Success?

The past decade thus shows repeated attention given to problems of scientific information by the Pugwash scientists of East and West. Recommendations have been made with increasing urgency and specificity, although lacking technical expertise. The national and international bodies possessing the money and the authority to organize, support, and develop more effective systems for the storage, retrieval, and analysis of information have been slow to respond. Nevertheless, discussions of these matters were begun in UNESCO and ICSU, and in December 1967 a conference held in Paris adopted a plan for a feasibility study of the compatibility of existing and proposed information systems, and funded it. A bright and hopeful ray!

Why is it that in this area, where it should be far easier to achieve real scientific cooperation, even less has been accomplished than in the difficult area of agreements to ban nuclear testing and any further spread of nuclear weapons to additional nations? In large part, I suppose, the difficulty traces back to the fundamental structure of scientific organization in most countries. These activities are in the hands of individual scientists and scientific societies, notoriously individualistic and independent. If it has taken several decades to develop the beginnings of national science information services even within biology, chemistry, or physics, we should not be discouraged that the international efforts are slow to be born. Repeated demands for international cooperation on these problems by scientists of many nations, through the Pugwash Conferences and elsewhere, may eventually produce either a World Center of Scientific Information or a worldwide network of such centers serving different disciplines by means of compatible systems. We cannot afford to give up the effort, for meanwhile we are drowning in floods of paper.

References and Notes

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NEWS AND COMMENT

International Biological Program: U.S. Effort Stands on Shaky Ground

American participation in the 50-nation International Biological Program (IBP), the largest and most ambitious ecological research effort ever undertaken, stands "on shaky ground—organizationally and financially," according to a report* made public this week by the House subcommittee on science, research, and development. The subcommittee, chaired by Emilio Q. Daddario (D–Conn), cites "four major difficulties . . . standing in the way of a meaningful and successful IBP endeavor on the part of the United States." These are "loose" administration, an "inadequate and unrealistic mode of funding," a shortage of trained ecologists, and lack of concern for the program on the part of the public, the Congress, and the Executive branch. Though the report is constructive in tone and singles out no particular villians for blame, it amounts to a low-key indictment of the rather disjointed and slow-as-molasses American planning for the IBP.

Although the scheduled starting date for the IBP was last July, at this writing not a single major U.S. project has been assured of funding, and American IBP officials have decided to reduce the scope of their program to about one fourth or less of its once-projected size. "Our program is just oozing along like a glacier," one top planner told *Science* last week.

In an effort to get the program "off the ground," the Daddario subcommittee recommends that the federal government provide financing of $3 million to $5 million from its contingency funds for fiscal year 1969 and give a "firm commitment . . . to support the IBP to the maximum feasible extent" for the full 5-year term of the IBP, or even longer if necessary. But with the austerity mood that grips Washington today in the wake of the gold crisis and President Johnson's offer to cut $9 billion from the fiscal 1969 budget, the prospects for substantial IBP funding are still somewhat chancy. As W. Frank Blair, a University of Texas ecologist who is chairman of the U.S. National Committee for the IBP, told his colleagues at a recent meeting: "In all of history we probably couldn't have picked a poorer time to launch this program."

The National Committee estimated at one point that the 5-year U.S. program would require $199.3 million in "new money," of which $11.5 million would be needed the first year. But the Daddario committee reports that "an attempt is underway to reduce the size and cost of the IBP by consolidating the major projects." The subcommittee estimates that the "new money" needed may now fall into the $30- to $50-million range. Significantly, the committee recommends that as much as a third of this money should come from state, local, and private sources rather than from the federal government. The National Committee has thus far concentrated almost all of its efforts on obtaining federal support.

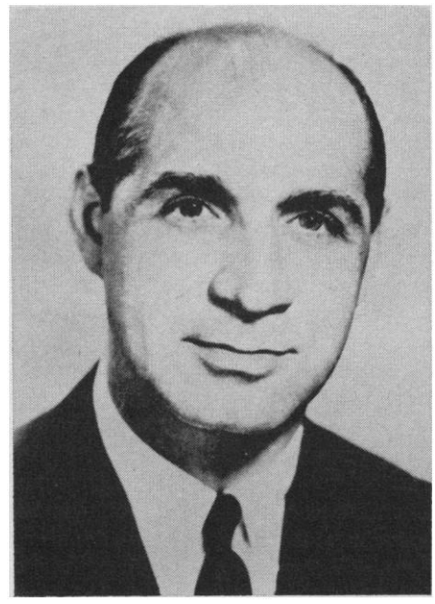
The IBP got its start, according to the generally accepted version of the story, in early 1959 in discussions between the British biochemist Sir Ru-

*Available free from the House Science and Astronautics Committee, 2321 Rayburn Building, Washington, D.C. 20024. The report contains a brief analysis and a series of recommendations prepared by the research subcommittee and its staff, headed by Philip B. Yeager, and a long background report prepared by Freeman Quimby and Marcia Carlin of the Science Policy Research Division of the Library of Congress.

dolph Peters, then president of the International Council of Scientific Unions, and the Italian geneticist Giuseppe Montalenti, then president of the International Union of Biological Sciences. The two sought to do for biology what the International Geophysical Year had done for geophysics—namely, increase the volume of research, foster international cooperation, and gain enough momentum so that further research would grow out of the original program. Meetings were held within the structure of the two international organizations; ICSU appointed a planning committee under the chairmanship of Montalenti; and by late 1963 the concept and general plan for the IBP were complete. The focus was to be on "basic biological studies related to productivity and human welfare," and on "studies that are urgent because of the rapid rate of the changes taking place in all environments throughout the world." A timetable was subsequently adopted that called for a planning phase lasting until July 1967, at which time the operational phase would begin and continue for about 5 years.

In the United States, the task of quarterbacking the IBP effort fell to the National Academy of Sciences, the scientific organization here that adheres to ICSU. An ad hoc committee appointed by the Academy reviewed the proposed IBP, consulted with about 300 U.S. biologists and officials of national societies, negotiated some changes in the original ICSU plans, and ultimately recommended that the United States participate in the IBP. In February 1965 the Academy appointed a U.S. National Committee for the IBP, chaired originally by Roger Revelle of Harvard, who held the post until 2 months ago when he yielded the reins to Blair; Revelle remains active on the committee.

From the beginning, the U.S. program ran into difficulties. It should be acknowledged that American planners consistently argued that the IBP was being launched too hastily and required a longer planning phase. Even granting that, however, the Daddario report finds that "organization and interest were quite late in arriving on the IBP scene in the United States." For one thing, it proved hard to entice American scientists into the program. S. Dillon Ripley, Secretary of the Smithsonian Institution, told the Daddario subcommittee at hearings last summer that he was "somewhat depressed by the lack of



Emilio Daddario

response [from] the biological fraternity in general." He attributed the difficulty to the fact that bright young scientists could achieve "the most patting on the back" and the greatest financial reward by working in molecular biology rather than on "large, dirty, formless, intellectually highly complicated problems having to do with the general environment." Some molecular biologists were actively hostile to the IBP.

A second problem—the Daddario subcommittee labeled it "the greatest problem of the IBP"—was identification of the areas for research. One member of the U.S. National Committee told *Science* that until late 1966 he "had no idea what the program was about, it was so nebulous." Most members of the National Committee seem to agree that a meeting in Williamstown, Massachusetts, in late 1966 was a turning point that gave the American IBP effort new direction and thrust.

Ironically, the American program eventually came to suffer from quite another problem, one which the IBP planners dubbed "ecological sprawl." The program ultimately embraced such a wide variety of seemingly unrelated projects that one committee member questioned "how anybody is going to be able to keep this animal under control."

The heart of the U.S. program is a series of major "integrated research programs" that were developed within the framework of the National Committee and are intended to attack ecological problems on a broader scale than ever before. Currently the national committee has approved 12 such major projects, of which four have recently been designated "priority" items. The future of the other eight is under review. The four priority programs include:

►Analysis of ecosystems in six contrasting regions: tundra, grassland, desert, coniferous forest, deciduous forest, and tropical forest. The Daddario report calls this "the central core of the U.S. IBP effort" and notes that "no one as yet has attempted to look at a large area like the grasslands . . . as a whole interacting system." The first study to be launched, an analysis of various grasslands in Colorado, Canada, Mexico, and several midwestern and northwestern states, would involve more than 80 senior scientists from 20 universities and government laboratories.

►Ecology of migrant populations, a study aimed primarily at determining the impact of urbanization on rural migrants, and the attributes that result in successful or nonsuccessful adaptation to city life. The study will focus initially on the movement of Negro residents from Holmes County, Mississippi, to Chicago.

►A joint study (with Canada, Denmark, and France) of the adaptation of Eskimos to their hostile environments in three widely separated communities that stem from the same origin.

►A cooperative effort with South American and Latin American scientists to gain a new perspective on evolutionary mechanisms by studying divergence in plants and animals that range through many environments, and convergence in organisms under similar environments.

Besides the major integrated projects, the U.S. program includes 244 individual projects that have been accepted as "relevant" to the IBP, of which 151 were "ongoing" projects that requested inclusion under the IBP umbrella and 93 are "new" proposals. How many of the "new" proposals were inspired by IBP and how many would have been developed anyway is not known. All these projects are funded. The National Committee has mixed emotions about this aspect of its program, for most of the individual projects have no connection with the rest of the IBP other than in name. A minority on the committee would like to toss out all projects that do not relate to the big integrated research programs. The U.S. program also

includes funds for the training of prospective ecologists.

How the U.S. program compares with the programs of other nations is not completely clear, but the U.S. effort may well be the most ambitious, provided it gets off the ground. *Nature* commented in December that the "radical sweep" of the American integrated research programs "makes most of the efforts of other countries look very small beer." *Nature* suggested that in Britain and various "other countries" the IBP has merely "provided a new system for indexing research projects already in progress."

The U.S. program eventually became so divergent and unfocused that Ivan L. Bennett, Jr., deputy director of the Office of Science and Technology, warned the National Committee in January that it would have problems gaining the support of the President and Congress. "The last thing we can sell at the present time is the idea of surveys," Bennett said. "There's a strong feeling in some quarters that science has studied things to death, but what has come of it?" Some of the "selling" job may now be performed by the Daddario report, which emphasizes that the IBP deals with "one of the most crucial situations to face this or any other civilization—the immediate or near potential of man to damage, perhaps beyond repair, the ecological system of the planet on which all life depends." The report acknowledges that the IBP won't solve the myriad problems facing America, but it warns of "awesome" consequences if this nation fails to make a start on ecological problems. "It is not only a matter of learning. . . . It is a matter of survival," the report says.

The most serious problems of the IBP stem from the fact that no single organization is clearly in charge. The U.S. National Committee makes policy and coordinates the program, but it has no money to support research. The "power of the purse" remains with the regular granting agencies, and with a special Interagency Coordinating Committee that tries to coordinate support for major projects that are too costly to be funded by a single agency. The danger of this system is that projects considered important to the IBP might not seem important to any particular agency's mission, and the agencies, in effect, can veto IBP plans by refusing to fund them. Thus far the agencies have been notably unenthusiastic.

NEWS IN BRIEF

• **MATHEMATICIANS' PROTEST**: At least two dozen American mathematicians and logicians have signed a statement asking information from the Soviet Embassy in Washington concerning the reported confinement to a mental hospital of a Soviet mathematician for his participation in a protest movement of Russian intellectuals.

The statement followed publication on 13 March of a New York *Times* report of the confinement of Aleksandr Yesenin-Volpin, a mathematician and poet, for his protest of the trial of four dissident Soviet intellectuals. The *Times* stated that 99 Russian mathematicians, including some members of the Academy of Sciences, had issued a formal protest of Yesenin-Volpin's confinement.

The inquiry to the Soviet Embassy expressed "great concern over the reports that he (Yesenin-Volpin) may have been subjected to pressure simply for expressing his views on public matters." The statement cited Yesenin-Volpin's "excellent mathematical work . . . and great integrity," and asked the Soviet Embassy to clarify the reports on Yesenin-Volpin's present status.

• **LAKE BAIKAL**: Scientists and conservationists in the Soviet Union are losing a battle to keep the world's largest freshwater lake, Lake Baikal, from becoming a cesspool, the New York *Times* has reported. Wastes from a woodpulp plant are currently being dumped in the Siberian lake and several more similar plants are planned for the area. Conservationists have battled for nearly a decade to preserve the lake which has a unique ecosystem and unusually cold and mineral-free waters. Among the species found only in Lake Baikal are the nerpa, a freshwater seal, and the golomyanka, a fish producing living young instead of eggs.

• **CYCLOTRON CONSORTIUM:** The University of Southern California, the University of California at Los Angeles (UCLA), and the University of California at Santa Barbara have formed a nuclear research and training consortium. The center of the consortium is a 50-Mev spiral ridge cyclotron at the UCLA cyclotron laboratory which is currently being enlarged through a $411,000 grant from the University of California regents and a $450,000 grant from the Atomic Energy Commission. The regents also have approved the expenditure of $4.8 million for the construction of a 150-Mev cyclotron.

• **NSF REVISION MEASURE:** A special subcommittee of the Senate Labor and Public Welfare Committee has favorably reported a bill that would revise the National Science Foundation Act of 1950. The bill, S. 2598—the Senate version of H.R. 5404, a bill sponsored by Representative Emilio Q. Daddario (D–Conn.), which has passed the House—would authorize NSF to support research in the social sciences as well as applied research projects. It also calls for five new administrative positions in NSF.

• **ESTUARY LEGISLATION:** The House passed a bill (H.R. 25) authorizing $1 million to finance a study and report by the Secretary of the Interior on the methods by which estuarine areas can be preserved and whether a national system of estuarine areas should be established. The House did not authorize federal acquisition of land, although the Secretary of the Interior was empowered to enter into agreements with states or localities for the permanent protection of estuarine areas which are now publicly owned. Under such agreements, the states or localities must share the costs of preservation of the lands "in an equitable manner."

• **NEGRO COLLEGE FUND:** Contributions to the United Negro College Fund in 1967 reached record levels in several communities that were torn by riots during the summer, the fund has reported. Among the areas where donations rose from the previous year were: Milwaukee, a 64.4 percent increase; Chicago, up 18.7 percent; Detroit, 14 percent; and northern New Jersey, 13.4 percent. The fund received $4.6 million in contributions during 1967—a gain of more than $600,000 over 1966. Corporate support accounted for 44 percent of the total. The contributions supported 33 private, regionally accredited, predominately Negro colleges and universities and scholarship programs for approximately 20,000 students.

The IBP funding scheme contrasts sharply with the system used for the International Geophysical Year. In the IGY, a national committee appointed by the Academy determined what projects would get support, and it was able to draw on a line item appropriation that had been made to NSF. The IBP staff explored the possibility of establishing a similar arrangement with several agencies, but gave up the effort after the agencies claimed they were legally required to control any funds entrusted to them and could not assume a mere banker's role. Thus the IBP ended up with many masters instead of one. The Daddario report warns that the IBP will be "disjointed and haphazard" unless the National Committee has the ability to implement its decisions, but the report is vague on how to give the committee such authority.

The Daddario report makes several recommendations aimed at strengthening the financial underpinnings and improving the administrative machinery of the U.S. IBP effort. Staff members of the subcommittee predict that implementing legislation will be introduced within a week or two. Daddario's interest, coupled with recent efforts of the U.S. National Committee to establish priorities and bring the American program into better focus, has made the future of the American effort look a little brighter. Bennett, for example, says he is now "quite optimistic" about the program.

But whatever the fate of the American IBP effort, some U.S. officials hope the whole experience will teach the U.S. a valuable lesson. "It illustrates the difficulty we often have in participating in international scientific endeavors," says one top science planner. "It's not just the IBP. We had problems with the International Hydrological Decade too. Maybe we'll finally learn to devise a mechanism to avoid all this agonizing in so many different agencies."

—PHILIP M. BOFFEY

Washington Outpost: More Schools Find Use for a Man in the Capital

In recent years, the growing size and complexity of federal support of university activities has led to the creation of a new kind of academic post—the university representative in Washington.

Employed by colleges and universities throughout the country, about 20 such representatives are working in the capital. Their role varies, but in general it is that of keeping tabs on government programs, assisting in the procurement of federal funds, and trying to untangle administrative snarls in government-campus relations. Some representatives are university employees working full time in Washington, while others are private entrepreneurs who work for schools on a retainer basis.

In past years universities tended to let nature take its course, or, in some cases, they set up campus-based research and development offices to gather information and seek money from federal agencies. These offices kept in touch with government programs through a combination of news releases, long-distance phone calls, and occasional plane trips to Washington. Some schools enlisted the part-time aid of Washington alumni to provide timely information on new programs and expenditures. However, as the sources of government money grew to include more than 50 agencies and over 1000 programs, many schools decided to establish offices in the capital. Now, more than 50 colleges and universities are served full or part time by representatives in Washington.

The cost to a university of maintaining a Washington office varies with the size of the office and the number of personnel. The Associated Colleges of the Midwest (ACM), an affiliation of ten midwestern undergraduate institutions, shares the expense (about $35,000 a year) of operating a small office staffed by a director and a secretary. The State University of New York (SUNY), which runs a suite of offices staffed by a director and several assistants, spends close to $120,000. Institutions that cannot afford offices of their own may contract with one of several Washington firms offering representation services. The cost for such service ranges from a few hundred dollars to several thousand, depending on the length of the contract. To meet these costs a school must draw funds from its operating budget, as federal guidelines for grant applications prohibit the use of government money for financing professional representation.

University representatives have come to their jobs from a variety of backgrounds. Rowan Wakefield, director of the State University of New York's office, has worked as a newspaper reporter, a high school teacher and administrator, and, most recently, as acting director of AID's education program. Ida Wallace, who represents the Associated Colleges of the Midwest, worked for SUNY. Prior to that, she had been a reporter for *Newsweek* magazine. Jane Odle, who directs the University of Texas office, had been an administrative assistant to a Texas congressman.

The job of the Washington representative varies according to the size and needs of the institution served. Rowan Wakefield of SUNY, a network of campuses that includes more than 12,000 teachers and administrators, calls himself "a middleman in a vast ocean of information." His office keeps a file of the special interests of SUNY's grant applicants and administrators and an index of federal programs and requirements. "Our main responsibility involves collating the information and putting the right people in touch with the right programs," said Wakefield. In addition, the SUNY office publishes a semimonthly newsletter informing the university about possible new sources of government funds.

Sometimes Washington representatives engage in "fire fighting," a term Wakefield uses to describe emergency action taken to oppose agency budget reductions. Last year when Congress threatened to cut the budget of the National Science Foundation, Wakefield urged members of his university to write letters and telegrams to the New York congressional delegation, and the SUNY Washington office drafted a letter of protest for the university chancellor. On other occasions Wakefield has urged university officials to

(Continued on page 1339)