World Atom Agency: Indian Reactor Accord, Agreement on Japan Point to More Significant Role for IAEA

Several good things have happened recently to that usually neglected offspring of the cold war and nuclear power, the International Atomic Energy Agency (IAEA).

First of all, the Indian Government has swung around to the view that it would not be intolerable for the IAEA to apply the safeguards to a 380-megawatt power reactor that the United States plans to finance at Tarapur, near Bombay. The reactor would be the first with weapons potential to be constructed on the territory of a nuclear have-not nation, and, accordingly, the safeguards issue became a crucial one for IAEA's future as an organ for preventing the proliferation of weapons from power-producing facilities.

It was established from the outset that there would be safeguards, if not by IAEA, then on a bilateral basis. But IAEA, which grew out of Eisenhower's Atoms for Peace proposal, was concerned that its reason for existence would diminish if the Indians rejected its inspection services. Whether or not that was a reasonable fear, the fact is now that the Indians have agreed to permit IAEA inspectors to determine that the plant is not being used for the production of weapons-grade plutonium. The result is a considerable boost in the agency's prestige and morale. Just what brought the Indians around has not been publicly stated, but it is understood that the United States made it clear that its interest in putting some $78 million into the Tarapur plant was tied to the Indians' acceptance of IAEA.

Closely allied to the Indian agreement was a decision taken several weeks ago by the IAEA Board of Governors to extend the agency's jurisdiction to reactors above 100 megawatts (thermal). The limitation has been a convenient excuse for nations that did not want IAEA inspectors looking into their nuclear power facilities. They still don't have to admit IAEA, especially since the agency's jurisdiction technically extends only to facilities for which it has provided materials. Nevertheless, some, including the United States, have admitted IAEA inspectors to small, experimental reactors that were constructed without IAEA assistance. The removal of the 100-megawatt limit must be formally endorsed by the IAEA general conference next September; at the moment, the indications are that this will go through without any difficulty, but in fact there is no hurry, since the completion of the plant is expected to take about 5 years. However, until IAEA comes into the picture with an operational safeguards service, a U.S.-Indian bilateral agreement will cover the reactor. Eventually, IAEA would provide the safeguards, but as a courtesy to Indian sensibilities, it was agreed that these would have to be "generally consistent" with the bilateral safeguards.

Significantly, the Soviet Union, which has grudgingly cooperated with IAEA since its founding, switched its previous stand and voted in favor of raising the megawatt limit. This doesn't mean that IAEA inspectors will be invited to Soviet power installations, but since East-West cooperation is available in such small doses, the new Soviet position is considered to be a sign of still more cooperation in the sensitive area of preventing the spread of nuclear weapons.

Finally, it has been announced that the bilateral safeguards agreement on atomic materials between the United States and Japan will be administered by IAEA. The United States has some 40 such bilaterals with other nations, and the existence of these agreements has been a sore point with the international agency. It has asked, not unreasonably, why the U.S. simultaneously pays homage to IAEA and then goes off and signs bilateral agreements. The answer, in large part, is that many of the small nations consider IAEA inspection to be a symbol of second-class citizenship in the nuclear world. Japan, however, has come around to the view that it wouldn't hurt to have IAEA doing the inspecting job, and it is quite likely that other nations will arrive at this position. The United States is pushing hard in that direction.

Though no one talks about it very much, there is some speculation on what role IAEA might play if an East-West arms accord were reached. At this point, the possibility of such an accord is sufficiently remote to make the details of secondary interest, but within IAEA there is harbored the hope that the agency might be singled out for a significant inspection role. However, no one can claim any certainty, and it is perhaps worth recalling that when the Soviets agreed to inspection of their dismantled missile sites in Cuba, they called upon—of all organizations—the International Red Cross.—D.S.G.

Congress: New Study Shows Federal Education Budget of $2.2 Billion, $613 Million of It for Research

Federal activities affecting education have, like Topsy, just growed, and the House Education and Labor Committee last week performed a welcome service by publishing a survey of federal education programs which pulls together information which has hitherto been scattered or submerged.

Initiative for the survey came from Congresswoman Edith Green (D.–Ore.), chairman of the Education and Labor Committee subcommittee which handles legislation on higher education, the area in which confusion about federal programs has perhaps been most prevalent.

Mrs. Green, who is both knowledgeable about education matters and determined, had urged for several years that an inventory survey be made, but not until Representative Adam Clayton Powell (D.–N.Y.) succeeded retiring Representative Graham Barden (D.–N.C.) as chairman of the Education and Labor Committee in 1961 did the idea gain headway. A study was authorized at the beginning of the 1962 session, and a year of work, involving hearings before the Green subcommittee and a good deal of staff work with Executive agencies and with colleges and universities produced the 176-page report, *The Federal Government and Education*, released last Friday (available from the House Education and Labor Committee, Washington 25, D.C.).

Source of Confusion

It is worth noting, as Mrs. Green points out in a letter of transmittal accompanying the report, that "one reason for a good deal of the confusion in all debate on the Government's role in education is the inadequacy and misleading nature of available educational statistics."

For one thing, government agencies do not rush into print with statistics, and in the fast-moving field of education and research, figures may no longer be pertinent when they are published. To increase imprecision, definitions vary among agencies on what constitutes education programs. It is also not unheard of in an agency for the front office not to know of all that is being done in the back shop.

The internal political significance of the report is considerable, since congressional opponents of federal aid pro-

grams in education have regularly complained that information on how much the federal government was spending on education, and for what, was inadequate or unreliable. Most notable among these critics, because of his pivotal position, has been Representative Howard Smith (D.–Va.), who as chairman of the House Rules Committee is lockkeeper on the flow of legislation to the floor of the House.

In recent years, Smith has raised, as a stock objection to passing more education legislation, the complaint that nobody could give him satisfactory answers on details of programs already on the books.

Opponents of federal aid probably expected the survey to confirm their direst misgivings about duplication and superfluity, while the proponents looked to the study to banish these suspicions. Actually, the study will probably not change the prejudices or preferences on either side, but it should enable both sides to agree on the facts.

In making these facts available, the Green report improves on existing sources on the counts of currency, completeness, and convenience. It is based for the most part on 1962 figures. The staff seems to have had better luck in extracting information than most agency compilers have enjoyed. And data are presented both by category—such as fellowship or research grants—and by agency.

The grand total for federal expenditures on education, loosely defined, was $2.2 billion in 1962. Almost exactly half of this went into what is construed as direct support of education, while the balance was spent on research in colleges and universities ($613 million), education of government personnel ($296 million), and international programs (161 million).

The highly ramified education and research programs of the military services made the Defense Department the biggest spender among federal agencies, with outlays totaling $520 million. Of this, $322.7 million went into education programs for personnel and dependents and $197.9 million went to support defense-related research in colleges and universities.

How highly variegated are the federal programs in education is perhaps most clearly revealed by the Department of Defense, which operates schools at almost every level. In rich profusion, the DOD programs range from professional graduate training, the service academies, and ROTC programs in private institutions through a variety of technical and foreign-language instruction programs (full-time and off-duty), down to a far-flung school system for dependents.

Though other agencies offer less diversity, all federal programs seem to share the principles of origin and growth described by Mrs. Green in her letter of transmittal.

"A review of the educational programs in the various mission-oriented agencies shows that most of them began almost as experiments with very small amounts of money devoted to quite specific and narrowly defined purposes. As they have developed, however, appropriations have increased, the purposes have become broadened, and new programs more general in purpose have been added . . . . [the] growth of the National Science Foundation is in many ways typical of some other governmental agencies.

"Since, however, each of the agencies launching an educational program often does so unilaterally and many times experimentally, this results in overlapping in some areas and neglect in other large segments of the educational system. If the Government's objective is to meet a short-range goal, the goal may well be achieved in this way. Multiagency programs, planned unilaterally, do not, however, promote long-range overall planning."

Clearing the Air

Though general concern has been expressed over this lack of planning and coordination, criticism is seldom leveled at the big and long-accepted programs, such as the service academies or agricultural extension work, or at smaller, special-purpose, and sometimes exotic programs, like the Interior Department's support of schools in the Pacific Trust Islands, Samoa, and the Pribilofs. The critics' most intense interest falls on the federal programs affecting schools and, especially, institutions of higher education. Because of the proliferation of fellowship and research programs through the agencies and the absence of a control point in Congress, the question of what the federal government is doing for and to the universities has been a particularly murky one.

Where the report is perhaps most helpful is in providing a detailed balance sheet that gives the clearest picture available to date on federal assistance to college and university students.

Federal assistance to undergraduates was limited largely to about 60,000 veterans attending college under the GI Bill and to some 10,000 war orphans in college under a special program. The figures for undergraduates do not include, of course, the cadets at the service academies or students receiving ROTC payments.

In supporting graduate study, a field in which the federal government has expanded its activities greatly since World War II, the report shows that some 35,404 fellowships and traineeships were awarded in 1962, with a value of $103.8 million. More difficult to pin down was the number of graduate students supported fully or in part by work on federally sponsored research projects. The best estimate which the report staff could come up with, based both on agency figures and on conversations with university researchers, was that 19,350 graduate students receive "major support" from the federally financed projects.

John F. Morse, who took leave from his post as vice president of Rensselaer Polytechnic Institute last year to direct the study between 1 March 1962 and the end of the year, says this estimate is based on agency figures crosschecked with the universities.

About 87 percent of the federal funds for graduate-student support went to students in science and engineering, and most of this money was given to predoctoral students.

The National Institutes of Health leads the list both in the number of full-time students supported (9995) and in the total amount given ($35.2 million). The Office of Education reported supporting 5366 full-time graduate students; the National Science Foundation, 2749; and the Public Health Service, another 2735. Another 10,625 received partial or "part-time" fellowships.

Support for postdoctoral research and study has been available on a much smaller scale. In 1962, according to the report, some 1600 individuals received fellowships for part- or full-time postdoctoral study. The great majority of these fellowships—some 1300—were awarded by the National Institutes of Health, and the National Science Foundation operated the only other substantial program, making awards to some 270 individuals in 1962, primarily faculty members on leave.

Over the years it has been the practice within both the government and the universities to make a distinction between federal funds for university re-

search and for education programs, but the report recognizes the difficulties of disentangling one from the other and abandons ritual by treating federal support of university research as part of the federal education budget.

The report confirms—and it will come as a surprise to hardly anyone in the university research community—that in the distribution of federal research funds the rich inexorably tend to get richer. Of the $613 million in federal funds for university research in 1962, 90 percent, according to the report, was concentrated in 100 universities, 59 percent in 25, and 38 percent in 10. In 1952 these top ten were the University of California, M.I.T., Columbia, the University of Michigan, Harvard, the University of Illinois, Stanford, Chicago, the University of Minnesota, and Cornell.

Mrs. Green's letter puts the realities of the assignment of research funds this way:

"In the first place it is difficult to conduct large scale research in an institution that does not have a graduate school of some magnitude, although small projects may be carried on by individual investigators without graduate student assistance. Second, since almost all Government-sponsored research is for a specific purpose, the assignment of it is determined on the basis of its likely contribution to that purpose, and not on the basis of 'spreading the wealth.' Third, research is not in reality, except in the case of agricultural funds and a newly inaugurated program of the National Institutes of Health, assigned to institutions; it is assigned to individual professors. The concentration of research funds indicates the concentration of scientific scholars in a small number of institutions."

But, for Mrs. Green, to understand this is not to forgive. In an interview last week she noted that the survey showed a concentration of federal funds (i) in the sciences, (ii) in a few universities, and (iii) in programs at the graduate level, and went on to say, "it's quite obvious that there are areas of neglect in the educational program."

"It's a strange rationale," she said; "we believe in free education through the 12th grade, and then if someone manages to make it, by pluck or luck, from the 12th through the 16th years, support becomes available again."

Mrs. Green is a strong proponent of federal aid to education, and perhaps because of her work on a subcommittee dealing with higher education she has been particularly concerned about the unbalancing effect on colleges and universities of the heavy flow of federal funds funneled into the sciences. The haphazard growth of agency programs in education and the dispersion of control over education programs through many congressional committees [*Science* **138** (14 Dec. 1962)] seem to have convinced her that new mechanisms of coordination are required to avoid duplication and competition and to balance the needs of science against other educational needs.

It is worth noting that Mrs. Green feels that there is a "trend toward coordination" of education programs by the Office of Science and Technology, headed by Jerome Wiesner, and that, because of OST's concern with research and with scientific manpower, it is possible that research and education programs in science and technology may be more efficiently coordinated, but at the possible expense of other fields, such as the humanities and the social sciences.

In the past Mrs. Green has raised for discussion the question of whether there should be a Department of Education and Science, with full cabinet stature, to oversee and to enhance the status of the widely scattered programs in the two fields. In her 7-page letter commenting on the new survey she suggested, as one of three major recommendations, that consideration be given to "combining the Office of Education and the National Science Foundation, the only two agencies with a primary concern for education."

While the draft survey was under discussion her views brought her into disagreement with members of her subcommittee, particularly with two minority members, Representative Albert Quie of Minnesota, ranking Republican on the subcommittee, and Representative Charles E. Goodell of New York, who objected to, among other things, recommendations they felt might lead to overcentralization of programs which had profited from diversity of control. Members of the subcommittee at one point also felt that Mrs. Green appeared to be calling for a cut in science programs, action they felt was not called for by the results of the survey.

The disagreement appears to have been largely a matter of emphasis, for Mrs. Green's letter, with its recommendations as published, seems acceptable, for the most part, to the subcommittee members. Because of these differences, and because of such other factors as changes in subcommittee membership in the new Congress, the survey and its accompanying letter are not published as a bipartisan subcommittee report, and whatever impetus this might have given the recommendations is missing.

Mrs. Green's other major recommendations are as follows.

1) "Creation, within the executive branch of the government, of an Interagency Council on Education to coordinate the educational activities of all Federal Agencies and Departments."

2) "Creation of a nonlegislative Joint Congressional Committee on Education in order to provide the Congress with an overall picture of Federal educational activities and education needs."

Both proposals have the advantages of being constructive and, at the same time, of proposing no radical departure from convention. The Joint Economic Committee, as Mrs. Green points out, provides a precedent for a Joint Committee on Education, and the idea might well be accepted so long as the committees with major responsibilities for education in both Houses were represented. An awareness of the untidy sprawl of education programs is growing in Congress, and the time may well be ripening for a move toward better coordination.

The problem of correcting imbalances created by federal programs is something else. Congress is willing to vote funds for research and education programs in behalf of defense or against disease and for limited programs for special purposes, but the legislators have so far been unwilling to go much beyond this, because the path is strewn with political pitfalls.—JOHN WALSH

Krebiozen: FDA Deadline Brings New, but Not the Final, Episode in Controversy over Cancer Drug

This is the last of three articles on the Krebiozen controversy.

The latest (though probably not the last) chapter in the Krebiozen chronicle grew out of a clash between the old controversy and the new drug laws. The laws, passed in the aftermath of thalidomide last summer, covered several aspects of drug production and