

F. A. S. NEWSLETTER

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SPUTNIKS STIR WIDESPREAD REACTION

With the launching of Sputnik II on Nov. 3, the Russians demonstrated convincingly the advanced state of their rocketry program. Following their first artificial satellite launching on Oct. 4, the USSR placed an impressive number of scientific instruments and a dog in their second device -- claimed to weigh 1120 pounds and to be travelling 1056 miles out in space. (US Naval scientists computed the distance at only about 530 miles out.) Associate Director Rinehart of the Smithsonian Astrophysical Lab. estimated the second satellite was launched with a force of more than 1,250,000 pounds, and concluded the Russians "certainly" have the potential for firing an ICBM.

FREE WORLD PARTNERSHIP A communique issued Oct. 25 from the 3-day Eisenhower-Macmillan conference urged an "enlarged Atlantic effort in scientific research and development" and pledged US-British efforts for a "genuine partnership" in which free world nations would combine resources and share tasks. The President "will request the Congress to amend the Atomic Energy Act" to permit "close collaboration of scientists and engineers" of free world nations, the communique said. On Nov. 9, British officials were reported to be forming a team of experts to visit the US and help organize a joint scientific general staff.

Congressional reaction to amending the Atomic Energy Act was generally favorable, and Joint AE Committee Chairman Durham said he would call hearings as soon as the Administration proposals were drafted. But former Committee Chairman Anderson warned that Congress would insist on rigid security protections and definite exchange commitments before agreeing to relax the present law.

MISSILE PROGRAM On October 13, new Defense Secretary McElroy assumed personal supervision of the US ballistic missile program. On Oct. 28, he cancelled a two-months-old order cutting military research and development funds by 10% and, on Nov. 8, he ordered the Army to launch a satellite with its Jupiter-C rocket. This was a sharp reversal of policy, joining the Army missile program to the Navy Vanguard outer-space project, previously kept separate with only scientific goals. Appointment of a special boss for space projects has been hinted. The President conferred on Oct. 10 and 15 with leading US scientists, and has met frequently with the National Security Council. Congressional pleas for an investigation of our missile program mounted with the second satellite launching. Sen. Johnson's Preparedness Subcommittee announced Nov. 9 the appointment of N.Y. lawyer E. L. Weisl as special counsel in charge of a Senate inquiry of US satellite and missile progress.

The President addressed the nation on Nov. 7 and 13, describing US military achievements and future plans. In his first speech, he announced appointment of MIT President James R. Killian as his Special Assistant for Science and Technology, and directed that the Defense Dept.'s Guided Missiles Director have broad authority to prevent interservice rivalry from hindering progress. He reiterated plans to ask Congress to remove barriers to "exchange of appropriate technological information with friendly countries" and "to carry on an enlarged Atlantic effort in research" through a "Scientific Committee organized within NATO."

SCIENCE ATTACHES Deleted from the President's prepared

FAS URGES CONTROL OF 'SPACE WEAPONS'

On Oct. 9, the FAS Executive Committee issued a press release urging the establishment of a UN agency for international control of space weapons. The statement began with a "salute to the scientific and technical achievement of the USSR in successfully launching a satellite into space," but noted that "this same technology is all too easily applied to military purposes and must therefore be controlled." Noting the analogy between the control problems presented by space weapons today and the nuclear weapons control problems of 1946, the statement concluded with the following paragraphs:

"Both the US and the USSR have expressed willingness to negotiate international control of 'space weapons.' US Ambassador Lodge, in his statement before the UN Political Committee last January, expressed the hope that 'future developments in outer space would be devoted exclusively to peaceful and scientific purposes,' and indicated willingness 'to participate in fair, balanced, reliable systems of control.' Now, Communist Party leader Khrushchev, on the eve of renewed full-scale disarmament discussions before that same UN Committee, has declared that the Soviet Union is also willing to submit to international control of its developments in this area.

"In the past, attempts to reach agreement have failed either because control plans have been offered only in the context of broader disarmament agreements, or because adequate inspection systems were not provided for.

"The FAS renews its appeal of last year that all possibilities for even limited 'first-step' agreements for the control of nuclear weapons and of intercontinental ballistic missiles be most carefully explored. In particular, it would appear feasible at once to ban further tests of large nuclear weapons and of long-range rocket weapons, empowering an appropriately constituted UN Agency to monitor such an agreement. Because of recent advances in long-range detection systems, the number of inspection sites necessary for such monitoring need not be great. This same UN Agency could be authorized to undertake, on an international basis, research on and development of long-range rockets and earth satellites for peaceful purposes. Limited agreements along these lines might prove invaluable by providing a break-through in the prolonged disarmament negotiations which have to date been so disappointing. Concessions will be necessary on both sides, but they must be made. The time is short."

text was a promise that a new Science Adviser and science attaches would be appointed -- reviving a program which has languished in our State Department for two years. A State Dept. announcement November 8 confirmed plans to give "new impetus" to this program, while the *Washington Post* reported on Nov. 9 that this part of the President's speech was cut because of time shortage and that there is some disagreement in the State Dept. as to "how to go about re-establishing the lapsed program."

The President's Nov. 13 address cited the need for maintaining our "retaliatory power" as a "deterrent," and for "reserve strength to meet unforeseen emergency demands." He said "our total expenditures will go up," and we must strengthen "our scientific education and our basic research."

EDUCATION AND RESEARCH SUPPORT

The successful sputnik launchings have brought widespread recognition by responsible leaders in this country of the disparity between Soviet and American emphasis on science and on the fundamental importance of a broad base of basic research. It is generally agreed that something must be done to increase the output of scientists and engineers and the general appreciation of the role of science in the modern world.

SENATE COMMITTEE A staff report (Nov. 9) to the Senate Government Operations Committee urges a massive overhaul of this country's science and technology -- recommending, in part, the creation of a department of science and technology at the Cabinet level, the formation of new Senate and House science committees, and the founding of an academy of science, analogous to the military academies, plus "a broad system of science scholarships and proper incentives to instructors in the existing schools."

ADMINISTRATION VIEWS Sec. of Health, Education and Welfare Folsom, told a Labor Dept. meeting Oct. 12 that America must reexamine its whole public school curriculum "if we are to hold our own with Russia." Stressing that "we must keep a balance" and "that education cannot be all science and mathematics," he said that American high schools have many "so-called popular or easy courses" that could be dropped for more basic subjects. A 226-page report on Russian education, published Nov. 10, said that high school graduates in the USSR have had five years of physics, four years of chemistry, five years of biology, ten years of mathematics and one year of astronomy. The report, compiled by the US Office of Education, is available at \$1.25 from the US Govt. Printing Office.

A concrete proposal was made by I. I. Rabi, Columbia U. physics professor and chairman of the President's Scientific Advisory Committee, that the Government should award a \$500 college scholarship to every high school senior who passes a federally administered mathematics test. Although in the past the Administration has opposed federal undergraduate scholarships, the Washington Post reported (Nov. 12) that President Eisenhower is expected to propose to Congress that the Government provide science scholarships and aid in the building of school and college laboratories.

John S. Toll, Maryland Univ. Physics Department head, writes in the Oct. 20 Washington Post that, "although much US research is supported by the Government, the total Federal expenditures for research are less than 1% of the Defense Department budget. A rapid doubling in basic research expenditures would be sound in the long run, leading to great savings in weapon development."

BASIC RESEARCH Basic research is underemphasized in the US, and the government "must assume active leadership" in encouraging and supporting it according to a 64-page report released Oct. 27 by the National Science Foundation. The report, entitled "Basic Research -- a National Resource," is available at 45¢ from the US Govt. Printing Office. It emphasizes that basic research is necessary to supply the scientific knowledge that permits the development of new products for a growing economy and new weapons for the military.

The report offers a number of practical suggestions to encourage scientific research, including a redefinition of rules on tax exemption privileges now accorded to nonprofit research institutes, changes in Federal income tax laws to stimulate private philanthropic giving for basic research, and a program of Federal grants in aid to states designed to increase state financial participation in supporting basic research.

The report laid emphasis on the "real need" to foster a national atmosphere in which "basic research may continue to flourish. ... Science will attract more young people as the conditions promoting its free growth and prestige become established on a wider basis." "In times past," said the report's general summary, "we tended to import new scientific knowledge, to lean heavily on the findings of scientists in other nations, and to concentrate on applied research and development. Such tendencies are not as prevalent as they once were."

CULTURAL EXCHANGE PROPOSALS

The USSR on Oct. 28 proposed a broad cultural and scientific exchange program with the US. Soviet Ambassador Zaroubin said Russia wanted "a wide exchange of delegations of specialists," while US Ambassador Lacy said this country favored "progress in the removal of barriers... obstructing the free flow of information and ideas. In particular," Zaroubin told State Dept. officials, "we have in view an exchange of delegations of specialists in the following industries: metallurgical, mining, automobile, chemical, radio, tool engineering, plastic, energetic and others."

RUSSIAN MOVES The Washington Post reported on Oct. 19 that the Moscow Teachers Union had asked the National Education Association to send a delegation of American elementary and high school teachers to Russia in exchange for a visit of Russian teachers here, but said "there were indications that the proposal would be turned down."

The Russian state tourist agency, Intourist, has made a number of changes in its regulations to encourage foreigners to visit the Soviet Union. Formalities of entrance at the border have been relaxed considerably, and visas now are granted free on a reciprocal basis to citizens of other countries. The rate of exchange has been changed to the benefit of the American tourist from 4 rubles to 10 for a dollar (Washington Post, Nov. 8). A Russian travel delegation visiting Washington said American travel to Russia increased last year and is continuing to increase this year. On their current US visit, the Russians are attempting "to establish more relations with travel agencies in this country to stimulate travel," the Post reported.

Kenneth Holland, head of the Institute of International Education, spoke Nov. 4 in Washington about his experiences during a recent trip to Poland and the USSR. He felt there were better prospects now for a broad exchange program than ever before. Holland spoke for nearly two hours with Mr. Ilushin, Minister of Higher Education, who seemed very desirous of making exchanges on a wide basis, as proposed by Zaroubin to the State Department. The Deputy Minister added that all fields of education should likewise be exchanged. Various plant managers he met also wanted our engineering students sent to them. "Similar expressions for exchange and a general feeling of good will and warm interest were expressed wherever I went. It seemed genuine," said Holland.

RESULTS OF EXCHANGE "Already more than 50 delegations have traveled between the US and Russia," Carroll Kilpatrick reported in the Washington Post of Oct. 30. However, Russian customs inspectors "will no longer permit shipments of television or movie film out of the country." Although there is no precise way to measure the benefits of the exchanges, said Kilpatrick, officials "are convinced that this country gains at least as much from them as Russia does. Americans who travel to Russia usually leave a favorable impression," and "the Russians who come here obtain a decidedly favorable impression of American life. Almost invariably the returning Russians write newspaper articles which... reveal surprised and even delighted new impressions of American capitalism."

PEACEFUL A-TALKS MAKE GOOD PROGRESS

The first general conference of the International Atomic Energy Agency ended Oct. 23 after three weeks' discussion. US, Soviet and many other delegates expressed satisfaction with results thus far of attempts to pool atoms-for-peace, and voted to hold another session in Vienna in 1958. The Agency is designed to accelerate peaceful atomic energy development. One of its main aims is to direct as much fissionable material as possible from military stockpiles into peaceful reactors. The agency will have a corps of inspectors whose job will be to insure that agency aid is not used for military purposes.

By the end of the first year, a staff of 370 employees will be assembled, headed by former US Rep. W. Sterling Cole. One resolution proposes the agency give \$250,000 for scholarships for scientists and technicians in 1958. A first-year budget of \$4,089,000 will be supported by member nations on a similar basis to contributions to the UN.

RADIATION HAZARDS & NUCLEAR TESTS

The UN Political Committee voted unanimously on Oct. 11 for a compromise resolution asking the Secretary General and the UN Scientific Committee on the Effects of Atomic Radiation to consider expanding the Committee's function to include the dangers of radioactive fallout from nuclear test explosions and industrial uses of radiation. The compromise resolution was introduced by the US and 15 other nations, and broke a deadlock over a Czech proposal for an international scientific conference in 1959 on radiation effects. The Committee's report on the effects of radiation on man and his environment is due next July.

A-TEST DANGERS The AEC Advisory Committee on Biology and Medicine issued a report Oct. 19 recommending that nuclear testing be held to "the minimum consistent with scientific and military requirements," and added that, "in time the situation may well become serious" if the rate of tests increases. They reported that radiation damage to health resulting from the tests is "within tolerable limits" and is "justified" by the need for maintaining "a first-class military organization." The report conceded that damage factors support wide differences of opinion because the potential numbers of persons adversely affected are "large if stated in absolute terms."

A British report released Nov. 2, of a study by four members of the health physics division of the Atomic Research Establishment at Harwell, stated that a small but definite increase in quantities of strontium⁹⁰ was being detected in the bones of human beings and animals.

A-TESTS DOUBLE The US, Britain and USSR have set off more than twice as many atomic explosions (42) this year than any other year since the nuclear age began. The US exploded 24, the USSR 12 and Britain 6, John W. Finney reported in the N.Y. Times Oct. 14. The total is probably still larger, he said, since there undoubtedly have been Soviet explosions not announced by the US. The previous record for nuclear test explosions was 19 in 1955. Finney saw the accelerating rate of atomic testing as emphasizing the "quicken, broadening pace of the atomic arms race in the midst of futile international negotiations for nuclear disarmament."

Finney quoted AEC Commissioner Libby as seeing no reason for increased concern over the rising number of tests. In 24 explosions so far this year, according to Libby, the US had introduced less radioactive material into the atmosphere than in 1954, when the US set off three explosions at Eniwetok. Finney said the "current rate at which fission energy is being exploded is of key importance," because "all the official reassuring statements about the hazard of radioactive fallout have been based on the assumption that atomic tests would continue at the rate of the last five years." In testimony at the fallout hearings last spring, he noted, some scientists proposed an international agreement to limit the amount of fission energy exploded in any one year, suggesting levels ranging from two to nine megatons a year. Scientists estimate that the upper level has been exceeded in 1954 and 1956, Finney observed.

FUTURE AND PAST TESTS The AEC and Defense Dept. jointly announced on Sept. 15 that, "in the absence of a safeguarded disarmament agreement, preparations are under way... for a series of nuclear tests to begin in April, 1958 at the Eniwetok Proving Ground in the Pacific. The US repeatedly has stated its willingness to suspend nuclear tests as part of a disarmament agreement. Until such agreement is attained, continued development of nuclear weapons is essential to the defense of the US and of the Free World." Test operations will be governed by the declaration made in the Bermuda communique on Mar. 24 of the intention of the US to "conduct nuclear tests only in such manner as will keep world radiation from rising to more than a small fraction of the levels that might be hazardous."

Since last April, the USSR is reported to have fired eight nuclear tests including, according to a Moscow announcement, "a powerful hydrogen device of new design" exploded Oct. 7. The British announced on Nov. 12 a halt to further nuclear tests in the "immediate future." They also claimed (Nov. 9) to have developed a hydrogen bomb so "clean" it could be used for "tactical" purposes.

DAYTON APPEALS PASSPORT DECISION

In a 2-to-1 decision, the US Court of Appeals ruled Oct. 24 that the Secretary of State can use confidential information in considering passport applications. In this case, Weldon Bruce Dayton, a cosmic-ray physicist, claimed he had a right to confront witnesses who have information against him. Dayton was denied a passport in 1954 when he wanted to go to India to work at the Tata Institute. He was then accused of being active in Communist-front activities, associating with Communists, and wanting to go abroad "to engage in activities which will advance the Communist movement."

Dayton's attorney, Harry I. Rand, said the case would be appealed to the Supreme Court, since "the very important issue" of whether the State Dept. can deny a passport on the basis of secret information should be settled by the high tribunal. A brief amicus curiae, prepared by Attorney Nathan H. David in cooperation with the FAS Passport Committee, had been filed by the FAS in Dayton's behalf (see NL 57-7). The FAS Committee is now considering further participation in this case to bring a Supreme Court ruling.

The Appeals Court ruling, by Judge Prettyman, said past cases and common sense do not allow it to compel the Secretary to disclose secret information relating to internal security or foreign relations. "Americans always resent and oppose the deprivation of liberty upon the basis of undisclosed information. We do so in this area. We would not agree to it except in the necessary circumstances of public concern." Judge Fahy dissented from the majority decision, stating "this case requires still further consideration by the Secretary before a final verdict is reached."

INDUSTRIAL HAZARDS

United Kingdom atomic energy authorities ordered all farmers within a 7-mile area of Britain's Windscale Atomic Energy Station to stop delivering milk because of radioactive leakage, occurring when one of two nuclear piles became overheated and released radioactive fallout over the countryside last month. The area was later extended to 200 miles. Reuters reported on Oct. 18 that radioactivity in the London area increased to 20 times its normal strength following the escape of radioactive iodine from the plant.

Surgeon General L. E. Burney, speaking before a conference of Public Health leaders on Oct. 4, said that public health "has not yet taken its proper place in radiation protection. The increasing medical and industrial uses of fissionable material place this responsibility in the realm of community health protection."

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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. This issue of the Newsletter was prepared by D. A. Osgood and I. Shapiro of the Washington Office staff, with the editorial assistance of a Washington area member:

Editor of this Issue: E. D. Korn

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"Let's Meet the Soviets Half-way"

The November Bulletin of the Atomic Scientists reprints two Soviet documents -- a resolution of the Presidium of the Soviet Academy of Sciences adopted Aug. 8, and a statement signed by 196 Soviet scientists on Aug. 13, following a report by Prof. A. V. Topchiev on the Pugwash Conference (see Sept. Bulletin or NL 57-7). Both documents propose holding a broad international conference of scientists to discuss the dangers to mankind of a thermonuclear war. Commenting editorially on these communications, Editor Eugene Rabinowitch points out that, although they repeat some Communist propaganda demands (prohibition of atomic weapons and cessation of bomb tests), the scientists recognize the necessity to discuss in a "business-like way" any "proposal directed toward the prevention of atomic war," and the "creation of secure peace." He concludes: "Western scientists should not be the ones to refuse the invitation of their Russian colleagues."

Spokesmen of the three main parties in the Canadian Parliament gave broad approval to the Soviet conference proposal, on Nov. 12. Former Foreign Affairs Minister (and 1957 Nobel Peace Prize winner) Lester B. Pearson said "such a meeting might have good results," and should be held in the US or in Russia. M. J. Coldwell, leader of the Cooperative Commonwealth Federation (Socialist) requested Prime Minister Diefenbaker to "encourage and assist" the holding of the proposed conference.

EATON'S VIEWS The current Soviet offer grew out of the conference last summer at the home in Pugwash, Nova Scotia, of Cyrus Eaton, Chairman of the Chesapeake & Ohio Railway. The N. Y. Herald-Tribune (Nov. 8) called attention editorially to these Bulletin articles and published a statement by Eaton under the headline quoted above. Eaton wrote in part:

"The longer we put off finding a common ground the tougher it's going to be to find. Russia has tremendous resources, and her people have a great willingness to work and a strong love of country. Leave Russia alone, let her deal with her economic theories and practices -- time would have a big effect on these. But to build places all around them from which we can launch bombs and missiles gives that nation a solidarity that it would not have if they didn't feel the Western World was plotting to destroy them. So I take the declaration of these... top scientists seriously. I think that any man who refuses to respond to that approach is lacking in wisdom, and not serving the best interests of the US. ...

"What should be the mechanics of our answer to the Soviet proposal? This depends on the scale, on whether a few scientists or a large group will be involved. Perhaps we'd have to have it under the auspices of a government, but this inevitably carries a stigma with it. We can't hold it in the US, because the US won't allow representatives from Red China. This is a policy -- like barring newsmen to China -- in which it's hard to find any

UN BACKS WESTERN ARMS PROPOSAL

The UN General Assembly, by a vote of 56 to 9, endorsed a Western arms proposal as the basis of new disarmament talks on Nov. 15. The 24-power resolution, which has been endorsed by the Political Committee the previous week, asked the Disarmament Commission to reconvene its 5-power subcommittee as soon as possible and to give priority to the Western plan presented at last summer's deadlocked London talks. This plan would include suspension of nuclear tests under international control, halting of production of fissionable materials for weapons, reduction of stocks of nuclear weapons, reduction of armed forces and armaments, progressive establishment of ground-air inspection systems to guard against surprise attacks, and a study of an inspection system to control outer space objects. The Assembly also approved, 71 to 9, a Belgian resolution calling for the widest possible publicity on the effects of the continued arms race and nuclear weapons.

A recent Russian draft resolution, calling for abandonment of the present UN disarmament structure and its replacement by an 82-nation "permanent disarmament commission," was defeated. Canada and Japan, backed by the Western powers, proposed to add 10 countries to the present Disarmament Commission for 1-year terms. India, Yugoslavia and Sweden proposed an additional 4 nations (total of 25) in an effort to meet Russian objections.

On Nov. 4, the USSR withdrew from all UN disarmament negotiations. According to William Frye (Washington Post, Nov. 10) the Russian boycott was an attempt to "frighten the 82-nation Assembly out of endorsing a Western disarmament plan" which would prevent other countries from getting atomic and H-bombs. However, the Assembly voted for the plan 57-9. Frye said the 57 countries had agreed on the first atom control plan "to gain wide approval since the Baruch Plan was endorsed in 1948."

intelligence" and which suggests "a lack of wisdom ..."

Eaton expressed confidence in the "willingness on the part of scientists to do their part toward cooling the passions of statesmen. I think the more conferences we have under as many auspices as possible, taking in people with no axe to grind -- and scientists are probably as disinterested as you can find -- the better. It's certainly something colleges and universities can back. Certainly anyone who is a capitalist ought to go for it -- because in a war all the material accumulations of the past would go. ..."

BRADLEY Gen. Omar N. Bradley, speaking at the St. Albans School (Washington, D.C.) convocation Nov. 5, said "we are now speeding inexorably toward a day when even the ingenuity of our scientists may be unable to save us from the consequences of a single rash act or a lone reckless hand. ... if we apply to these human problems, the energy, creativity, and the perseverance we have devoted to science, even problems of accommodation [with Russia] will yield to reason."

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