to preserve the interests of a small, powerful group and ranges roughly in order of its age from mildly inefficient to totally insane.

This is, of course, what strikes the young, bright, partially educated student of society. Wherever he looks, as soon as he learns enough to analyze any existing system he sees obviously desirable changes, obvious improvements to make, and often drastic deficiencies which anyone with a little common sense could easily rectify. He immediately concludes that it is either stupidity or since this seems on the face of it rather unlikely, an evil conspiracy of some sort which tends to preserve this obvious error. What the young man finds difficulty in recognizing is that built into every system is an accumulated history of challenge and response to specific situations. Built into every job there is an expertise painfully and tediously accumulated sometimes over years of experience and not readily devalued simply because some new developments elsewhere have now made it possible to accomplish the same end with much less effort.

I think it is important to recognize this as a real factor and to recognize that men of status, power, wealth, what have you, the establishment (including us, of course) are simply not going to give up their status, etc., simply because they no longer deserve it. It is not a question of justice, or what's right or what's more efficient or what's best for the country or anything else, it's simply a fact of human nature which I, for one, see no particular prospect of changing in the foreseeable future.

Youth recognizes that experience is the only asset that age actually possesses. To the extent that experience may be bypassed by new developments and techniques, the balance of power in the generational war clearly favors the young.

Science plays a peculiar and very special part in this generational struggle. Scientists as individuals are at least as conservative in their thinking, in their daily jobs, in the way they organize themselves, as any other group; but science in its inevitable association with change, with progress, with new ways of doing things, is the most radical, most potent force available in our society. Science and technology, not scientists, are inevitably on the side of the young in this generational battle.

Now the conflict between sons and fathers is hardly new to our generation. What is new or at least of much greater importance today are two basic trends in our society. First we have the vast increase in the resources we are putting into science and technology and the resulting rapid change which this makes possible in the way of life of an increasingly large fraction of our population. For all of us, our expertise rapidly becomes obsolete.

The second factor which drastically compounds the problem lies in the increasingly large numbers of individuals whom we are educating to the point where they can recognize these facts and challenge the existing establishment on its own terms. There always were a few who recognized ways to bypass existing channels and open up new paths to the top, found new industries, create new institutions, etc. They were, however, a rather small minority and it is due to that small minority that progress has been as rapid as it is. But today we have not a small minority but a much larger one and there doesn't seem to be enough room for this group to move ahead without running rather roughshod over large elements of the existing establishment. It is this situation which it seems to me poses the basic problem of generational conflict so forcefully in our society and it is this situation with which I propose to deal. I must apologize for the absurdly long introduction but I haven't figured out how to shorten it adequately.

For reasons which will become obvious, I have entitled my concept "Project New Manhattan." It is designed to combine most of the virtues which I at least found in the Manhattan project and in the settling of the new world, most exemplified of course by Manhattan and the words on the Statue of Liberty. It is not easy to remember that those of us living in this country are almost entirely the descendants of either rebels or rejects, people who found the society in which they were born distasteful or people who were unable to build a satisfactory life for themselves and their children within that society.

I haven't studied the figures in any detail but I suspect a high percentage of immigrants to America were under thirty. And indeed, I would take it for granted that many of our young people who express an obvious dissatisfaction with the society in which they find themselves would cheerfully take advantage of the opportunity to help build a new world.

And that, of course, is the essence of my suggestion. Continuous creation of an effective frontier is the only long range solution to the collision of any establishment with a revolutionary young element wishing to take advantage of the changes in our society that technological innovation would make possible. Again there may be innumerable ways of carrying out the principles I would suggest and while I have a number of ideas of my own, I would like to encourage all of you to speculate on them. I would create self-sustaining new communities, based in part on a large national laboratory complex devoted to a significant current problem with technological implications, at least one each year, financed by self-liquidating investment from a large revolving fund such as the trust fund noted above.

Before I go into detail, I would like to enunciate a few principles. First, I believe that freeing the young and the imaginative to build technologically based new enclaves will increase our total wealth rapidly rather than cost money. While I hope to see a substantial revolving fund set up to finance this program I would prefer to see all advances on a loan basis so that there is no net cost to any existing establishment. Secondly, the communities created must be self-governed to the maximum feasible extent. They must pay their share of taxes and respect constitutional guarantees, but radical experimentation in social organizations should be encouraged. Thirdly, we should seek the maximum feasible diversity, geographically, in research areas, and in community organization. Fourthly, one must anticipate failures. If those selecting projects find all their projects financially sound in a short time, they are obviously being much too conservative. In some cases disaster will be visible in short order, in others success or failure may hang in the balance for a long time, in still others a long slow growth will eventually produce financial stability.

Let me develop these a little more. The first principle is, I believe, most important for the ultimate success of our campaign. We have noted a growing resistance to government support of scientific projects.

There is no substitute for such support of basic research on a large scale, but I don't know why we should confuse this with support of science and technology directed to specific useful ends. We are producing a growing number of technically trained people, most of whom are not going to earn their living doing basic research. We must use these scientists and engineers efficiently and effectively and in such a way as to meet their objectives. This means largely, that we must provide the opportunity for them to select socially desirable goals and carry them out with a minimum of resistance from an existing establishment. But they certainly will expect to "earn their keep." I have nothing in principle against subsidizing a lot of socially useful activities, but I believe that any establishment that pays for innovation will find convenient methods of sabotaging such innovation to the extent they achieve significant changes. I would like to minimize the hold of the establishment on the innovative process.

I would like to see a program set up on a continuing recycling basis without recurrent requests for congressional approval or authorization. This would only be possible with a revolving fund and no net congressional appropriations (e.g. TVA).

Like most visionaries I, too, have a dream, a dream not of a sterile utopia in some wise man's image, but rather the endless variety of a very mixed up America with maximum mobility for the dissatisfied, adequate wealth to ease the burden of the unsuccessful, or merely unlucky, and exciting new opportunities to challenge the youth of any chronological age.

NEWS ITEMS

The American public can make judgments on issues of military spending and nuclear weapons "if it is able to penetrate the walls of security set up by the defense establishment," Dr. Leonard Rodberg of the Institute for Policy Studies and a member of the FAS told a meeting of the League of Women Voters Education Fund conference meeting at Neil House, Columbus, Ohio.

The ABM is "a weapon in search of a mission"—developed by the military industrial complex to meet a threat which no longer exists, according to Dr. Rodberg.

"In the case of ABM, there were alternatives which were cheaper and had less likelihood of stimulating an arms race. Why were they not proposed by the Defense Department?" asked Dr. Rodberg.

"In spite of all efforts to keep information from the public, there is enough information for the American people to make the judgments they must make—not to determine the details of our weapons—but to say what our overall foreign policy goals should be and how our national resources should be divided up to meet them," he said.

In the crucial area of defense spending, the public "should insist that the defense establishment relate itself more closely to changes on the home front and the world political scene, and not look at defense needs in terms of the Cold War of 20 years ago," said Dr. Rodberg.

He urged that the public should ask—in an age when even the Secretary of Defense admits we have overkill capacity—why we cannot put stronger efforts into halting the arms race and achieving major cutbacks in armed forces on both sides.

(League of Women Voters news release, 11 November 1969.)

Plans are being made by Britain, West Germany, and the Netherlands to build two pilot plants for the manufacture of nuclear fuel by gas ultracentrifugation, a comparatively inexpensive method. The headquarters of the enterprise would be in Germany although no plant will be built there. (N.Y. Times, 28 October 1969.)

A street in Toledo was recently paved with "glasphalt." The private roadway is a part of a parking lot, and is being used as a test to determine whether discarded glass containers can be substituted for sand, gravel, and stone that are now mixed with asphalt for standard paving. The glass is finely ground and then mixed with asphalt and spread to harden. The University of Missouri at Rolla is associated with the project, which was undertaken by the Owens-Illinois Company. (Owens-Illinois, Inc., 1969 Third Quarter Report, 5 December 1969.)

The Army has announced plans for the removal of all lethal chemical-warfare munitions from Okinawa to a storage site in Oregon. Secretary of the Army Stanley R. Resor said the first of five shipments would begin either in December or January. The withdrawal would be completed by spring. Included would be two types of nerve gas, GB and VX, and a mustard gas known as HD. The deadly agents are believed to be in the form of bombs, artillery shells, and aerosol drums. The plans are to move the chemicals by sea to the Navy ammunition depot at Bangor, Washington, and from there by rail to Umatilla Army depot near Hermiston, Oregon. An Army spokesman was unable to say whether the United States stores any of its only incapacitating agent—BZ—on Okinawa. He did say that tear gas and herbicides, if they are stored on Okinawa, would not be included in these withdrawals. (N.Y. Times, 3 December 1969.)

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