

# F. A. S. NEWSLETTER

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## NATURAL RESOURCES REPORT

In a report to President Kennedy, the National Academy of Sciences-National Research Council has called for "a basically new orientation and organization" of this country's natural resources research and development effort to meet the world-wide challenge of burgeoning populations and rising aspirations.

The report to the President finds that "unless there is a sudden denial of access to world markets the United States need fear no serious curtailment of growth because of natural resources over the next few decades.

It tempers this observation, however, by saying that "unless in that period the current research emphasis is changed, the consequences will be serious," and warns that our present effort in the field of natural resources "carries the seeds of national disappointment in opportunities lost."

The recommended program would mobilize the scientific and technical skills that have contributed to "an environment of comparative plenty" in this country to help emerging and underdeveloped nations, as well as domestic low-income areas, solve the resources problems that hinder their economic development and produce substandard levels of nutrition, health, and education.

These major themes are emphasized in the report as guides for future action:

1. The relative abundance of natural resources in the United States, due in large part to knowledge derived from research, necessitates a shift in philosophy from the cautious husbanding of scarcities to the wise management of plenty.

2. Although as a nation we face substantial domestic problems, our major challenge in the immediate future arises from the needs of other nations and other peoples—needs which will not be met unless we are successful in the export of our research and technological assistance "in a usable form tailored to the specialized requirements of underdeveloped nations."

3. The potential capacity of science to meet the requirements of increased productivity without lasting damage to our national endowment is great and growing steadily.

To enable the United States "to give vigorous leadership to world efforts to meet rising needs for resources," the Academy-Research Council report urges that a Central Natural Resources Group be established within the Federal Government to coordinate an expanded program involving a majority of the departments of the Government.

In discussing man's effect upon his environment, the committee noted that "man is altering the balance of a relatively stable system" by polluting the atmosphere and water supplies, by deforestation, by overgrazing grasslands, by irrigation, by draining swamps and by building dams.

"The effects on man himself of the changes he has wrought in the balance of great natural forces and in the new micro-environment which he has created are but dimly perceived and not at all well understood."

"In summary," the report stated, "it is apparent that man must concern himself with a variety of changes in the environment, both those caused by human beings and those reflecting man's responses. Some are good; some may be harmful.

### 'UNWISE TO TAMPER'

"That we often do not have any clear-cut idea of their impact on man, or of man's response, is cause for concern. It would seem unwise to continue to tamper with environment without, concurrently, striving to determine the real and last effects of our actions." (W. Post, 1/10)

### FAS COUNCIL MEETS

The FAS Council meeting in New York on January 25-26, will be reported in February Newsletter.

## DISARMAMENT

Geneva disarmament negotiations, suspended in mid-December, have been postponed until February 12, a sign of the uncertainties concerning the next steps in test ban and arms policies.

In recent weeks, the Soviet-American "disarmament impasse" has been overshadowed by news of an "alliance impasse" facing each State, and these problems promise to have important repercussions on the negotiations at Geneva. The big news has been concerning the mounting battle of words, and the possibility of an open split, between the Soviet Union and China, as the Chinese directly attacked the Soviet Government's "concessions to imperialism," challenged its right to lead the world Communist movement, and discounted its fears of a nuclear holocaust. As for the U.S., the prospect is long, hard work and no quick solutions in its new efforts to promote a nuclear rapprochement with France and a nuclear reformation of NATO. (See article from the Economist elsewhere in this issue.)

Simultaneously, the U.S. and U.S.S.R. have been trying cautiously to deal with each other on new lines. Since the Cuban crisis, President Kennedy and Premier Khrushchev have continued to exchange public and secret messages, dealing with the "mutual need" to find ways to preserve peace and reduce tension. January opened with some high-level "casual" talks and a two-Power letter to the United Nations which amounted to an ad hoc end of the Cuban crisis. This was immediately followed by a four-week postponement of the Geneva talks (agreed upon by the Soviet and American co-chairmen of the Conference), rumors that the Soviet Union had made a new "overture" concerning a test ban agreement, and announcement that the two Governments would hold "exploratory talks," which the State Department described as preparations for resuming the Geneva negotiations. The talks began on January 14 in New York, when William C. Foster, Director of the U.S. Arms Control Agency, met with the new Russian Ambassador to the UN, H. E. Fedorenko, and Semyon K. Tsarapkin, leading test ban negotiator. (W. Post, 1/11, 1/12.)

## PRESIDENTIAL SCIENCE ADVISERS 'BELTED' BY VAN ALLEN

Speaking at a closing session of the AAAS meeting in Philadelphia and again later during a press conference Prof. James Van Allen touched off another round in the controversy associated with the U. S. high altitude nuclear test blast of July 9, 1962. As reported in the Washington Post (Dec. 31) Van Allen launched a rather sharp attack on the President's Science Advisory Committee and was joined in his criticism by James W. Warwick of the University of Colorado. Van Allen has charged that the Presidential Committee was such "a big and authoritarian machine that it decidedly intimidates the small man." He also found the committee—"hasty"—"Government-dominated," "speaking a language different from that of the common man" and possessing "an air of authoritativeness inappropriate to sound judgment."

Apparently what irks Van Allen is that the public announcements concerning the effects of the July 9th blast cited results from Telstar rather than those from the Injun satellite carrying Van Allen's experimental equipment. The results obtained from the two satellites, according to Van Allen, apparently differ—with Injun data indicating that the test effects were not as bad as announced. The Government report, Van Allen charged, said in effect that the U.S. "is so sorry that it has goofed again" even though there was evi-

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## COUNTERFORCE AND ARMS CONTROL\*

JOHN PHELPS

Secretary McNamara's now famous speech at the University of Michigan last June set off a wave of discussion which is still continuing. The speech, along with two or three subsequent interviews, seems to have raised particularly the "counterforce question." It strikes me that much of the discussion has greatly oversimplified the issues and that, because of the obvious importance of these issues, the oversimplification is a serious matter. I want to try to stress here a few points—one point in particular—that seem to me very important but still generally neglected in the discussion so far.

It is almost certain that McNamara was mainly trying to explain some Administration views on independent, relatively small, national nuclear forces, undoubtedly with France in mind. He made a quite effective case against these forces. In the course of making his case, McNamara said that U.S. strategy is now based on the conclusion that, even in a general nuclear war, the "principal military objective . . . should be the destruction of the enemy's military forces, not of his civilian population." He added that our side is strong enough to absorb a first strike and still "destroy an enemy society if driven to it," and that "we are giving a possible opponent the strongest imaginable incentive to refrain from striking our cities."

What McNamara did not say is that the U.S. expects to have in the years ahead a counterforce capability sufficient to knock out all or most of the Soviet nuclear forces to a degree, say, that would protect our own homeland from massive damage. Many people, including some Russians, assume that McNamara meant that the U.S. was actually aiming for such a capability. But the point must honestly be considered to have been left unclear, either by conscious omission, or by accident, or because it was just off the subject on that occasion.

The fact that many have read so much more into his speech seems to me a result of the oversimplification of the issues. There is a widespread view that we are going to have to choose cleanly one of two mutually exclusive alternatives: 1) a "minimum" or "finite" deterrent which involves relatively small strategic forces for retaliation against cities, or 2) a "counterforce policy" which involves very large forces planned and targeted to destroy, in an at least possible first strike, most of the enemy's strategic power.

Trying to avoid oversimplification, we can consider the counterforce question in the light of some military and political realities. A determined effort is made here to reject solutions that do not allow for these realities.

One reality we should probably if reluctantly postulate is that, taking everything into account, the chances are against our achieving a disarmament agreement which will substantially change the nature of the military confrontation in the next year or two. We may perhaps still achieve a test-ban agreement but, when it comes to a real disarmament treaty, the positions of East and West are very far apart and showing few signs of coming together. So our military planning is going to continue and we should plan as well as possible. Hopefully, we can find military policies that tend to stability and to circumstances which facilitate arms control. And we should take steps (which I will not try to go into here) to make our arms control efforts more imaginative and more serious.

### COUNTERFORCE CAPABILITIES

Our military planning is probably going to have to include, roughly, two kinds of counterforce capabilities. We can identify these in a general way here. One kind of capability is for use in geographically limited wars; such wars have ordinarily been counterforce wars, involving tactical weapons, and presumably one of the things we want to do is to keep them that way. The other kind of counterforce capability is

something we might want to have at our disposal if circumstances ever raised, sharply and suddenly, the threat of a major nuclear war. We might want the capability to strike some military targets in the U.S.S.R. These targets might be bomber or missile bases, troop concentration or training areas, supply depots ports of particular military usefulness, radar sites, or many other things.

It is most important to keep in mind the unpredictability of what might be loosely termed the escalation process by which a relatively minor conflict grows into a bigger one. The elementary argument that we want as many steps or alternatives as we can have short of an all-out nuclear attack seems quite sound. Many of these steps, coming somewhere between a relatively confined conflict and an all-out nuclear war, may take the form, essentially, of strategic counterforce attacks.

A principal argument for some strategic counterforce capability is the consequences of not having this capability. (On this point I knowingly part company with some of my colleagues working on arms control.) Consider the case of a limited retaliatory force, sufficiently invulnerable but big enough only to destroy a certain number of enemy cities. It is at least possible (though I tend to think it is little more than possible) that active and passive defense measures by the Soviet Union could so reduce the probable retaliatory destruction that the deterrent effect of the force would be largely negated.

Much more important is the question about the credibility of the deterrent in the first place. Such a limited-capability force tends to commit us really to just one final "spasm" of retaliation, planned simply to punish the Russians for their behavior. It is hard to see how, once we have suffered severely, say, but not fatally from Russian aggression, our main concern will be with punishing the Russians. This is especially true if the Russians, as they would be likely to do, have withheld some weapons for further retaliation against our cities. The notion of a simply definable retaliatory threshold above which all-out retaliation occurs goes contrary to all the reasonable guesses one can make about the way in which escalation in the broad sense might occur, the pressures on the decision-makers, the manner in which forces might be used and withheld, and the desire to protect one's homeland.

While the arms race goes on then, we will probably want to retain a substantial strategic counterforce capability. Now, however, we come to the most important point of all: One of the most dangerous and costly things we can do in the long run is to proclaim and try to maintain a decisive strategic counterforce capability. I use "decisive strategic counterforce capability" to mean the capability of depriving the Russians, presumably in a first big strategic strike, of the ability to retaliate against us. This is equivalent to maintaining a truly overwhelming strategic force, along with the targeting information necessary to use it in a successful first strike.

For one thing, it seems certain that we cannot, as a practical matter, maintain this decisive strategic counterforce capability. Most or all of the number of now somewhat unpredictable things would have to work out in our favor (again the effect is made to be as realistic as possible):

1) The Russians will have to use limited ingenuity in designing and deploying their own weapons. If they build Polaris-like forces, and go for a sophisticated mix of these, hardened ICBMs, bombers, and other possible strategic weapons, it is hard to see how any strategic force the U.S. is willing to pay for can find and destroy the necessary fraction of these weapons.

2) We will have to have good active defenses. The anti-ballistic missile problem is a tough one technically. It has to allow for the ingenuity of the attacker in using various countermeasures, choosing targets, and trying to saturate the defense all, again, at a cost the taxpayers are willing to put up. (One of my principal realities is the American taxpayer. He has shown no signs of willingness to face the problems and the cost of protecting himself should deterrence, his cheap and favorite option, become inadequate.) We must also counter the bombers coming in, say, at low altitudes on unpredictable courses or using standoff missiles. In thinking about the active defense problem we have to remember what just a few big nuclear weapons, say ten not-so-accurately placed on city targets, can do.

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\* Adapted from a discussion in the forthcoming April, 1963, issue of *The Journal of Arms Control* (P. O. Box 1106, Ann Arbor, Michigan). This paper is circulated to FAS members by the FAS Committee on Arms Control and Disarmament. Although the paper is written by the Chairman of the Committee, it does not necessarily represent FAS policy. It is intended as a contribution to useful discussion and, with this purpose in mind, the Committee hopes to follow it with other papers, from various sources, on a fairly regular basis. Comments, sent to the author at the Institute for Defense Analyses, 1666 Connecticut Avenue, N.W., Washington 9, D. C., will be appreciated, both for their substantive value and as a means of keeping the Committee in touch with the views of FAS members.

## COUNTERFORCE AND ARMS CONTROL

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3) We will have to have good passive defenses. This means, probably as a minimum, a civil defense program something like two orders of magnitude bigger than what the U.S. public and Congress have been willing to undertake so far. Our apathy in this area is well known. Even assuming that we are able to protect our people from short-range effects (with fallout and blast shelters) and that active defenses can protect some targets, we will have to contend with the longer range effects of heavy radioactive contamination on our food supply, and economy.

4) The Russians will not be able to develop any radically new weapons or delivery systems. We have so far left out of consideration space weapons, including high-yield bombs in orbit, chemical and biological weapons, "suitcase" or tanker delivery, and other things.

5) We will have to work out some political and psychological problems. The effects on our friends and allies of obvious massive efforts to protect the U.S. homeland will be considerable. It would scarcely be a satisfactory situation for us if the Russians chose, at their convenience, to emphasize the vulnerability of Europe by contrast. If we claim to be able to defend ourselves we may be forced into claiming, without much basis in fact, that we can defend the whole Free World as well.

In sum, all this suggests that a decisive strategic counterforce capability is unattainable, given a number of practical constraints. We will not be able physically to prevent the Russians, if they choose in desperation to ignore the consequences to themselves, from bringing severe damage to the United States. What is disturbing is that some advocates of "counterforce" imply that we can with imagination and effort so control the weapons situation that we can, even in the extreme situation of all-out war, come through relatively intact. This seems a dangerous way to maintain a sense of security. And it certainly helps to keep us from facing squarely the problems we are up against.

### EFFECT ON SOVIET UNION

There is another objection to the notion, either implicit in our behavior or spelled out in public, that we can achieve a decisive strategic counterforce capability. We manage largely to ignore the impact of such a policy on the Russians and its longer-range implications for the arms race.

Some knowledgeable Americans are in effect claiming that the arms race is an asymmetric, unstable affair, and that the instability is of a kind which is most obviously threatening to the Russians. Detering the Russians is one thing. But we are occasionally telling them that we can not only annihilate their population, but we can also prevent them from retaliating against us. This, in effect, compels them to try very hard to redress the instability in their favor.

Thus the Russians may try to enhance the invulnerability of their weapons (which they can certainly do). But it probably means also that they will build more and bigger weapons, and that they will try to develop radically new ones—just as we would if the situation were reversed. In short, they will hold up their end of the arms race. And, so long as we try to maintain a decisive strategic counterforce capability, we can be counted on to hold up ours. This rules out for the foreseeable future any numerical disarmament and, probably also, any significant arms control in the area of strategic weapons.

Whatever one thinks of the Soviets' sincerity in disarmament negotiations, it is clear that they are not disposed to negotiate from a position of weakness. Their time to have done this would have been some years ago. From a skeptical military standpoint, we may not be able to take it for granted that they are now sincere. Yet we can not assume the contrary either. Arms control progress does not depend entirely on formal negotiations in Geneva, and we have many reciprocal restraints in the military situation already. A wide range of arms controls would be manifestly in the Soviet interest as well as ours. It is this recognition of mutual interest in military matters—how to make the world more stable and less dangerous for both sides—that underlies much of our current thinking on arms control. By acting and talking as if we are going to maintain a decisive strategic counterforce capability—a permanently unacceptable state of affairs from the Soviet standpoint—we are slamming at least one important door on arms control progress.

What should be done, again paying attention to the realities of the situation? We cannot expect the U.S. (or the U.S.S.R.) publicly to proclaim its permanent vulnerability to retaliation in a nuclear war. On the other hand the recent discussions on counterforce following McNamara's speech have unquestionably done some damage, and this damage will be far harder to repair if the decisive strategic counterforce idea should receive any official sanction. We can officially stress, more clearly than we have done so far, the idea that what military security we have lies in a credible and flexible deterrent, and we can leave our strategic counterforce capabilities relatively unspecified. We can exert some considerable control over semi-official loose talk on counterforce. This is a kind of minimum policy, but it should be practical. It is absolutely necessary if we aim for our declared goal of a stable military situation and enhanced arms control prospects in the years ahead.

## KENNEDY BACKS SHELTER PROGRAM

In spite of widespread apathy and, in some quarters, open opposition to a national shelter program, President Kennedy plans to appeal to the new Congress for Federal funds to help schools, hospitals and welfare institutions build fallout shelters. It appears that the President will ask for a 1964 budget of something over 300 million dollars for the Office of Civil Defense—about half what he wanted last year but about three times as much as the 113 million dollars that he actually got.

### "NO-CITIES" WARFARE

Secretary of Defense McNamara is said to regard the shelter program as a basic protection in "no-cities" warfare. This term is Pentagonese derived from the supposition that neither this country nor Russia wants annihilation and the first exchange in a nuclear duel might be limited to obliterating military targets. Thus war might be stopped short of mass extermination of civilians. McNamara holds this hope to be valid only if there are adequate fallout shelters for civilians. Otherwise, it is estimated that fallout alone could kill 70 to 110 million. Pentagon experts believe that fatalities could be held to below 20 million if shelters are provided and the prospect for national survival, with the economy and institutions preserved would be greatly enhanced. (W. Post 1/9/63)

### FRENCH H-BOMB TEST POSSIBLE IN '65

French newspapers of Jan. 9 gave prominence to reports that France may explode her first hydrogen bomb in the Pacific within two years—ahead of her scheduled nuclear program.

Le Monde said the advance party of a technical and administrative mission was due to begin work on a test base at Mangareva Island, southernmost of the French Polynesian group in the Pacific.

The conservative Le Figaro recalled that Defense Minister Pierre Messmer had said last July that France was studying the question of a Pacific nuclear test base, and added:

"The choice has been made. The base will be on Mangareva Island."

L'Aurore said, "France will explode her first H-bomb at the Mangareva test base within two years—earlier than expected." (W. Post, 1/10)

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

## HARD FACTS SEEN AHEAD FOR EUROPE

The following article, reprinted in *The Washington Post* (1/2/63), originally appeared in *The Economist*:

Asked what it did in 1962, the world can reply curtly that it survived. It will be excused if, breathing hard, it declines to prophesy about 1963. What follows is a guess, not about the coming year, since that is too hard, but about the likely shape of one part of the world's affairs a few years hence; this more distant prospect being easier to pick out, like mountains across a fog-filled valley, than the immediate foreground. The guess is based on the assumption that the next few years will see the emergence of a common West European approach to the problems of foreign policy and defense. The Western Europe in question may be either a coalition of sovereign states, or some kind of federation, and it may or may not include Britain; no attempt is made here to predict the outcome of the thickly befogged Brussels negotiations. But, if the general assumption is right (of course, it may not be) then there is a fairly safe forecast to be made. In both military and foreign policy, Western Europe is going to be forced by circumstances to learn a number of lessons that the United States learned some time ago.

First, the military lessons. To begin with, the European delusion that nuclear independence can be achieved through a handful of manned aircraft loaded with free-falling bombs cannot now live much longer: the Skybolt row and the Nassau agreement herald its demise.

Without Skybolt, the European manned bombers simply will not provide a credible basis for an independent nuclear policy in face of the overwhelmingly superior armory of the Soviet Union. It is as if the Russian nuclear threat to the United States consisted solely of the 200 Communist bombers capable of crossing the Atlantic.

It can be argued that European bombers are not meant to be used in total isolation; that their job is to let fly a first nuclear blow, when the interests of Europe demand it, in the belief that the far bigger American forces will be bound to come out punching immediately afterwards. This is the theory of the "catalytic" deterrent. But it is a strikingly dangerous theory. It means telling the United States that it is liable to be drawn into a nuclear war on somebody else's *casus belli*, perhaps against its own best judgment. It is hard to think of a surer way of making the Americans retort that they have no intention of going bang when someone else pulls the trigger. If the effectiveness of a European nuclear arm depends on its ability to drag the Americans into the fray willy-nilly, it may well turn out to be wholly ineffective. Or rather, its effect may be to thrust the two halves of the alliance further apart.

Maybe, if the Europeans really are bent on nuclear independence, they will go ahead and build the fairly sizable armory necessary for true self-sufficiency. The Europeans would thus learn for themselves the first military lesson already grasped by the Americans—that real nuclear power as distinct from the mere token display of it, is hideously

expensive. And this first lesson would run headlong into the implications of the second lesson, which is that nuclear power alone is not enough. Sooner or later it is going to dawn on the Europeans, as it dawned on most American strategists some years ago, that there is simply no substitute for bigger conventional armies for warding off the kind of minor attack that plainly does not call for blowing the world up.

From these two military lessons there ought also to flow a political one. This is that a limited amount of rearmament, such as Europe is pretty well bound to undertake, is not necessarily incompatible with (and perhaps is even a useful preparation for) the business of keeping on civil terms with the Soviet Union. In his first two years in office President Kennedy has rearmed to the extent of several hundred additional missiles and an extra quarter of a million men in uniform. And yet he has simultaneously kept the flow of ideas and information moving briskly between Moscow and Washington—far more briskly than Mr. Eisenhower did—and even, in one or two matters, worked out a rough understanding with Mr. Khrushchev. If the European allies now follow his example in refurbishing their arms (but only the non-nuclear sort, one hopes) they should also follow his example in taking steps to lessen the chance that the arms will have to be used.

### PRESIDENTIAL SCIENCE ADVISERS "BELTED" BY VAN ALLEN

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dence, as he believed, to the contrary. He further charged that the present results from several satellites now in orbit indicate that the Government's earlier statement (that the induced high intensity radiation belt would last for ten years) was "hasty" and "ill-considered." He predicted that most of the artificial belt would not be detectable by mid 1963 and that the remnants would last no longer than a few years. Warwick's results, based on radio measurements from ground stations in Hawaii and the Philippines, agree with Van Allen's. (Warwick further concluded that the blast did cause some interference with radio astronomy but that it affected only a limited number of observatories at or near the equator.)

Prior to the high altitude tests a panel of experts called together by the President in answer to world-wide anxiety and criticism had concluded that there would be no long term effects. After the test, the results from Telstar and Injun showed that the intensity of the trapped radiation was considerably in excess of what had been predicted. The initial public announcement based on results from Telstar indicated that the artificial belt might last for many years. Van Allen's present studies indicate a possibly more rapid dissipation—i.e., the belt will last no longer than a few years. Based on this assessment it seems that the Government's "ill-advised" and "hasty" report may not have been too far from the mark.

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