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THE NATIONAL FAS: WHITHER AND WHY?

— Some Blunt Questions from the NEWSLETTER Editor

I would like to bring up some points that I believe all FAS members should very seriously consider if the Federation is to continue as a national organization.

In 1969, with the manifold, enormous, and steadily accelerating impact of science on society, few if any members will question the need for the kind of organization that the FAS surely aims to be, and—to a far greater degree than now—once was. As I conceive it (and if any conception is wrong, then this editorial can be lightly dismissed) the FAS consists of scientists and engineers, informed, responsible, objective, free as an organization to speak out and lobby to an extent which other groups are not, and dedicated to help bring scientific and technological developments into the stream of human affairs as wisely as that can be done.

This conception of the FAS carries with it obligations and limitations that the organization often appears to overlook. When the Federation fails to speak as an organization of scientists and engineers in areas where its members have special competence or insight, and where they have done whatever special study may be necessary, its pronouncements deserve no particular attention; nor can politicians and others look to it for enlightenment. Similarly, the FAS must demonstrate a clear and objective concern, appropriate to an organization of scientists, with all the facts relevant to an issue. Sincere concern and deeply held convictions, and objective analysis of all pertinent facts, are eminently compatible.

A year ago I submitted a memo to the Council at its 23 April 1968 meeting. The second part of the memo was entitled "Some Questions for the FAS." I attached to the memo a copy of a 1951 NEWSLETTER and a 16 November 1946 *New Yorker* article on William A. Higinbotham and the activities of the FAS in its first year, commenting that Council members would enjoy reading them and that they might help to give some historical perspective on the role of the FAS. I am sorry there is no way to reproduce them for all members in this NEWSLETTER. The remainder of my memo to the Council follows. (It should be the Garwin-Bethe article instead of the Bethe-Garwin article—my mistake.)

"I would like to raise, in a friendly and constructive spirit but with blunt words, some questions about FAS and its relevance in 1968. Some equally blunt answers are added. I hope the Council will have time and some disposition to consider questions like this at its current meeting. My aim here chiefly to raise questions and stimulate discussion, and not to delineate issues with care and objectivity.

Has the FAS outlived its usefulness? (Compare its significance through about its first decade with today. Note, among other things, the evolution of the AAAS and *Science*, the emergence of various new organizations overlapping FAS and their relative activity. To many observers, the FAS certainly looks like an anachronism.)

Has the FAS grown fat and lazy? (Again, compared with the 1945-55 period, the FAS bank balance is up by about an order of magnitude and its average activity is down.)

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NEW FAS STATEMENT OPPOSING ABM

Following is the text of a statement entitled "FAS Opposes Sentinel Anti-Ballistic Missile System," and released on 20 March 1969. (Also contained on an inside page of this NEWSLETTER is a short background paper on the use of ABM to protect retaliatory forces, prepared by the FAS but not released as a public statement)

The Federation of American Scientists has long opposed the Sentinel Antiballistic missile system and will continue to oppose the piece-meal deployment which President Nixon proposed on Friday, March 14.

The altered system which initially is oriented toward the protection of missile sites is perhaps less provocative of further escalation of the arms race than one oriented toward protection of cities. But if it proceeds as planned it will ultimately have all the destabilizing effects of the original system and will provoke expansion of both offensive and defensive weapons systems by the Russians and Chinese. In addition there are sound arguments against deploying ABMs to protect our missiles.

It is generally agreed among military experts that our minuteman missiles in their hardened silos could withstand

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FAS CHAIRMAN SATTERTHWAITE SUGGESTS FAS CAUCUSES AT SCIENTIFIC CONFERENCES

For the following item the NEWSLETTER is indebted to FAS Chairman Cameron B. Satterthwaite.

The March 4th programs at MIT and other Universities and the formation of the new organization, Scientists for Social and Political Action, indicate a rebirth of the kind of concern among scientists that got FAS started in the immediate post-war period. FAS has felt some of this surge with the anti-ABM activity in a few places, but much of the activism that could be channelled into FAS has gone elsewhere. FAS, which started out as a group predominantly of physicists, has remained predominantly physicists and we have not been successful even in attracting many of the younger physicists.

At the last Council meeting we made a step toward reaching out to the broader scientific community by arranging our next winter Council Meeting to coincide with the December meeting of the American Association for the Advancement of Science rather than the January meeting of the Physical Society. Hopefully this will bring FAS closer to some of the biological and social scientists. Furthermore the AAAS has existing committees with interests similar to those of FAS and FAS has participated in arranging programs for the annual AAAS conference.

As a further move toward bringing more people into the action of FAS I urge that an effort be made to set up FAS caucuses at all the major scientific conferences. If there are two or more FAS members at a conference, they should get together for lunch or dinner or in someone's hotel room or in a meeting room to exchange ideas about the legitimate concerns of FAS. Out of a caucus of FAS chemists we might expect to get a memorandum suggesting FAS action in areas such as pollution or chemical warfare. Out of a caucus of FAS biologists a memo suggesting FAS action

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KALKENSTEIN ON SCIENTISTS AND INVOLVEMENT

As one more response to the request—hereby repeated once more—to former FAS Chairmen for their views on the role and significance of the Federation, the NEWSLETTER is pleased to have the following contribution, entitled "Scientists and Involvement" from Marvin Kalkstein. The paper was delivered last December 2nd to an ASME panel on "Technology and Society: Conflicts in Engineers' Responsibilities" in New York.

I have been asked to present the third side of the three-legged stool that the scientist occupies in dealing with public issues. Previous speakers have talked about the approach represented by the Society for Social Responsibility of Scientists and the Committee for Environmental Information. SSRS has taken the position that the individual has a moral responsibility for the effects of his own involvement in the scientific endeavor of our society. The Committee for Environmental Information takes the position that basically the scientist's or engineer's role is to present facts in an unbiased manner and not to advocate a particular position in attempting to influence the decision-making process.

A third approach, one followed by the Federation of American Scientists, of which I am a member, is one of open advocacy or lobbying for a particular point of view. The Federation of American Scientists does operate within certain self-imposed constraints. These are that the issue involved must be relevant to science or that it must be an issue on which our scientific and technological expertise gives us a particular competence.

I would like now to go beyond my "prepared" remarks and to suggest that while there is certainly value to all three of the above approaches, at the same time they can perhaps be faulted for not going far enough. I would like to suggest that there is a need for the scientist and engineer to make value judgments as part of his contribution. This may be somewhat difficult since even in our academic training there is a great stress upon objectivity in both our teaching and our research; if anything, we assiduously try to avoid even the appearance of making value judgments.

Now, to deal specifically with the three positions enumerated above. While it is well and good that the individual has a sense of moral responsibility for his own personal acts, what is most needed is to act from a position of the scientist within the society in dealing with these issues. The information approach, while claiming and pursuing objectivity is of necessity making value judgments in the choice of issues with which to be concerned. The advocates of this approach point to the possibly harmful effects upon the public image of the scientist of the Pauling-Teller debates on nuclear testing and fallout. The fact is that in the Pauling-Teller case, as in most other controversies on technical issues, it was not the scientific facts that were in dispute but differences of opinion based upon pre-conceived notions (or initial assumptions). Basically, the two scientists had arrived at very different judgments on the basis of the same

information. The safeguard on this within a scientific context is that in dealing with a scientific issue or work, the scientist will be very explicit about the assumptions involved in his work so that his conclusions can be viewed and evaluated with all the assumptions present.

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THE NATIONAL FAS — Continued from page 1

Have the problems that scientists should worry about gone away? (No answer needed, but one observation may be instructive. It used to be that developments like the Astin affair or the Oppenheimer case brought the FAS to life and increased its membership. It's an imperfect analogy, but what about Vietnam, ABMS, and R&D funding cuts now?)

Why do some FAS members still act like scientists are the only people who comprehend, for instance, the dangers of nuclear war? (Probably no simple answer.)

Does the FAS do its homework? (If the Bethe-Garwin article is so highly regarded as a contribution to the ABM debate—as it perhaps should be—how come an FAS committee didn't do a more comprehensive job on the same subject two or three years ago?)

Does the FAS even manage to sound like an organization of scientists in its statements? (Hardly, going by some of its hand-writing, cliché ridden, factually weak, sloppily written, pompous verbal potshots of the last couple of years.)

My own belief and hope is that the FAS is still needed and that it has the resources to make very significant contributions. Recent good examples—although certainly modest efforts—are the Visa Committee report and the power policies statement. Would it be possible for the Council, at its present meeting, to establish committees to work in and take responsibility for each of half a dozen major areas of FAS concern? How about planning to support these committees with, say, half of the FAS treasury between now and November (probably along with a membership drive which points to the new FAS activity)?

If I were to write a similar memo to the Council this year, I would raise about the same questions. I would also observe that, although some chapters and branches have sprung to relative life, especially on the ABM issue, the simple fact is that the FAS as a national organization—I believe its contributions have been reflected fairly in the NEWSLETTER—has contributed very little of appreciable significance to the national debate on ABM's or on any other important issue.

This is a sad comparison with the first decade of life of the FAS. It is easy to say that times have changed, new organizations have arisen, Science and other magazines with professional staffs serve much the role that the NEWSLETTER once did, and so on. Yet it seems also fair and indeed necessary to ask whether FAS members have realized and considered the great relative decline of their organization, whether they accept this as inevitable, or whether they care enough to do something about it.

—Harriette L. Phelps

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Chairman _____ Cameron B. Satterthwaite

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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.

FAS CAUCUSES — Continued from page 1

on safeguards to be applied to the use of drugs, and so forth. Perhaps nothing will come of a caucus but interesting and stimulating conversation—it will have been useful, none-the-less.

Ways in which the Washington Office and the Council can stimulate the setting up of caucuses will be on the agenda for the Council meeting in Washington this month. As a minimum, I would propose that the Washington Office should supply anyone willing to organize a caucus with brochures and recent issues of the Newsletter for distribution and receive reports of the caucuses and recommendations for action to be distributed to the Council and the Newsletter Editor. The responsibility for organizing caucuses, however, will rest largely with individual members of the various societies.

Perhaps an injection of participatory democracy into FAS can revitalize its body politic.

USE OF THE SENTINEL ABM SYSTEM TO PROTECT OUR RETALIATORY FORCES: SOME CONCLUSIONS

Prepared by the Federation of American Scientists

In its continuing attempt to develop a justification for the deployment of an anti-ballistic missile (ABM) system, the Defense Department has brought forth the idea of using such a system to protect our land-based retaliatory force, consisting of our intercontinental missiles and long-range bombers. Since the radar and missile sites for such a defense could, in principle, be located far from our major cities, the need for a Soviet missile buildup in response, to preserve their retaliatory capacity, might be reduced. This approach would also have the virtue, from the Pentagon's viewpoint, of avoiding the heated reactions from the public that attended the original Sentinel deployment near cities. Since this new role for an ABM system has received little public attention, it seems desirable to examine some aspects of it and to explore its broader implications.

The Sentinel ABM system in this role would use its long-range radars and high-altitude interceptor missiles to detect and destroy incoming warheads directed at our missile sites or bomber bases. Since our missile sites are located in the northern Great Plains of this country, the radars and interceptors could also be located primarily in that area. However, because of the need to protect against attacks coming from different directions, and because of the long range of the radars and interceptors, there would unavoidably be some overlap with cities in the Midwest. The system would thus be able to attack incoming warheads aimed at those cities as well. Most bomber bases are located near cities, and they are distributed over the country from Maine to California. Any attempt to provide anti-missile protection for them would simultaneously imply the creation of a defense for the rest of the country.

An ABM system intended to protect our retaliatory force would require the same types of radar, computers, and interceptor missiles as a defense of our cities, so that the same production facilities would have to be established. From the Soviet point of view, this development, together with the five to seven years it would take to deploy the system (during which our plans could evolve considerably), would make it difficult for them to be certain that the system would indeed be limited to the protection of our retaliatory force alone. They would have to assume that it would be modified and expanded, threatening their ability to retaliate against our cities in the event of a nuclear war, and leading them to respond by further expanding their own missile force.

There does not appear to be any evidence that the Soviet Union is seeking now—or, indeed, has ever sought—a capacity to attack our missile force. For a number of years they have had a force of limited size, clearly suitable only for retaliation against our cities in the event of an attack from us. In order to be able to successfully attack our missile sites and still retain sufficient force to attack our cities, they would have needed a substantial numerical superiority over us. They have never attempted to achieve this.

The Soviet Union today possesses about 1,000 ICBMs and a total of about 1,200 available warheads and bombs, as compared with our 1,054 land-based and 656 sea-based missiles and 4,200 available warheads and bombs. According to Defense Department figures, even as few as 200 delivered warheads (for instance, one-third of the Polaris force) could cause 50 million Soviet fatalities and destroy 70% of their industry. Thus the Soviets would need the capacity to eliminate a large portion of our missile force before they could feel capable of carrying out a successful attack on it. However, our ICBMs are each in individual, concrete underground "silos." Using reasonable assumptions for the yield and accuracy of Russian missiles, there is about a 50% chance that one of their missiles could destroy one of our ICBMs; put another way, they would have to use three missiles to have a 90% chance of destroying one of ours. What is clear, then, is that at the present time the Soviet missile force does

LETTER TO THE EDITOR

As a first response to the announcement in the last NEWSLETTER that "Letters to the Editor" would be welcome, the following item is received with appreciation from O. S. Reading and Adolf A. Berle. The text is intended as an addition, for insertion before the concluding paragraph of the Reading-Palevsky statement, in the October 1968 NEWSLETTER. I am also grateful to Dr. Reading for his strong support for the idea of using the NEWSLETTER as a forum for the exchange of ideas and viewpoints among FAS members.

—H.L.P.

For more specific data than the preceding generalized abstract statements, the Russian Colleagues may study modern corporation procedures as described in the works of A. A. Berle, J. K. Galbraith, E. E. Morison, R. R. Blake and G. W. Ball. These authorities point out that the aggressive, ruthless exploitation and control of government actions that Dr. Cheprakov fears did prevail in the last third of the 19th and into the first third of the present century. However, in our middle third these procedures are superseded in modern large corporations by increasingly beneficial mutual goals for corporations, governments, their supporting populations and customers.

Modern corporations tend not to fight each other; they merge, witness the (French)-Citroen-(Italian)-Fiat-(Soviet Commissariat)-Russian automobile production and many other mergers or cooperative agreements in all industrial countries. The principle of cartels instead of fighting when competition gets destructive might well be extended to competition between nations. They can be used to produce total mutual benefits, including customers.

American corporations operating in foreign countries often train host nationals; witness the Volta Redondo Steel and the Paulo Affonso Electric works in Brazil. Presumably similar arrangements are being made in Russia with the Italian Fiat Automobile Project and the Soviet-constructed steel mills in India. Such procedures and arrangements can be extended to avoid the Cheprakof-feared exploitation of host countries, even between countries having different social systems.

Modern American corporations are demonstrating high efficiency that is due, more than any other factor, to fully candid and free communication that feeds both forward and feeds back between all personnel, not only between managers and supervisors. Such free, candid communication includes all information, not only the factors affecting production directly, but also all factors affecting customer and employee personal status and satisfactions. Such high efficiency demonstrates the advantages of free communication rather than the withholding of some information by censorship expressed by Academician Sakharov.

American corporations, like Russian commissariats, are not angels. They will expand their power and exploit their customers. Both have. Exploitation by Soviet commissariats led Yugoslavia to break away from the Communist world. Expanding power of American corporations has led to resistance in other countries. Both, however, can produce with high efficiency and their production is necessary. The need is for discussion, negotiation and working out of norms by which their production becomes available on fair, mutually beneficial terms to everyone.

not pose a danger to our ability to retaliate against them in the event of attack.

In the past we have been assured by the Pentagon that the Sentinel system was intended as an anti-Chinese defense and could easily be defeated by the Russians. The same weakness to Russian attack is present in the version directed at protecting our missile force, but its inadequacy is even more glaring. In order to have a significant effect on our ability to retaliate, reducing it to levels which the Soviets might consider acceptable, they would have to attack with several thousand warheads. Against such an attack, pre-

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sumably accompanied by a large number of decoys as well, the Sentinel system would be completely inadequate and would probably fail completely. Any ABM system that would protect our missile forces must have several interceptors for each missile being protected. As now proposed, the Sentinel system would have a much smaller number of interceptors, reportedly a total of about 700. Also, if the Soviets were to launch an attack, they would undoubtedly first use a small portion of their warheads to destroy or black out the long-range detection radars of the Sentinel system, giving their remaining warheads a "free ride" to their targets. One must conclude either that this rationale for the system is not serious, or that the system will be further expanded to have the proposed effect. There is, in short, no such thing as a "thin" defense of our retaliatory force.

Looking ten or fifteen years into the future, and assuming that the arms race continues, our land-based missile forces are likely to become vulnerable to Soviet attack. They may have more ICBMs, guidance accuracies will increase, and multiple individually-guided warheads may be introduced. At that time, if we have not reached an agreement to halt the arms race, there is a possibility that the deterrent capacity of at least the land-based portion of our retaliatory force could be substantially diminished.

There are several ways of forestalling this situation which avoid the numerous disadvantages of ABM deployment. The most desirable, of course, is an agreement with the Soviet Union that would maintain the present stable balance. As a unilateral measure, the Defense Department is currently developing super-hard missile silos which, by providing greater protection for our missile force, would make it much more difficult for the Soviets to attack this force. Dr. Harold Brown, former Secretary of the Air Force, described these new silos as "a form of ABM defense." The Air Force envisages raising the hardness by about a factor of ten, requiring a corresponding increase in the yield, accuracy, or number of missiles which the Soviets would need to carry out a successful attack on our ICBMs. The introduction of such super-hard silos would provide a far cheaper means of protecting our ICBMs than an ABM system, would be far more reliable (they involve only concrete and shock protection devices, as contrasted with the highly complex ABM network which could fail for a wide variety of reasons), and would not launch a new round in the arms race.

We might also continue to introduce multiple warheads as a means of countering any threat to our missiles from the Soviet Union. Such warheads would effectively increase the number of missiles we possess and require the Soviets to destroy a correspondingly greater number of them if their attack was to be effective. These warheads should be introduced, though, only if there is clear evidence that the Soviets

are attempting to achieve such a capability. If we were to install them (especially the type that could be individually targeted) in the absence of a Soviet force buildup, we could so threaten their retaliatory capacity that they would be forced to respond by just the expansion we fear. Just as we must preserve our own ability to retaliate, so we must recognize that they will take whatever steps are necessary to retain their capacity as well.

Eventually, we must be prepared to dispense with the land-based portion of our retaliatory force and place primary reliance on our submarine-based missile force. It seems likely that this will remain invulnerable to effective attack for decades to come. As noted earlier, it possesses quite enough destructive capacity to provide a sound deterrent. Attempts to preserve the land-based Minuteman system may please the Air Force, and reassure those strategists who believe in the "mix" approach to deterrence, but they will only delay the inevitable, while adding new fuel to the arms race and requiring vast new expenditures for military hardware.

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a Soviet attack and still be capable of delivering an unacceptably damaging attack on Russian cities. If these missiles become threatened as a result of increased Soviet offensive strength in the next few years, the balance can be redressed with much greater assurance and less cost by increased hardening of sites than by an uncertain missile defense system. In addition we have the Polaris and more powerful Poseidon submarine forces which offer an independent deterrent.

The view of the vast majority of the scientific community is that the system is unlikely to be effective against attack, whether it be against cities or missile sites, considering the wide range of choice an attacker has in penetration aids and diversionary tactics. These opinions appear to have been swept under the carpets of the White House and the Pentagon.

Herein lies a great danger. Since the effectiveness of a missile defense system is, and always will be, questionable there will be continued pressure from the Pentagon and its supporters to upgrade the system at fantastic cost to the American people. If a system is developed that is, or is even thought to be, more reliable than the one presently planned it will further stimulate counter measures and a new round in the arms race.

The Federation of American Scientists continues to view the ABM unworkable, wasteful and provocative. We shall continue to oppose it and to press for an ordering of national priorities that places more emphasis on human needs and less on military overkill and useless military hardware.

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