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DISARMAMENT: STILL TALKING, STILL HOPEFUL

While the Big Four meeting at Geneva raised hopes for progress in the field of world disarmament, it left behind a host of practical problems to be grappled with. Developments during the past month have indicated the magnitude of some of these problems, as well as the manner in which their solution is dependent on the course of East-West relationships. As in the past, the main protagonists continued to circle warily, but the spirit of Geneva was at least superficially maintained. Conciliatory attitudes became the rule rather than the exception.

EISENHOWER PLAN — On October 8, after a month of activity, the UN Disarmament Commission Subcommittee adjourned, far more friendly but little more successful than during most of its nine years of existence. Throughout the month, the Western powers continued pressure on the Soviet Union to accept the basic Eisenhower plan involving armament inventories and an aerial inspection system. Although the USSR persisted in replying indirectly, the general impression has evolved (N.Y. Times, Oct. 2) that much of the Soviets' distrust of US motives in proposing the plan has disappeared, and that with certain modifications they might be willing to accept its major facets. On October 14, Soviet Delegate Sobolev requested a meeting of the UN Disarmament Commission to discuss the report of the subcommittee.

Meanwhile, from Denver, President Eisenhower replied to Premier Bulganin's letter of Sept. 23 dealing with aerial reconnaissance (see NL 55-7). The Soviet Premier's letter, although containing no definite commitments, had been phrased in friendly terms; the President's reply was drafted in a similar tone. Typical of the attitude assumed by Eisenhower was the statement: "I have not forgotten your proposal having to do with stationing inspection teams at key points in our countries, and if you feel that this would help to create the better spirit I refer to, we could accept that, too." The Eisenhower proposal will almost certainly receive further consideration at the Big Four Foreign Ministers meeting, to begin on October 27.

US STUDIES LAUNCHED — Within the US, two groups will review disarmament problems. Presidential aide Harold Stassen named eight leading military, scientific and industrial figures to a special task force. Included are such individuals as Gen. Doolittle, who is to direct efforts towards finding improved methods of aerial inspection; U. Cal. Radiation Lab. director E. O. Lawrence, who will head a nuclear section; Lt. Gen. W. Bedell Smith, assigned to study inspection of Army and ground forces; and other prominent figures.

The second step is the appointment of 12 Senators to a special Senate Foreign Relations subcommittee on world disarmament. Formation of the new committee was authorized in a Senate resolution introduced by Sen. Humphrey (D, Minn.) and passed July 25. The committee, headed by Humphrey, includes the following Senators chosen from the Foreign Relations, Armed Services and Joint Atomic Energy committees: Barkley, Byrd, Pastore, Sparkman and Symington (Democrats); Bricker, Bridges, Hickenlooper, Knowland, Saltonstall and Wiley (Republicans).

WORLD SEEKS DISARMAMENT — World opinion continued to press the major powers for a solution to the armament problem. India's UN representative, V. K. Krishna Menon, urged that nothing less than total prohibition of nuclear weapons be accepted, regardless of the positions taken by the US and the Soviet Union (N.Y. Times, Oct. 5). Smaller nations, such as Bolivia, asked the General Assembly for aid to underdeveloped countries through the transfer of savings from armament reductions (N.Y. Times, Sept. 27). The only reversal of this tendency occurred in the Middle East, where Egypt announced acceptance of a Czechoslovakian offer to sell armaments, and where a weapons race between the Arab countries and Israel appears imminent.

Though the pattern of future developments remains well hidden behind the smokescreen of diplomatic negotiations, several points have become more clearly delineated. First, it appears that the armament problem cannot be solved without some resolution of other major outstanding issues, such as reunification of Germany. Second, even if these issues in the European theatre can be settled, there will still remain temptations for both East and West in the unstable political scenes at the periphery, such as in the Middle East and in Asia. Third, it becomes increasingly likely that the US attitude -- that adequate inspection must precede actual disarmament -- will be accepted in some form by all countries including the Soviet Union. Finally, the external pressures on both the US and the Soviet Union have become so great that continued strenuous efforts for solution of these problems must be maintained and publicly aired.

"You'll Both Have to Go Some to Tie Up This Baby"

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BUT A-TESTS CONTINUE — In spite of worldwide discussion of disarmament questions, A-bomb testing continues. In the US on October 10, the AEC announced that a new series of tests beginning next month would be designed to determine experimentally the effect of accidents -- such as fire or conventional explosions -- upon nuclear weapons, even though calculations indicate that such accidents will not cause nuclear detonations. Britain announced that two series of tests will be undertaken next year in Australia. And on Aug. 5, the AEC -- reporting that the Soviets had a new series of tests underway -- stated that "further announcements concerning the Soviet test series will be made only if some information of particular interest develops."

SCIENTIFIC MANPOWER -- Current Views

For the past several years, there have been growing indications that the number of scientists and engineers engaged in practice and in training in the US is inadequate to the point of being dangerous to our technological progress. These indications have been strong enough to cause some of our most prominent national figures in science and government to view the situation with alarm. Much discussion and argument is now being devoted to the question of how serious a shortage of scientists and engineers really does exist and, if it is truly serious, how to alleviate and ultimately eliminate it.

Opinions differ markedly as to the origins of the shortage. Some believe it is simple economics -- that salaries are not high enough to attract men to a field calling for long and difficult training. Others, however, believe that the main causes of the shortage are more subtle and related to a tendency in our society toward anti-intellectualism and devaluation of the scientist along with other 'eggheads.'

OFFICIAL FINDINGS In its role as the developer of national science policy, the National Science Foundation released on July 24 an important report entitled "Shortages of Scientists and Engineers in Industrial Research." From the investigation leading to this report, NSF Director Waterman concluded, "The supply of qualified research scientists and engineers in the US falls far short of industry's needs." The data for the report was assembled for NSF by the Bureau of Labor Statistics of the Dept. of Labor, on the basis of interviews with officials of approximately 200 large companies reputed to employ over half the nation's industrial research scientists and engineers. These 200 were the largest of some 11,600 companies chosen as representative of all non-agricultural industries in the nation after being surveyed by questionnaire about their volume of research expenditures, research manpower, and related topics.

According to the report on the 200 companies interviewed, "At least half these companies reported that they were unable to hire enough research scientists and engineers to meet their needs and one out of three reported major or substantial shortages of such personnel. The remaining half of the companies interviewed did not report numerical shortages of research personnel, but many of them emphasized their need for better qualified scientists and engineers." A report on the results of the more extensive, general survey of the 11,600 companies is to be released at a later date.

ESA ANALYSIS In the July-August News Digest of the Engineers & Scientists of America (a national federation of collective bargaining groups of engineering and scientific employees), ESA's Washington representative, Leo F. Lightner presents a critical analysis of the NSF report and its possible significance. The most serious criticisms are that the sample is biased by being limited to large companies and that the data are all in the form of qualitative expressions of opinion.

Lightner also criticized the report's conclusion that a shortage exists because some companies cannot, by their own recruiting methods and on their own terms, obtain all the research personnel they desire. He implies that this inability may result from inappropriate company employment practices instead of from a real shortage of scientists, and suggests that it should also have been determined how "this company's research and development staff was organized, or how its wage rates compare with other existing wage rates." "Wages, working conditions, promotion possibilities and similar factors might well cause considerable doubt about the conclusion so blissfully drawn," Lightner cautioned.

EXTRAPOLATION Much of the present alarm over this situation is concerned with extrapolation to the future. After returning from the "enlightening" experience of last August's atoms-for-peace conference in Geneva, AEC Chairman Strauss told the Atomic Industrial Forum-Amer. Nuclear Society meeting Sept. 28 that unless these shortages are eliminated, "this situation, a generation hence, will become a national calamity, imperiling our security and freedom." Strauss cited statistics given by Central Intelligence Agency director Allen Dulles that, in the 1950-60 period, 1.2 million scientists and engineers will be graduating in Russia, compared with 900,000 in the US.

Charles A. Thomas, president of Monsanto Chemical Co., also views the future with alarm. Speaking to the Amer. Chemical Society in Minneapolis in Sept., Thomas said: "The recent witch hunts and the misapplication of some security regulations are outward blemishes which indicate the turmoil and unrest seething beneath the surface of our society. In some quarters at least, it almost seems as if science were on trial." According to Thomas, young people are not studying science "because their minds, and those of their parents, have been poisoned by the insidious cloud of anti-intellectualism which hangs over this country like a great shroud."

The possible scope of this anti-intellectualism was indicated by ACS president Joel T. Hildebrand of the U. of California. Also speaking to the ACS Minneapolis meeting, he warned, "One of our greatest dangers lies in an anti-intellectualism fostered, strange to say, by school authorities who should be among its most valiant opponents." Hildebrand is one of many who decry the extreme de-emphasis of intellectual discipline so common in current educational practices.

SECONDARY EDUCATION Various aspects of the education problem, particularly at the secondary school level, have received more attention than any other factor from those concerned with the shortage of scientists. In the N.Y. Times of Oct. 16, Benjamin Fine quotes Henry H. Armsby, specialist

for engineering education, US Office of Education, as saying, "The solution to the problem must be found in the secondary schools. We must do a better job of science teaching. We should get to the talented high school graduates who never go to college." Besides its own particular problems in education, the field of science shares the problems common to all fields of education. These include teacher shortages, probably due to low salaries, and inadequate building space and equipment.

FINANCIAL AID A broader, more organized attempt by scientists to strengthen the population of their own field is to be found in the Science Teaching Improvement Program of the Amer. Assoc. for the Advancement of Science (Science, 122, 145, 1955). Under a $300,000 grant from the Carnegie Foundation, the AAAS Cooperative Committee on the Teaching of Science and Mathematics will undertake projects aimed at stimulating and aiding improved science teaching. A new source of direct monetary aid for college education is the $20,000,000 National Merit Scholarship Corp. recently established by the Ford Foundation and other organizations to grant scholarships and make gifts-in-aid to promote technological education. This

(Continued on Page 4, Column 2)

MAPPING ATOMS-FOR-PEACE

Publication on Oct. 7 of the complete text of the draft statute for an international atoms-for-peace organization has set the stage for practical consideration of the agency originally proposed by President Eisenhower in December, 1953. The draft, issued by the US and other charter members of the proposed agency, named to the first 16-nation board of governors the US, USSR, France, Britain and Canada, together with Australia, Belgium, Czechoslovakia, Portugal and South Africa as "the principal producers and contributors of uranium, thorium, and such source materials as the board may specify." The six remaining members are to be selected from non-producing countries. The organization would assume custody of nuclear materials and their release to approved projects. As clearly defined in the statute, decisions would be made by majority vote of the board of governors and no power would have veto privileges, in contrast to UN Security Council procedure.

SMALL NATIONS OBJECT — A counter-proposal by India emphasizes what appears to be the major objection of many of the smaller powers, namely, the minor role given the "have-nots" in the direction of the agency. A second objection hinges on the fact that fissionable materials are to be sold under the present statute rather than provided as part of atomic technical assistance. The Indian plan recommends a close working relationship and "clearing system" with the UN General Assembly. Commenting on the atoms-for-peace draft, the Soviet's First Deputy Foreign Minister Kuznetsov, while conditionally approving the international agency and reiterating Bulganin's earlier pledge to supply fissionable material, added the USSR's proviso that matters of vital security be subject to the veto-bound UN Security Council. Kuznetsov, however, aligned the Soviet with India, Brazil and other smaller powers, in stipulating that no country or group of countries be placed in a privileged position.

Many of the objections voiced by the smaller powers are being ironed out in negotiations between these countries, the US and Russia. An international conference of all 84 prospective agency members will be called to settle remaining controversies.

SECRECY LID OFF? — A statement released by the FAS Executive Committee, meeting in New York October 8, stressed that "much of the success of the Geneva Conference resulted from the release of a large amount of technical data concerning nuclear reactors. America's future cannot be protected by concealing what we already know; we must aim for the positive security of vigorous and continuing achievement."

In the same vein, Victor Weisskopf, physics professor at MIT, stated in the October Bulletin of the Atomic Scientists that "reactor physics and most aspects of reactor design, though not all metallurgical details, are now an open book." He pointed out how pre-Geneva discussions held at Brookhaven National Lab. between Russian experts and Brookhaven physicists revealed "the reassuring, if not entirely surprising fact that [low energy cross-section data for] uranium and other substances have the same values on both sides of the iron curtain."

The futility of continuing 'secrecy' on peaceful aspects of atomic energy is discussed at length by physicist Ralph E. Lapp in the same issue of the Bulletin. Lapp commends the AEC for initiating a policy of intensive declassification at Geneva, but observes that, in the contest with England and Russia for the lead in nuclear power, "the US cannot afford to handicap itself with the remnants of what has been an obviously futile policy of A-power secrecy."

Lapp recommends an AEC power program based on the following points: (1) "nuclear science should be freed from all security restrictions of all types;" (2) "nuclear power development ought to be thrown open to industrial participation without the present 'L' clearance drawbacks for personnel and limited access to nuclear power data;" work that has to be kept secret should be relegated to AEC installations; and (3) "all biological and medical work of the AEC ought to be open and easily accessible."

Francis K. McCune, vice president and general manager of G.E.'s atomic products division, generally agreed with Lapp's views, assailing atomic secrecy in an address before the Atomic Industrial Forum in Washington, Sept. 27.

FALLOUT PERILS and DEFENSES

More details of the nature and extent of fallout radiation hazards have recently been revealed by AEC Commissioner Willard F. Libby. In a speech delivered Sept. 29 at the 4th Annual Conference of the US Civil Defense Council meeting in Boston, he discussed practical measures that might be taken to limit radiation exposure.

One of the crucial considerations with respect to fallout radiation is its decay. The initial decay is very rapid; within 2 days the level falls to 10% of the initial value. For this reason, Libby suggested sitting out the decline in activity in a house or, preferably, a cellar as the most effective initial means of defense. By this measure alone, most of the beta ray hazard would be avoided because of total absorption in the outer building structure. The gamma ray hazard would be somewhat decreased but, since 4 inches of concrete will only reduce fallout intensities by 50%, ordinary shelters would probably be inadequate in the face of high intensities. Libby stressed that instruments sensitive to both gamma and beta rays should be available, the beta dose from skin contamination being a very considerable hazard.

CONTINUING HAZARDS — Libby warned that, after the rapid initial decay, further decay was considerably slower. He suggested that the hosing down of buildings -- particularly the roofs -- might be an effective means of rapid decontamination.

Certain foods in fallout areas may become unsafe for consumption. Libby disclosed that radioactive strontium, Sr^{90}, might be a major problem. This element is handled by living organisms in much the same way as calcium and would therefore appear in high concentrations in milk, cheese and possibly vegetables. Meat would be safe although bone would of course contain considerable radioactivity.

FALLOUT DATA SUPPRESSED — At about the same time that Libby was disclosing these new and important facts on fallout, physicist Ralph E. Lapp decried the earlier suppression of fallout data by the AEC. In a speech to the National Conference of Editorial Writers on Oct. 15, Lapp reviewed the tardy and somewhat contradictory statements issued by the AEC concerning the extent of fallout resulting from the Bikini super-bomb test, and observed that the American people cannot be protected "unless they know what they are being protected against."

The ATOMIC ENERGY COMMISSION at long last has its fifth commissioner. On Oct. 10, President Eisenhower made a recess appointment of Harold S. Vance to the AEC. Vance is a former chairman of the Studebaker-Packard Corp. and will be occupying the position for which Allen Whitfield had originally been named. That appointment was withdrawn after Senate delay in confirmation.

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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. The Newsletter is edited by members of the FAS Washington Chapter.

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SECURITY PROGRAM CRITICIZED

FAS was represented in recent hearings before the Senate Subcommittee on the Government Employees' Security Program by John B. Phelps, secretary of the Scientists' Committee on Loyalty and Security of FAS. Phelps presented a memorandum listing 12 proposals for improving operation of the security program. Among these were: (1) incorporation into the program of more of the traditional legal safeguards for the individual; (2) adjustment of security standards to make them reflect the sensitivity of the position to which they are applied; and (3) speeding up the processing of security cases. Subcommittee members expressed interest in receiving case histories offered by Phelps.

NUMBERS RACKET This same Senate Committee, headed by Olin Johnston (D, S.C.), has been investigating the validity of the Administration's claims as to the number of security dismissals from Federal service made in recent years. The committee has concluded that the majority of firings were made on general unsuitability grounds and were not at all "security risks" in the subversive sense usually implied by the term.

The committee also heard Secretary of Agriculture Ezra Benson declare that it was "gratuitous and unnecessary" to label agricultural expert Wolf Ladejinsky a security risk when the department refused to retain him on its payroll last January. Benson acknowledged that the case had started a full-scale reform of security procedures in his department.

MULLER CONTROVERSY CLARIFIED

In a press conference October 3, AEC Chairman Strauss "accepted full responsibility" for the rejection of a paper submitted for presentation at the recent Geneva conference by Nobel laureate H. J. Muller. Strauss, while disclaiming a personal role in the decision, felt that it was sound, since Muller's reference to the bombing of Hiroshima would have touched off discussion which would have been "out of bounds for the conference."

The AEC chairman expressed regret that his staff had not communicated with Muller personally with regard to the possibility of altering the paper to make it acceptable for presentation at the conference. Muller's paper, entitled "How Radiation Changes the Genetic Constitution," will be published in the Conference reports.

THE OPPENHEIMER CASE, by Charles P. Curtis, Simon & Schuster, $4. Mr. Curtis, an eminent Boston attorney, has carefully studied the Oppenheimer security procedures within the framework of the security system's own standards. "For those who want a thorough, understandable record of the case, Mr. Curtis has done a good job," wrote Washington news reporter Tony Lewis in The Nation for October 22.

REFUSAL TO TESTIFY UPHELD

When may a witness before a Congressional investigating committee legitimately refuse to answer? Should the witness who invokes the highly 'controversial' Fifth Amendment to our Constitution be cited for contempt or otherwise punished? A series of important test cases now coming before the Federal Courts should provide the answers in the very near future.

FIRST DECISION In one case, that of Barrows Dunham, the right of the witness to refuse to testify has been upheld. A former professor of philosophy at Temple University, Dunham was cited for contempt by the House Un-American Activities in 1953 for refusing to answer questions concerning his educational background and his occupation. In hearings before District Judge Joseph C. McGarraghy, Dunham's defense counsel argued that his appearance before the House committee paralleled that of a witness called before a grand jury deciding on his indictment, and that consequently the witness had the right to remain silent. The Judge found that Dunham's invoking of the Fifth Amendment was perfectly in order and granted a defense motion for acquittal.

Dunham had completely refused to answer any questions put to him by the committee, declining even to say that he was a professor. At the time the committee recommended contempt proceedings, they held that failure to convict Dunham would mean that the inquiry "might as well close up shop." Dunham was dismissed from his Temple University post following his appearance before the committee (N.Y. Times, Oct. 20).

CASES PENDING The Supreme Court, on Oct. 19, heard oral arguments in the case of Prof. Harry Slochower, who was dismissed from Brooklyn College in 1952 after he invoked the Fifth Amendment and refused to tell a Senate investigating committee whether or not he had been a member of the Communist Party in 1940 and '41. Slochower's defense held that the provisions of the City Charter, which require automatic dismissal of an employee who uses the Fifth Amendment, are unconstitutional and that therefore he was illegally discharged.

The cases of Leon J. Kamin and Wendell Furry are before the Federal District Court in Boston. These men were cited for contempt of Congress as a result of Sen. McCarthy's one-man sessions in Boston in 1952.

SCIENTIFIC MANPOWER (Continued from Page 2).
is separate from the Ford Foundation's $50,000,000 program to provide capital grants to colleges for raising teachers' salaries. An increasing amount of direct monetary aid to science education has been coming also from interested business firms, many of which conduct substantial programs to increase contact and rapport between science education and the practice of science.

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