

F. A. S. NEWSLETTER

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M. Stanley Livingston, Chairman

----- to provide information
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No. 60-5

June 27, 1960

DISARMAMENT TALKS BREAK DOWN

On June 27, the ten-nation disarmament talks broke down when the five Communist nations, led by the Soviet Union, walked out of the talks at Geneva. The walkout came as U. S. Delegate Frederick M. Eaton was about to present the Western response to the latest Soviet proposal. (Wash. Star, 6-27.)

The Soviet bloc action came in the wake of mounting criticism at home and from Western allied nations that the U. S. had little or nothing new to offer by way of counter-proposals. The criticism focused both on the failure of the government to organize itself for thoughtful and systematic policy formulation, and on the inadequacy of the personnel chosen to lead the American negotiating team. In a report released the day before the Geneva disarmament debacle, the National Planning Association characterized American disarmament efforts as "perilously casual" and criticized the administration for selecting "unseasoned personnel" for delicate negotiating tasks. (Wash. Star, 6-27.) The NPA study pointed out: "Arms control is not an amateur's game. . . . The only continuous feature of our efforts in the disarmament field have been a lack of continuity in top personnel and paucity of planning and research efforts."

The Soviet move had not been unexpected (NY Times, 6-25), but came much sooner than expected. Soviet Delegate Zorin announced that the Communists will now take their plan back to the U. N. General Assembly. Coupled with Premier Khrushchev's statements at the abortive summit meeting last month in Paris, many people here consider it most unlikely that direct East-West disarmament negotiations will be resumed until after January 1961, when a new administration takes office.

The 10-nation disarmament conference had reconvened this month to discuss a revised disarmament proposal offered by the Soviet Union. This is a modification of the total disarmament plan presented last fall, the most publicized change being to abolish all means of delivering nuclear weapons (including bases on foreign soil) in the first stage of the program.

New aspects of the Soviet plan also include a more detailed disarmament control system, recognition of the need for an international police force, and provision to study control of production of fissionable material (NYT, 6-19). Abolition of means of delivery of nuclear weapons is said to be favored by the French, but since it would eliminate the nuclear "deterrent" before reduction of conventional weapons, Great Britain and the United States have objected that Russia would gain an advantage. The British delegate stresses Western insistence on a balanced program of reduction of all types of arms at every stage of disarmament; and the American delegate declares that the West cannot agree to "immediate abolition of the free world's major capabilities for protection against aggression." (Wash. Post, 6-11). The Soviet plan provides that "no state shall at any stage obtain military advantages over other states as a result of the progress of disarmament (NYT, 6-3) and Mr. Zorin said on June 10 in reply to this point: "If the West . . . consider the Soviet plan is not sufficiently balanced, this could easily be corrected. If the Western powers have any proposals, we are ready to discuss them." The U. S. is under pressure from its Allies to present counterproposals.

NUCLEAR TEST BAN TALKS CONTINUE

After the failure of the Summit meeting in Paris last month, current negotiations between the U. S. and USSR on a nuclear test ban and disarmament have continued in Geneva. Recent actions of the U. S. in this area have drawn criticism. Early in May the President announced that the

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"Daddy, Why Doesn't Everybody Love Me Like You Do?"



U-2 DOWN—DEFENSE SPENDING UP

There has been a general emphasis on strengthening the U. S. defense posture since the U-2 incident. Previously, largely in the interests of economy, development of several military programs had been seriously curtailed. Congress has now begun to restore many of these. The House re-allocated funds for development of nuclear powered aircraft (W. Post 5-21) and the Senate Appropriations Committee added a billion dollars to the President's military budget. These funds are allocated to development of a spy satellite ("Samos"), the restoration of the Bomarc missile defense program, building an aircraft carrier and developing the B-70 bomber as a full weapons system (W. Post 6-9, 6-11). Coincident with this renewed Congressional concern with our military might, the Defense Ministers of West Germany and Great Britain met with the Council of Ministers of the Southeast Asia Treaty Organization in Washington to discuss means for improving the defenses of Europe and Asia (NYT 5-31).

The missile program has also been accelerated. Approximately 75-105 major launchings are planned for the next three years including an attempt to put an astronaut into orbit in 1961. Also under development is the Kiwi-A, a

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FAS NOTES

• The next FAS Council meeting will be held in Chicago in conjunction with the Thanksgiving meeting of the American Physical Society, November 25 and 26.

• The FAS Executive Committee met June 25 in Washington. In addition to routine business the Execom decided to pursue its studies of science education policy and chemical and biological warfare.

• Some FAS members have expressed concern that the State Department may be instructing American scientists attending international scientific meetings to vote against admission of, or to restrict contacts with, scientists from Communist China or East Germany. FAS acknowledges that it may be proper for the Department to guide the actions of scientists who officially represent the United States at meetings of organizations where the United States as a nation is the member and not the individual scientist. But attempts to instruct individuals who do not officially represent the United States would seem unwarranted. The problem, of course, is the scope of the words "officially represent the United States." At the recent live virus polio vaccine conference in Moscow, three U. S. Public Health Service employees were forbidden to attend an international symposium because Chinese Communist and East German scientists were at the meeting. Three non-government researchers were apparently permitted to attend. (NY Times, 5-12.) FAS members are invited to inform the Washington office of additional instances, if such exist.

• Materials and hearings of Sen. Jackson's Subcommittee on National Policy Machinery, "Organizing for National Security: Science Technology, and the Policy Process," may be obtained from the Senate Committee on Government Operations.

• Political Party Platforms: As a result of FAS Council action at its April meeting in Washington, FAS has submitted a policy statement to both the Republican and Democratic platform committees. Dr. Walter Selove testified on April 28 before Democratic platform hearings in Philadelphia urging continued support for a nuclear test ban and urged an intensive disarmament research program. The Republicans will hold hearings on July 20 and 21 in Chicago, prior to their convention there the following week.

The FAS statement, drafted by Frank Ham, Robert Rochlin, Hugh Wolfe, and Walter Selove, is as follows:

FAS DRAFT FOR PARTY PLATFORM

Education

We can not be content when the American education system fails to provide our children full opportunity to develop their talents to the limits of their abilities. Shortages of classrooms and of competent teachers, low teachers' salaries, and inadequate standards today handicap our schools. With many communities and states facing severe difficulty in providing increased funds for school support, these deficiencies can be corrected in time to benefit the present generation of students only with the provision of substantial funds from the federal government. Since the strength of democratic institutions in a rapidly changing world depends on full development of each citizen's abilities, we can countenance no further delay in making these funds available.

School Construction. We pledge support for federal grants to the states to assist in the construction of new schools and classrooms, in order to correct the classroom shortage made acute by rapidly rising school populations.

Teachers' Salaries. We pledge support for federal grants to the states to aid in raising teachers' salaries in general and in providing special salary levels for highly qualified teachers. One of the principal causes of mediocrity among teachers and of the present teacher shortage has been the low general level of teachers' salaries and the absence in the schools of incentive rewards for the better teacher.

Federal College Scholarship Program. We pledge to work for creation of a federal scholarship program for college undergraduates. This shall be designed to assure the opportunity of a college education to able students who are now prevented from attending college by financial need, and thereby to encourage these able students to prepare for college.

Loyalty Oath Requirement. We pledge to work for repeal of the loyalty oath provisions for teachers and students con-

tained in the National Defense Education Act. These requirements have led many college to withdraw from the student loan program, and they are an instance of the objectionable extension of loyalty-security procedures to non-sensitive areas where they serve no useful purpose and may do substantial harm. We fear particularly that requiring the anti-subversion affidavit will tend to inhibit free inquiry and expression of ideas among students and their instructors. The affidavit may act also to dissuade students from associating with their fellows in legitimate campus organizations, lest the group or an individual member be criticized at some time for holding controversial views. We hold that such inhibitions have no place in the educational process.

Other Items

Passports. We hold that whereas freedom of movement is basic in the scheme of American institutions, a citizen's right to travel at home and abroad may not be abridged without due process of law. Since the crucial function of a passport is control over entry and exit from the country, we hold accordingly that no test of beliefs or associations should be made in issuing a passport. The right to a passport and that to travel abroad should be restricted only under the war power of the President and the Congress or in the case of a person under indictment, information, or sentence for the commission of a felony.

Loyalty-Security. We oppose requiring loyalty tests or other applications of loyalty-security programs for any person except the few individuals who are privy to secret information or who hold positions in which their decisions and actions directly and substantially affect the national security. We believe that the extension of loyalty procedures into non-sensitive branches of government or into groups of the general population tends to spread suspicion within our society, to create a conformity of fear, and to erode both traditional democratic liberties and the creativity, dedication, and morale of our citizens.

International Exchange Programs. We pledge the vigorous expansion of programs facilitating the exchange of scholars, scientists, farm experts, artists, engineers, students, teachers, and others, including the generous tourist, between the United States and all other nations. We believe that the free exchange of individuals and ideas across national boundaries will increase mutual understanding and the appreciation abroad of American ideas and institutions, will help to decrease international tensions, and will benefit both the United States and other nations in accelerating by coopera-

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TEST BAN DATA AVAILABLE TO FAS MEMBERS

In recent months it has become apparent that the Congress and the Joint Committee on Atomic Energy are becoming less and less convinced of the merits of a ban on the testing of nuclear weapons.

The FAS, through its statements of policy (see NL 60-3), is strongly in favor of a moratorium on bomb tests. To support this policy publicly, and thereby to create a climate of opinion favorable to a workable test ban, the Washington Office of FAS has available, in limited quantity, specific material that may be used by chapters or members. These materials are:

Supplementary Testimony of Dr. Hans Bethe before the Joint Committee on Atomic Energy, April 1960.

Lecture notes "Test Cessation" by H. Bethe. Talk sponsored by Boston Chapter FAS, June 1960.

Summary Analysis prepared by FAS Panel on Nuclear Test Control (See Editor's Notes, this Issue).

This material can be used by FAS chapters, branches and members as the basis for discussions among themselves for talks before the public.

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: EDITORS: E. Shelton, J. Edgcomb, E. Korn. WRITERS: J. Edgcomb, R. Hendler, E. Leonard, E. Shelton, and B. Wright.

EDITORIAL POLICIES AND ACTIONS FOR THE FUTURE

The FAS has reached a fork in the road which requires discussion and certain basic decisions on policy to guide future actions. This is a result of the effective stalemate on test cessation negotiations at Geneva, which has resulted in the FAS having less opportunity to be influential in this area, and the growing clamor for general disarmament which many members of FAS feel is too broad an assignment for effective action.

This situation exists because the FAS has been in some measure successful in past actions. Since the appointment of the President's Science Advisor and reactivation of the Science Advisory Committee (PSAC) many changes in Administration policy have occurred, and most of these changes are in the direction advocated by the FAS in past years. This group of highly competent scientists in a position of considerable influence at top levels in the Administration has served an important function in bringing qualified scientific opinion to bear on government policy. However, it is becoming clear that this Committee is forced to accept many compromises with the "realities" of the political situation, such that their advice generally falls short of the FAS policy position. The FAS must certainly continue pressure toward the long-range goals consistent with FAS policy, and so will occasionally be in a position of criticizing the recommendations of PSAC. Such a situation will require the most careful and tactful phrasing of FAS pronouncements if we are to avoid antagonizing members of the Committee or appearing to widen further the split in scientific opinion in this country.

The conflict of FAS policy and the Committee's recommendations shows up in the State Department instructions to the U.S. negotiating team at Geneva for a test cessation, which tend more and more to require further major concessions from the U.S.S.R. on the control procedures. We can expect still further hardening of the State Department's position as a consequence of the recent Senatorial opposition to a test cessation agreement disclosed in the Holifield hearings. The major problem seems to be the concern by the State Department (and PSAC) that the Senate may refuse to ratify an agreement on test cessation, even if one can be obtained at Geneva.

The experience of Hans Bethe at (and following) the Holifield hearings justifies fears that the opponents of a test ban agreement have, in recent months, strengthened their position in the Senate. The FAS should search for other ways of influencing the Senators, going beyond our usual policy pronouncements. Bethe suggests that it may require a public information campaign, with the FAS taking the policy argument to the public. Unfortunately, the FAS has consistently failed to make a significant impact on the public at large, and seemingly does not have the organization, experience or ability to mount such a campaign. Yet the FAS must find some channel of influence in this area of the Geneva test cessation negotiations if it is to justify its past actions and basic policies.

The FAS has maintained a steady interest in the problems of general disarmament, and a few individuals such as Dr. David R. Inglis have applied intensive efforts. However, the FAS Council has in general shied off from entering the broad field of general disarmament, on which many other organizations are working with more effective techniques, and has chosen to search for specific areas in which the scientific or technical aspects justify FAS action. One such area which has been proposed several times and which several members have studied seriously is the problem of delivery of nuclear weapons, and opportunities for international agreements to control missile testing. It seems high time that the FAS took some definite policy stand on this issue, so that interested members could exert themselves to better effect.

Another specific problem on which FAS policy is already established is that of stimulating government support of technical studies on inspection and control systems which might be required for implementation of disarmament agreements. These studies would be of major value in preparing our negotiating teams to know what they are talking about in advance of international meetings, and in knowing which features of a proposed disarmament system by another country could be accepted. The FAS is on record in supporting proposals for more effort on such technical studies, both by government and by private research foundations.

However, the number of specifically technical areas is limited. It may well be that the technical problems on control of nuclear arms, to which the FAS has largely restricted itself in the past, have now developed to such a stage that the FAS must broaden its objectives to include studies of general disarmament. In this area the FAS will be a late comer. Only a few of our members have the experience or the confidence to think broadly on the general disarmament issue. Others would have to educate themselves, so a great deal of individual interest and individual effort would be required. It is also probable that many disagreements would arise within our membership out of any attempt to formulate a policy position. However, the FAS should face up to this problem and at least clarify the general policy as to whether the organization should or should not expand its objectives into the field of general disarmament.

The history of the FAS shows that it thrives on crises and works most effectively when opposing existing government policy. We are in an awkward period in which crises abound, but not the kind on which the FAS can unite, and in which we are (temporarily) on the side of announced Administration policy and opposing unhealthy external opinion. How the FAS acts in this situation may well affect its future usefulness and influence.

M. Stanley Livingston

FAS NOTES

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tive action the peaceful development and application of science, technology, and other fields of knowledge. We pledge to work for the removal of the remaining barriers to this exchange, including such legal obstacles as stringent visa requirements for visitors to the United States and such hindering administrative practices as prolonged delays in approving visa applications.

Disarmament

We affirm that the national security of the United States will be best advanced by progress in reducing the armaments of all nations, subject to adequate international inspection and control. Despite the failure of the summit conference and the resulting increase in international tension, ways must be found to move ahead on disarmament. Stockpiles of nuclear weapons now available to the United States, Britain, and the Soviet Union are sufficient to destroy modern civilization if they should be used in war. Rapid development of intercontinental missiles is fast outpacing the possibility of defense against attack and daily enhances the hazard that the world may plunge into a devastating war through accident, miscalculation, or an insane act. If the arms race is permitted to continue to accelerate without restraint, nuclear weapons will spread to many additional nations, and increasing tensions will sooner or later lead to nuclear catastrophe. Our civilization will survive only if the United States joins with other nations to achieve adequate control and reduction of armaments before that catastrophe can occur.

Cessation of Nuclear Weapons Tests. We pledge to seek an international agreement to cease all further testing of nuclear weapons and to establish an adequate inspection system to insure that the agreement is observed. Such a treaty is of the highest importance as an essential first step in seeking broader measures of arms control and in limiting the number of nations which acquire nuclear weapons.

We believe that the Geneva negotiations have shown promise that an effective treaty can be achieved, given reason and moderation on all sides. While the collapse of the summit conference has dealt a heavy blow to hopes for early agreement, we believe that progress in negotiating a treaty and in devising an effective inspection system is still possible. The Soviet Union has steadily been reluctant to permit extensive international inspection on its territory to insure against violations. However, major Soviet concessions, including the principle of on-site inspection and the willingness to accept foreign inspectors stationed on her soil, have held out hope that the Soviet Union desired an agreement and would ultimately agree to a satisfactory inspection system. We pledge to give negotiation toward such agreement the highest possible priority.

While we shall seek agreement on as effective an inspection system as possible, we recognize that no arrangement can guarantee detection of every possible small violation. However, many nuclear tests would be required for the Soviet Union to gain a significant military advantage through the development of new nuclear weapons. Any such series of tests would almost certainly be detected by the detection system advocated at Geneva by the American and British delegations, strengthened by technical improvements that can be expected in the immediate future.

No developments in weapons foreseeable in the near future can change the fact that existing intercontinental missiles equipped with megaton nuclear warheads constitute an annihilating force against which there is no effective defense. Also, at least a dozen nations besides the four nuclear powers are now capable or will soon be capable of producing nuclear materials suitable for use in weapons.

In view of these facts, we consider that the risks to the United States of a continued arms race and of the spread of nuclear weapons to many nations if no test ban is achieved are much greater than the risk of significant Soviet gains through violation of a test ban. Accordingly, we shall strive for agreement on a test ban treaty in the present Geneva negotiations with Britain and the Soviet Union, and we shall seek to extend such a treaty to include all other nations.

Research for Disarmament. We pledge to support a greatly enhanced research program on the possible ways to inspect and control the reduction of armaments. We believe that

a new agency of the federal government should be created with the primary responsibility of conducting this research.

Despite the importance of arms reduction to our security and survival, and despite the many international conferences on disarmament in which the United States has participated, research by our government on the technical aspects of arms control has been seriously inadequate. This lack of preparation has hampered severely the efforts of American diplomats in international negotiations.

To make possible effective disarmament we must solve difficult and challenging problems in the physical sciences, engineering, psychology, medicine, law, and economics. We must mobilize the best minds we can find. We must set them to work free of the antagonistic environment of agencies devoted to designing or using weapons. This can best be done in a new agency with the primary purpose of conducting this research in arms control. We urge its creation forthwith.

United Nations Police Force. We pledge to work for the formation of a permanent and effective United Nations Police Force. Such a force is vital to strengthen the United Nations in its ability to uphold international law and to assist in the peaceful settlement of disputes among nations. If the ultimate goal of disarmament is ever reached, namely the reduction of national military forces to a level no higher than that needed for internal security, the United Nations Police Force will have full responsibility for enforcing the rule of law among nations. The world must start now to build a competent and respected Police Force capable of assuming increasing responsibilities in future years.

U-2 DOWN

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U.S. would resume nuclear explosions as part of Project Vela to improve methods of detecting underground blasts. Initially, the administration failed to make clear that the project would not include nuclear weapons testing. The announcement was made without informing British and American negotiators in Geneva who are trying to reach agreement with the Russians on a joint research program to improve detection methods. There was strong editorial comment: "... the Gettysburg announcement is seen as the latest attempt to sabotage the negotiation . . . the British here (Geneva) believe that it would have been possible to get a treaty . . . during the past nine months if it had not been for America's delaying tactics." (Wash. Post, 5-11). Objections to suspension of nuclear testing have been expressed during the past month by AEC Chairman McCone, by E. Teller, who wants to develop nuclear tactical weapons, and by Senator Goldwater, who wants bigger nuclear warheads on our missiles. President Eisenhower, after the Paris meetings, said that a test ban and disarmament negotiations must go on; and the Security Council of the United States during the U-2 debate adopted a resolution to the same effect.

Test ban negotiations now center on the question of how the U.S. can assure the Russians that Project Vela will not contribute to nuclear weapons development. The U.S. "black box" plan provides that in advance of the 12 tests the approximately "boxed" explosives be placed under international custody, thus guaranteeing that the tests would not be used as a sequential development program for nuclear weapons (NYT, 6-2). But the Soviet officials want to inspect the nuclear devices, and they have also objected to the performance of seven of the tests.

TEST BAN

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nuclear powered rocket engine (NYT 5-11). Gen. T. D. White, Air Force Chief of Staff, has called for two more 12-missile Atlas ICBM squadrons within the next three years (W. Post 5-20).

The space race at present finds that the U.S. has had 23 successes out of 40 attempted launchings while the Russians have placed 6 vehicles in orbit (number of attempts unknown). The Soviet satellites are much larger; the U.S. appears to be well ahead in development and use of compact highly instrumented packages. Recent successes in the U.S. program include firing an Atlas 9000 miles and a Titan 5000 miles, both on target (W. Post 5-21, 5-28).

U. S. TEN-YEAR PLAN FOR SPACE

Keith T. Glennan, Administrator, National Aeronautics and Space Agency, in a recent article (W. Post, 5-22) described what his agency hoped "to accomplish in space during the next decade." First he reviewed progress in the launch vehicles program and then he discussed the specific uses to which the launch vehicles would be put (specific missions).

Launch Vehicles

There are 4 classes of launch vehicles divided according to their thrust power. The smallest vehicles are intended to provide versatile, highly reliable power to spacecraft. Scout and Thor-Delta are the smallest in this group and will be fired in 1960. In the medium-to-high thrust class there is the Atlas-Agena B which will be launched this year by the Defense Department and will be made available to NASA.

The Atlas-Centaur is a still higher-thrust vehicle with a liquid hydrogen second stage. Its first launching is anticipated next year and when fully developed it will be capable of sending 8500 pounds into earth orbit.

Static testing (running engine with vehicle clamped vertically to launching pad) has been begun on the truly high thrust vehicle Saturn. The first stage of Saturn is an eight engine cluster, capable of 1.5 million pound thrust. In the first static test of the Saturn space vehicle booster, the firing lasted eight seconds and developed 1,300,000 lbs. thrust (Aviation Week, 5-16). Saturn will be the basis for manned exploration of the moon because it will be capable of circumnavigating the moon and returning to earth. It will also be capable of launching a 30,000 lb. space laboratory into earth orbit. In 1964 the complete three stage vehicle will be launched.

Available in 1965 will be the launch vehicle of the Nova class capable of 5-12 million pound thrust. These vehicles will be able to carry 50,000 pounds to the moon or to place 150,000 pounds into earth orbit.

Pay Load

The pay load, for which the launch vehicles will supply the power, is a major area of NASA planning. Tiros I weather satellite was the first "specific mission" in the 10-year plan. It will be followed first by more satellites of the same type and then by satellites of the Nimbus series which will contain more advanced sensors for measuring meteorological conditions near the earth.

Sometime in 1960, an attempt will be made to put Project Echo into orbit. This is a 100-ft.-diameter inflatable "passive reflector communications satellite" which will serve as a teleradio transmission link by acting as a signal reflector. Successful suborbital flight has already been achieved. World-wide communication may be revolutionized by these satellites which one day may make trans-ocean TV a reality.

Late in 1960 at Cape Canaveral an astronaut will be put into suborbital flight in a Mercury capsule launched by a Redstone rocket. The flight will last for 15 minutes with speeds up to 4000 miles per hour. Lunar exploration is receiving major emphasis in the space program with step-by-step planning of testing, training and orbital flights centered around Project Mercury. The planning for 1960-70 will consist of preparation for manned expeditions to the moon.

Troubles in Space

Both the U.S. and the USSR have had misadventures in space. The 150-watt transmitter of this country's Pioneer V probe (NL 60-84) could not sustain transmission so data will not be received from the solar satellite up to the 44 million miles that was once hoped. The Soviet Union's Sputnik IV malfunctioned in such a way that its cabin, designed for use by a living pilot, shot off in the wrong direction and is now in uncontrolled flight around the world. (W. Post, 6-4).

U. N. and Space

American and Russian delegates have worked out a compromise that will make possible the convening of the 24 nation U. N. Committee on Outer Space. The space studies compromise was forwarded to Washington for approval by Ambassador Lodge after consultation with Soviet Delegate Sobolev. Under the compromise, U.S. and USSR will alternate the chairmanship of the scientific conference on outer space slated to convene in Geneva next year.

Required reading on the 10-year program is the July issue of National Geographic.

EDITOR'S NOTES

• The Panel on Nuclear Test Control of FAS, an ad hoc committee formed late in 1959, prepared a Summary Analysis of the hearings held by the Special Subcommittee on Radiation and the Subcommittee on Research and Development of the Joint Committee on Atomic Energy, April 19-20, 1960. The document was sent to all Senators on May 18, with a covering letter signed by D. Inglis, O. Chamberlain, P. Axel, and W. C. Davison. The Summary Analysis entitled "Technical Aspects of Nuclear Weapons Test Ban," was particularly concerned with the problems and techniques of detecting underground explosions. The conclusion reached by the Panel was that the Geneva Network (180 seismic stations in the world, 21 in Russia, supplemented by annual on-site inspections) is adequate to monitor underground tests of a power down to about the size of the Hiroshima A-bomb or about 0.1% of an H-bomb and that little is to be gained by the resumption of testing.

• On June 8, the Education Committee of FAS (Mohawk Chapter) sent to Congressmen a summary of the Committee's findings concerning the teaching of science and mathematics together with recommendations for possible Federal action. The committee report emphasized that more competent and inspiring teachers are needed and urged that Federal aid to education be increased.

• In Newsletter 60-4 there was a report on Congressman Kastenmeier's efforts to restrict U.S. use of biological or chemical weapons. It should be of interest to FAS members that the Departments of State and Defense have opposed enactment of Kastenmeier's resolution, H. Con. Res. 433 (FCNL Action, 5-50).

• On May 26, the Senate refused to ratify an agreement to let the World Court settle international sea disputes because it did not contain the Connally reservation. The Senate did ratify four conventions dealing with such things as fishing rights and freedom on the high seas that were agreed upon at the Geneva Conference on the Law of the Sea in 1958. What they did not ratify was the protocol providing that disputes arising from these conventions be within the compulsory jurisdiction of the International Court of Justice. (W. Post, 5-30).

• Great Britain has recently shown a major change in economic policy by making overtures to join Eura-tom and the European Coal and Steel Community. The European reaction has been an indifferent "too little and too late." (W. Post, 6-7).

• In an address before the National Conference on the Population Crisis held in Dallas, Indian Ambassador Chagla made a plea for U.S. aid in developing cheap contraceptives. Ambassador Chaglas declared that the U.S. cannot remain neutral to the question of birth control (W. Post, 6-12).

• This is the last issue of the Newsletter until September. At that time we plan to make some changes in the way the Newsletter is put together. Any suggestions concerning the Newsletter will receive our interested attention.

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PROTEST AND RIOT

On May 13 and 14 the House Committee on Un-American Activities held public hearings into alleged Communist activities in north California. On the first day of the hearings seven students were forcibly ejected from the hearing room in the San Francisco City Hall. On the second day six were ousted, and a fifteen-minute riot occurred. The police, reinforced to number three hundred, employed fire hoses and blackjacks to restore order. Forty-three of the two hundred protestants, including students and women, were arrested (UPI, 14 May). An editorial (Washington Post, 17 May) contained the following comments. "The police, it seems clear, acted with unnecessary severity. . . . Students ought to protest against a committee of Congress which has long since ceased to serve any purpose but punishment by publicity."

SCIENCE AND EDUCATION

The National Science Foundation has given \$738,000 to the American Institute of Biological Sciences for the revision and improvement of methods of teaching biology in high schools. A Curriculum Study group under the direction of Dr. A. B. Grobman will work this summer at Boulder, Colorado in an effort to write three courses at different high school levels. The group plans to recommend suitable equipment for laboratories and field trips and to write its own textbooks for publication in paperback editions. Instruction in the new program for teachers is contemplated, and the courses will be taught in selected schools in 1960-61. (NYT, 23 May).

The Physical Science Study Committee has prepared a textbook on physics for high school students. Parts of it have been tested in six hundred high schools in the past two years. The Committee, which has received support from the National Science Foundation and industry, was formed three years ago at the initiative of M.I.T. It has also been responsible for the preparation of sixty educational films, the publication of a number of "background books" on physical subjects, and the design of ingenious, inexpensive equipment for experimentation. Its future activities are to be the responsibility of Educational Services Incorporated, a non-profit organization. (Washington Post, 30 May).

The report of the committee of consultants on medical research to the Subcommittee on the Departments of Labor and HEW of the Senate Appropriations Committee (GPO, May) has recommended that the appropriation for medical research in the National Institutes of Health be \$664,000,000. The Eisenhower administration has proposed \$400,000,000. It is estimated that the present cost of disease and disability in the United States is \$35 billions per annum. This can be reduced only through medical research and the applications of its findings. In 1960 the federal expenditure for medical research is \$380,000,000—0.076 per cent of the gross national income of \$500 billion.

FAS NEWSLETTER

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RADIATION AND FALLOUT

At recent hearings of the Joint Committee on Atomic Energy new official attitudes on the possible dangers of radiation were expressed. There now appears to be general agreement that even small doses of radiation may entail some biological risk. For example, in the past the Atomic Energy Commission had asserted that no damage was being done to radiation workers who were not exposed to levels higher than the established MPD (maximum permissible dose). The Federal Radiation Council now states that the MPD is a safety guide and does not represent a level of absolute safety. They further stress that all attempts should be made to reduce the exposure of the general population as much as possible (W. Post 6-5-60).

A report on the fallout during 1958 in New York City indicates that short-lived fission products make a major contribution to radiation levels. In the past, fall-out measurements were primarily concerned with the long-lived strontium-90 and cesium-137, which together contributed less than 3% of the total beta radiation in New York City in 1958 (5 curies per square mile). As might be expected the dependence of fall-out on rainfall was found to be no different for old or fresh debris or for long- or short-lived fission products (Science 131. 1711 (1960)).

The amount of radioactivity in milk, air and water appears to be holding steady at levels considered to be safe.

NATO

American political leadership of the Atlantic Alliance has been called into question by the inept handling of the U-2 incident. Since it appears that the United States may be willing to run risks over espionage and other strategic planning that its allies are not prepared to take, leading members of the alliance may now demand greater voice in the direction of military policies. Although the European press has been unanimous in criticizing the American fumbling over the U-2, they also agree that Khrushchev should not have disrupted the Summit Conference because of it. Resentment of Soviet tactics may yet serve to reknit the weakened ties of the North Atlantic Treaty Organization.

The British hope that Khrushchev's new aggressiveness will minimize intra-alliance disputes over bases for West German forces or France's share in the strategic direction of the Alliance. They further hope that the renewed tension may discourage the division of Europe into two competitive economic groupings, the European Economic Community and the European Free Trade Area, as well as encourage American economic efforts in Asia and Africa (W. Post 6-5-60).

Plans are progressing to place the U.S.-designed ballistic missile Skybolt on British aircraft in 1964 or 1965. Debate is continuing on a proposal to help the Netherlands build an atomic submarine. The decision rests upon U.S. willingness to share atomic submarine secrets with allies other than Britain.

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