

# 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.

## SOME AGREEMENT REACHED AT GENEVA

The three-power negotiations for a treaty banning nuclear weapons tests reopened in Geneva on September 27th, and, since then, have moved a major step forward by reaching agreement on the legal framework for a test ban control system. The agreement "settled one of the major issues blocking a treaty"; the documents adopted spell out in detail "the legal status of the control organization, its chief administrator, and the entire control staff" (W. Post, 10/18).

Discussion on the actual control posts has continued. The three powers have already agreed on a world-wide network of 180 posts to be completed in six years; a new British plan offered on September 29 proposed that at the end of two years 10 posts would be operating in the U.S.S.R., 12 in the U.S. and its Pacific islands, and 14 in the British home and overseas islands (NY Times, 9/30). U.S. amendments provided that each part of the system should become operative as soon as it was installed (NY Times, 10/4). The U.S. has agreed to a final total of 11 posts within the borders of the U.S.; the Western powers want a total of 21 posts in the Soviet Union. The Soviet delegate, Mr. Tsarapkin, has stated that Russia cannot agree on more than 15, which he says would be adequate since only 5% of the U.S.S.R. is considered prone to earthquakes which might be confused with nuclear explosions (W. Post, 10/20). Tsarapkin also says that this number unjustly "overloads" Soviet territory relative to the rest of Asia and that "more effective control" would be insured by more posts in "areas south of Russia" (W. Post, 10/27). The question has been raised in this country as to how agreement can be reached on posts in Communist China when we have no relations with this country.

**Underground Testing:** On October 5, Tsarapkin termed "insufficient" the U.S. offer of a 27-month moratorium on underground nuclear tests, and again called for a 4 to 5 year period. He declared that "the main preoccupation of the U.S. is not to perfect detection of atomic explosions but to resume nuclear testing" (W. Post, 10/6). At a press conference in Washington on October 3, AEC Chairman, John McCone, stated that the U.S. had no evidence that the Soviet Union had been conducting underground nuclear tests during the Geneva negotiations but said that "since there are so many advantages [in resuming tests] . . . I can surmise that they are proceeding in the absence of any proof that they are not" (NY Times, 10/4). Tsarapkin's response, in Geneva, was that "Mr. McCone made this unfair allegation because he wants to draw a picture of the situation that will enable him to achieve his aim of resuming nuclear testing" (NY Times, 10/5).

**Humphrey and Tsarapkin Urge Cooperation:** On October 4 the Soviet delegate in Geneva said that with "good will on both sides" agreement on a treaty before next June was "quite possible" (NY Times, 10/5). Senator Hubert Humphrey, chairman of the Senate Disarmament Subcommittee, had suggested earlier in the month that the U.S. should resume nuclear testing next June if a test ban agreement is not concluded by that time (NY Times, 10/3). In a letter to Secretary of State Herter, Senator Humphrey stated that in the Geneva negotiations the Soviet Union "has often been unreasonable" but that "the U.S. has not taken all action to expedite the drafting of a treaty" which "could be concluded within 9 months if the two sides expedited their work"; he said that "our government should take all possible action now to show that it is not delaying on any issue" and that negotiations "should continue even if testing is resumed for a seismic research program" (from the Office of Sen. Humphrey).

The AEC has announced that the U.S. "will soon begin" Project Vela tests aimed at improving techniques for detec-

## ATOMS-FOR-PEACE PROGRAM FALLING SHORT:

### THE MCKINNEY REPORT

The Joint Congressional Committee on Atomic Energy has released a new study casting doubt on the prospects for early achievement in the field of competitive atomic energy. This evaluation was contained in a 5-volume review of US international atomic policies by Robert McKinney, a Santa Fe, N. M., newspaper publisher and the first US representative to the international Atomic Energy Agency in Vienna. His survey of four years ago on the peaceful uses of atomic energy prepared for the Joint Committee drew wide attention.

The new report concludes that the objectives on which the Eisenhower Atoms-for-Peace program were based in 1953 are no longer valid. Instead of concentrating on the achievement of atomic disarmament through immediate development of atomic power (a goal of the Eisenhower program), the report suggests that the US emphasize long-range research in this field in cooperation with Western allies. Such a re-orientation is necessary because atomic power has proved more difficult and costly to develop than expected and conventional fuel has become more plentiful and cheaper. As a result, according to the report, the possibility of atomic power's making any immediate significant contributions to arms limitation "must, therefore, now be written off". The long-range goal of achieving atomic power that would be "appreciably" cheaper than conventional power will probably not be fulfilled until the next decade. (NY Times, 10/10) (This view contrasts with the more optimistic estimates of the AEC. The AEC's goal is to achieve competitive atomic power by 1968 in high-fuel-cost areas of the US. Recently the AEC has predicted a similar timetable for Europe.)

In order to implement the objective of long-range basic research, the McKinney report further recommended that the US via the AEC take the lead in providing greater coordination in atomic research among laboratories of the Free World. Also the Joint Committee was urged to take action toward providing long-term financing for portions of the AEC's program that are conducted jointly with other nations (Wall St. Journal, 10/10). It should be noted that the McKinney report did not bear any endorsement from the Joint Committee nor did the conclusions reflect the policies of the Committee.

**McKinney Report and AEC at Variance:**—It is interesting to compare the conclusions of the McKinney report on US international atomic policies with the conclusions released in September by the Subcommittee on Research and Development of the Joint Committee on Atomic Energy following its hearings on "Frontiers in Atomic Energy Research". The hearings, held in March, 1960, covered 5 general areas, among them the Plowshare Program on peaceful uses of nuclear explosives (See Newsletter, Sept. 1960), the Sherwood Program on controlled thermonuclear reactions, and the area of space propulsion and power. The Subcommittee concluded from the testimony of experts in these fields that there were "many promising long-range applications of nuclear energy which have the potential for contributing to the knowledge and welfare of mankind. . . . The primary problem appears to be the lack of sufficient long-range planning, particularly in the selection of projects." (Joint Committee on Atomic Energy—Release 9/12)

tion of underground explosions and for differentiation of them from earthquakes. Permission may be given for international observations of the tests but not of the nuclear devices used (NY Times, 10/9). No decision has yet been made whether to use nuclear devices in the Vela program.

## DISARMAMENT DISCUSSIONS IN THE U.N.

The question of disarmament was taken up this month by the 99-nation Political Committee of the U.N. General Assembly. This action followed the defeat on October 11 of a Soviet-sponsored resolution to have the matter debated on the floor of the Assembly. The two principal resolutions to be discussed are (1) "general and complete disarmament", as recommended by the General Assembly last year and reiterated by Premier Khrushchev before this year's Assembly, and (2) the report of the U.N. Disarmament Commission, which covers all proposals including those of the Western powers (W. Post 10/19). In the most recent formulation of the Eastern proposal, Khrushchev has called for the drafting of a treaty for complete disarmament, to include elimination of military bases, ban on nuclear weapons, and control over "disarmament, not arms" (NY Times, 10/21). The Soviet delegate stated that the U.S.S.R. "would accept any control system offered by the U.S. or the Western powers—but only after the signing" of the treaty (W. Post, 10/25). The Soviet bloc has also indicated that they want consideration of disarmament to be linked with their proposed reorganization of the U.N. Secretariat and Security Council which would include representatives from Communist and neutral countries (NY Times, 10/14). The Eastern proposal has been criticized in the Committee because it would require an impractical length of time for satisfactory negotiation (W. Post, 10/25), and because it calls for inspection of arms destruction but not for compliance with agreed levels of remaining armaments (NY Times, 10/22). The Western resolution on the other hand, calls for step-by-step disarmament. Each step would be completed within a specified time and would be accompanied by, and dependent on, inspection and controls. Compliance would be verified by a disarmament organization within the framework of U.N. and would include verification of armament reductions and adherence to agreed levels of retained armaments (NY Times, 10/15, 10/23). Mr. Wadsworth, for the U.S., called for "concrete agreements" on first steps; he cited reduction of nuclear stockpiles, banning use of outer space for military purposes, and measures for guarding against surprise attack (W. Post, 10/23). A separate British resolution calls for the appointment of technical experts to report to the U.N. Disarmament Commission within six months (W. Post, 10/15). The Soviet delegate has stated that the current discussions will be "empty talks" without "basis of agreement" (W. Star, 10/20) if the Political Committee "wastes time" on "futile proposals" by the Western states "rather than on 'basic principles' of a disarmament treaty" (W. Post, 10/20). He said that in the Geneva discussions the Western nations "showed an intention to drag out the talks" and "to digress into technicalities" (W. Post, 10/21). The East has called for discussion in a special session of the General Assembly next spring to be attended by heads of state (W. Post, 10/26). Possibilities for a simultaneous or separate summit conference can presumably not be clarified until after the U.S. elections, although Prime Minister Macmillan has said that he was willing to seek a new summit conference (NY Times, 10/9). Resumption of negotiations by the 10-nation Disarmament Conference is currently blocked by East-West disagreement over the Soviet proposals for enlarging the Committee (Newsletter, XIII, 7).

## "FUTURE SCIENTISTS OF AMERICA" LAUNCHED

The National Science Teachers Association, a department of the National Education Association, has announced the formation of a new organization for high school students, to be known as the Future Scientists of America (FSA). FSA will be sponsored and administered by science teachers and science educators, and will function as an extracurricular student activity intended to encourage students interested in science. FSA membership is open to all secondary schools throughout the United States. It will publish a quarterly newsletter, The FSA Centrifuge, and will sponsor the publication of a series of paperback books entitled "Vistas of Science". Each will include a brief presentation of a specific area of science, a discussion of research methods and problems, and suggested student activities in the particular field. The series will be published by Scholastic Magazines, Inc.; the first volume is expected to appear early next year.

## EUROPEAN ATOMIC RESEARCH NOTES

At a meeting early in October the Board of Governors of the International Atomic Energy (IAEA) approved a request by Finland for a research reactor and enriched uranium to fuel it. Both reactor and fuel will be donated by the US under the auspices of the IAEA which will safeguard against diversion of the uranium into military use. The Board also considered a proposal by Monaco to make possible Agency research on the disposal of radioactive waste through Monaco facilities. The Board was further informed of a proposal by Norway for a joint research program on reactor physics data to be carried out in conjunction with the US. (Free Release IAEA—10/7)

West Germany has decided to begin work on an \$18-million development program to build an atomic-powered research ship within 5 years. Part of the cost of the program is expected to be met by Euratom. (W. Post 10/13)

The British Atomic Energy Authority has announced the abandonment of plans to build a massive fusion power research machine. The main reason for the action was the high cost of the machine. (NY Times 9/29)

In France a 3-year program costing \$6-million is aimed at achieving control of the fusion process. The research is supported by the French Atomic Energy Commission and by Euratom. (NY Times 10/2)

## PEACEFUL USES OF ATOMIC ENERGY

Eighty-two scientists and engineers from 17 countries have started the fall term of an international "atoms for peace" program of training and research at Argonne Laboratory. (NY Times 10/16)

Victor F. Weisskopf, professor of physics at M.I.T., president of the American Physical Society and member of F.A.S. Council, will head the 12-nation European Organization for Nuclear Research (CERN) in Geneva. The appointment is somewhat unusual because the US is not a member of CERN. (Science 10/21)

The US AEC has sent a major scientific exhibit on tour in South America. The exhibit is a complete movable laboratory with technical facilities and equipment needed to exploit the use of the atom in industry, medicine and agriculture. (Science 9/23)

The United Mine Workers Union, worried over mass unemployment in the coal fields, urged Congress to stop "squandering" money on the development of atomic energy as a potential rival to coal. Efforts to harness the atom for electric power were described by leaders at the union's quadrennial convention as too dangerous and costly to warrant further Government investment. It was contended that coal was abundantly available to satisfy all future power needs. (NY Times 10/5)

## NEW REPORT ON GRADUATE EDUCATION

An optimistic report on graduate education in the arts and sciences, education, and agriculture has recently been prepared by Dr. Bernard Berelson, director of the Bureau of Applied Social Research of Columbia University. The results of a two-year, Carnegie Corporation-financed study are discussed in a new book "Graduate Education in the United States" (McGraw-Hill, 1960). Dr. Berelson defends the graduate schools' emphasis on research, pointing out that 40% of all Ph.D.'s now go into research work, with the remainder entering academic life. He labels as failures recent attempts to introduce general education and inter-departmental study into graduate education, pointing out that the pressure of subject matter and the resulting need for specialization have led to shallow results from these attempts. He urges undergraduate colleges to provide the kind of liberal education on which graduate schools can rely, and reports that graduate schools generally do not want colleges to increase the amount of specialized training given to undergraduates. The greatest deficiencies found in graduate students were in writing and organization of research and scholarly reports, and in foreign languages. Although the estimated undergraduate enrollment will probably double within ten years, he estimates that graduate schools will produce at least 99,000 Ph.D.'s by 1970, an adequate number to staff the nation's colleges. (NYT, 10/10)

## FROM THE WASHINGTON OFFICE

COMMUNICATIONS SATELLITES  
GO COMMERCIAL

## Chicago Meeting—November 25, 26

The FAS Council will meet on Friday evening, November 25, in Chicago. The meeting will be held at 8:00 p.m. in Room 480 of the Fermi Institute. In order to complete its business, the Council will reconvene on Saturday afternoon at a time to be determined at the Friday evening meeting. The Fermi Institute is located on the campus of the University of Chicago.

## FAS Investigates Limitation on Travel by Scientists to International Meetings

Pressure is building up among government scientists for a clarification by the State Department of a policy which apparently prohibits scientists employed by the Government from attending international meetings which Communist Chinese threaten to attend. The policy derives from the fact that the United States has not extended diplomatic recognition to the Chinese Communists. The Department is reluctant to permit any contact which might imply a change or a weakening of that non-recognition policy. However, the policy has been applied unevenly to Government scientists: We are informed, for example, of instances in which scientists from the Naval Research Laboratory have attended, as part of their official duties, international scientific conferences where East German and Communist Chinese were also in attendance. On the other hand, in May 1960, three Public Health Service officers, in Moscow for bilateral scientific meetings with the Russians, were not permitted to attend a multilateral symposium where Chinese Communists were present (see NL 60-5).

More recently, scientists at the National Institutes of Health have been officially led to believe that they may not be permitted to attend the Meeting of the International Union of Biochemistry to be held in Moscow, August 1961. After numerous informal discussions about the meeting of the Int. Union of Biochemistry with local scientists and with officials of the National Science Foundation, the United States Public Health Service, and the State Department, FAS on October 31 asked the Secretary of State to answer the question: "Will [Government] scientists be prohibited by your Department, or by Departmental advice to other Government agencies, from attending the 1961 Moscow meeting?" An answer is expected shortly.

This matter is on the agenda of the Council meeting in Chicago. When a reply is received from the State Department, that reply and the FAS request will be given the widest possible circulation.

## Post-Election Outlook for Arms Control

With the election of Senator Kennedy as President, the Democratic Platform proposals on arms control become of paramount relevance. In addition, during his campaign, the President-elect indicated that a vitalization of our arms control efforts had a high priority in his plans for the first 90 days of his administration. The Democratic Platform states:

"A primary task is to develop responsible proposals that will help break the deadlock on arms control. . . . This requires a national peace agency for disarmament planning and research to muster the scientific ingenuity, coordination, continuity, and seriousness of purpose which are now lacking in our arms control efforts.

"The national peace agency would develop the technical and scientific data necessary for serious disarmament nego-

The possibility of commercial application of our space technology has been given a substantial boost forward in recent weeks with the successful launching and operation of two communications satellites and the subsequent invitation by T. Kieth Glennan, head of the National Aeronautics and Space Agency, to private industry for participation in the field of space communication. The two communication satellites now in orbit are the NASA "passive" Echo (see NL 60-5) and the recently launched (Oct. 4) Army "Courier," an "active" relay satellite which receives and stores messages that can be rebroadcast to other stations upon command. Within a five minute pass, Courier is capable of receiving and transmitting 372,500 words.

Mr. Glennan has taken the position (NYT, Oct. 13) that the space agency could continue its research and development "as long as is necessary to assure that timely development of a commercially feasible communications system will be completed by private industry". In addition to developing communications satellites on its own, the space agency will support "technically promising" private proposals on "a cost-reimbursable basis". He also indicated that NASA would make available at cost to private companies, vehicle and launching and tracking facilities provided "the private plans . . . are technically promising and are in general consonance with the requirements of other licensing bodies".

A. T. and T. Plans Transatlantic Satellite Network: An indication of the scope of these proposals came on Oct. 17 when the State Department disclosed that the government-owned telephone companies of Britain, France and Germany have expressed considerable interest in participating with the American Telephone and Telegraph Company in establishing an international space communication system. Apparently the negotiations have been carried on privately by A.T.&T., with the State Dept. being kept informed because of the many international aspects of the problem. On Oct. 21 (NYT, Oct. 22), A.T.&T. formally applied to the Federal Communications Commission for permission to establish an experimental space communication system across the Atlantic. The company plans to launch its first active-repeater satellite within a year for use in experimental transmission of telephone calls, TV broadcasts and other forms of communication between the United States and Europe. This would be the forerunner of a commercial network of some thirty to fifty satellites that the Bell system would hope to have in operation within five years.

It is expected that this move by the Bell system will set off a policy debate on public vs. private exploitation of space and of the many attendant problems of patent rights, government subsidies, monopolies, and federal regulation.

tations, would conduct research in cooperation with the Defense Department and [AEC] on methods of inspection and monitoring arms control agreements, particularly agreements to control nuclear testing, and would provide continuous technical advice to our disarmament negotiators."

If this campaign pledge is to be successfully redeemed, scientists, among others, must be willing to share the burdens and responsibilities of such an endeavor.

Mr. Kennedy based his pledge upon the policy statement entitled "A National Peace Agency" that was released in December, 1959, by the Committee on Science and Technology of the Democratic Advisory Council. The seventeen scientists who compose the Committee represent a cross-section of biological and physical science and technology. Chairman Ernest C. Pollard, vice-chairman Richard B. Roberts and members Samuel K. Allison, Harrison Brown, L. C. Dunn, D. R. Goddard, David L. Hill, John S. Toll, and Harold Urey are members of FAS.

## A Lesson from the Past

Probably the most searing yet thoughtful critique of our past disarmament efforts is contained in the recent National Planning Association pamphlet entitled: "Strengthening the Government for Arms Control." On October 31, Senator Humphrey's Disarmament Subcommittee issued a reprint of the pamphlet as Senate Document No. 123, 86th Cong. It may be obtained free from the Subcommittee.

## Is Russia Cheating on the Moratorium?

This question has haunted our test-ban negotiators and our  
(Continued on page 4)

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Chairman ..... M. Stanley Livingston

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

## LETTERS TO THE EDITOR

The Editors of the NEWSLETTER welcome letters from members of FAS. The Editors reserve the right to edit and publish such letters at their own discretion.

### WE MUST PROVIDE A POLITICAL PLATFORM FOR SCIENTISTS AND ARTISTS

Your June 27th editorial "Policies and Actions for the Future" (NL 60-5) the April issue of the Newsletter of the Society for Social Responsibility in Science which contained a plea for a re-evaluation of the constitution and policies of S.S.R.S., and the action of the A.A.A.S. Committee on the Social Aspects of Science are all in agreement that scientists must find a more effective way to communicate with the public concerning matters involving scientific judgment. In looking for ways to accomplish this, each of these groups is turning inward and studying its own organization and policies in the hopes of finding more effective ways of: (1) making up its organizational mind about what policies it wishes to follow, and (2) more effectively communicating to whoever is concerned, its collective opinions about scientific policy questions.

I want to suggest that, as desirable as these efforts may be, they will accomplish relatively little unless at the same time some reforms are made in our government to provide effective "receivers" for such opinions and information as scientists and their organizations may have to offer.

If the United States government is to operate in a way that will preserve our leading role in the family of nations, it must develop more effective ways than it now has of communicating with its scientists (and artists and other intellectuals). Ways of doing this are briefly outlined here:

1. Establish a National Educational Council of distinguished people. The N.E.C. would:—
  - a) Provide a national forum for debating public policy issues relating to education.
  - b) Provide a means of studying and conducting research on significant educational questions not being studied or researched elsewhere.
  - c) Continuously study the entire educational needs of the country: publish an "ideal" curriculum which educational institutions might voluntarily follow (Admiral Rickover would make it compulsory); make recommendations to Congress, the Executive and others concerning the size, location, quality and other aspects of our educational plant; and (perhaps by using the existing Educational Testing Service) encourage the wider use of national texts which permit a valid comparison of the results obtained in a given school with those obtained elsewhere.
2. Establish in the President's Cabinet Secretaries without portfolio for:
  - a) Physical sciences
  - b) Biological sciences
  - c) Social Sciences
  - d) The Arts
3. Appoint Senators and Representatives Designate (voice

without vote) to represent Science and Arts. The number of such Congressmen and the manner of selecting them would require some careful study, but I feel certain that Congress will never be able to deal effectively with scientific and artistic matters until scientists and artists are able to speak spontaneously in Congress and in Congressional Committees as the equals of the other Congressmen rather than merely as witnesses brought in to clarify specific issues. It would seem desirable for these Congressmen Designate to feel themselves to be representatives of various scientific and artistic and cultural groups, but the manner of achieving this objective requires more study.

It would seem that since the objectives of F.A.S., S.S.R.S., and A.A.A.S. are to influence legislative action, they should strongly encourage Congress and the Executive branch of our government to establish the instruments outlined.

The time has come when we must recognize the necessity of having better national educational, scientific, artistic and cultural policies. We do have them today but often they are formulated by people with limited information, resources and ability. Establishing official machinery whereby artists, scientists and educators can democratically reach intelligently informed decisions and a means for publicly presenting them to Congress, the Executive and the general public will not enslave these professions. Rather it will afford them the prestige they deserve and provide them with the research tools they need for studying the problems that arise in these fields and also provide them with suitable platforms for arguing their points of view before the bar of public opinion.

Joseph W. Still

### From The Washington Office

(Continued from page 3)

policy makers since the Geneva talks began two years ago. With the all but universal high level agreement here that the unmonitored moratorium must end sometime soon unless an agreement is in sight, public discussion of the "cheating" issue has flourished (see "Underground Testing" elsewhere in this Issue). The New York Times (10/30) reported: "The United States has no evidence that the Soviet Union has been cheating on the present voluntary moratorium on atomic tests. . . . A highly placed Defense Department official who regularly receives reports on the findings of the [world-wide] detection system and who also has access to intelligence reports on the Soviet Union's atomic activities said today that thus far no evidence, even circumstantial, has been obtained that the Soviet Union had carried out clandestine tests in the last two years."

However, ambiguous seismic events occur regularly in the Soviet Union and lead to official concern that it might be possible for the Soviets to test clandestinely. If the Russians should test, it would be difficult for us to assess the weapons progress (they) could make. Policy-makers must make decisions on facts (no evidence of testing) and on assumptions (Russians may be testing). But when they confuse or obfuscate distinction between fact and assumption—in public or in private—they may, on the basis of the confusion, ill serve the national interest.

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