

# F. A. S. NEWSLETTER

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to provide information and to stimulate discussion. Not to be attributed as official FAS policy unless specifically so indicated.

## ARMS CONTROL DEBATE HIGHLIGHTS UN GENERAL ASSEMBLY

In an intensely dramatic setting created by the presence of many heads of state, President Eisenhower, Prime Minister Macmillan and Premier Khrushchev presented their views on disarmament to the General Assembly of the United Nations. The drama was further intensified by the increasing pressure from the neutral nations of the world to make their influence be felt and Mr. Khrushchev's attempt to make drastic changes in the organizational structure of the United Nations.

**President Eisenhower Said:** The United States proposes to close down gradually its production of fissionable materials for use in weapons and/or to transfer 30,000 kilograms of U-235 from weapons stockpiles to international stockpiles for peaceful purposes, if the U.S.S.R. would do the same and if adequate controls were established to verify compliance with the terms of the agreement. The plan also calls for agreement to prohibit putting into orbit or stationing outer space "weapons of mass destruction" (Eisenhower Text, W. Post 9/23). These proposals were the ones formulated for presentation to the disrupted 10 nation disarmament conference in Geneva last June and which were presented before the UN Disarmament Commission on August 16. They were rejected then by the Soviet delegate who claimed that the United States was still advocating controls without disarmament (Bull. Atomic Sci., Sept., 1960). Premier Khrushchev criticized them before the General Assembly on the grounds that the U.S. plan did not reduce the threat of war by providing for the destruction of current stockpiles of nuclear weapons (W. Post 9/24).

**Premier Khrushchev Said:** The Soviet disarmament plan proposed in Premier Khrushchev's address was the same as that submitted in June to the 10 nation disarmament conference. It calls for elimination of all means of delivering nuclear weapons in the first stage of the program (Newsletter 6/27). Khrushchev has now also linked disarmament discussion with his proposal to replace the office of UN Secretary-General by a three-person executive body. He assumes that disarmament administration by a United Nations force would "be impossible under the command of a single man" because no single individual would be granted acceptance and trust by all groups of states (W. Post 9/25). The Soviets have also formally proposed that the 10 nation Disarmament Conference be increased to 15 by the addition of India, Indonesia, the United Arab Republic, Ghana and Mexico (W. Post 9/28).

**Prime Minister Macmillan Said:** Mr. Macmillan urged that the Assembly appoint a board of technical experts to report "from a purely technical and objective basis what measures of international inspection and control would be appropriate, in the fair interests of all nations." (NY Times 10/2). Such a board of experts would follow the pattern of the three-power negotiations on a nuclear test ban, which have been going on in Geneva since October, 1958.

Mr. Khrushchev interrupted Macmillan from his seat on the floor shouting "You accept our proposals on disarmament and we will accept any form of controls." (NY Times 10/2).

**China Problem Arises:** In his blistering speech on October 1st in support of the admission of the Peoples Republic of China into the United Nations, Mr. Khrushchev referred several times to the disarmament question. He said, at one point, "there cannot, indeed, be any disarmament without China, there cannot be any normal work of the United Nations without China." U.S. delegate James J. Wadsworth had indicated earlier that the U.S. had negotiated with the Chinese Communists on various matters for the past eight years, and that their admission to the U.N. would not be needed to carry on other negotiations (NY Times 10/2).

## ORGANIZATION OF THE PUGWASH CONFERENCES AND THEIR RELATION- SHIP TO CYRUS EATON CLARIFIED

In a press interview industrialist Cyrus Eaton expressed his views on the Pugwash Conferences of Scientists which led the three American members of the International Pugwash Continuing Committee to issue a detailed description of the origins, current status and future plans of the Pugwash Conference. This letter, signed by Harrison Brown, Bentley Glass and Eugene Rabinowitch, is here reprinted in full from the Washington Post Sept. 24.

In the Sept. 24 issue of many newspapers, there appeared a UPI story, datelined Cleveland, Sept. 13, entitled "Eaton to Sponsor Moscow Session." The story quoted Mr. Cyrus Eaton as saying that the next session of his "Pugwash Scientists Conference" will be held in November in Moscow.

As American members of the International Continuing Committee of the "Pugwash Conference of Scientists," we would like to correct this story. The conferences to which the story refers are not "Mr. Eaton's Conferences"; they have been initiated by scientists, and are planned, organized, and directed by an international committee of three Americans, three British, and three Soviet scientists. After Bertrand Russell had launched, in 1955, an appeal to the scientists of the world to meet and discuss the implications of science for the future of mankind—an appeal signed by Albert Einstein just before his death, and by several other outstanding scientists from many countries—Mr. Eaton offered hospitality for such a meeting at his estate in Pugwash, Nova Scotia. It was held there in July, 1957, and was followed by a series of four other meetings in 1958-1960, held in Austria and Canada. These conferences dealt with the dangers of scientific war, disarmament, world security, international cooperation of scientists, and their responsibilities to mankind.

The so-called Vienna Declaration of September, 1958 summarized the unanimously held opinion on these subjects of 80 participants at the Kitzbuhel Conference, in which scientists of widely different national and political backgrounds took part. Other conferences were devoted primarily to a frank exchange of ideas, without an attempt to reach agreement, and no conference has issued public statements endorsing or protesting any specific policies—except for support, given in the Vienna Declaration, to the conclusion of an agreement on properly controlled cessation of nuclear weapons tests—which is the official policy of all major governments in the world.

Mr. Eaton generously accepted the costs of three out of five conferences held to date, and the organizers and participants owe him gratitude for having been a generous host, without attempting to influence the composition, program, and conclusions of the conferences. However, as Mr. Eaton has come to play an increasingly active and controversial role in political affairs, the scientists felt that his exclusive support of their conferences may place them in the wrong light. The Continuing Committee therefore solicited and obtained the greater part of funds for the conference in Kitzbuhel in September, 1959, from other individuals and foundations, and did not ask for support from Mr. Eaton in the organization of the Conference in Baden, Austria, in September, 1959 (except for secretarial assistance in the preparation and distribution of the conference papers). The Committee declined even this kind of technical support for the forthcoming Moscow Conference.

In memory of our first meeting in Pugwash, the name "Pugwash Conference" has been used in the subsequent

(Continued on page 3)

## CURRENT STATUS OF PAULING CASE

On June 21, the Senate Internal Security Subcommittee ordered Linus Pauling to disclose the names of scientists who helped him to circulate a petition calling for an international agreement to cease nuclear testing. The petition was signed by 11,021 scientists from 49 countries and was submitted to the United Nations in 1958. Pauling was willing to disclose the names of those American scientists whom he asked to circulate the petition but maintains that the names of non-residents are not pertinent to the lawful inquiry by the subcommittee (see below). The subcommittee then ordered Pauling, under the threat of possible prosecution for contempt of Congress, to submit the names by September 15. Pauling filed suit in the Federal District Court of the District of Columbia, asking the Court to bar the subcommittee from forcing him to supply the names. The District Court turned down the request on the grounds that the Senate order was not subject to judicial review. The United States Court of Appeals subsequently also turned down Pauling's request. An appeal has now been made to the Supreme Court. In addition, the subcommittee has postponed until October 11, the deadline for submission of the names. Although no reason for the postponement was given, it will allow time for the Supreme Court to consider Pauling's appeal (W. Post 8/24, 9/7, 9/11, NY Times 8/6, 9/8).

**Pauling Appeals to Public.** In an advertisement in the Washington Post (10/4), Pauling appealed to his "fellow Americans" to join with him in getting rid of the Senate Internal Security Subcommittee and the House Un-American Activities Committee "that exceed their authority and subvert the Constitution and the Bill of Rights." Pauling states his conviction that the reason for his difficulties before the Senate Subcommittee derives from the desire of its presiding officer, Senator Dodd, to reverse the current American policy aimed at international test ban and disarmament agreements. Pauling quotes his reply to the subcommittee request as follows, "No matter what assurances this subcommittee might give me about the use of the names of the people who circulated the petition that I wrote, I am convinced that these names would be used for reprisals against these believers in the democratic process; these enthusiastic idealistic, high-minded workers for peace . . . I think that my reputation and example may well have led many younger people to work for peace in this way. My conscience does not allow me to protect myself by sacrificing these idealistic and hopeful people, and I am not going to do it. As a matter of conscience, as a matter of principle, as a matter of morality, I have decided that I shall not conform to the request of this subcommittee."

**Denouement:** On Oct. 11, Pauling appeared before the Subcommittee for four hours. He stood firm in refusing to give the names of those who helped circulate the 1958 petition. The Subcommittee has not decided whether it will seek a contempt citation. Dr. Pauling has been released from the most recent subpoena, and the current hearings have been adjourned.

## TEST BAN TALKS CONTINUE AT GENEVA

**Project Vela Debated:** The United States conceded to Russia the right to inspect nuclear devices to be used in underground explosions for research on detection methods if devices of "older" design were to be used and if the U.S.S.R. and Great Britain would also contribute their devices to the program. The tests would be carried out only in America but under international supervision. The Soviet Union rejected this proposal on August 2 on the grounds that such a research program is unnecessary.

**Number of Inspection Posts and On-site Inspections Discussed:** British Delegate Sir Michael Wright agreed to accept 13 control posts on British oceanic island territories and accepted a Russian proposal that 10 ocean control ships be put into operation within two years of adoption of a test ban treaty. The Soviet delegate agreed to study the offer (W. Post 9/30).

The Soviet Union had offered on July 26th to allow test ban inspection teams to make three on-site inspections a year in Russian territory. The United States and Britain considered this "grossly inadequate" (the U.S. has suggested 20 annual inspections) but welcomed the readiness of the Soviets to negotiate on the inspection issue (Bull. Atom. Scien., Sept. 1960). On Sept. 27, the United States proposed a moratorium on small underground nuclear tests for a maximum period of 27 months following the signing of a test ban treaty. The Soviet delegates "expressed dis-

(Continued on page 4)

## MAJOR CHANGES IN NATO PROPOSED

French President de Gaulle has suggested a revision of the NATO alliance to increase the role of France in basic planning and command. Specifically, he proposed that France, Great Britain and the United States should assume the leadership in the formulation of NATO's international policies. He also proposed that each country's forces be under national control rather than under an integrated command. These ideas were not favorably received in London, Bonn, The Hague or Washington (NY Times 9/7, 9/15, 9/21) but are likely to be considered at the forthcoming meeting of the foreign ministers of the NATO countries in December.

In spite of the new de Gaulle proposals, an agreement to integrate the air defenses of the NATO countries was expected to be completed soon with an integrated air command to become effective within a few weeks. It would mark the end of almost two years of negotiations (NY Times 9/25).

**NATO Maneuvers Held.** On September 30, the NATO Atlantic Fleet ended 10 days of mock warfare in extensive land, sea and air maneuvers under command of Admiral R. L. Dennison, Supreme Allied Commander Atlantic, and General L. Norsted, Supreme Allied Commander Europe. Such large scale maneuvers are normally held every three years. The time for this year's had been decided long ago and just happened to coincide with the arrival of Premier Khrushchev at the United Nations in New York (NY Times 9/18, 10/1).

## STUDENT LOYALTY OATHS BEFORE CONGRESS

During the last Congress various bills designed to repeal the so-called "disclaimer affidavit" from the National Defense Education Act were introduced. This condition for student loan requires students to sign an affidavit disclaiming membership in any organization advocating the violent overthrow of the government. Educational institutions and civil liberties organizations all over the country have protested the "disclaimer affidavit" and some schools have refused to administer the loan program because of it. The bill originally introduced in the Senate (Kennedy-Clark-Javits Bill) simply called for the repeal of the disclaimer affidavit, but the bill passed on June 16 was significantly changed by an amendment by Senator Winston Prouty (Rep., Vt.). The amendment provides that no member of the Communist Party or a similar organization may receive a NDEA loan. In addition, any person who has been a member of such an organization within the previous five years must file a sworn statement concerning said membership before receiving a loan. (W. Post 9/19). The American Civil Liberties Union has pointed out that under this amendment, applicants and recipients of loans would still be surrounded by an atmosphere of fear and suspicion. It is likely that this amendment would actually be administered by means of a disclaimer affidavit (Civil Liberties Clearing House Bulletin, July-Aug., 1960). The bill, as amended, failed to reach the House floor during the August session so that at present the original disclaimer affidavit of the NDEA is still in effect.

## DEFECTIONS TO MOSCOW

Early in August the disappearance of two mathematicians from the Cryptology Department of the National Security Agency (NSA) was reported in the press. On September 6, the Soviet Union presented the two defectors, William H. Martin and Bernon F. Mitchell at a public news conference. The two delivered a lengthy statement declared that "the U.S. Government, in carrying out policies dangerous to world peace, should not be allowed to rely upon these emotional attachments to guarantee the loyalty of its citizens." The two mathematicians discussed at length, the organization, function, and method of the NSA. They declared their dissatisfaction with the practices the U.S. uses in gathering intelligence information, citing as an example our flights over Soviet territory. The two also stated that they had personal reasons for wanting to leave the U.S. and become Soviet citizens (NY Times 9/7).

In Washington, official reaction to the defections took the form of Congressional and Executive investigations into practices used to determine the reliability of persons handling government secrets. Both the House Armed Services Committee and the House Un-American Activities Committee held rival hearings (NY Times 9/10). The President urged a review of security procedures in sensitive government agencies and it has been reported that such an investigation is under way in the Defense Department (NY Times 9/8).

## PEACEFUL USES OF ATOMIC ENERGY

**IAEA Meets.** The Fourth Annual General Conference of the International Atomic Energy Agency opened in Vienna on September 20th. The U.S. delegation, under permanent delegate Admiral Paul F. Foster, agreed to the Chairmanship of Prof. Georgi Nadjakov of Bulgaria; Western delegates filled the key positions on some technical committees (NY Times 9/18). Vyacheslav M. Molotov, the new permanent Soviet representative to the IAEA made his first appearance having recently been relieved from a diplomatic post in Siberia. The delegates from the 70 member nations initially agreed on the agenda but then clashed over the admission of Communist China and Hungary. The Conference accepted the U.S. position that the same rules should apply as at the U.N. from which those two countries are excluded. (W. Post 9/21).

The Director General of the IAEA, Sterling Cole (former New York Congressman) discussed the organization's successes, largely in the area of education, and emphasized its financial difficulties. In the distribution of fissionable materials for peaceful purposes, the IAEA is hampered by a dispute over means of safeguarding that the material, or plutonium derived from it in nuclear reactors, does not find its way into military applications. The West proposed a plan involving inspection of the reactors by the IAEA which was accepted by the organization's Legal Committee in a 44 to 14 vote. (W. Post 9/29). AEC Chairman McCone expressed his willingness to open four U.S. reactors to such inspection. These would be the graphite and medical research reactors at Brookhaven, the boiling water reactor at Argonne and the organic cooled, moderated water reactor under construction at Piqua, Ohio. (NY Times 9/23, 9/25). The Soviets denounced the United States for wanting to pry into other countries reactor installations (NY Times 9/23).

**IAEA By-passed.** The refusal of the Soviet bloc, India and the United Arab Republic to agree to the inspection and other safeguards sponsored by the IAEA has led the United States, Canada, Great Britain and the Soviet Union to distribute fissionable material to over 50 countries under bilateral agreements. According to Science (9/9), some of this aid is given to nations that cannot reasonably be expected to gain economically from experimentation in this field but who want reactors solely for purposes of prestige.

**Permissible Exposure to Radiation Lowered.** The maximum permissible exposure to radiation for workers in the atomic industry has been reduced from 15 to 4 rems per year. This sharp reduction will be applied by the AEC to all of its licensees effective January 1, 1961 (Chem. Eng. News 9/12). The recommended maximum permissible exposure for the general public is fixed at 10% of that for atomic workers. In making this change the AEC said it "is in accord with new trends of scientific opinion" and "should not be interpreted as present levels having caused damage" (W. Post 9/7). The underlying concept of a maximum permissible exposure per year, without consideration of threshold values, was criticized at a Euratom Symposium on Legal and Administrative Protection in the Peaceful Uses of Atomic Energy in Brussels (Chem. Eng. News 9/26).

**Random Notes.** Kentucky is the first state to make a formal proposal to the AEC for state control of atomic radiation in accordance to a law passed by Congress last year (Chem. Eng. News 9/26).

French and Belgian firms will jointly build a nuclear center at Chooz in the Ardennes (W. Post 9/2).

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Chairman ..... M. Stanley Livingston

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

## WORLD POPULATION CONTINUES TO GROW

The United Nations released last month the 1959 Demographic Yearbook containing its annual survey of world population statistics. The population of the world is now increasing at the rate of 48 million per year, an annual increment of 1.7%. The population increase in the North American continent is occurring at the average world rate. The rate of increase is only 0.7% in Europe while it is as high as 2.7% in Central America. There is also a wide spread in birth rates throughout the world. The birth rate is only 18 per thousand in over-populated Japan but reaches 60 per thousand in parts of Asia and Africa. The increased rate of population growth, however, is not due to changes in the birth rate, which has tended to remain constant between 1954 and 1958, but to a decline in the death rate. If the current trend continues the world population will double every 40 years (NY Times 10/4).

**U.S. No Exception.** Demographer Lincoln Day has focused especially on the problem in the United States in an article entitled "Our Irresponsible Birthrate" (Columbia University Forum, Summer 1960). He points out that since World War II our population has increased at a higher rate than India's. The birthrate in the U.S. is now 25 per thousand compared to a low of 18 during the depression. If the average growth rate of the last 5 years is continued for the next 98 the population of the United States will then be 1 billion. The increase in the U.S. birthrate is attributable not to an increase in the number of very large families but to an increase in the proportion of medium-size families with 3 or 4 children and an associated decline in the proportion of families with one or no children and in the proportion of people who never marry. Population growth in the U.S. has particular significance in terms of the consumption of world resources. Americans comprise but 6% of the world population but consume half of the world's production of major minerals (iron, copper, lead, zinc).

### Organization of the Pugwash Conferences

(Continued from page 1)

conferences. It has become widely known in America, Europe, and the Soviet Union as designating a spontaneous, independent, and nonpartisan activity of scientists concerned with the survival of mankind in the atomic age. For this reason, the Continuing Committee has been reluctant to suggest a change in the name of the Conferences, despite possible misleading connotations, and confusion with other conferences organized by Mr. Eaton in Pugwash.

The public misunderstanding of our conferences as being initiated, sponsored, financed, directed or influenced by Mr. Eaton, and Mr. Eaton's own reference to them as such in correspondence and public statements, forces us to make this clarification. The Committee intends to propose to the Moscow Conference the adoption of a new name, which would avoid future misunderstanding.

We are sorry that an encouraging cooperation between a generous businessman, eager to assist the scientists of the world in their efforts to prevent the misuse of science for the destruction of mankind, and to further its use for constructive purposes, has been made impossible by his reluctance to keep his support of the scientists conferences clearly separated from his increasing involvement. We retain our gratitude to Mr. Eaton for his original support, and would welcome him, together with our other supporters, as our guests at the Moscow Conference; but we must make it unmistakably clear that Mr. Eaton's role in this and any future meetings can be only that of one of our guests, and not of a sponsor or active participant.

We would like to correct also the statement by Mr. Eaton that the Conference is being held in Moscow because holding it in America was made impossible by the refusal of the State Department to admit Chinese participants. The possibility of holding a conference in the United States never yet has been explored by the Committee. Soviet scientists have offered to hold the next meeting in the Soviet Union, after five preceding ones had been held in the countries of the West; the American members of the Committee sincerely hope to be able to reciprocate by inviting our colleagues to assembly next time in the United States.

## LETTER TO THE EDITOR

The report by M. D. Kamen in the September Newsletter on a proposed National Policy for the Support of Fundamental Science has evoked the following letter from Dr. R. R. Newell of San Francisco. It is reprinted, in its entirety, in the hope of stimulating further discussion.

"The work of the Boston Chapter as reported by M. D. Kamen is important enough to warrant wide discussion and an attempt to summarize the general opinion of the entire membership. The matter of encouragement and support of basic science is difficult indeed.

"Basic science is hard to define. This makes it hard to direct—I believe impossible to direct. I don't believe you can order it or assign it. I think the best thing you can do is permit it.

"I quite agree that the best place for it is the universities. There you can observe the benign coexistence of teaching and research. Basic research has a harder time in the shadow of developmental or engineering research. The efforts of the investigator that are deviated toward his basic scientific project are more visibly stolen from his bread and butter activities when he is hired for programmed research and development than when he is hired to teach.

"I think there is no easy way to assay a basic research project—to determine whether it is worth supporting. I think you can measure the investigator's motivation. Therefore it is a safer investment to support the man than to support the project.

"I'd like to snipe at the 6 General Recommendations:

1. National education reform by a federal ministry means at present the standardization according to the best opinion. This is a policy for persistence of the best we know about education. Since we know practically nothing about education beyond the primary grades, I'd say that such a policy is as bad as we are likely to find. What we need is some success in developing a scientific foundation for education so as to remove it from the confining present 'science of education,' which is based on intuition and revelation.

2. I could list the things that are essential for the education of a young person in our Western culture. But to have a federal agency promulgate a compulsory curriculum would be very bad indeed. We need more variety, more experiment in curricula, not less. Our culture is in serious danger from conformity, not from heresy.

3. Teaching standards do have to be set but let's set them locally. Sure it's an administrative convenience to have the grades turning out a uniform product. How many, many bad decisions are made under the plea of administrative necessity. We are afraid we might have to buckle down and ourselves estimate a boy's capabilities. We'd like a dependable label 'Government Inspected.' This is the logical development of one of the salient features of our present culture, namely to have everything done by experts. In this case it is to have our minds made up for us (as to what is good) by federal employees.

4. I'm one of those who are rebellious about the dominance of professional educators. It's not because I'm against method in teaching—but because my eyes are glued on the

intellectual content. It's because I suspect that educators have become a self-perpetuating coterie held together by a credo which punishes apostasy by ostracism (and dismissal from employment). This is a piece of the hazardous rigidity that I'd expect to be thoroughly crystallized by a federal department of education.

5. Sure, funding processes should be more flexible. In a situation where you have almost no way to be certain of the wisdom of your budgeting, I'd think a degree of capriciousness would be an advisable hedge against disastrous habitual blindness.

6. This is the one I'm violently opposed to. Support of basic research should by no means be centralized. There is no way to make wise decisions about basic research. All investigators, engineers, teachers, et al., should be privileged to do research (let them call it basic or otherwise) and supported if they demonstrate their motivation.

"I'd like to paraphrase Portia: 'The quality of mercy is not strained, it floweth freely . . .', like this: Basic researches are not directed; they emerge spontaneously from the hands and minds of those who are engaged in manipulating materials and abstractions for useful purposes. Having emerged they grow autocatalytically if the milieu is favorable and if the researcher is energetic. The duty of management (including government) is to estimate the energy and, if impressive, supply the milieu. It does not extend to the assay of the speculation, the program or the product.

"We in the U.S. are supposed to be suspicious of a managed economy, or even dead set against it. We are certainly loud in our criticism of some islands of managed economy—crop price supports for example, and even the Federal Reserve Bank. I marvel that a committee of the FAS brings in a report favoring management of education and basic research. There must be an underlying faith that you can put wisdom into a federal bureau that does not lie in the mind of any available person, just by giving the bureau the duty. Well, I do agree that a committee has capabilities beyond those of any one of the committeemen. Most students of committees incline to the belief that these emergent committee capabilities are most clearly evident in their assassinations and in their unconscionable coldness."

### Test Ban Talks Continue at Geneva

(Continued from page 2)

appointment" that the U.S. had not proposed a longer period but said that this "provided grounds for negotiation." (W. Post 9/28). Russia has been advocating a 4 to 5 year moratorium.

[The Senate Subcommittee on Disarmament has published an "Analysis of Progress and Positions—October 1958-August 1960" covering in detail the areas of agreement and disagreement in the Geneva Test Ban negotiations. This useful review may be obtained by writing the Senate Foreign Relations Committee. Sen. Humphrey, in announcing the publication of this staff study called for resumption of underground testing, both for weapons development and for improving detection techniques if no agreement is concluded by June 30, 1961.]

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