

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.

U.S. REPORTS MILITARY SATELLITES TO U.N. REGISTRY

The United Nations Space Registry revealed on October 9th that the United States had reported to it a total of 66 launchings as of August 15, 1962. These included 25 launchings of NASA vehicles and 41 by the U. S. Military Services.

The U. N. Registry was originally recommended by the U. S. in the meetings of the Committee on Peaceful Uses of Outer Space and finally set up last February by a resolution of the General Assembly. All objects placed "into orbit or beyond" were to be reported to the Registry and thereby made public.

In September, Platon D. Morozov, the Soviet representative to the committee accused the United States of not reporting all of its space flights and referred to magazine reports as evidence concerning secret spy flights launched by the U. S. Air Force. In particular, he referred to an article in "Flight International," a British magazine, that claimed the U. S. Air Force had launched 20 "secret" satellites since last November, six of which were "probably" Samos vehicles which supposedly carry devices for reconnaissance similar to that performed by U-2 aircraft.

The U. S. representative, Francis T. P. Plimpton answered by stating that since the establishment of the Space Registry, the U. S. "has been registering every object which goes into orbit, whether long or short, and whether or not it goes into orbit." He also accused the Soviet Union of not reporting all of its launchings. Apparently the data on the "spy satellites" referred to by Mr. Morgan were already on file in the U.N.

The U. S. reports to the U. N. Registry were started after the February 30 flight of Glenn and have been giving the same information for both NASA and Military vehicles—name, date, period, inclination, space and perigee, and in addition, functional category (flight development technique, space research, etc.). The information disclosed in the U. S. reports apparently is the outcome of a struggle between the State Department and the Pentagon. NASA launchings of course had been widely publicized, whereas the Air Force, while announcing launchings gave no orbital or identifying information. The State Department thus has succeeded in persuading the Pentagon to submit similar information on military launchings to that being given for NASA vehicles.

WORLD ATOM AGENCY CARRIES ON

The Sept. 21 issue of "Science" reports that "the International Atomic Energy Agency (IAEA) is visibly stunted as it starts its sixth year, but it is very much alive and far more robust than anyone had a right to expect."

"The agency, which developed from former President Eisenhower's Atoms for Peace proposal, is at the mercy of the two major nuclear powers, neither of which has taken any special pains to foster its growth. While the United States has given the agency considerably more support and respect than the Soviet Union has, both countries have demonstrated that they do not consider IAEA to be in the mainstream of international atomic matters. At the same time, the behavior of both suggests that they think it a good idea to have IAEA in existence, and hopefully, the United States is showing increased interest in enhancing the role of the agency. The Soviets, meanwhile, have been steadfastly maintaining a moderately cooperatively attitude.

"Prospects for the agency's future thus range from oblivion to the possibility, viewed with guarded hope, that should a Soviet-American nuclear arrangement be worked out, IAEA would play a significant role in policing it. In the prevailing chill of the Cold War, and in the light of France's and China's determination to acquire nuclear arsenals, the peace-

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DISARMAMENT: AFTER CUBA

The Cuban crisis and its aftermath have so far had one abundantly clear effect: arms control negotiations and policies have been thoroughly shaken up, and new policies, and problems, will have to be taken up in months to come. The Kennedy-Khrushchev correspondence over Cuba emphasized new efforts towards arms control, and negotiations on general disarmament and on a test ban treaty are about to resume in Geneva. The U.N. General Assembly also is concentrating on these issues.

The General Assembly's Political Committee has ended over a month of debate by approving two resolutions urging prompt conclusion of a test ban treaty (texts in N.Y. Times, 11/6). The first, drafted by 37 States, calls for cessation of all tests by next January 1. It endorses the memorandum by the eight neutrals at Geneva as the basis for negotiations by the nuclear Powers. (See May Newsletter: the memorandum avoided details on the crucial issue of on-site international inspection of suspicious seismic events.) If total agreement is not reached by the cutoff date, the resolution recommends an agreement banning air, water, and space tests plus "an interim arrangement suspending all underground tests." At the behest of the U.S. and U.K., the provision for a suspension refers to a system for effective identification of seismic events. The Committee approved the resolution without negative votes, but all nuclear powers abstained.

The second resolution, drafted by the U.S. and U.K. embodies their main proposals for a total ban with "international verification" or a partial ban without controls. It was approved by a vote of 50 to 12 (Soviet bloc) with 42 abstentions.

The eighteen-nation Disarmament Conference will resume its meetings on November 26: under pressure from the U.S. and many U.N. members for early negotiations, the Soviet Union dropped an effort to postpone the meeting until the General Assembly had completed its current review of disarmament issues.

The U.N. debates so far have raised two new themes which are likely to be pursued at Geneva. First are indications by the Soviet Union that it would revise its Geneva proposals for "first stage" elimination of all nuclear missiles and delivery vehicles, by allowing the U.S. and Soviet Union to retain "a strictly limited and agreed number" on their own territory, as insurance against surprise attack. (See letter by Bernard T. Feld in this issue.) The second theme, in reaction to the Cuban crisis, is the effort led by Brazil and several other Latin American States to establish Latin America as a "nuclear-free zone." Proposals for this are currently being dealt with at the U.N. and in diplomatic talks.

With the end of the Soviet and American series of atmospheric tests, hopes were reviving for an agreement on some test ban steps, and President Kennedy's exchanges with Khrushchev singled out the test ban as the prime area for new efforts.

However, the three-Power negotiations seemed to be heading into a new argument concerning the possibilities of using unmanned, sealed equipment to record seismic data, with the "black boxes" being delivered for periodic checks by an international authority, which would also receive and analyze the records.

(In the earlier negotiations concerning control posts for detecting underground tests, the U.S. had suggested unmanned stations might supplement international control posts and inspections.)

At the unofficial Pugwash Conference last September, review of this idea led to a statement by three American and three Soviet scientists, outlining a large-scale system of automatic recording stations, with the aim of providing sufficient seismic data "so that the international control commission

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A BRIEF HISTORY OF F.A.S.

When John Toll became FAS chairman in May 1961, he asked all past chairmen to constitute a committee on long range goals and appointed me chairman. The committee was asked to review our program and to suggest changes if such seemed appropriate. Members' opinions were solicited via the Newsletter and a number of thoughtful letters were received. The committee met briefly in February and April of this year and submitted a report at the last Council meeting this spring. To remind us of what FAS has done in the past I prepared a brief review of FAS history which I have edited for publication in the Newsletter. It is based upon inspection of Minutes of meetings and old Newsletters. A summary of the comments received from FAS members and committee members will be published later on. Any comments on this or future reports of the committee will be greatly appreciated.—W. A. Higinbotham

The history, such as it is, is broken down into subjects, each one of which is taken up in approximately chronological order. The first activities, as many of you will recall, occurred shortly after the end of the war at the Manhattan District sites. Associations were formed at Chicago, Oak Ridge, Los Alamos, etc. to try to inform the public about the significance of the development of atomic energy. Briefly, the statements said that there was no secret, no defense and that there must be world control of atomic energy. Introduction of the May-Johnson bill for control of atomic energy intensified the activity of these associations and stimulated formation of more scientific groups outside the Manhattan Project. The Project groups formed a Federation of Atomic Scientists which joined with the others to found the Federation of American Scientists in January of 1946. Some of the early history, especially of the activities relating to domestic legislation, is given in "The New World" by Hewlett and Anderson, an excellent and absorbing history of atomic energy from 1939 to 1947.

Arms Control And Disarmament

These have been the central theme of FAS from the beginning. The early statements and missionary activities were concerned with explaining the social implications of atomic energy and called for an imaginative approach to world control. It soon became evident that public education was a big job as FAS encouraged about 80 national organizations to set up a National Committee on Atomic Information to help spread the word and the Emergency Committee of Atomic Scientists to raise funds for the NCAI. Also in the fall of 1945, the atomic scientists initiated a classified study of the technical feasibility of international control which was later useful to the Lillenthal panel and to Mr. Baruch.

In the spring of 1946, the Lillenthal panel produced a remarkable document analyzing the problem of international control and outlining a policy. FAS and NCAF did much to publicize this report and urged Mr. Baruch and the Administration to adopt it as a basis for policy. Shortly before Mr. Baruch presented his version of the proposal to the United Nations, the FAS was host to the scientific delegates from all the 12 nations on the UN Atomic Energy Commission in the Institute of Physics headquarters in New York City. Baruch added some provisions which we deplored but in general we supported the U. S. position while urging greater flexibility. We continued to seek avenues to agreement for several years.

When the Soviets exploded their first nuclear device in the fall of 1949, FAS called for a new effort at international control but the government decided to make H-bombs instead. The Federation suggested that the Baruch plan was out of date and urged that control of atomic energy be merged with general disarmament in the UN discussions, as it shortly was. The Council declared that bigger weapons would not lead to security, when the first H-test was announced in November 1952.

Stalin died in 1953 and the Soviets began to take a more conciliatory stand toward disarmament. Dave Ingliss and an FAS committee suggested a test ban as a first step in 1954. A big educational effort was appropriate at this time, when megatons came into being and the government was reluctant to disclose the facts about fallout, but there is little on record to indicate that FAS was studying and being critical of the negotiations during 1955 and 1956. Ralph Lapp deserves special credit for his educational work at that time.

Shortly after fallout from the Eniwetok tests was revealed,

we asked the U. S. government to initiate a UN study of long range effects. In April 1955, Sen. Payne introduced a similar resolution which passed the Senate and the UN Commission was established in December. An FAS committee, under W. Selove, studied radiation effects and prepared materials for a number of releases. In June 1957 FAS took part in the Hollifield hearings on fallout.

The test ban, suggested by Ingliss, was proposed by the Soviet Union (together with other measures) in May 1955. Sec'y. Dulles opposed it in Jan. 1956. We polled our membership and have supported the test ban ever since. Fallout and the test ban became a center of controversy during the 1956 Presidential campaign. Thanks to being prepared, the FAS played a constructive role.

The "clean bomb" of 1957 was placed in perspective by our Los Alamos Chapter. After Sputnik, the Council urged that space be reserved for peaceful purposes. FAS has opposed giving nuclear weapons to other nations in several releases and in testimony before the Senate Foreign Relations Committee.

In 1959 and 1960 FAS studied detection techniques for nuclear tests and urged a reluctant Administration to be more aggressive in the negotiations. Recently we endorsed the goal of general disarmament called on the US to pledge not to be the first to use nuclear weapons and urged the government not to resume atmospheric tests. FAS worked hard for establishment of the Arms Control and Disarmament Agency in 1961.

Domestic Science Legislation

As mentioned above, the first coordinated activity was opposition to the May-Johnson bill. The FAS played a major role in drafting the McMahon bill, a period well covered in "The New World." Other AEC crises were the confirmation of Lillenthal for chairman in Feb. 1946, Senator Hickenlooper's charges of "gross mismanagement" in 1949, and confirmation of Pike for chairman in 1950. In 1954 the act was amended to encourage commercial development. FAS testified in favor of the liberalizing proposals but opposed extending the power of Chairman Strauss.

A national science foundation was a topic at the first FAS Council meeting in 1946. As action was delayed in Congress, FAS set up an interscience committee of broad scope and continued to work for the bill until it was finally passed in 1950.

In 1953 the Secretary of Commerce fired the Head of the National Bureau of Standards because his scientists found a certain battery additive useless. FAS led the defense of Dr. Astin and, of course, the entire scientific community joined in.

In 1956 M. S. Livingston and Don Hughes argued for less secrecy in testimony before the Moss subcommittee. In 1959 we urged that responsibility for radiation safety measures be transferred from the AEC to the Dept. of Health, Education and Welfare. Recently FAS committees have studied some aspects of federal support of science and of education.

Loyalty And Security Problems

The Canadian spy case, revealed in March 1946, introduced an era of suspicion and fear. At Oak Ridge in 1947 and then in several other places people were dismissed on security charges. An FAS committee at Cornell made a critical study which was published in SCIENCE and we began to work for responsible procedures. In May of 1948 the House Un-American Activities Committee assailed E. U. Condon and the scientific community began to take notice. FAS set up the Scientists' Committee on Loyalty Problems at Princeton, with a big list of distinguished sponsors, which followed many cases, explored agency procedures, assisted victims and demanded better regulations. SCLP faded in 1951 and another committee was set up at Yale just in time to deal with the McCarthy invasion of Ft. Monmouth.

Repeatedly FAS has opposed extension of loyalty and security procedures beyond classified areas, such as a requirement for FBI investigation of AEC fellows in 1949, the California University oath, Dept. of Commerce export regulations and Dept. of HEW denial of research grants on suspicion of disloyalty.

Related to this have been problems with visas and passports, which have occupied FAS committees since 1951.

(Due to space limitations, the balance of W. A. Higinbotham's brief history will appear in a subsequent issue.)

WORLD ATOM AGENCY

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keeping role for IAEA is so obscured by uncertainties as to be indefinable. But through thick and thin during the past half-decade the Soviet Union and the United States have shown a willingness to keep the Cold War from obliterating the agency. Whatever the motives may be, the effect has been to maintain a bridge between the American and the Russian nuclear establishments, for IAEA, though relatively unpublicized, is the only organization where scientists from the two nations regularly work side by side. At present there are some 30 American and 15 Soviet scientists at the agency's headquarters, well mixed together in about a dozen sections. As has been the case elsewhere, they get along extremely well.

Establishment and Accomplishments

"IAEA, a 77-nation specialized agency of the United Nations, came into existence during the brief East-West thaw of the mid-1950s, charged, optimistically, with spreading the peaceful benefits of atomic energy and making certain that the results did not contribute to the spread of nuclear weapons. To get the agency off to a good start the United States announced that it would make available 5000 kilograms of U²³⁵ for IAEA to distribute—and keep under surveillance—in the promotion of atomic energy. The Soviet Union pledged 50 kilograms, and the United Kingdom offered another 20.

"It soon became apparent, however, that there were serious deficiencies in both the scientific and the political assumptions underlying establishment of the agency. IAEA's role was linked to the unrealistic expectation that the widespread use of atomic energy was just a few years off. On the basis of this belief, it was expected that the agency, in return for helping to bring atomic power to the nonnuclear nations, would exact the right to conduct inspections to guarantee that the materials and technology it supplied were not being diverted to the production of weapons-grade plutonium. The optimistic forecasts about the arrival of atomic power have not been borne out, thus the agency has been prevented from assuming a guardianship role (so far it has distributed just 70 kilograms of U²³⁵), and in the instances where atomic power has been achieved this has been accomplished without IAEA assistance. Furthermore, after the agency had been set up, neither the United States nor the Soviet Union showed any enthusiasm for bringing it into the programs under which they provide nuclear training and materials for other nations. On the American side at least, this situation has arisen partially because underdeveloped nations have come to regard IAEA guardianship as reflecting adversely on their trustworthiness. In the competition between East and West for scientific ties with the new nations, IAEA has thus been left out. The United States, for example, has about 40 bilateral agreements under which it alone is responsible for maintaining safeguards over the materials it provides. IAEA, meanwhile, has provided materials for research reactors in Norway, Yugoslavia, Finland, and Pakistan, and along with responsibility for supplying the materials, has acquired the right to conduct inspections. However, outside of these nations, whose nuclear intentions have not aroused any noticeable concern, the agency has been politically as well as technically blocked from assuming a role of responsibility for keeping atomic energy peaceful."

Recently, in an effort to show that inspection does not hurt and also to give IAEA experience in developing inspec-

tion procedures, the United States opened four small experimental reactors to IAEA inspectors (See Newsletter Vol. 14, No. 3). The Soviets, to no one's surprise, failed to respond in a similar fashion, as did the French, who, in promoting their own atomic weapons program, have turned their backs on the agency's inspection role. A recent disturbing item is the fact that India, in shopping for a 300,000-kilowatt reactor, has told the United States that it refuses to accept IAEA safeguards as a condition for obtaining the reactor from American sources. The Administration has shied away from this proposal since it would undercut IAEA's stature at a vital point in the agency's existence.

With IAEA so far able to play only a limited role in safeguarding the peaceful nature of atomic energy, the agency has meanwhile turned itself into an extremely busy and significant service organization for dealing with such problems of atomic energy as health and safety regulation, waste management, legal concepts, and isotope standardization. In working on these problems, the agency, in its short history, has sponsored nearly 1800 fellowships, has provided short courses for 1500 trainees, has organized 50 scientific conferences and seminars, and has awarded 140 research contracts among its member states. Its staff now numbers 600 persons, including 230 professionals. It operates a small laboratory on the outskirts of Vienna, and it is associated with the operation of the Norwegian Institute for Atomic Research and the French Oceanographic Institute, in Monaco.

Future Outlook

Just where IAEA goes from here is a question to which there is no ready answer. At the agency's sixth General Conference at Vienna in September, U. S. Atomic Energy Commission Chairman Glenn T. Seaborg reaffirmed strong United States support for IAEA and its program. Chairman Seaborg referred to the so-called Smyth Report, a review of U. S. relations with the IAEA, which was made at the request of the State Department by a committee headed by Henry D. Smyth, chairman of the research board at Princeton University and U. S. Representative to the IAEA. According to Chairman Seaborg, the specific recommendations of the Smyth report are still under review by the Administration but "the general thesis of strong U. S. support for the IAEA is fully accepted by my Government". A principal conclusion of Smyth's committee was that, with economic nuclear power almost a reality, the Administration should seek to enlarge the agency's role to enable it to provide safeguards against the diversion of nuclear materials to military purposes. (Science, 9/21 and AEC Release 9/20).

The sixth General Conference of IAEA concluded with a pledge to improve East-West cooperation in the peaceful use of the atom for the benefit of developing countries. The venture involves two major projects. One is a long-term planning program which the Agency decided to contribute to the U.N. "developing decade" plan to make atomic power competitive where coal and hydroelectric resources are decreasing. The plan, now under study to cover the 1964-69 period, will be submitted to the General Conference next year. The other project is a short-term one proposed by the Soviet Union—and welcomed in principle by the West—for joint establishment and financing of health centers and physical laboratories, equipped with nuclear apparatus, in underdeveloped areas. The Communist bloc volunteered to contribute one-third of the costs and the Conference decided to forward the proposal to the Board of Governors, which will decide how the remaining two-thirds will be financed and where the establishments will be located. Political questions were kept at a minimum at the Conference, making it the most harmonious in the Agency's history. East-West issues erupted only when Communist China was again barred from membership by majority vote (W. Post, 9/27).

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Chairman.....Freeman J. Dyson

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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.

CLEVELAND MEETING CANCELLED

The Executive Committee cancelled the FAS Council meeting scheduled over the Thanksgiving Weekend in Cleveland.

Please note now that the Council will meet in New York City on January 25-26, 1963, and send suggested agenda items, statements, etc., to the Washington office promptly.

Please plan to attend.

A CHANGE IN SOVIET DISARMAMENT POSITION

The following letter, dated Sept. 24, 1962, appeared in the New York Times:

Dear Sir:

In our preoccupation with the "rocket rattling" over Cuba indulged in by the Soviet Union's Foreign Minister Gromyko in his speech before the United Nations General Assembly (N.Y. TIMES, Sept. 22), I hope we shall not overlook a statement of great significance, on the subject of disarmament, made in the same speech: "... the Soviet Union agrees that in the process of destroying nuclear weapons delivery vehicles at the first stage exception be made for a strictly limited and agreed number of global (intercontinental) missiles, anti-missile missiles, and anti-aircraft missiles of the ground-to-air type which would remain at the disposal of the U.S.S.R. and the United States alone. Thus for a definite period, the means of defense would remain in case someone . . . ventures to violate the treaty and conceal missiles or combat aircraft."

This sounds very much like the concept of a "minimum deterrent" advocated by a great many Western proponents of arms control and disarmament as the most hopeful means for getting started along the path of comprehensive and controlled disarmament. As such, it represents a major change in the position of the Soviet Government. If approached seriously by both sides, this concept could provide the basis for real progress towards the disarmament we both profess to desire.

The minimum deterrent aims at the achievement of rough parity in nuclear capability, at the lowest possible levels consistent with the provision of assurance that neither side could initiate a nuclear war without suffering unacceptable retaliatory damage. But the negotiation of an agreement on this basis will require the readiness on both sides to forego other aspects of our present military policies.

Thus, the U.S.S.R. must be prepared to sacrifice its present superiority in conventional armed forces and armaments in Europe, against which much of our nuclear capability has been developed and is being deployed, if they are to expect NATO to relinquish the nuclear aspect of its "shield." This could be accomplished by an agreed reduction of conventional forces to roughly equal defensive levels. Furthermore, if the numbers of remaining nuclear delivery vehicles are to be kept small, the Russians must be prepared to supplement currently available national sources of information on these numbers with other effective means of verification to assure us that the agreed upon numbers are not being augmented by significant clandestine production or secreting of non-declared weapons. Studies on both sides indicate that appropriate measures of verification can be devised which will not unduly compromise the legitimate role of secrecy as a means of enhancing the invulnerability of defensive nuclear weapons.

On our side, we must be prepared to forego the temporary advantages of the "missile gap in reverse" and to accept the negotiated reduction of delivery vehicles to levels of rough parity, even though this implies relinquishment of our current "counter-force" nuclear strategy (a strategy whose success demands appreciable numerical superiority on our side). Furthermore, if the minimum deterrent is to have any attraction to the Russians, we must be prepared to talk of levels appreciably less than those now planned. And we must relinquish reliance on the threat of introduction of nuclear weapons to deter conventional conflicts (i.e., the offensive aspects of our NATO shield).

Although a first stage disarmament agreement based on a minimum deterrent would not settle the problems arising from current political disagreements between the major powers, it would facilitate a military disengagement in the most sensitive areas. Conversely, an agreement (even tacit) to forego force in the settlement of outstanding political issues would greatly enhance the prospects for a large-scale controlled reduction of present nuclear capabilities.

The minimum deterrent should be thought of as a means of permitting the rapid reduction of nuclear arms, thereby eliminating many of the present tensions which arise from the arms race. Its attainment would have the effect of reducing radically many of the present dangers of large-scale nuclear war by accident, miscalculation, escalation, or mad design. It is not general and complete disarmament. It is probably not even a stable arrangement in the long run. But it could provide that interrim military stability which would enable our leaders to start to cope with the vast political, economic and social problems which must be solved if comprehensive disarmament is to be achieved. And it would remove the awful threat of nuclear Armageddon which now hangs over all confrontations between East and West. It is imperative that our leaders explore, with open minds and hopeful intent, this new and challenging opportunity for a major breakthrough in the frustrating disarmament dialogue.

Bernard T. Feld
Cambridge, Massachusetts

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will need to request very few on-site inspections." (Text in Bull. of Atomic Scientists, Nov. 1962, p. 40.)

Since then, there have been repeated signs of official Soviet interest in such a plan, as a solution of the impasse over on-site inspection. The plan is under study by U.S. officials, but press reports so far emphasize that many difficulties would arise in installing such a system and making it tamper-proof. The proposal has not yet been raised in the negotiations on a test ban treaty. However, the U.S. apparently is strongly opposed to the Soviet concept of "inspection by invitation" and concerned to uphold the principle of mandatory international inspection.

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