

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.

TEST-BAN DEADLOCK CONTINUES

The nuclear test-ban talks at Geneva continued to make no progress during the past month as the Western representatives remained adamant against the Soviet demand for a triumvirate to administer the proposed test ban. (The only agreement between the two sides has been to describe this as the "troika" concept, after the Russian three-horse sled.) At the meeting in Vienna with President Kennedy, Premier Khrushchev asserted that the Soviet demand for a veto over the functioning of the inspection machinery was not negotiable (W. Post, 6/7). In his report to the nation following the Vienna meeting, President Kennedy stated, "Mr. Khrushchev made it clear that there could not be a neutral administrator. In his opinion no one was truly neutral. . . . In short, our hopes for an end to nuclear tests, for an end to the spread of nuclear weapons, and for some slowing down of the arms race have been struck a serious blow. Nevertheless, the stakes are too important for us to abandon the draft treaty we have offered at Geneva."

At the Geneva conference the Soviet Union threatened to walk out and to resume nuclear testing if France did not desist from future tests (NYT, 5/16). France's fourth nuclear test was performed on April 25. Soviet delegate Tsarapkin charged that the West had "closed its eyes" to, if not actively encouraged, the French tests, and "benefited from the resulting information" (W. Post, 5/16). This charge was branded as "absurd" and emphatically denied by the U.S. and British delegates, who said that if anything was encouraging testing it was the deadlock of the Geneva negotiations. The U.S. also refused to agree to an unlimited, uncontrolled moratorium on testing, which they said rejected the principle of the need for sound controls to enforce a ban. The Soviets were equally emphatic against the Western proposal for expiration of the moratorium at the end of a three-year research program, which they claimed showed that the Western countries "want to resume the nuclear armaments race" (W. Post, 5/24).

The West offered to accept a sliding scale on the number of on-site inspections. It proposed that there be only twelve inspections in the Soviet Union, instead of the twenty originally demanded by the West, if the number of earth tremors in Soviet territory that could be attributed to nuclear origin proved to be as small as Russian scientists report. Under the plan, there would be an additional inspection, up to a ceiling of twenty, for every five tremors above sixty classed by the control organization as of possible nuclear origin (NYT, 5/30). Two days later the Soviet Union rejected the proposal, asserting that the number of on-site inspections was a political question and should be divorced from scientific considerations. Mr. Tsarapkin reiterated his stand that three inspections a year should satisfy the West. (NYT, 6/1).

In an evaluation of the new Russian attitude, Joseph Alsop (W. Post, 5/24) has suggested that the Soviets may be backing away from an agreement because Communist China has served notice that she would neither sign nor comply; in such an event an agreement might hold little interest for Khrushchev.

Meanwhile, pressure mounted within the U.S. for a time limit to the negotiations. Republican Congressmen took the lead in this pressure in news conference criticism by Senator Dirksen and Rep. Halleck of the Kennedy Administration (W. Post, 5/12) and in lengthy statements by Rep. Hosmer on the floor of the House (Cong. Record, House, 4/18 and 5/25). Additional pressure in this direction has been attributed to "the Air Force, the munitions industry, certain highly influential scientists, along with other elements in the Pentagon" (Marquis Childs, W. Post 5/24).

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KENNEDY TO PROPOSE DISARMAMENT AGENCY

The Kennedy Administration will shortly send to Congress a proposal to create an independent agency responsible for developing methods and plans for disarmament. In President Kennedy's second State of the Union address, he requested additional funds for mutual security and defense and then stated, "I cannot end this discussion of defense and armaments without emphasizing our strongest hope—the creation of an orderly world, where disarmament will be possible. Our arms do not prepare for war. They are efforts to discourage and resist the adventures of others that could end in war. That is why it is consistent with these efforts that we continue to press for properly safeguarded disarmament measures . . . we are determined to keep disarmament high on our agenda; to make an intensified effort to develop acceptable political and technical alternatives to the present arms race. To this end, I shall send to the Congress a measure to establish a strengthened and enlarged disarmament agency" (NYT, 5/26).

The proposal is an outgrowth of a suggestion made more than a year ago by Sen. Humphrey, and adopted by the then-Sen. Kennedy. In a speech delivered March 7, 1960, Sen. Kennedy said, "The entire Government staff currently engaged in arms control and disarmament research consists of fewer than 100 full-time men, scattered through four or five agencies, with little or no coordination, and almost no basic research. . . . I am introducing a bill . . . to establish an Arms Control Research Institute." This Institute, "under the direction of the President, could undertake, coordinate, and follow through on the research, development and policy planning needed for a workable disarmament program. The studies in physical, natural, and social sciences already mentioned could be undertaken in its own laboratories, or farmed out to other agencies or to universities under ACRI's direction. The scattered disarmament technicians and appropriate scientists could at last work as a unit. . . ."

The size and structure of the agency have apparently not been firmly settled, but White House sources indicated that present thinking indicated a total staff of about 250, with no plans for laboratory facilities during the first year.

Present plans call for the creation of a semi-autonomous agency, responsible to the Secretary of State under the direction of the President. The director of the agency would report to the Secretary of State but would be free, after informing the Secretary of State, to report to the President. This link with the State Department is necessitated by the close involvement of disarmament with foreign policy, even though far more than diplomatic considerations are involved in a disarmament program (NYT, 5/28).

ONWARD THE MARCH OF SCIENCE!

The Defense Department has instructed the Air Force to negotiate contracts for research on an anti-missile project known as Bambi (Ballistic Missile Boost Intercept) (W. Post, 6/6). This project envisions a cloud of satellites orbiting the earth, capable of detecting missiles as they are launched and releasing heat-seeking missiles to destroy them. Although the report did not describe the type of explosive to be used, these satellites would presumably carry nuclear weapons, since these are used in present air defense systems and in the planned Nike-Zeus anti-missile system.

Ed. Note: Twinkle, twinkle, little cloud,
Why do you explode so loud,
Though you guard the skies by day,
Isn't there some other way?

FAS NOTES

Disarmament Action

As soon as the President sends to Congress the legislation necessary to create an independent agency responsible for developing methods and plans for disarmament (See page 1), the FAS will launch an all-out effort to persuade the Congress and the public that such an agency is essential, first, to equip this country to develop negotiable proposals which can achieve the goal of disarmament, and second, to convince the Soviets and the rest of the world that we are dedicated and serious about our stated aims.

FAS is planning a program which will match in scope and effectiveness the successful FAS effort in 1946 to assure civilian control of the then new-born atomic energy field.

FAS has long urged the creation of such a disarmament agency. And at last there seems a genuine possibility that such a permanent, well-staffed agency will become a reality, even though it may begin with modest goals and staff. When the legislation is sent up to Congress, every FAS member will be urged to write to his Senators and Representative to stress the urgent necessity for such legislation. We shall also urge each member to get a new FAS member to strengthen our capacity to act on this proposal.

FAS urges each member now to begin planning local public meetings to explain the legislation and the need for its passage.

Locally the Washington office will arrange a series of briefings for Senators and Congressmen to set forth the details of the legislation and to persuade them that adequate preparation is essential to fruitful negotiation.

FAS GROUP INSURANCE

All members have by now received information on the FAS Group Life Insurance Plan. The Executive Committee believes the program a good one and urges each member to consider it seriously. The insurance carrier has advised that only a few more subscriptions are needed to put the program into force. Considering the individual advantages and the advantages to FAS, the insurance proposal merits your immediate attention.

FAS Seeks Science Inventory Contract

The FAS has applied to the National Science Foundation for a three-year grant in the amount of \$285,895 to "undertake an inventory of idle or replaced scientific equipment, textbooks, and scholarly journals in the United States, and to arrange for the transfer of the inventoried materials to laboratories in countries where the needs are great and where there is some assurance that the materials will be well used." The project will require a full-time staff director with an office in Washington. It will also seek an advisory panel of American scientists of international stature. The project will involve large-scale mailings, classification of the

FAS NEWSLETTER

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Chairman John S. Toll

The FAS Newsletter is prepared in Washington by FAS members. The staff for this issue were: Editor—E. Shelton; Writers—E. Anderson, T. Fulton, I. Manning, F. K. Millar, N. Seeman.

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

CENSORSHIP, THE PRESS, AND THE GOVERNMENT

President Kennedy, in a speech delivered at a dinner of the American Newspaper Publishers' Association on April 27th, urged the press to cooperate voluntarily to prevent the disclosure of news that may be helpful to enemies of the United States. He pointed out that in time of war the government and the press have joined in an effort to uphold national security. "If the press is awaiting a declaration of war before it imposes the self-discipline of combat conditions, then I can only say that no war ever posed a greater threat to our security." Our foes, he said, have openly boasted that the newspapers have supplied them with information they would otherwise use espionage to acquire.

Kennedy stressed that any censorship of the press should be self-imposed. He does not plan to establish a new Office of War Information or new types of security classification. He does not wish to stifle debate, or to hide the errors of the Administration. As a matter of fact he urged greater coverage and analysis of news, and said that the government must provide the fullest possible information outside the narrow limits of national security. "Every newspaper now asks itself with respect to every story: 'Is it news?' All I suggest is that you add the question: 'Is it in the national interest?'"

Editorial comment on the President's speech was varied. Many newspapers stated that none of them would intentionally print news harmful to the country, but the definitions of "harmful" were numerous. A number of papers claimed that Kennedy was too vague on what the press should withhold from the public. And several papers claimed that handling information that could be of use to an enemy is better accomplished through government policing of its own sources. However, others pointed out that the censorship requested may just become the excuse for withholding information on errors the government, or an individual in it, has committed.

data received, solution of repair and maintenance problems, and liaison with scientific workers overseas. In addition, a source of funds must be found to finance the shipping of the equipment and books. The cooperation of FAS members in conducting the survey will be sought when the project is begun.

FAS Goals

Members of FAS are urged to submit to the Long Range Goals Committee their views on the role which FAS should play in the years ahead. The Chairman of this committee, which is composed of the past Chairmen of FAS, is Dr. W. A. Higinbotham, Brookhaven National Laboratory, Upton, L.I., N.Y. With the formation of the Office of the Special Assistant to the President for Science and Technology and the President's Science Advisory Committee, as well as many other groups of scientists in various departments of the government, some functions previously served by FAS may have been taken over by these other committees and advisors. It would be helpful to the Goals Committee, and to FAS, if the members make known what part they want their Federation to play in the broad area of the "impact of science on national and world affairs."

Statement of Los Alamos Chapter

The following communication from the Los Alamos Chapter of FAS was presented at the recent Council meeting in Washington, and submitted to the Editor of the Newsletter:

The Los Alamos Chapter of the FAS, as a result of extended discussion, wishes to take exception to the recent Council resolution calling on the U.S. categorically to renounce first use of nuclear weapons. While we favor increased reliance on conventional weapons, our disagreement is motivated by the following considerations: It is unlikely that the U.S. would adhere to such a policy of renunciation even though it had previously declared it, if some form of first nuclear action were imperative to our survival or the alternative to defeat on a vital issue. If a potential enemy takes such a resolution at face value, aggression may actually be encouraged by reduced fear of consequences.

Harry Foreman, M.D., President
Fred L. Ribe, Vice President

JAPAN SUBDUED

The Atomic Bomb and the End of the War in the Pacific.

By Herbert Feis
Princeton University Press. 208 pp. \$4.00

Reviewed by Michael Amrine

Mr. Amrine, Washington science writer, was recently elected Chairman of the Washington Association of Scientists. Mr. Amrine is author of THE GREAT DECISION; The Secret History of the Atomic Bomb, published in 1959. The decision book described the last 100 days before the dropping of the first atomic bomb.

Herbert Feis, in this part of his series on diplomacy in World War II, turns his attention to the early atomic decisions, and to the other political and military steps which brought about the surrender of Japan.

This is a scholarly and understanding account of the complex of factors, personalities, and accidents, which led to the events which concluded the Pacific war. It is almost a complete guide in itself to the immediate surrender, except that the reader interested in a basic bookshelf would probably also like to have Feis' book on the Potsdam Conference, *Between War and Peace*, which appeared last year. For all his books, and particularly for this, Mr. Feis has sought to make the most of his access to the official papers and of his interviews with the leading figures, including Oppenheimer, Groves, and the two ex-presidents, Mr. Truman and Mr. Eisenhower. Feis has been a special consultant to three Secretaries of War, and has worked on his histories as a member of the Institute for Advanced Study. With this book he adds to his reputation for fairness and objectivity.

This reviewer was pleased that Feis saved his main editorial comment and personal conclusions for the end of his book. It is there that he endeavors to answer the question, "Was A Real Chance Missed To End The War Earlier?" The rhetoric of his answer is no more crisp than his question. His answer is, "Perhaps, But Probably Not." This reviewer and many others will disagree but still respect the study and logic which Mr. Feis brings to this and the other questions with which he deals.

The Feis view is that even if Truman had much earlier proposed that the Japanese keep their Emperor, and made other political approaches, the situation would not have been materially changed by mid-July, the time of Potsdam and the Alamogordo test. Joseph Grew and others thought not, and held that if we had made a real push in May towards Japanese surrender, the war might have ended before the bomb, before Russian entry, and even before the Potsdam summit meeting.

Feis meticulously documents the day-by-day progress of that last spring and summer of the pre-atomic age, and deals competently with military and diplomatic meetings at high levels, the state of affairs in Japan, the operation of the Potsdam meeting, and the military operations which delivered the bomb. Up to now histories of Potsdam have had astonishing asterisks referring to the atom. If the subject was mentioned at all, one would find embedded in the usual descriptions of pomp and power, an asterisk referring one to a footnote, "It was this morning, in a separate session, that the atomic decision was made." At that point most of the previous books would then return to a discussion of real history-in-the-making. In a way, this scholarly job is the first history of what F.A.S. readers would doubtless agree was the real history of this summer of 1945.

Feis, like all other writers in this area, is sometimes troubled with prose of the purple Promethean variety. The bomb beggars description, but all we poor beggars who describe things want to be eloquent about just how it escapes us. At other times he is troubled by really wretched pedantic language. Here he is, on one of the questions most important to him, the fact that years after the bomb many (including Feis?) still feel guilty and ask questions.

Feis writes: "... subsequently, however ... as more and more powerful kinds were spawned in the factories of the United States and the Soviet Union, the precedent act has been regarded by many with rue."

At the Institute, Mr. Feis was next door to one of the

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FEDERAL CIVIL DEFENSE PROGRAM TO BE EXPANDED

President Kennedy, in his second State of the Union address to the Congress, revived national interest in civil defense by enunciating a broad view of the purposes and value of a civil defense program. In backing up his views with a request for specific changes in the national civil defense structure, the President said that "one major element of the national security program which this Nation has never faced up to is civil defense." He continued by saying "This Administration has been looking very hard at exactly what civil defense can and cannot do. It cannot be obtained cheaply. It cannot give an assurance of blast protection that will be proof against surprise attack or guaranteed against obsolescence or destruction. And it cannot deter a nuclear attack.

We will deter an enemy from making a nuclear attack only if our retaliatory power is so strong and so invulnerable that he knows he would be destroyed by our response. If we have that strength, civil defense is not needed to deter an attack. If we should ever lack it, civil defense would not be an adequate substitute.

But this deterrent concept assumes rational calculations by rational men. And the history of this planet is sufficient to remind us of the possibilities of an irrational attack, a miscalculation, an accidental war which cannot be either foreseen or deterred. The nature of modern warfare heightens these possibilities. It is on this basis that civil defense can readily be justified—as insurance for the civilian population in the event of such a miscalculation. It is insurance we trust will never be needed—but insurance which we could never forgive ourselves for foregoing in the event of catastrophe."

It is of interest to compare the above *raison d'être* of civil defense with that of Herman Kahn, author of the controversial book "On Thermonuclear War." Mr. Kahn spelled out his philosophy of civil defense in "Report on a Study of Non-military Defense" (Rand Corp. Report R-322-RC), which antedated his book, and in testimony before the Joint Committee on Atomic Energy (June, 1959). In the introduction to the Rand Report under the heading, "Initial Premises," it is stated that non-military defense measures can make "two significant contributions to the national defense. First, they might alleviate the catastrophe of a nuclear attack and, if military victory were attained, provide a reasonable chance that the United States as a nation could survive. Second, they might increase U.S. freedom of action in conducting peacetime foreign policy and in implementing a broad deterrence strategy." In pursuing the second line of reasoning, Kahn goes on, "... willingness to make foreign-policy decisions carrying a risk of war may be important to meet major Soviet challenges that threaten U.S. security. The more effective the defense of civilian society, the easier it will be for U.S. leaders to make such decisions. Deterrence of extremely provocative enemy behavior other than a direct attack on the United States might thus be maintained as a credible national policy."

To implement the civil defense program, President Kennedy asked the Congress to initiate a program of "identifying present fallout shelter capacity and providing shelter in new and existing structures." He assigned the over-all authority for the program to the Secretary of Defense, and reconstituted the Office of Civil and Defense Mobilization as a staff agency with the title "Office of Emergency Planning." The President anticipates that the appropriations for civil defense in fiscal 1962 will be more than triple what they have been in the past, and they will increase "sharply" in subsequent years.

Federal Civil Defense Program

The Federal civil defense program has in the past emphasized three different areas (Annual Report, Office of Civil and Defense Mobilization, 1960). These are (1) protection of life and property, (2) mobilization and management of resources and production, and (3) supporting functions. In order to carry out its program more effectively, OCDM has divided the United States and its possessions into 8 regions with headquarters at (1) Harvard Univ., Cambridge, Mass.; (2) Olney, Maryland; (3) Thomasville, Georgia; (4) Battle Creek, Michigan; (5) Denton, Texas; (6) Denver, Colo.; (7) Santa Rosa, Cal.; (8) Everett, Washington. Any one of these regional headquarters could be used as the seat of

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FEDERAL CIVIL DEFENSE

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national government in case of an emergency. For example, at the Region 5 headquarters in Denton, Texas, a vast underground fortress capable of accommodating 500 persons for 30 days is being constructed. The subterranean structure, due to be completed in 1962, will contain offices, communications center, decontamination rooms, kitchens, bunking areas, sick bay, power plant and other facilities. It will serve as a model for those that the Federal Government hopes to build in the seven other regions (W. Post, 5/14).

Protection of Life and Property

The financial summary of OCDM for the fiscal year 1960, shows that less than 5% of the funds available (\$2.4 million) for "construction of facilities" was actually spent. On the other hand, nearly all of the budget for "emergency supplies and equipment" was used and about 60% of the money available for "research and development" was spent. These figures are somewhat deceiving since \$215 million was expended in "research and development" for building prototype shelters for the purpose of demonstrating them to the public. The national shelter policy has largely been concerned with informing the public in an effort to stimulate individual or local participation in the program of shelter construction. Dispersion of government offices and industrial installations away from major areas of population density has been considered to be of limited usefulness as a means of vulnerability reduction.

The National Warning system (NAWAS), another protection program of OCDM, consists of a warning network of 36,000 miles and 377 warning points which can be reached in 15 seconds. NAWAS is currently being used to disseminate weather and seismic information and to coordinate search and rescue operations for missing aircraft. In addition to a warning system, OCDM controls an intricate National Communications System, NACOM I and NACOM II. NACOM I consists of 20,000 miles of leased-wire facilities that links the Presidents headquarters in Washington with all 8 regional and all state civil defense headquarters. NACOM II, scheduled to be in operation by July '61, backs up NACOM I with a high-frequency radio network which will eventually link all regions and states.

OCDM is working with local and federal police forces, with the Dept. of Health, Education and Welfare, with the American Red Cross and with numerous other agencies, state and local governments to coordinate the maintenance of law and order and the establishment of disaster and health services.

Availability and Use of Resources

A second primary mission of OCDM has been to assure the availability and effective use of resources under emergency conditions. In order to do this OCDM must develop and maintain a stockpile of essential resources such as machine tools and production equipment, strategic materials (metals, oil, ores, diamonds, rubber, and so forth), food and water. They must be able to organize manpower, fuel and energy, housing, transportation. Most of the activity in taking care of these various aspects of defense mobilization has been concentrated in surveys and analyses, and conferences coordinating the Federal plan with the State and Local agencies. Stockpiling is difficult to achieve because of the problem of obsolescence; thus OCDM not only has the problem of stockpiling, but also the problem of disposing of obsolete materials, and they have tried to meet the situation by selling certain items when it becomes apparent that they are outdated.

Research and Education

The final major area with which the OCDM is concerned is that which it terms "supporting functions," namely, research and development, training and education. Here the Federal program reaches into schools, into other government agencies and into private industry to develop, coordinate and administer research projects aimed at solving the problems of non-military defense. Examples of cooperating agencies are Columbia Univ., Univ. of Minnesota, Stanford Univ., the Weather Bureau, the Dept. of Agriculture, the Dept. of Health, Education and Welfare, the Bureau of Standards, the Brookings Institute, American Machine and Foundry Co., Armour Research Foundation, Midwest Research Institute and National League for Nursing, Inc.

NEAR

One of the most recent developments to result from the

research programs sponsored by the OCDM is the indoor attack warning device known as the NEAR system (National Emergency Alarm Repeater). A system of attack warning has always been a chief concern in civil defense and it was recognized that outdoor sirens could not always be heard indoors or would not reach many suburban or rural areas. In 1955, Congress appropriated funds for research aimed at developing a device that was absolutely reliable, economical and available to everyone. After many tests, it was found that it was possible to convert a small portion of the regular 60-cycle current carried by commercial power lines to a 240-cycle signal. This type of signal would not endanger the continuity of regular power service and could be carried over long distances by equipment requiring only routine maintenance. An instrument was designed that could be plugged into a standard 110-volt outlet and left there continuously. When the 240-cycle signal is sent to the receiver, it activates a timing mechanism which delays sounding the alarm for 10-15 seconds. This delay eliminates the possibility that a sudden surge of power such as a stroke of lightning, would result in a false alarm. A small light on the front of the receiver provides a check on its operating condition.

If NEAR receivers are widely distributed, the Nation could be alerted within one minute to any type of disaster, natural or man-made. The NEAR system has been proven to be technically sound, but at least \$60 million will be needed to start the program. Two thousand receivers have been purchased for demonstration at Charlotte, Michigan and experience from this operation will be used to develop policies for nationwide use of the NEAR system.

Rand Proposals

As a result of an extensive study of civil defense, a group headed by Herman Kahn has proposed (Rand Corp. Report RM 2206-RC) a \$500 million civil defense program. This program includes \$100 million to purchase 2 million dose-rate meters and 10 to 50 million dosimeters, \$150 million for identifying and supplying shelter facilities, \$75 million for research in shelter structures, \$75 million to train reservists or "cadres" for handling evacuation, improvisation of shelters, decontamination, and debris clearing, and \$100 million for general studies, education, etc. While some of these activities are currently being performed under the OCDM program, this represents a much intensified and expanded program. The Rand group has also investigated large shelter programs costing several billion dollars. However, their study indicates that the above rather "modest" program could save tens of millions of American lives in the event of a war.

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greatest living stylists of the double or triple negative—i.e., J. Robert Oppenheimer. Perhaps it was here that Mr. Feis found it was not clear that in spite of historical objectivity, infrequently he dared not cling to his non-objective attitude. So, in some cases, he and his sentences have a way of backing into the really troublesome patches. Of course, they generally arrive, though wrought with rue.

Still, we may wish he had pushed harder on one or two questions. He rather brushes off the Franck Report, saying it dealt with issues for which the authors were not professionally qualified, and Feis could not determine whether it was ever delivered to the right people in time to be considered before Potsdam. Nor was Feis able to find explicit documents showing that President Truman had ordered the second bomb on Nagasaki, nor that he had ordered two bombs. In correspondence to this reviewer, Mr. Truman has said that he ordered bombs, not a bomb. Feis thinks there may have been verbal orders, from Truman to the Commanding General of the Strategic Air Forces, aboard the *Augusta*, on August 7th, as the Potsdam party was returning to the U.S. Either that, or an order was sent from the *Augusta* to Spaatz in Washington. Feis says, "I have found no messages sent from the *Augusta* in the Manhattan Project file."

Thus there is no document to show that the President explicitly ordered the bomb on Nagasaki. To this reviewer, this omission supports the implication in existing documents that the operations were set up, and the machine was simply not turned off.

So this reviewer believes that when one is asked if the next combat atomic bomb may be dropped by accident or on the decision of lower-echelon military, one may still reply, "Well, that is how they dropped the last combat A-Bomb."

THE MOON AND A LOT MORE THAN SIXPENCE

In a second State of the Union address before Congress on May 25, 1961, President Kennedy strongly recommended four long range goals for United States space activities and indicated that the program would call for the expenditure of an additional \$7 to \$9 billion over the next 5 years. (This is in addition to the originally planned estimate of \$15-\$20 billion for the space program during that period.)

First, he called for the nation to "commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to earth." Secondly, he asked for an additional \$23 million to accelerate development of the ROVER nuclear rocket. Third, he asked for an additional outlay of \$50 million to accelerate the development of space satellites for world-wide communications. Fourth, he requested an additional \$75 million to develop a satellite system for world wide weather observation.

The President emphasized the sacrifices which would be necessary. He said, "... Let it be clear that I am asking the Congress and the country to accept a firm commitment to a new course of action—a course which will last for many years and carry very heavy costs, \$531 million in fiscal 1962 and \$7 to \$9 billion additional over the next five years. If we are to go only half-way, or reduce our sights in the face of difficulty, in my judgment it would be better not to go at all.

"This is a choice which this country must make. . . . I think every citizen of the country as well as the members of Congress should consider the matter carefully in making their judgment, to which we have given attention over many weeks and months, as it is a heavy burden, and there is no sense in agreeing, or desiring, that the United States take an affirmative position in outer space unless we are prepared to do the work and bear the burdens to make it successful. If we are not, we should decide today. . . ."

Recent Decision

The decision to "shoot for the moon" seems to have developed during the past two months. The initial reaction to the Soviet manned orbital flight on April 4th appeared to be a concession that we could not engage seriously in a space race. Subsequently, however, the President called for a new sense of urgency and indicated the desirability of some major U.S. space achievement. A recent NASA press conference (W. Post, 5/26) indicated that the new decision was made after the Soviet flight.

There has been and is considerable criticism over the prospects of spending such huge sums for outer space projects—especially in view of what could be done with such expenditures on many major "earth-bound" problems. James A. Webb, NASA's administrator, however, indicated that elements of the scientific community had been consulted in the discussions between April 4 and the President's announcement. According to Webb, Jerome Weisner, the President's science advisor did not object to the program. Apparently others had doubts but, as Webb said, "in every case their concern was dissipated." (W. Post, 5/26).

MEMBERSHIP APPLICATION—Dues: Regular—\$7.50 (with income below \$4500-\$4); Supporting—\$10; Patron—\$25. New membership and an introductory subscription to Bulletin of the Atomic Scientists—\$12.00 (with income below \$4500—\$8.50).

[\$2 of the dues is for a subscription to FAS Newsletter.]

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PROBLEMS IN COOPERATIVE ATOMIC DEVELOPMENT

The program for joint development of nuclear power by the Government and private industry may be approaching a crisis if one is to judge by recent events. Early in May the AEC announced that because of "technical and economic uncertainties" it was terminating an agreement with two groups of utility companies to build an experimental 50,000-kilowatt reactor in Polk County, Fla. The move was symptomatic of the difficulties besetting the Government's cooperative program inaugurated in 1954 by the Eisenhower Administration. The Atomic Energy Act of 1954 made possible and encouraged the participation of private utilities and public power groups in proposing and building atomic power plants. The Government has assisted by providing research and development funds. Thus far, only one project has been completed under the cooperative program—a 110,000-kilowatt plant at Rowe, Mass., built by the Yankee Atomic Electric Co. Generally speaking, progress has been slow in the cooperative program and projects have been beset by delays and rising costs. Atomic Energy Commission officials have attributed the slowdown primarily to the reluctance of most utilities to accept the financial burden of constructing atomic power plants in the face of current technical and economic uncertainties about nuclear power. Dr. Glenn T. Seaborg, Chairman of the Commission, told Congress that it might be necessary to offer additional financial incentives to industry to stimulate the development of atomic power. Another possibility would be for the Government to build some experimental plants and sell the electricity to private and public groups. This was the approach followed in the nation's first civilian atomic power plant at Shippingport, Pa. (NY Times, 5/10).

In a recent speech (4/25), Representative Chet Holifield, Chairman of the Joint Committee on Atomic Energy, had some blunt criticism of the cooperative program. In his view, it is "high time that the Atomic Energy Commission move ahead with the development, construction, and operation of a sequence of developmental projects aimed at achieving clearly defined technical objectives according to a reasonably definite schedule." He referred to President Kennedy's recent recommendation to convert the New Production Reactor at Hanford to a dual-purpose plant (for production of electrical power as well as of plutonium) as an encouraging step in the desired direction (See Newsletter, Vol. 14, No. 5). While Chairman Holifield would not preclude the construction of plants by private utilities, he feels that a strong Federal program is desirable in preference to dependence on such projects.

While the future of the cooperative program thus seems uncertain, there is no indication of a lessening of interest in nuclear power development. Chairman Holifield referred in his speech to the need for low-cost atomic power as a stabilizing influence on conventional fuel costs and as a restraint on the exhaustion of the fossil fuel supply. A recent article by Frank K. Pittman, Director of the Division of Reactor Development, AEC, (Science, 5/19) warned of the problems inherent in making nuclear power competitive with fossil fuels. He described how the AEC's reactor development program was aimed at the solution of these problems in order that nuclear power can ultimately meet the tremendous growth in demand for electricity in the U.S.

AEC BLAMES SELF FOR REACTOR ACCIDENT

In a report on the accident last Jan. 3 involving a small research reactor at Idaho Falls, a special board of investigation placed the blame on a sticky control rod. It suggested that the accident would not have occurred if there had been more "prudent" operation and better administration of the safety rules. The report is expected to result in improvements in the safety procedures. It is believed that the organizational shortcomings apply to most of the research facilities operated by the AEC, but do not prevail for privately operated reactions, where extensive safety precautions are enforced (NYT, 6/11).

U.S. PLEDGES POLARIS TO NATO

At the spring meeting of the NATO Council of Ministers, held on May 8-10 in Oslo, Norway, Secretary of State Dean Rusk pledged the U.S. to commit five nuclear submarines, carrying Polaris missiles with nuclear warheads, to the forces assigned to NATO. The statement was vague about who would control the submarine force, but it is understood that the plan calls for putting it under U.S. fleet commanders operating with the alliance's naval force. Under the Atomic Energy Act of 1954, all nuclear weapons must remain under the operational control of the United States and may be used only at the direction of the President. Even though full NATO control of the submarines remains doubtful, it was expected that the commitment of this force to a specific defense mission in the NATO area would give a strong psychological lift to its European members. The U.S. commitment was coupled with a plea for a strengthening of the conventional forces of NATO, so that there would be military alternatives short of nuclear war in the event of crisis. The ministers approved efforts to increase the alliance's conventional military strength by one third.

The conference communique noted the broad area of pressures being applied by the Soviet-Chinese bloc, the menace being "not only military, but also has world-wide political, economic, scientific, and psychological aspects." The conference resolved to counter the ever-increasing area of these pressures not only on a European, but on a global basis. The ministers discussed the unsatisfactory state of political consultation within the alliance, and agreed on the establishment of machinery to strengthen the cohesion of the alliance (NYT, 5/10, 11).

PAULING MEETING OPPOSES NUCLEARIZING NATO

A five-day conference at Oslo, Norway consisting of sixty scientists and scholars from fifteen countries culminated May 7 in an appeal for a pact aimed at halting the spread of nuclear weapons. The conference was organized by Linus C. Pauling and wife, and included seven participants from the Soviet bloc. Among the sponsors (not present) were Albert Schweitzer, Bertrand Russell, Lewis Mumford, and Robert M. Hutchins. The participants urged "that the present nuclear powers immediately bind themselves by treaty not to transfer nuclear weapons to other nations or groups of nations," and "that all nations not now possessing these weapons commit themselves to refrain from obtaining or developing them." These statements, together with the fact that the conference took place at the same city and just prior to a major NATO meeting, was widely interpreted as a direct attack on current proposals to provide NATO with atomic arms. The conference statement said that the long stalled negotiations by the United States, Britain and France for a ban on atomic tests should "be swiftly completed by reasonable compromise on the few questions remaining unsettled."

TEST BAN DEADLOCK CONTINUES

(Continued from page 1)

And last week Congressman Chet Holifield (D., Calif.), Chairman of the Joint Committee on Atomic Energy sent up what many in Washington believed to be an Administration "trial balloon" elaborating on the "so-called 'TNT' theory of test ban negotiation—"test 'n talk." As Holifield stated: "I believe we should continue to negotiate in good faith, or to be available to negotiate in the event a recess or adjournment occurs. But I believe also that concurrently we should proceed with . . . our testing program." More specifically, and Holifield's words were apparently very carefully chosen, the United States should:

1. "Proceed to get in readiness to resume underground weapons tests whenever the President determines that our national defense requires it."

[James Reston reports that the President "is not convinced that a case has yet been made for testing. . . . The main question the President has put to his advisers is whether the security of the United States is impaired by the present uninspected test ban, and nobody has been able to demonstrate to his satisfaction that it had." N.Y. Times, 6/14.]

2. "Immediately proceed with its research and development program on seismic detection to include tests of nuclear devices in underground shots. The Soviets should have full access to the devices and to the information derived from the experiments," which means that enabling legislation must first be enacted by Congress to amend the disclosure restrictions of the Atomic Energy Act.

3. "Seriously consider going ahead with our Plowshare underground shots."

Thus the Holifield proposal, which has a sympathetic audience among much of the pro-test ban community, envisages passage of legislation now to allow for the expansion and carrying into effect as soon as possible the detection studies of Project VELA as contemplated in the present U.S. draft treaty. Beyond that, he apparently has urged only a stepped up pace of preparation for resumption of weapons and/or peacetime uses explosions should the deteriorating negotiations collapse without hope of resumption.

The so-called TNT approach is being widely discussed on the floor of Congress, in the press, and within the Administration. In a situation where many believe that the U.S. has now moved the Russians to the defensive in the propaganda part of the test-ban struggle, it appears unlikely that the decision whether to adopt Holifield's proposal will be made without fulsome public debate, especially in the light of the fact that the first step in Holifield's program is the passage of legislation by Congress to allow the U.S. to show the Soviets the nuclear devices to be used in the seismic detection research program.

Asked later to elaborate, Dr. Pauling declined, saying only that the participants in the conference did not presume to be able to outline any specific course of action (NYT, 5/8).

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