REPORT FROM EUROPE

EMBO Gets a Modest Green Light

London. After many delays, the European Molecular Biology Organization has obtained money enough for a modest start on all its aims except a program of research grants and the establishment of a major international laboratory for research and training. This was officially announced after approval from the Volkswagen Foundation, which, together with the government of Israel and the Interpharma drug organization, has made a grant to start an EMBO program of short-term fellowships and travel grants, postdoctoral and professorial fellowships, visiting professorships, and advanced courses and study sessions. This "pilot" program, including a small appropriation for planning the projected laboratory, will cost about $700,000 during its first 3 years.

EMBO includes a great many of Europe's fundamental biologists. Its council, headed by Max F. Perutz of the Laboratory of Molecular Biology in Cambridge, England, has members from Belgium, Denmark, France, the German Federal Republic, Israel, Italy, Sweden, and Switzerland. The organization was founded in 1964 after a conference at Ravello, Italy, in September 1963 (*Science*, 24 April and 28 August 1964).

The members of EMBO were fearful that further development of their interdependent researches would be hampered by lack of interchange and by failure to develop sufficiently large collections of researchers in Europe. They felt that such groups as those of Cambridge, Paris, Tübingen, and Naples, although distinguished scientifically and very open to scientific visitors, did not represent a wide enough spread of disciplines.

Hence, even more would be needed than the rising support from individual European governments, such as the French "concerted action" for molecular biology or the British Medical Research Council's policy of establishing molecular biology research groups at or near universities.

The molecular biologists wanted an international laboratory analogous to the European Organization for Nuclear Research (CERN) in that a small permanent staff would lead the work of a constantly changing group of junior researchers.

They also wanted to ensure much more frequent movement among European laboratories by researchers at all levels, and this will be the goal of EMBO's first program.

The idea of the program is "to promote collaboration in the field of molecular biology not only in the interest of solving current problems but also to ensure that developments in each member country have maximum effect on developments in all the others."

For this, an EMBO manifesto issued the week of 21 November 1965 points out, speedily granted short-term fellowships and travel grants are important. Such grants often allow a researcher to "meet critical and unforeseen developments which suddenly arise in a man's work" by moving to a laboratory with special equipment and experts in a particular problem. If the amount is less than $700, then EMBO executive secretary R. K. Appleyard (director of Euratom's biology division in Brussels) can grant the money with the approval of at least one member of the administering EMBO "fund committee." For larger amounts, the fund committee chairman's approval is needed. The grants would be limited to 3 months. Some 15 of these are foreseen in the first year, 45 in the second, and 90 in the third.

The EMBO postdoctoral fellowships will be awarded for periods of up to 12 months, with possible extensions up to 2 years. The maximum fellowship, exclusive of tax and travel allowances to the fellow and his family, would be $6900 a year. Candidates for extensions will be competing with new applicants. About seven fellowships are foreseen in the first year, 16 in the second, and 25 in the third.

Without specific budget provision, EMBO also foresees the award of senior fellowships or visiting professorships, for which preference will be given to applications to work at "universities and laboratories that do not have provisions for such temporary appointments." The awards would be for up to 1 year.

After the 3-year trial period, EMBO would also like to be able to negotiate "a small number of long-term appointments at professorial level at existing universities and laboratories in member countries. Such appointments [would be] meant to promote the establishment of courses and research in molecular biology." These appointments would involve some matching by the institution. For instance, EMBO might offer to pay the professor's salary for 3 years if the institution paid "a matching sum" to equip his laboratory, or if it guaranteed tenure to the EMBO professor after the grant from EMBO (never for longer than 6 years) ceased.

In its first year, EMBO hopes to sponsor perhaps two advanced courses or study sessions at a total cost of $10,350. The number would increase to four in the second year and six in the third. Not only would these courses foster international collaboration, EMBO's manifesto explained to Europeans less accustomed than Americans to this device, but would also encourage students to enter the field while providing them with initial training.

The EMBO manifesto described the activity this way: "The study sessions will not be conferences or symposia in the usual sense, but rather working sessions of selected researchers intended to facilitate exchange of ideas and methods in rapidly developing areas of molecular biology. Their proceedings will not be published.

"Although they need have no connection with the courses, they would in practice often follow them as a culminating discussion at high level. In such cases they would include the lecturers in the courses as well as specially invited participants, and the students in the courses would be able to take part in them. Such a conjunction of the two activities, advanced courses and study sessions, would contribute to the efficiency of both and to the more economical use of EMBO funds. It would be an incentive to the students in the courses to feel that they were working up to participation in a study session at the end."

Additional Goals

While announcing its initial program, EMBO seeks to focus the eyes of potential contributors—especially governments—on its other goals: a program of grants and the research center.

The EMBO manifesto did not describe its proposed granting procedures in detail, but it set down some general principles:

1) The grant program would stress

international collaboration and would not "substitute for the national or private granting agencies which support fundamental biological research in the member countries."

2) Grants would be subject to the advice of international panels, to guarantee objectivity and to make sure that "each request would be reviewed by an authority in that field. In such a diversified area of research as molecular biology, in which many competences are needed, at least some countries in Europe could not rely on adequate evaluation of all requests locally, since they do not have enough national scientists in the field to make this possible." (This statement touches on one of the major sources of regret in Europe at the reduction of American overseas grant funds: the loss of stimulation from the highly specialized review panels of such agencies as the National Institutes of Health.)

3) In view of EMBO's rather special aims, "it is not contemplated that the total amount of EMBO research grants given to laboratories of any single member country should ever exceed 10 to 15 percent of the general budget spent by that country in support of modern biology."

4) Preference would be given to laboratories which receive EMBO fellows or organize advanced courses and study sessions, because the teaching and grant programs should complement each other. Likewise, grants might go to the departments of the projected EMBO professors.

5) Preference would also be given to collaborative research schemes involving at least two member countries.

The manifesto saved its most eloquent arguments for the proposed international laboratory, whose cost was estimated at $3.7 million for a building of 10,500 square meters, $3 million to equip the building for a complement of 150 scientists and 225 technicians (including 15 to 20 permanent senior researchers), and an annual budget of $3 to $3.5 million.

Keeping the permanent scientific staff to 10 or 15 percent of the total, as is done at CERN, would ensure "a constant flow of younger researchers" and avoid any serious drain on member countries, the manifesto asserted, especially since the formation of the laboratory would probably attract back to Europe several important biologists. Although it stated no definite choice of site, the manifesto said that a location near CERN might satisfy such criteria as good intellectual milieu, good amenities, a welcoming attitude by the host country, and location, "as it were, on neutral territory."

The manifesto stressed the "multidisciplinary" nature of molecular biology, which requires large communities of scientists of "diverse approaches and techniques" grouped together in laboratories in a pattern unlike that of traditional university biology departments. The large groupings are necessary for fully effective cross-fertilization of ideas among independent researchers and also to allow a wide range of choice for a postdoctoral researcher working his way toward an independent program.

Such an "interacting group of techniques and talents" is the biological equivalent of the CERN "plant," the manifesto asserted. Not only the money such a group would cost, but also the number of scientists needed, is lacking in any European country, except possibly the United Kingdom. "As things stand today, no European laboratory or group of laboratories covers more than about a third of the field; there are only two or three which do as much as this. In America, on the other hand, there are a number of excellent examples, for at present it is only in America that it is possible to muster the necessary resources of money and talent on a national basis. This is the reason why almost all good Ph.D.'s in the field want to go to America as postdoctoral fellows, and why many European countries are suffering a serious permanent loss of more senior workers to America."

The members of EMBO believe that the projected laboratory would not only provide a center for research of high quality, but also would help recruit a higher proportion of able young European scientists into molecular biology; the laboratory would provide postdoctoral training which is hardly available in Europe now, and would stimulate universities to set up posts and departments to provide permanent employment for the new men. The manifesto noted that "some pessimists had predicted that [CERN] would starve the universities of good physicists, but in fact the reverse has occurred."

Here, the EMBO members were replying directly to fearful comments in several European countries, notably England, that establishment of the EMBO laboratory would draw molecular biologists away from the universities just as the effort to strengthen molecular biology there was building up steam.

If it is to get its laboratory, EMBO must counter arguments like these, which influence the governments whose support is essential for such an expensive project. Of course, EMBO's leaders have realized from the start that the laboratory would be a taller order than the program of fellowships and travel grants and courses.

Some of the confusion created by the existence of possible rival projects has been cleared up in the past year. A World Health Organization plan for a general research laboratory as part of a center focused on the health research problems of developing countries has been shelved (*Science*, 18 June 1965). A French plan for an international cancer center has been scaled down to a projected information-processing agency under WHO supervision; the future of the agency, which might be located in Lyon, is uncertain.

But there is still skepticism about some of the international collaborative efforts started after CERN. There is still worry about favoring a single group of biologists.

To the latter objection, EMBO's manifesto makes this reply:

"There is no branch of biology which will not be illuminated by the advances in this immensely promising field and the prospects of practical dividends in applications to medicine and agriculture and the development of new industries can hardly be overestimated."

Why do the EMBO members feel this way?

"In the past decade, we have witnessed the beginning of an efflorescence in biology which is likely to be as important for the development of that subject as was the new knowledge of atomic and nuclear structure in the earlier years of the century for the development of physics. The appearance of a new biology has been marked by advances on many fronts, but especially in the area that has come to be known as molecular biology.

The determination of the structures of biologically important macromolecules like the proteins and nucleic acids, and the interpretation of function in structural terms, have already revolutionized our knowledge of heredity and of cell behavior, and similar concepts applied to problems of differentiation and control, to immunology, to supracellular organization, and to the central nervous system have every prospect of yielding equally dramatic results in the future."

There are signs that arguments like

these are beginning to convince a wider circle. In late September, an expert committee of UNESCO announced its support of an international laboratory of fundamental biology with an initial staff of 150 scientists, buildings and equipment costing $6 million, and an annual budget of $3 million. The committee also supported an international fellowship, training, travel, and grant program.

To be sure, the committee included three EMBO council members: Perutz, A. A. Buzzati-Traverso of Naples, and Jean Brachet of Brussels. But also on the panel were René Wurmser of Paris, V. A. Engelhardt of the Soviet Academy of Sciences, and Sir Peter Medawar of the National Institute of Medical Research at Mill Hill, London.

So, while EMBO develops its "pilot" program of training younger researchers and improving research collaboration, it can pursue its idea of a laboratory with some hope.

—VICTOR K. MCELHENY

Physicist Named to Academie Francaise

Professor Louis Leprince-Ringuet of the Ecole Polytechnique in Paris, leader in the development of high-energy physics in France since World War II, was elected to membership in the Académie Française by a bare majority on 13 January. He joins such other scientific members of the Académie as Louis de Broglie (physicist) and Louis-Joseph Pasteur Vallery-Radot and Jean Rostand (biologists).

Leprince-Ringuet's group at the Ecole Polytechnique has played a leading role in subatomic physics, using the 3-billion-electron-volt proton synchrotron commissioned at Saclay near Paris in 1958 and the 28-Bev synchrotron at CERN in Geneva, in use since 1959. Liquid hydrogen and heavy-liquid bubble chambers designed in Paris have been used intensively at CERN. The new director-general of CERN, succeeding Victor F. Weisskopf, is Bernard Gregory, who worked with Leprince-Ringuet in Paris. Leprince-Ringuet himself was vice-chairman of CERN's scientific policy committee from 1954 to 1964, when he became chairman.

Born in 1901, Leprince-Ringuet began his career as an engineer working on submarine cables but was attracted into physics by Maurice de Broglie, beginning as a student of cosmic rays. He was elected to the French Academy of Sciences in 1949. An author of books and newspaper articles popularizing science, Leprince-Ringuet has also been a notable public critic of the French Government's commitment to building a nuclear striking force. Nonetheless, he is a member of the Committee on Atomic Energy which oversees the operation of CEA, the French nuclear energy agency.

—V.K.M

Successor to Brimble at Nature: John Maddox

The publishers of the British weekly scientific journal *Nature* have shown boldness in their choice of a new editor.

Instead of reaching into the academic world, Macmillan (Journals) Ltd. has chosen John Maddox, 40, former scientific correspondent for the *Guardian* and now an assistant director of the Nuffield Foundation in charge of the foundation's science teaching project.

Maddox succeeds L. J. F. Brimble, who died in November after more than a quarter century as editor. He will begin doing some work for *Nature* immediately, but will not move over to the journal full time until the Nuffield Foundation has had time to look for a new coordinator of its project to develop new science textbooks for British schools and get them tested in the classroom.

That a man of Maddox's background has been chosen to edit *Nature* indicates that the journal will pay more attention to events—the news side of science—than it has in the past.

Maddox is well known in America, which is the source of about a third of all contributions to *Nature*. In 1960 he spent some months as science correspondent of the Washington *Post*, on an exchange program. In 1962–63, he was affiliated with the Rockefeller Institute in New York. At the invitation of Detlev Bronk, Maddox spent the year learning about the work of Rockefeller Institute scientists firsthand, and gave them his views about scientific communication.

Maddox was born in Swansea in south Wales. He studied chemistry at Christ Church College, Oxford, where he received his degree in 1947. During 2 years' work at Kings College, London, he switched over to theoretical physics, which he taught for 6 years at the Univeristy of Manchester. He joined the *Guardian* in 1955. Maddox also has written often for *The New Scientist*, a British science news weekly.—V.K.M.

British Oceanographer Dies

Maurice N. Hill, 46, a leader in British geophysical work during the recent International Indian Ocean Expedition, died suddenly 11 January in his home at Cambridge.

In the expedition, members of Hill's group in the department of geodesy and geophysics at the University of Cambridge had made measurements between the Seychelles Islands and Kenya which indicated that the Mohorovičić discontinuity approached very close to the sea bottom there.

Such studies typified Hill's long interest in measuring the structure of the sea floor by seismic refraction and other techniques. In the late 1940's he developed means whereby British oceanographers could use a single ship, instead of the customary but generally unavailable two, for seismic refraction work. The place of the second ship was taken by a set of buoys, usually four; these buoys received the sound echoes from the explosion and then radioed data back to the ship from which the explosive charge had been released.

At his death, Hill was a reader (associate professor) in the department headed by Sir Edward Bullard. A fellow of King's College, Cambridge, Hill was elected a fellow of the Royal Society in 1962, and was awarded the Physical Society's Creer medal in 1963. He was one of the editors of *The Sea*, a three-volume collection of short papers issued in 1962–63 to make up for the lack of a current survey textbook on oceanography.

Hill played an important role in the postwar development of oceanography in Britain. At Cambridge he trained many seagoing geophysicists. He planned the 1949–52 expedition of the research vessel *Challenger* in the Atlantic, Pacific, and Indian oceans. During the past several years he was a leader in lobbying for more generous support of physical oceanography in Britain. This issue is now in the hands of the new Natural Environment Research Council, of which Bullard is a member.

Hill was the younger son of A. V. Hill, who won the Nobel prize in medicine in 1923.—V.K.M.