

# F. A. S. NEWSLETTER

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to provide information and to stimulate discussion. Not to be attributed as official FAS policy unless specifically so indicated.

## OPPENHEIMER RECEIVES FERMI AWARD

Dr. J. Robert Oppenheimer has been chosen to receive the Fermi Award for 1963 for his contributions to development of nuclear energy. According to the New York Times of April 5, the award is intended as a symbolic action to "clear the name" of the former director of the Los Alamos Laboratory.

The Times states that "the decision to give the award to Dr. Oppenheimer comes as a climax to several years of behind the scenes activities during those years persons within both the Eisenhower and Kennedy Administrations and outside groups have sought for a feasible way to reverse the security indictment of the physicist and to restore his public honor. . . .

"An important impetus to commission action came from the Federation of American Scientists, a political action committee created by a group of scientists in 1946. In October, 1961, the federation wrote a letter to the commission urging a complete review of the Oppenheimer case.

"For reasons that are not clear, knowledge of the federation letter was originally restricted to the two scientist members of the commission—Dr. Seaborg and Dr. Leland J. Haworth—and kept from the two lawyer members—Mr. Olson and John S. Graham.

"It was only in the following March that the two lawyer commissioners were told by Neil Naiden, general counsel of the commission about the federation letter.

"During a commission meeting in March, Mr. Olsen asked whether a letter from the federation was 'floating around here.' This brought the Oppenheimer case up for discussion by the commission.

"During the discussion, Mr. Olson told Dr. Seaborg that he could count on his vote for action favorable to Dr. Oppenheimer. Mr. Graham, whose first action on becoming commissioner in 1957 was to read the 992-page transcript of the Oppenheimer hearings, was also reported to have made clear earlier his desire to reopen the case.

"One commissioner, not identified, was reported to have suggested that the commission agree that in the absence of new evidence it could not reopen the case. From the back row, Mr. Naiden was reported to have objected that the commission could not take such a position since, in effect, it would be endorsing the position taken during the Eisenhower Administration.

### APPOINTMENT SUGGESTED

"Mr. Olson recommended appointing Dr. Oppenheimer as a consultant on a classified project. This, he pointed out, would require a new security investigation. Then a report would be laid before the commission and the commission would grant clearance and 'that's all there would be to it.'

"Nothing positive resulted from this commission discussion. Action seemingly was put off on the common agreement that the question went beyond the commission's scope.

"Behind the scenes, however, the scientist members of the commission continued to discuss action to vindicate Dr. Oppenheimer.

"There were also continuing efforts by outside groups.

"Joseph Volpe, for example, a Washington lawyer and general counsel of the commission from 1948 to 1951, urged Administration officials and members of the Joint Congressional Committee on Atomic Energy to act. Mr. Volpe had worked with Dr. Oppenheimer on the Manhattan Project.

"Some influential members of the Congressional Committee made clear that they were not opposed to reopening the Oppenheimer case but urged that action be deferred until after the election.

### INVITED TO WHITE HOUSE

"As a 'trial balloon' to test public reaction, the Administra-

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## FAS STATEMENT

**Current Prospects for Achieving Significant Arms Control and Disarmament Agreements with the Soviet Union**  
Recent changes in the international political and military situation appear to increase the practical prospects for arrangements between the United States and the Soviet Union allowing reduction in major armaments, limiting the production of new armaments, and reducing the chances of war by accident or miscalculation. Newer, more invulnerable weapons reduce the dangers which could result from possible violations of arms control agreements and, as a result, lessen substantially the requirements for inspection. In addition, the Soviet acceptance of the principle of on-site inspection offers some new opportunities for serious negotiations toward a nuclear test ban. The Federation of American Scientists urges the U.S. Government to examine realistically and imaginatively the current possibilities for achieving significant arms control arrangements with the Soviet Union.

Recent political and military developments provide a setting in which major new arms control initiatives are possible and give renewed hope for formal or informal agreements between the major powers. There are indications that the Soviet Union hopes to achieve a more stable relationship with the West. Possibly, as a result of the Cuban crisis, a new atmosphere seems to have emerged, which may allow a more realistic and perhaps more conciliatory approach to outstanding differences.

The chances for a significant agreement in one particular area of arms control negotiation—a nuclear test ban—seem to have been improved by developments in recent months. The Soviet Union has offered to allow at least some on-site inspections. This appears to offer a new chance for a compromise on the exact number of such inspections. If this particular long-standing obstacle to agreement can be overcome, there may be cause for optimism that the remaining points at issue in the test-ban discussions between the U.S. and the Soviet Union could be resolved.

Transcending the question of a test ban is the fact that modern weapons technology is bringing into being on both sides nuclear deterrent forces which can survive any likely attack and retaliate with sufficient destructive power to deter any potential aggressor. New weapons, especially including missiles which can be fired from submerged submarines or from concrete encased launching sites in the ground, have made the balance of terror very much less delicate. No longer can a surprise attack by one side eliminate the retaliatory capacity of the other side. Since press reports, confirmed by Secretary McNamara's recent testimony before the House Armed Services Committee, indicate that the Soviet Union as well as the United States is developing these invulnerable retaliatory weapons, it appears that the nuclear powers are approaching a situation in the next few years in which the nuclear arms race could at last level off, or even be reversed.

With the advent of these new weapons the ability of one side to retaliate effectively after attack no longer depends greatly on the level of forces of the other side. This is a major change from the situation of the recent past, in which strategic deterrence depended almost entirely on relatively invulnerable manned bombers. The emerging situation has at least two significant implications for the arms race: (1) Tacit understandings could be reached whereby each side would limit the level of its strategic arms, would not transfer nuclear weapons or strategic delivery vehicles out of its control, and would seek other measures to stabilize the strategic environment; (2) There could be more far-reaching disarmament measures in which the level of strategic armaments would be drastically reduced, and such agreements would require only a modest amount of inspection on the territory of each side.

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## FAS STATEMENT

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The character of modern weapons implies that the overall stability of the strategic balance could not be upset by even a large number of hidden armaments or a large amount of hidden production facilities. It has been estimated that the Soviet Union would have to use more than ten ICBMs to have a 90% chance of destroying one Minuteman missile in its hardened silo. If the U.S. had even 100 such missiles—it is planning to build at least 950 of them—the USSR would need at least 1000 ICBMs simply to reduce the U.S. Minuteman force to ten surviving missiles. Since a recent unclassified estimate of the Institute for Strategic Studies in London attributes to the Soviet Union a force of about 75 ICBMs at the present time, it becomes clear that the acquisition of a force necessary to launch a successful first-strike against hardened American missiles would be a large—and easily observable—undertaking. Furthermore, the U.S. now has nine Polaris submarines, and expects ultimately to have forty-one, carrying a total of 656 Polaris missiles. These submarines are immune to reliable detection and location by any known means, and it will certainly be many years, if ever, before any anti-missile missile could be built that would effectively defend cities against the missiles from these submarines. The U.S. also has nearly 3,000 aircraft capable of delivering nuclear weapons to the Soviet Union. Since the delivery of even 25 large thermonuclear weapons on the USSR could cause between ten and twenty million casualties, it seems clear that the U.S. would retain a potent deterrent even after large reductions in its strategic forces.

Recent news reports and statements by Government officials imply that our knowledge of Soviet strategic armaments is quite good, so that it may therefore be possible to fashion an agreement which avoids inspection of retained armaments—a feature of past U.S. proposals which has been strenuously resisted by the Soviet Union—while including a reasonable amount of inspection to provide long-term assurance against significant new production. By such an agreement, there would be observation of the destruction of armaments and inspection of declared production facilities—aspects of inspection that have been accepted by both the United States and the Soviet Union—and at least some means of ascertaining that supposedly civilian production facilities are not producing armaments. Such measures would not compromise the security of the military establishments of either side.

The Soviet Union last Fall modified its position in the disarmament negotiations and has—contrary to its earlier position—agreed that each side might keep an agreed number of intercontinental missiles in the early stages of the disarmament process. It has, however, rejected the U.S. proposal that each side accept proportional cuts in all armaments. One reason for this appears to be the fact that such a proportional reduction would perpetuate the present Western lead in strategic arms—a lead which would in fact become more significant as the level of arms is reduced. If an agreement is to be acceptable to the Soviet Union, the West may have to consider reducing the margin of its present numerical superiority. In return, the USSR might be willing to give up some of its present superiority in conventional forces, especially in Europe, against which much of our nuclear capability has been developed and deployed.

Another type of agreement which would be advantageous to both sides would involve a substantial limitation on the production of major armaments. The latest U.S. and Soviet disarmament plans call for production limitations in the first stage of the disarmament agreement. Such limitations on production, whether they permit one-for-one replacement as

## AEC RESTRICTIONS MODIFIED

University protests over certain Atomic Energy Commission restrictions on the free exchange of visits and information between United States and Soviet bloc scientists have led the AEC to modify many of its restrictions. (W. Post, 3/20.)

The dispute has centered around the operation of large and expensive atomsmashers, which are built with AEC funds and owned by the AEC but operated by universities such as Stanford, Harvard and Princeton under AEC contracts.

For example, the contract would have required Harvard to obtain permission from the AEC before a Soviet bloc scientist could be invited to visit the AEC-owned accelerator.

Moreover, the contract would also have required a Harvard scientist who wanted to send data from an accelerator experiment to a Soviet bloc scientist to first get an agreement from the Soviet bloc scientist that comparable data would be sent in return.

AEC officials now concede that their original contractual conditions were too stringent. And they have modified, but not altogether eliminated, many of the most irritating restrictions.

In the case of visits by Soviet bloc scientists, for example, the director of the accelerator will now have control of casual visits without requiring prior AEC approval.

In the case of exchanging information with Soviet bloc scientists, unclassified, published information "within reasonable bounds" may be sent without restriction. As regards unclassified, unpublished data, it may be forwarded on request and "if appropriate" the scientist may ask for reciprocity from the Soviet bloc scientist.

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in the U.S. plan or completely halt production as in the Soviet plan, would represent perhaps the most significant part of an overall agreement. Even major arms reductions could not be expected to remove completely the danger of a nuclear war or to eliminate massive damage and loss of life if a major nuclear war should occur. But a limitation on production would halt the growth of weapons stockpiles and would prevent the production and deployment of novel and even more destructive weapons. Equally important, this dramatic evidence of restraint on the part of the present nuclear powers could be a powerful example for those countries who now feel, or who might feel in the future, that they must possess nuclear weapons and the means to deliver them as symbols of their national power and pride.

Arrangements such as those envisioned here would greatly reduce but not remove the nuclear threat hanging over us all. They would not settle the many political controversies which divide the world. But they would radically lessen many of the existing dangers of war by accident, miscalculation, or escalation. They would provide a pause in the arms race and lead to a broader recognition of the futility of force as a means of settling political issues. They would improve the political climate and enhance the likelihood of political and economic settlements. Likewise, these agreements would represent the necessary first steps toward long-term security arrangements with enhanced international peace-keeping institutions and far-reaching disarmament.

It is imperative that our Government and leaders throughout the world interested in controlling the modern tools of destruction, explore earnestly and optimistically all possibilities for formal and informal agreements arising from the new political, military, and technical situation in which we find ourselves today.

(Released April 15, 1963.)

## AEC REPORT OPTIMISTIC ON PEACEFUL USES OF NUCLEAR EXPLOSIONS

The AEC plans to set off two nuclear devices annually over the next four years to perfect nuclear explosives for peaceful use in mining, chemical production, reservoir construction, and possibly for the excavation of a new Panama Canal. These plans were set out in the Commission's Annual Report to Congress which stated that "for scientific purposes, the nuclear explosive is a proven and versatile tool." According to the Report, the chemical and nuclear explosive experiments carried out under the Plowshare Program "have advanced understanding of nuclear cratering to such a point that: (1) A refined technology for excavation with nuclear explosives appears possible within about the next five years; (2) There are now assurances that future applications will not be seriously restricted by hazards from radioactivity; (3) The amount charged for nuclear explosions should be considerably less in the future than the presently published estimates; (4) A preliminary theory of cratering has been developed by AEC scientists." As in past years, the Commission's Annual Report cited gains in biological and physical research, in putting the atom to work in space, under sea and throughout the land, and in civilian nuclear reactor development. (Annual Report to Congress of the AEC for 1962, Jan. 1963, and W. Post, 1/31.)

Annual congressional hearings on the state of the nation's atomic industry began late in February against a backdrop of rising optimism for the nuclear power program. These hearings should provide some answers as to whether or not the atomic energy industry can continue to develop along lines suggested by the AEC's recent study of the role of nuclear power in this country's economy. (See Newsletter, Vol. 15, No. 10.) Further support for a strong and broad nuclear power program was provided by the Twentieth Century Fund's five-year study of civilian nuclear power, which was recently made public. The report emphasized that there are compelling reasons for sustaining the present scale of effort aimed at both long- and short-term goals. These reasons include:

- The costs of generating nuclear power are promising.
- The Nation's capacity to produce fissionable material is so great that enormous economic waste is in prospect if these cannot be used productively for peaceful purposes.
- The United States possesses an unequalled opportunity to provide effective world leadership in both the control and promotion of nuclear power development. (W. Post, 2/20.)

In dramatic contrast to these opinions, David Lilienthal, the first chairman of the AEC, has called for the government to abandon its support of atomic power and to reduce substantially its support of basic atomic research. Lilienthal thus challenged the AEC in a series of lectures earlier this year at Princeton University. As regards atomic power development, he suggested the following as premises for 1963:

- Energy from the atom is not now needed for civilian purposes.
- At the time and place where it is needed it will be forthcoming without governmental prodding. If there is a real need it will be met by the utility and manufacturing industries, as it has been with the automobile, the diesel engine, the telephone and so on, in response to proved economic need.
- There is now no urgent fuel or power crisis and no prospect of one in the foreseeable future; when such a shortage develops, it will be taken care of by the atom if that is then the best alternative.

Moreover, said Lilienthal, who resigned as chairman of the AEC on February 15, 1950, the Government "should stop trying to force-feed atomic energy."

"Throw away the present discredited time-table." Don't abandon the hope for competitive power, he advised, but deal with it realistically.

The same approach, Lilienthal argued, should apply to the atom in basic science, in medicine and agriculture and industry. Funds and scientific manpower should be freed for other "starved" areas of research and development, such as biochemistry.

In effect, Lilienthal was saying just the opposite of what the AEC had reported to President Kennedy in November 1962, and what AEC officials told the Joint Committee in late February.

This was essentially that nuclear energy can and should

## SCIENCE AND MAN: HESBURGH SPEECH

The following comments are taken from a speech delivered by Rev. T. M. Hesburgh, President of The University of Notre Dame, at the California Institute of Technology, Nov. 16, 1962:

"But will science and technology in our day be dedicated to this great and noble work of human liberation? The best way to approach an answer to this question is not to ask it of science and technology, which are impersonal, but to ask the men who are the scientists and the engineers, the men who create and operate the present world of science and technology. Maybe it is time for scientists and engineers to become philosophers and theologians, too, that they might question the moral impact of their work on the world of man in which they live. Is this asking too much of scientists and engineers? Ask anything less, and you reduce scientists and engineers to the level of automatons, and condemn them to the same state that we bemoan in our adversary. It really makes little practical difference if scientists and engineers in the Soviet realm are forced to dedicate their lives to utterly materialistic ends, and ours are seduced to do likewise, by financial support, by prestigious appointments, or by the wave of our present affluent culture and material preoccupations. In either case, science is prostituted to something far below its greatest human potentiality in our times. In either case, mankind is the loser, and indeed the heaviest moral condemnation may fall upon the scientists and engineers who act freely, who might have chosen differently.

"I realize that both science and engineering may be a spiritually satisfying experience for the scientist and engineer, but this is not the thrust of my remarks which concern the moral and social effects of science and technology in our day. I would even say that this personal satisfaction would be greatly enhanced if the individual scientist and engineer knew that his unique efforts were part of a great human endeavor to reverse the historic inhumanity of man to man, and to make nature work for instead of against mankind. If on the other hand, the efforts of the scientist and engineer are directed towards trivial or worse ends, his personal satis-

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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.

make a vital contribution toward meeting the Nation's long-term energy requirements and that the proper role for the Government is to develop and to demonstrate the technology that will lead to a self-sustaining and growing nuclear power industry.

In short, where Lilienthal wants the AEC to get out of the nuclear power business, the AEC not only wants to remain in the atomic power business, but to increase its support of the Nation's nuclear power efforts. (W. Post, 3/21.)

Lilienthal recently testified at the April hearings (on the atomic power program) of the Joint Committee on Atomic Energy and told the Committee that the AEC should pay more attention to safety and the hazards of large nuclear power plants. In answer, Committee Chairman John O. Pastore stressed that both the Joint Committee and the AEC have been very active in these areas. AEC manager A. R. Luedecke defended the atomic power program as being "very successful." He said that nuclear fuel is not only on the threshold of being competitive with traditional fuels in the electric power field but is also needed for many other purposes ranging from exploration of space to medicine. (W. Post, 4/6.)

### EUROPEAN EXPERTS VOICE CONFIDENCE IN SAFETY OF N. S. SAVANNAH

The AEC has released without comment two reports by a group of European ship-building and nuclear experts that express complete confidence in the safety of the American nuclear ship Savannah. Earlier this year, press reports suggesting that the Savannah had failed to get a clear bill of health from an AEC advisory committee on reactor safeguards brought a prompt denial from the AEC that the atomic-powered ship was in trouble. The release of the reports by experts from Eurotom, France's Bureau Veritas and West Germany's Germanischer Lloyd was apparently another effort by AEC officials to correct what they consider to be "an erroneous impression" about the safety of the Savannah's nuclear power plant. The gist of the two lengthy European reports is that the operation of the Savannah "in coastal and harbor areas does not involve any . . . excessive radiological hazard—even in the event of an accident—to the crew, passengers and population on the one hand, and to the utilization and safety of the river-ways and land and port installations in the ship's vicinity on the other."

The Savannah, now undergoing modifications at Galveston, Tex., is expected to sail from that port early in April. It has already visited 11 American ports and is scheduled to visit a number of foreign ports. (W. Post 3/27.)

### SCIENCE AND MAN: HESBURGH SPEECH (Continued from Page 3)

faction will have a rather pathetic hue to anyone who thinks seriously of the total human situation today.

"We all admit the impact of the scientific and technological revolution in our times, but we have yet to witness the revolution of scientists and engineers. . . .

"Think for a moment of what would happen if the revolution of scientists and engineers should occur in our times. Suppose that our scientists and engineers really decided to make an assault on hunger: by developing both good and arid lands abroad and organizing large scale agriculture around the world as we have in this country where 5% to 10% of the population feed all the rest of the people and develop huge surpluses. We have proved that it can be done, but we have been satisfied to do it mainly for ourselves. If scientists and engineers put their talents to work, do you believe that there would be 900 million illiterates in this world, with all the riches of human culture closed to them? With modern communications, one master teacher can teach millions—but it isn't being done, except in a few isolated places where it has begun without our help. What if more scientists and engineers decided to make a concerted assault on disease, through better sanitation, vaccination, nutrition and all the rest? Again, we do it for ourselves and seem largely unconcerned about the rest of humanity. We know that industrial development depends largely upon electrical energy. Africa, for example, has 40% of the hydro-electrical potential of the world. But only 1/2 of 1% of the potential is developed. We balked at the Aswan Dam and let the Russians do it. Italian engineers built the Kariba, and we argued for months about the Volta in

### OPPENHEIMER RECEIVES FERMI AWARD (Continued from Page 1)

tion invited Dr. Oppenheimer to a White House dinner on April 29, 1962, that honored forty-nine Nobel Prize winners. The invitation was regarded by some White House officials as the first step in the 'rehabilitation' of Dr. Oppenheimer.

"During the dinner, Dr. Seaborg was understood to have approached Dr. Oppenheimer and asked whether he would like another hearing. Dr. Oppenheimer was reported to have replied, in effect, 'not on your life.'

"The Seaborg question and the Oppenheimer response pointed up the basic problem confronting Administration officials—that of finding a way to "clear" Dr. Oppenheimer without reopening the hearings and subjecting him to another round of interrogation.

"Late in the spring of 1962 there was general agreement within the Administration that it would be a mistake for the commission to act then. Those taking this view believed it would be unwise to take any action that might make the Oppenheimer case an issue in the approaching Congressional election.

"After the election, there was renewed activity within the commission and the office of Dr. Jerome B. Wiesner, the President's science adviser. In recent weeks officials have been indicating privately that action could be expected shortly."

Ghana. People might legitimately ask, 'Are they really interested?' The scientists and engineers in turn might blame the politicians who make the decisions, but I insist: we are committed to freedom and we are still free to work where and as we wish. Am I then suggesting that scientists and engineers take over the government of our country? Not quite, but I am more than suggesting that scientists and engineers cannot be oblivious to the moral quality and effects of their handiwork. No one of us, as a person, likes to be used for purposes other than those of our personal choosing. This is the meaning of freedom and responsibility which is an individual, not a mass affair. Dr. Oppenheimer was, I take it, rather deeply moved when he remarked, after Hiroshima and Nagasaki, "The scientist has now known sin." Virtue and sin are the fruit of freedom, impossible without it. And freedom is a precious heritage. When we say that freedom is ours to have and to hold, we do not exclude scientists and engineers. Freedom is also indivisible. When one man or one nation is not free, all freedom in this world is endangered.

"How free are the ignorant of this world, how free are the diseased, the undernourished, the homeless, the poor, those without hope for themselves and their children? There are many things that science and engineering cannot do, but there is one task that is made to order for them in our day, and it is to buttress freedom, to better the conditions of mankind on earth, to liberate man from his ancient servitudes, to provide for man a human situation in which he can truly manifest his dignity, practice his freedom, and follow his high spiritual calling. This is why I said earlier that in our day science can be the great liberator of mankind."

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