

F. A. S. NEWSLETTER

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November 13, 1959

DISARMAMENT AND TEST BAN

Two recent events may be of some consequence for the achievement of the interrelated goals of general disarmament and the banning of nuclear weapons tests. At New York, in an unprecedented display of unanimity, all 82 members of the United Nations General Assembly concurred in the sponsorship of a resolution which directs the Secretary-General to transmit to the 10-member Disarmament Committee all disarmament proposals which have been presented at the current session of the General Assembly. The resolution specifically mentions two plans. One is the British disarmament plan set forth by Foreign Secretary Selwyn Lloyd on September 17, in which step-by-step decreases in armament are to be accompanied by international controls and the establishment of an effective international police force. The other is the Khrushchev proposal of September 18 for "general and complete disarmament." The Disarmament Committee, a non-UN organization with 5 members from the West and 5 from the East, is scheduled to begin negotiations in Geneva during the first part of 1960.

Issues Involved

The second event occurred in Geneva. The 3-power East-West talks on a nuclear test ban were resumed on Oct. 27 after a recess lasting two months. The two major issues concerning the negotiators are the determination of the nature and location of control posts, and a consideration of procedures necessary for the detection and control of underground test explosions. In tests last summer and fall, the US secured data it considers essential for resolution of the latter problem, and now insists on a technical study of this information. On Nov. 3 the Russians changed their position and agreed to a two or three week study of the data by US, British and Russian experts. Optimism over the Soviet shift has been clouded by their qualified wording of what they expect the experts to do. These hopeful developments are counteracted by the rumored imminence of a French A-bomb test. Information from French sources place the date as the early part of 1960, but British and American scientists who have seen the French atomic installations do not believe the French will have the plutonium necessary for the test before late summer or fall.

FAS Statement

In a statement released Oct. 31, the FAS Executive Committee emphasized that the test of atomic weapons by France—or by China—should not be permitted to upset the Geneva test ban negotiations. "Instead," the statement said, "the imminent emergence of a fourth nuclear power should lend urgency to the present efforts to complete a treaty for a ban on atomic tests to which France and all other nations could subscribe." The statement recommends that an all-out effort be applied to solve the technical problem of detection of small underground explosions. "The tremendous value of the results of such an all-out program certainly would justify our dedicating to it the same energy and purpose we devote to large scale armament programs. Logically the USSR should join with us in an international effort to solve the technical aspects of this problem."

Test ban agreements have again become an issue in domestic politics. Gov. Nelson Rockefeller of New York, televised on the "Youth Wants to Know" program of Oct. 25, urged that the US resume underground nuclear test explosions so that this country will not "... fall behind in the advanced techniques of the use of nuclear material." He said the resumption of such tests would further the US objective of preserving peace of the world.

Humphrey & Kennedy For Test Ban

Two of the leading Democratic presidential contenders have disagreed with Rockefeller on this issue. Sen. Hum-

F A S OFFICER WINS NOBEL PRIZE

Dr. Owen Chamberlain, Secretary of FAS and member of the Berkeley Branch for seven years, was awarded the 1959 Nobel Prize in Physics for his part in the discovery of the anti-proton. Dr. Chamberlain received the news at Cambridge, Massachusetts where he is Loeb visiting lecturer in physics at Harvard University. He is on leave from the University of California Radiation Laboratory.

Dr. Chamberlain was born in San Francisco in 1920. He received his undergraduate training at Dartmouth College and his Ph.D. at the University of Chicago in 1949. During the war he was a member of the laboratory at Los Alamos. Since 1948 he has been at Berkeley.

SATURN PROJECT TRANSFERRED

President Eisenhower has announced the proposed transfer of the Saturn project from the Army Ballistics Missile Agency to the civilian space agency, the National Aeronautics and Space Administration (W. Post, 10/22). This will affect 4400 of the 5500 employees of ABMA, the nucleus of which is Wernher von Braun's team of 110 former German scientists. The announcement was made following a top-level White House conference which included Neil H. McElroy and Hugh Dryden, Head and Deputy Head of NASA, Herbert York, Defense Dept. Director of Research and Engineering and George Kistiakowski, Presidential Science Advisor. The conference followed the announcement of the resignation of Gen. John Medaris, Chief of the Army Ordnance Missiles Command and von Braun's immediate superior.

These occurrences may be ascribed to a general dissatisfaction about the progress of US space programs. Two months ago, responsibility for all military space vehicles was given to the Air Force. The Army was left only the Saturn project. As this project is considered to have no military significance, the Defense Dept. had reduced its support. This is said to have resulted in slowdown and discontent at ABMA.

Apparently, the transfer of Saturn to NASA cannot be concluded until 60 days after the commencement of the January session of Congress, and either chamber could act to block the move. No such action is expected, and the likely date of transfer is March 1960. Because of this delay the 1960 funds for Saturn must be included in the budget of the Defense Dept., not NASA.

Roy Johnson, Head of Defense Dept.'s Advanced Research Projects Agency, revealed that he will request \$140 million for 1960 and \$250 million for 1961 (W. Post, 10/30). These figures meet those suggested by von Braun and contrast with the \$50 million being spent this year. It is not known whether NASA, under which the Saturn project must ultimately function, has approved these figures. Von Braun has emphasized that even with the increased appropriations Saturn will not be ready before 1963-64.

phrey (D, Minn.) in a speech on Oct. 30, proposed a four-point program for resolving the test ban deadlock: 1) a one year extension of the voluntary test ban, 2) inspection of events suspected of being underground explosions of an intensity of five or more kilotons, 3) a limit on the number of inspections, 4) a comprehensive research program to improve detection techniques which might lead to control of all underground explosions within two years.

Senator Kennedy (D, Mass.) expressed his "emphatic dis-

(Continued on page 4)

SCIENTIFIC AND CULTURAL EXCHANGES

An expanded scientific and cultural exchange program is being negotiated by the US and the USSR. Details of the new plan have not been made public, but the exchange will cover eight industrial fields as well as construction, commerce, agriculture, medical science, and the performing arts.

The present two year program which expires January 1960, called for the US to send 1733 persons to Russia on 129 projects, while Russia in turn was to send 1391 persons to the US on 121 projects. The majority of the exchange projects, which included attendance at meetings as well as individual visits, involved scientific and technical personnel. Congressional appropriations provided funds only for administration of the exchange programs and the visits of US citizens were usually financed by the sponsoring group. No funds of any kind have been appropriated for the entertainment of Iron Curtain visitors to this country. During Premier Khrushchev's visit to the US, Surgeon General Leroy Burney and Dr. Aleksander Markov discussed the exchange of scientists, specific coordinated research projects, and a joint medical program to help underprivileged nations.

IRRADIATION PROBLEMS

Construction of a proposed 7.5 million dollar food irradiation center at Stockton, Calif. has been delayed by the Army amid indications that the whole program of preserving food by beta and gamma radiation may be slowed or stopped (W. Post 10/23). The immediate cause of the slow-down is the finding of adverse biological changes in animals fed irradiated food for months or years. These included reduction of the birth rate of dogs and the development of hemorrhages and visual disturbances in rats. The incidence of cancer was not increased by feeding irradiated food, and there is no evidence that the food is radioactive. Presumably the food contains no harmful agent, but it may not contain some factors essential to an adequate diet. Destruction of vitamins by irradiation is thought to be responsible for the biological effects. Although the results are considered inconclusive by the Army, all experiments with human volunteers have been stopped.

The food irradiation program began in 1953. It has had considerable publicity since then.

In response to the mounting interest in hereditary defects associated with radiation, the Office of Vital Statistics is planning to collect data on this subject beginning in 1960. The principal source of information will be birth certificates which cover about 99 percent of the population. Forty states now include a question on congenital malformations in their birth certificates; many of them ask for a description of the defect. The data to be collected could be used to correlate birth defects with local variations in radiation intensity. Joseph Schachter, chief of the Natality Analysis Section of the Office of Vital Statistics, is in charge of the new project (N.Y.T., 10/8.)

SPRING SUMMIT CONFERENCE LIKELY

In October it became evident that no East-West Summit Conference would be held this year. Deferment of the conference until spring has been attributed to the efforts of President de Gaulle and Chancellor Adenauer. A French Government communique, dated Oct. 21, described the French position. It held that there should be an easing of tensions before the talks and that there should be careful advance preparation by the Western powers. Delay of the meeting until spring might be favorable to France if there is an interim improvement in the Algerian situation and progress in her atomic energy program. Chancellor Adenauer, in declaring himself in favor of a spring meeting, maintained that he desires an agenda including disarmament and including changes in the present status of Germany. A meeting of the leaders of the Western powers is expected to take place in Paris around Dec. 19.

ANTARCTIC AGREEMENT IN SIGHT

The 12-nation Antarctic Conference, which began in Washington October 15, reported, after a week of negotiation, satisfactory progress toward a treaty to outlaw military use of the South Polar region. The treaty would recognize a territorial "status quo" in Antarctica and would encourage scientific cooperation there. It is evident that territorial claims may be an obstacle in the way of a treaty. Seven

ATOM POWER STUDY SET

A major study of the United States international program for developing nuclear energy was instituted on Oct. 25, 1959 by the Joint Congressional Committee on Atomic Energy. The study will be carried out by Robert A. McKinney, New Mexico editor and publisher, who headed an earlier committee which studied peaceful uses of atomic energy. Mr. McKinney has been asked to consider the following questions: 1) Should emphasis at present be placed on construction of atomic power plants or on the development of new designs; 2) are the needs of under-developed nations being met; 3) are our international nuclear activities properly related to our domestic program; 4) what is the effect of the present international program on our domestic nuclear power industry. Mr. McKinney in the past months has said on several occasions that plans for construction of nuclear power plants in Europe should be slowed because of the abundant supply of other fuels (N.Y.T., 10/25,26).

ATOMS-for-PEACE CONFEREES MEET

Progress toward increased international atoms-for-peace activity was made at the third general conference of the International Atomic Energy Agency. The two-week meeting ending Oct. 2 was held in Vienna. Plans for more research on small and medium-size power reactors were approved. An agreement by the US and the Soviet Union to exchange visits and information under the auspices of the IAEA was regarded hopefully. The agreement followed recent conversations in Washington by AEC Chairman John A. McCone and Vasily S. Yemelyanov, director of the Soviet Main Administration for Peaceful Uses of Atomic Energy. The IAEA has made less progress in advancing Pres. Eisenhower's atoms-for-peace plan than had been hoped at its birth in 1956. Although the US has allocated over 5000 kilograms of enriched uranium for distribution through IAEA, the sale of 3 tons of Canadian uranium to Japan last summer is the only one carried out by the Agency. The difficulties appear to be two-fold: first, the Agency gets no price reduction from the US, and its customers must therefore pay prices higher than those for direct purchases in America; second, agreement on controls to avoid diversion of nuclear material from peaceful uses to weapons use has not been reached by all countries. Sterling Cole, the director of the IAEA, has repeatedly criticized the US practice of selling uranium directly to other nations in agreements which by-pass the Agency. A recent request to IAEA (N.Y. T., 10/20) by Finland to purchase a few kilograms of enriched uranium may be a promising indication that the IAEA's future role in world atomic energy activity may be other than that of a clearing house of information.

NUCLEAR FUTURE APPRAISED

Three leading atomic scientists discussed the future of nuclear energy at a meeting organized in conjunction with the IAEA conference. Sir John Cockcroft of the United Kingdom noted the temporary surplus of coal in Europe and a tendency for nuclear power costs to drop less rapidly than had been hoped. He felt, however, that the recession in nuclear power plant construction would be temporary. He considered his "previous guess that thermonuclear power is at least 20 years away" is still valid. Dr. Homi J. Bhabha of India challenged the notion that nuclear power is not applicable in less developed nations. Dr. Bertrand Goldschmidt of France predicted that the uses of nuclear energy in chemistry and metallurgy may some day rival its use as a source of power.

A five day organizational meeting of the Inter-American Nuclear Energy Commission was held in Washington in October to plan future participation by South and Central American nations in the use of nuclear energy. The Commission will be a semi-autonomous group linked with the Organization of American States. It will meet regularly to consider the uses of nuclear energy in the Americas and will facilitate the exchange of information and scientific and technical personnel among the American States. Its next meeting is set for Aug. 22, 1960.

nations claim rights in the region, and delegates from Chile and Argentina have voiced objections to internationalization of the continent. The U.S. and U.S.S.R. have neither claimed territory nor recognized claims of others. It is the sanguine view of the U.S. that a treaty can be concluded without requiring any participating nation to renounce any basic historic rights.

MOVIE REVIEW

ON THE BEACH. Produced by Stanley Kramer for United Artists Corporation, from the novel by Nevil Shute, with a cast including Gregory Peck, Ava Gardner, Fred Astaire, and Anthony Perkins.

This is the first motion picture ever reviewed in this scientists' newsletter, but we break precedent because many scientists who have seen this film feel that it is outstanding in most of its details, and extraordinarily realistic and dramatic in its presentation of basic truths about atomic warfare. Scientists will not give it an unqualified recommendation, for it distorts facts about nuclear radiation, and perhaps does so needlessly. But if it were reasoned by the writers and the producer that this distortion was necessary to dramatic unity and impact, it may be forgiven. Of course some will not subscribe to the doctrine, "Never mind the facts, I want the truth," but there is more to be said for this doctrine in art than there is in science. We do not care now that in *Ghosts* Henrik Ibsen showed his ignorance of syphilis.

On The Beach is one of the few motion pictures which comes at all close to its claim which many have claimed, that it deals with "the biggest story of our time." Mr. Shute's book, set in the near future, "five years from now," deals with how people respond to the aftermath of a massive atomic war, in which the world-wide fallout dooms the entire human race to inevitable death by acute radiation sickness. The basic premise is that most people in the Northern hemisphere are dead, as the story opens. Nearly all the action takes place in Australia, where the inhabitants generally continue to go about their business, until quite close to the end, although their officials and their scientists assure them that as the cap of radiation cloud over the earth comes southward they will also be doomed. This is an unusual and dramatic statement for an opening, and offering all kinds of possibilities, but violating some of the tenets of popular dramatic construction, in that the ultimate end is predictable, is constantly predicted, and comes to pass, and the show is over. The viewer of this film, however, is generally so moved by the exciting possibilities of the human race, and the likelihood of its predicted end, that he is too concerned with the wrong way to run the human race to notice that this is a wrong way to end a story.

FAS members may look elsewhere for answers as to whether Gregory Peck is not a little too stone-faced as the gallant submarine commander, but this reviewer found that he and the rest of the cast gave excellent characterizations to a surprisingly tasteful script. You or I might well have said Fred Astaire would be our last choice for playing a physicist with a taste for alcohol and for sports cars. Given those psychometric parameters, Mr. Astaire shows why you and I are not casting directors, and gives a genuine quality to the most purple passages in the film. Early in the play he has a moment or two to discuss social responsibilities of scientists, and he does well with at least one of the themes, that scientists did try to warn the human race of the perils of bombs, of radiation, and of war.

"The horror lies in the very fact there is no horror," a theme well known in physicists' circles since World War II, seems to have been well understood by Mr. Kramer. Perhaps this is a counterpart of *All Quiet on the Western Front*, and may be considered as an anti-war film of our time. If so, its existence is historic in itself. But in content it is quite different from the anti-war documents of the Twenties and Thirties—as of course it should be. But as we see the story unfold as the main situation is sketched in implicitly, with an everyday acceptance which represents subtle dramatic artistry, a viewer may also see here a resignation, a blind drift, which may well be the hallmark of our age.

Scientists will not think it easy for any kind of radio-active war to wipe out human life, not by genetic effects, but through continental clouds drifting lethally from one hemisphere to another. But many will accept the basic truths and the fundamental honest and important message of this great motion picture.

This film may be compared with the Smyth Report, which scientists and engineers were urged to read so that they could help interpret the new age to laymen. This film may also be recommended to scientists for this reason, but a more compelling reason is that it will help most viewers, including scientists, to a better understanding of the alternatives facing man in the world science and man have made.

Michael Amrine

CHAIRMAN McCONE VISITS USSR

John A. McCone, chairman of the AEC, visited atomic energy installations in the USSR during the period, October 8-19. He was accompanied by five scientific advisors: Dr. John H. Williams, Dr. Frank A. Pittman, Dr. Alvin Weinberg, Dr. Lyman Spitzer, and Dr. Kenneth Pitzer. On November 3, a party of Russian scientists, led by Professor Vasily S. Emelyanov, Director of the Main Administration for the Peaceful Uses of Atomic Energy of the USSR, began a tour of US installations. This exchange of visits is one of the first results of Emelyanov-McCone discussions held in Washington during the Khrushchev visit (*W. Post*, 10/8).

Upon their return, Drs. Williams, Weinberg and Pittman, made the following remarks at a press conference:

"The U.S. has a lead in the quality and number of accelerators for conducting high-energy nuclear physics research."

"In controlled thermonuclear research, the Russians appear to be no closer to a practical device than is the U.S., and both countries are devoting about the same effort to this field."

"The Soviet Union is scaling down its construction of nuclear power plants until development problems can be overcome. No atomic power station was seen in operation comparable in size to the 60,000-kilowatt plant at Shippingport, Pa."

"The USSR has succeeded in running a reactor using plutonium oxide as fuel. It can produce more fuel than it consumes. The U.S. has not yet placed a similar plutonium-fueled reactor into operation." (*N.Y. T.*, 10/22).

Chairman J. McCone also attended a news conference, and said, *inter alia*:

"The Soviets are carrying on a high-level effort.... have men of considerable competence and get things done in a remarkably short time." (*W. Post*, 10/28).

As an example of the speed with which the Russians can carry out large projects, McCone mentioned that they had designed and built their huge "Ogra" experimental thermonuclear device in 10 months, whereas the U.S. is taking 2½ years to produce a somewhat similar machine. The Russians have designed and built a fast-neutron reactor in one year. When asked if the U.S. had to improve its present system, Chairman McCone replied that there is something inherent in a democracy and in its budget process which slows things down. Chairman McCone came home with the impression that the Russians seem anxious to exchange data in an atoms-for-peace program and that some such program may be arranged.

The FAS is a national organization of scientists and engineers concerned with the impact of science on national and world affairs. The NEWSLETTER is prepared in Washington by FAS members. The staff for this issue included, Editors: J. Edgcomb, E. Shelton and Irving Shapiro, of the Washington Office Staff; Writers: H. G. Dubuy, M. G. Fuortes, F. K. Millar, E. Korn, G. Picus, M. Singer, F. Stern, B. Stiller; Production: I. Shapiro.

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CHAPTER NEWS

In the belief that each Chapter of FAS would be interested in what is going on in other Chapters, the Editors of the FAS Newsletter are providing space for Chapter News. We invite your comments as to what you would like to see in this column.

Greater Boston Branch of FAS.—At a noon meeting on October 29, about 30 members of the chapter heard a discussion of the 4th Pugwash Conference conducted by B. T. Feld and V. F. Weisskopf. Owen Chamberlain, who attended the meeting, was congratulated for being awarded the Nobel Prize in Physics.

Mohawk Association of Scientists and Engineers, MASE, New York Capital District Chapter of FAS, Schenectady, New York.—MASE has its own Newsletter in which chapter meetings are announced and local news of interest to the Chapter is discussed. During October the Rockefeller fall-out shelter proposal was the subject of a meeting and the route of the Northway highway was the subject of another. On November 19, Seymour Melman, editor of "Inspection for Disarmament", spoke on "American and Soviet Attitudes on Inspection for Disarmament".

In one MASE Newsletter appeared a story about the activities of the MASE Committee for Technical Assistance to Rapidly-Developing Countries. The Committee, under the championship of R.M. Walker of G.E. Research Laboratory, has received requests for help on specific technical problems from such faraway places as Nigeria. The FAS Newsletter hopes to have a fuller story on this committee in a later issue.

Los Angeles Chapter FAS.—Gerard Piel, publisher of Scientific American, spoke to the Los Angeles Chapter on Oct. 19, on the subject "Will the boom in Science survive Total Disarmament?".

Washington Association of Scientists, WAS, District of Columbia, Maryland and Virginia Chapter, FAS. The members of the Executive Committee of WAS along with 60 other FAS members and friends were invited to see a preview of Stanley Kramer's film "On the Beach". See review by M. Amrine elsewhere in this issue.

OUTER SPACE EXPLORATION

The first photographs of the hidden side of the moon were relayed to earth from the Soviet rocket Lunik III. The satellite, launched on Oct. 4, was 5,000 miles from the moon on Oct. 6, proceeded about 70,000 miles further, and started to return to the earth on Oct. 11.

On Oct. 18, Lunik III moved around the earth at a height of about 25,000 miles and began its second two-week orbit. No details of the instruments carried by Lunik III have been disclosed, but at the Soviet Embassy in Washington it was stated that the satellite carried 614 pounds of instruments. The Tass News Agency stated that the photographs made by Lunik III were taken during a period of 40 minutes while

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LETTERS TO THE EDITOR

The Editors of the NEWSLETTER welcome letters from members of FAS. The Editors reserve the right to edit letters received. Letters will be published at the discretion of the Editors.

Dear Sir:

This is written to comment on the formation of the Advisory Committee on Science and Technology to work with the Democratic Advisory Council reported in the August 10th Newsletter.

It represents progress for the Democrats to thus give recognition to the political importance of science and technology. However, despite Dr. (chairman) Pollards' statement that, "I am fearful of the consequences of this committee being established as a Democratic committee", as one who has had personal experience in another field (Public Health) in which partisan politics has no place, I am certain that this committee (as constituted) will be unable to avoid being subtly sucked in to taking partisan positions on scientific matters. This statement implies no chicanery or dishonesty. It's only a recognition of the fact that both science and politics are too subtle to be dealt with in this way. To avoid this situation Departments of Health have often been placed under the protective shield of a bi- or multi-partisan board who can thus insure that the department scrupulously avoid actions which have (or might seem to have) a partisan character.

We badly need a national science forum in which to hammer out sound policies regarding science and technology. I suggest that the Democratic and Republican parties jointly approach the AAAS with a request that the AAAS establish an Advisory Committee which would be available to all for the purposes foreseen by the Democrats.

Dr. Joseph W. Still

the rocket was between 37,000 and 43,000 miles beyond the moon.

The Soviet scientist Prof. Ari Shternfeld predicted that other useful information will be gathered by Lunik III during its future revolutions. The satellite is expected to continue in orbit for many months. It should approach the moon during its 9th, 16th, 25th, 41st, 66th and 107th revolutions.

On Oct. 14 a 91 pound satellite, Explorer VII, was successfully launched from Cape Canaveral. This satellite circles the earth at altitudes between 350 and 650 miles and carries two transmitters, one of which is powered by solar energy. Explorer VII may remain in orbit several years during which it will transmit information on radiation.

DISARMAMENT (Continued from page 1)

agreement" with Gov. Rockefeller because resumption of tests would hamper the Geneva negotiations and damage the American image abroad. He proposed continuation of the test ban and development by the US of a well-defined and realistic inspection proposal. He also supported further study of the effect of fallout.

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