EMBO

The European Molecular Biology Organization

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Contents

The European Molecular Biology Organization, Geneva

Executive Secretary: Dr R. K. Appleyard,
c/o University of Brussels, 67 Paardestraat, St.-Genesius-Rode, Belgium

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Copies of this booklet may be obtained from: Dr R. K. Appleyard,
c/o University of Brussels, 67 Paardestraat, St.-Genesius-Rode, Belgium

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I. The general plan

The background

In the last 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 which 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 behaviour, 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 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 over-estimated.

Many of the key discoveries which triggered these developments were made in European laboratories. Today, the initiative has to a substantial extent passed to America, where the very large resources available for scientific research have been liberally and wisely applied in this field. Not only is the initiative moving across the Atlantic, but also many talented European biologists, attracted by the better conditions for research, by the more liberal funds available, and by the stimulating intellectual atmosphere of the American universities, have themselves moved to the United States. The intellectual capital of Europe is not being exploited to the full on home ground; European resources, financial and human, are in fact adequate, if properly mobilized, to ensure that Europe plays its accustomed role in an intellectual movement which is having far-reaching consequences not only in pure science but also in applications which cannot but lead to human betterment.

Foundation of EMBO

After various discussions culminating in a meeting at Ravello in September 1963, a number of leading molecular biologists organized themselves into a formal association known as the European Molecular Biology Organization (EMBO). The foundation of EMBO was welcomed with enthusiasm by workers in the field throughout Europe. A Council was set up and EMBO was legally established in Switzerland as an international non-profit organization. Its membership now comprises the majority of senior molecular biologists in Western Europe and Israel. Names of the present members of the EMBO Council are given in the Appendix.

The concept of European co-operation in this field was so well received that a substantial grant has already been made to EMBO by the Volkswagen Foundation.* Smaller amounts have been contributed by the Government of Israel and by Interpharma. These grants were made in order to help EMBO embark on a modest and more or less experimental programme immediately; however, they are restricted. In the long run, EMBO, if it is to build up its activities to a sufficient level to have any real impact, must look for international support from governments. Such support is not only necessary to ensure permanent and adequate resources, but would give the organization an international character, like that of CERN, which is essential to its role.

The philosophy

Molecular biology depends on many disciplines and techniques rarely available, all of them, in any one European country, and progress often requires collaboration across national boundaries. Such collaboration not only leads to more effective use of existing national resources but inevitably has the effect of developing them. As in other fields, national growth and vitality in science are dependent on international contacts and mutual influences. It is the aim of EMBO 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. This applies to both teaching and

* The grant from the Volkswagen Foundation was made specifically to cover the cost of fellowships, courses, and administration for a limited period.

research, two sister activities which are equally indispensable for the evolution of the subject and both of which, if EMBO is to have full effect, must find a co-ordinated place in its programme.

The programme

After careful study as to how this philosophy could be implemented most effectively and with a minimum outlay of funds, EMBO has formulated the following objectives:

1. The establishment of post-doctoral EMBO fellowships for training and research. In general such fellowships would be awarded preferentially to post-doctoral students in one member country wishing to continue their studies in another, or, possibly, in the central EMBO laboratory (see below). The international character of these fellowships would be a distinguishing feature.

2. The establishment of short-term quickly-available EMBO fellowships and travel grants to aid co-operative projects between laboratories in member countries. In administering them speed would be a major consideration, in order to meet unforeseen and critical situations.

3. The establishment of senior EMBO fellowships at professorial level for purposes of research and teaching. These, within the European area, would be somewhat like the existing senior Fulbright fellowships, and would enable one country to draw temporarily on the resources of another in a field in which the neighbour was particularly strong.

4. The establishment of EMBO professorships at universities in member countries desiring to initiate or develop some particular aspect of molecular biology. These would serve to introduce both research and teaching in a field which, as a whole, is at present hardly represented at all in many European universities, even leading ones. There would be an interplay between such professorships, as well as the fellowships, and a system of EMBO grants.

5. The establishment of a programme of EMBO research grants. These would be made preferentially for the initiation of new and promising developments, such as the provision of teaching and research facilities for an EMBO Professor, and to projects of European character such as those involving co-operative research between laboratories in different countries.

6. Establishment of a European Laboratory of Molecular Biology where

a majority of the disciplines comprising the subject would be represented. This laboratory would have a small staff of senior workers; the remainder of its scientific population would be temporary and would normally return to their own countries after a period of training or research. The concentration of a wider variety of disciplines than exists in any single national laboratory in Europe at the present time would make this EMBO laboratory unique; and the laboratory would be an unrivalled breeding ground for molecular biologists who would later be available to universities and national laboratories in their own countries. Contacts made by the non-permanent staff at the EMBO Laboratory would lay the ground for subsequent collaboration between national laboratories.

7. Establishment of an integrated programme of Advanced Courses and Study Sessions in the field of Molecular Biology proper as well as in certain closely related ancillary subjects. These would be co-ordinated with other similar activities sponsored by other institutions. Some of them would be held in the EMBO Laboratory itself, which would serve not only as a place for actual research but as a training centre as well. Such courses and study sessions would be a meeting ground for students from different countries and might be expected to stimulate the conception of co-ordinated projects.

All these various activities are conceived to supplement one another as parts of an integrated programme to promote the development of molecular biology in its different aspects at a *European* level. It is the conviction of the Council that EMBO, as a *European* organization, capable of drawing on the whole pool of talent and resources available in the member countries without hindrance of national boundaries and the restrictions to which national funds are often subject, could accelerate the development of this field more effectively and economically than could the countries themselves as a result of independent and unco-ordinated efforts. Its realization would significantly help the Europe of the future to make the contribution of which it is capable and which it owes to what is certain to become one of the major fields of the science of the future. The maximum financial commitment involved, whatever it might be, would be only a fraction of that necessary for a comparable programme in some other subjects such as space research, radio astronomy, or particle physics; the human benefits which may be expected to accrue are very much greater.

II. The EMBO general fund

For the purposes of financing and administration EMBO activities will be divided into two groups. Fellowships, Professorships, Courses and Research Grants will constitute one, the Laboratory will constitute the other. The first group will be provided for by a separate fund, known as the EMBO General Fund. It is the purpose of this chapter to spell out in detail the uses and functioning of this fund. The Laboratory will be dealt with separately in Chapter III.

1. Principles and administration

In order to foster teaching, research, and training in molecular biology in member countries a fund will be established from contributions of supporting governments, academies, private institutions, and other interested bodies in accordance with Article 2 of the Statutes. This will be known as the 'EMBO Fund'. Until otherwise determined by Council it will be administered, within a general policy and an overall budget determined by Council, by a committee of six members designated by Council and called the 'Fund Committee' (FC).

All applications for assistance from the Fund shall be evaluated solely on the basis of the scientific excellence of the project, regardless of the nationality of the applicant or his membership of EMBO, except that applications involving exchanges and collaboration between scientists working in institutions in different European countries will generally be preferred to those for projects involving a single country only. This is due to EMBO's basic motivation of promoting molecular biology at a European, rather than a national, level. If, in the opinion of FC, the best interests of European biology justify it, one of the institutions concerned may be in a non-European country. In selecting projects for awards, FC will take account of alternative possibilities of financial support which may exist from other, especially national, sources.

2. Activities

(*a*) *Short-term fellowships*

There is often need for quickly available small grants to enable workers in one laboratory to make visits to another for the purpose of carrying out

special experiments with techniques or specialists available there, for scientific discussion, or possibly some other form of scientific collaboration. The value of such grants depends greatly on the speed with which they can be made available, since they are often used to meet critical and unforeseen developments which suddenly arise in a man's work. They should not therefore be subject to the delays of processing acceptable for larger and longer term projects.

Duration: Up to three months.

Amount: A subsistence allowance (calculated on the basis of the qualifications of the applicant and local costs of living) and travel expenses will be paid.

Applications: These may be sent directly to EMBO's Executive Secretary at any time. They shall include name, age, academic qualifications and affiliations of the applicant, a short *curriculum vitae*, a description of the activities to be carried out at the host laboratory, the names of two persons from whom scientific references can be obtained, written agreement from the head of the host laboratory, and a statement from the head of the applicant's laboratory.

Processing: If the total amount involved is less than Swiss Francs (SF) 3,000 the Executive Secretary may take action at once after consultation with at least one member of the FC. In such cases he shall inform all members of FC of his decision promptly in writing. If a larger amount is involved the decision of the Executive Secretary must receive approval of the Chairman of FC.

Reports: A final report shall be submitted to the Executive Secretary by the grantee on the scientific results achieved through the Fellowship.

(*b*) *Post-doctoral fellowships*

Fellowships will be awarded to young and promising research workers who have already received the doctorate or its equivalent to give them the possibility of working for prolonged periods under the guidance of leaders in the field of molecular biology.

Duration: Post-doctoral fellowships will be awarded for periods up to 12 months with possibility of extension if the applicant can establish need for additional training. In all cases, extension will be contingent upon approval by the host laboratory, approval by FC, and availability of funds. Extension beyond two years will be granted only in exceptional circum-

stances and will require special justification. Applications for extension will be in competition with new applications.

Amount: The appropriate stipend will be fixed in each case by FC according to the cost of living in the locality chosen and the seniority and family circumstances of the fellow. In addition to this the fellow will be given travel expenses (return ticket by air, tourist class or its equivalent) for himself, wife and children. An associated grant, not to exceed SF 2,000 per fellowship year, may, in exceptional circumstances, be made to the host laboratory as a contribution to the cost of expendable materials.

Applications: These may be sent directly to EMBO's Executive Secretary at any time. They shall include name, age, academic qualifications and affiliations of the applicant, the names of two persons from whom scientific references can be obtained, a short *curriculum vitae* and a list of published papers, a description of the research plan to be carried out at the host laboratory, letters giving the views of the heads of the two laboratories involved, and any other pertinent information.

Processing: Applications will be reviewed and awards made by FC on the basis of the information submitted and where appropriate of an interview with the candidate by a member of FC or an *ad hoc* appointed delegate.

Reports: The grantee shall submit a report on his scientific work to the Executive Secretary at the termination of each fellowship period.

(*c*) *Senior fellowships and visiting professorships*

A limited number of senior research and teaching fellowships will be made available for limited periods. These senior appointments may be at 'professorial level', but their exact relationship to official University Professorships will have to be adjusted with reference to the academic system of the country involved. As a rule preference will be given to applications involving universities and laboratories that do not have provisions for such temporary appointments.

Duration: Up to one year.

Amount: The award will include travel expenses by air (tourist class) for the applicant and, at the discretion of FC, for his wife and children, and salary will be determined in each individual case.

Applications: These may be submitted by the host laboratory of the prospective fellow at any time, but must contain assurance of the agree-

ment of both parties to the proposal. They shall include details about the research and/or teaching programme and the benefits that may be expected to accrue from it.

Processing: Awards shall be made by FC, subject to the provisions of Section 3 of this chapter.

(*d*) *Long-term appointments*

EMBO may negotiate with the appropriate authorities a small number of long-term appointments at professorial level at existing universities and laboratories in member countries. Such appointments are meant to promote the establishment of courses and research in molecular biology. As a rule, appointments of 'EMBO Professors' will be contingent on partial financial participation of the interested institution. E.g., EMBO would offer a fund for the payment of the salary for a period of, say, three years, if the receiving university were ready to invest a matching sum for the equipment of a laboratory or would guarantee tenure of the 'EMBO Professor' after financial support from EMBO Fund ceased. In no case may the payment of salary by EMBO be prolonged beyond six years.

(*e*) *Advanced courses and study sessions*

It will be the policy of EMBO to organize and finance international advanced courses and study sessions, often in association with one another. These activities are regarded as an important part of the EMBO programme of fostering international collaboration in biology, of encouraging students to enter the field, and of providing them with initial training.

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 of 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

courses to feel that they were working up to participation in a study session at the end.

Committee on courses

Council shall appoint a Committee on Courses charged with the duty of preparing a long-term plan, with budget, for these two activities, Courses and Study Sessions. The plan and budget shall be reviewed annually by Council as part of the general programme of activities submitted by FC and, as ratified, shall be implemented by the Committee, assisted by the Executive Secretary. In the first instance the Committee shall be a provisional one, and its terms of reference and the length of service of its members shall be reviewed by Council at the end of the first year of operation.

Administration

The Committee on Courses shall appoint a local Committee to organize each advanced course or study session. This local committee shall consist of the Director of the host laboratory and the Director of the course or organizer of the study session, the Executive Secretary of EMBO, a local secretary and any other co-opted local members. It shall be given a budget and shall be empowered to select students or participants subject to any general directives made by the Committee on Courses.

Financial arrangements for the courses

(*a*) Lecturers shall normally be paid SF 200 per lecture, together with appropriate subsistence and travel expenses. Organizers of practical classes and demonstrators shall be paid at a comparable rate.

(*b*) The budget may include the cost of expendable materials required by the host laboratory.

(*c*) Students will be charged a registration fee, but in case of need the fee of a student may be paid for him from the budget of the course at the discretion of the local committee. Students may apply to EMBO for travel and subsistence grants in order to participate and their applications, after approval by the local Course Committee, shall be handled in the usual way as part of the fellowship and travel grant programme.

Financing of the study sessions

No fee shall be paid to participants in the study sessions, whether or not they are speakers, and no registration fees will be levied. As in the case of courses, participants other than scheduled lecturers may apply to EMBO for a grant to cover the cost of attendance.

Support of courses not organized by EMBO

As far as possible the programme of EMBO courses and study sessions will be designed to cover, in the long run, the whole field of molecular biology; however, it will take account of similar activities sponsored by other bodies and avoid unnecessary duplication. In order to promote co-ordination, EMBO may provide grants to enable students to attend such activities and appropriate recommendations regarding these will be made by the Course Committee to FC.

Advertising

Advanced courses and study sessions shall be advertised by the Executive Secretary in European universities and research laboratories and through appropriate scientific journals. Special notification shall be sent to all individual EMBO Members.

(f) Research Grants

It is the policy of EMBO to make grants for the direct support of research, and EMBO Council attaches great importance to this activity. Although in the initial phase of EMBO, while its funds are limited, it is felt that first priority should be given to fellowships and courses, nevertheless, as larger resources become available a substantial fraction of the EMBO General Fund, to be determined by Council, will be used for awarding research grants to laboratories or groups in member countries.

It should be emphasized that the policy of EMBO, in respect to such grants, will not be to substitute for the national or private granting agencies which support fundamental biological research in the different member countries. In accordance with the general aims of EMBO, the granting policy will be specifically designed to foster biology in Europe by promoting international collaboration between scientists working in established centres in different member countries. Thus, grants would be awarded preferentially to laboratories which act as hosts to EMBO fellows

(in order to contribute to expenses consequent upon such hospitality) or to research groups which organize advanced courses or summer schools with international attendance. Substantial contributions might also be made to the expenses of university departments which had accepted EMBO professorships as further encouragement to departments to provide matching funds for the establishment of these posts. Last but not least, grants would also be preferentially awarded to collaborative research programmes involving two or more groups belonging to different member countries. It is felt that such 'joint grants' for the pursuit of co-operative research programmes could be extremely effective in promoting fluidity, exchange, versatility, and therefore efficiency, of European biological research.

In general, the granting policy, while not necessarily concerned with these activities exclusively, will be shaped to support the principal aim of EMBO, namely to assist the growth of modern biology in the universities of Europe and to create close and concrete collaboration across national boundaries between existing or future centres of research.

The actual mechanisms which will be set up for the study of grant requests and for decision-making in this area need not be set out in detail at this point. Since, however, the granting policy and the fellowship policy should be conceived so as to help and support each other as much as possible, the FC should be in charge of both, working according to the general financial and scientific policy elaborated by Council. In any case, the fact that the awards would be subject to the advice of a group of high-level scientists drawn from all the member countries would give them objectivity and provide a guarantee that each request would be reviewed by an authority in the 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.

It is difficult at present to give an exact estimate of the budget of EMBO grants. It may be indicated, however, that in view of the rather specific aims of the EMBO granting policy, it is not contemplated that the total amount of the EMBO research grants given to laboratories of any single member country should ever exceed 10 or 15 per cent of the general budget spent by that country in support of modern biology. It may also be pointed

out that while it is felt that this might appropriately represent the eventual level of EMBO spending in the field of research grants, nevertheless even if only relatively small funds were available in the early stages of the operation, much might be accomplished by their judicious use in certain areas of research where it is already evident that close collaboration between existing groups in different countries could very greatly accelerate the development of their research.

3. Appointment and functioning of the Fund Committee

(*a*) The period of service of members of FC shall be three years in the steady state, i.e. after the first 3 or 4 years of operation, and each year two members shall retire and two new members shall be added. The Chairman and the members shall be appointed by the Council and shall cover as far as possible the principal fields of molecular biology. The Chairman of FC shall usually be a member of Council.

(*b*) Membership of FC shall be honorary and members shall receive no compensation except in respect of expenses actually incurred.

(*c*) FC shall examine and evaluate incoming proposals which lie within its jurisdiction and shall seek the opinion of referees, normally including at least one of nationality different from that of the applicant, before taking action.

(*d*) In the case of fellowships, FC may make grants on its own authority when the total sum involved in any particular award does not exceed SF 50,000. In cases where the sum involved is greater than this, FC will make an appropriate recommendation to Council. Each year FC shall recommend to Council the approximate overall allocation as between short-term fellowships, post-doctoral fellowships, and senior fellowships, and Council shall set the policy in respect to these items in the light of this recommendation.

(*e*) The same rule regarding grants not in excess of SF 50,000 shall apply to all other activities which lie within the jurisdiction of FC (e.g. research grants or courses), provided the decisions conform to the general programme approved by the Council.

(*f*) Applications for EMBO support will be invited in appropriate scientific journals. Notices will also be sent to universities and research laboratories and to all members of EMBO individually.

III. The EMBO Laboratory of Molecular Biology

1. The case for a European Laboratory of Molecular Biology

The essence of Molecular Biology is that it is multidisciplinary. The important advances have come about through the interaction of biologists with chemists, with physicists, and with mathematicians – by the application of quantitative physicochemical techniques to biological systems not hitherto thought amenable to this approach. Experience has shown that advances are most likely to occur if a substantial number of research workers, using diverse approaches and techniques, can be located together in a single laboratory or group of laboratories. Such groupings lie outside the traditional pattern of university biological departments.

There are good reasons for establishing *large* laboratories in fundamental biology, both in the interests of good research and in the interests of good training in the methods of research. In this field everyone is a specialist in some particular area or technique; the real advances come from cross-fertilization among specialists, from understanding other peoples' ideas and techniques, and from day-to-day exchange of ideas – in short, from the interaction of differing attitudes and skills – and all of these are best achieved by propinquity, by talking to experts in fields other than one's own working down the corridor. As to training in research, it may well be argued that at the pre-doctoral stage the scientist should often concentrate rather narrowly on acquiring a particular set of skills, but after the PhD, when he should be forming his own ideas and developing an independent research programme, the young post-doctoral fellow needs to be in a large laboratory where work is going on in many aspects of the field. He will not be so well served by working in a small one active in only a few areas. Thus an increased scale of support for national, and therefore generally small, biological laboratories, while doing nothing but good and in many European countries evidently very urgently needed, will not of itself be sufficient to give the needed impetus to the subject.

The argument for large institutes of fundamental biology is not the same as that in the case of high-energy physics, where the need (now satisfied by CERN) was for a very powerful and expensive machine which could only be provided in a central institute; in biology the essential 'plant' is, rather, an interacting group of differing techniques and talents, each only moderately expensive by itself, but in sum costing so much as to be beyond most

national resources, financial or – especially – human. Quite apart from financial considerations there is not a single European country, with the possible exception of the United Kingdom, which could at the present time muster the human resources and skills needed for such an inter-disciplinary institute even if the staff of its existing laboratories were totally exploited. 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 promising young men in the field want to go to America as post-doctoral fellows, and why many European countries are suffering a serious permanent loss of more senior workers to America.

The present proposal is to establish an International Laboratory of Molecular Biology (or Fundamental Biology) in Europe, large enough to satisfy the criteria just outlined, and with the possibility of expanding into new fields as they develop. In summary, the case for such a laboratory is that it would enable Europe to regain initiative in a field to which its contributions in the past have been so great, and which holds immense promise for the future of increases in human knowledge, or greater understanding of health and disease, and of economic benefit. In the first place, it would provide a centre at which high quality research would be done. In the second place, it would bring more of the ablest young scientists of Europe into the field; at present talent is recruited into fundamental biology on a much greater scale in America, largely owing to the presence there of many flourishing inter-disciplinary centres which have a powerfully attractive effect. In the third place, it would offer post-doctoral training facilities at present hardly available in Europe, and both by this means and by attracting senior visitors for short periods would help to improve the mobility of scientists from one European country to another. Finally, it would by its example stimulate the universities of Europe to establish posts and departments in which these men could find permanent employment. (It has been the experience of CERN that European physics has been stimulated in many ways, direct and indirect, by the presence of an international laboratory at Geneva; some pessimists had predicted that it would starve the universities of good physicists, but in fact the reverse has occurred.)

2. Scientific programme

The new outlook in biology has emerged largely in consequence of our increased ability to investigate fine structure – macromolecular (protein and nucleic acid structures), topological (genetic material), and organizational (viruses, muscle, mitochondria, ribosomes). Many new techniques have contributed – X-ray diffraction, electron microscopy, spectroscopy, chemistry, fine-structure genetics. In consequence we can now discuss function in molecular terms, at least in principle. But in most areas the new techniques have only been deployed in a fragmentary way – we know the structure of one kind of nucleic acid, of one or two proteins; the general principles of virus architecture have been elucidated; the broad outlines of parts of the genetic map of one or two organisms have been established; genetic and metabolic control mechanisms have been understood in particular species. Today the general character at least of biological organization can be grasped; we can begin to apprehend the total behaviour of a simple organism such as *E. coli* in the broadest outline, but with no details anywhere and with large areas of total ignorance (what is the mechanism of cell division? How does the cell membrane work?). In principle there seems no good reason why, by the application of techniques which are already in our hands, we should not achieve a virtually complete understanding of such an organism – but to do this will demand an exploitation of these techniques on a very large scale.

The relation between function and structure in macromolecules like proteins is in no single instance understood in detail; we do not yet comprehend the action of a single enzyme in structural terms. Genetic maps need detailed plotting, in many kinds of organisms. In the fields of biosynthesis, of replication, and of energy transfer only the main lines have been established. A major part of the activity of any laboratory of fundamental biology must be devoted for years to come to consolidation of the new territory, in other words to topics like the following, already flourishing but still due for a long period of fruitful activity.

(*a*) *Biological structure:* proteins, nucleic acids, viruses, the genetic apparatus, mitochondria, ribosomes, membranes.

(*b*) *Structure and function:* protein – especially enzyme – function interpreted in structural terms; selective permeability of membranes; mechanism of action of ribosomes and mitochondria, contractility of muscle.

(*c*) *Biosynthesis and replication:* mechanism of protein synthesis, nucleic acid replication.
(*d*) *Control systems:* control of protein synthesis, nucleic acid replication, etc.
(*e*) *Energy paths in living organisms:* photosynthesis, mechanism of energy transfer, etc.
(*f*) *The immune response and problems of molecular recognition.*

Beyond these topics there are others clearly ripe for investigation in fundamental terms.
(*g*) *Differentiation and embryology:* hitherto attention has been concentrated on mechanisms common to different cells; we are now in a position to study ways in which cells of common origin come to *differ*. The process of differentiation has, of course, been studied extensively in the past, but for the most part only at the morphological level.
(*h*) *Recognition:* how does one cell recognize another? The recognition mechanism is quite obscure, but of fundamental importance in many fields – embryology, immunology, the central nervous system.
(*i*) *Central nervous system:* in spite of the extended classical studies of the neurophysiologists, our knowledge of the mechanism of the central nervous system of even very simple animals is exceedingly small; even so fundamental a question as to the nature of memory (electric circuits, protein molecules, nucleic acid molecules?) remains without a definitive solution. Macromolecular structure, cybernetics, computer technology, the mechanism of selective permeability in membranes – all these are approaches to the problem which should begin to converge during the next decade.

Finally –
(*j*) Some of the fields which will be of the greatest importance in ten years' time cannot be listed because they have not yet been thought of. Any plans for a laboratory should include provision for substantial extension, not simply by the development of existing groups but by the creation of totally new ones.

Considerations of this kind suggest that the laboratory should include research groups dealing with most of the topics listed below and eventually with others as yet unspecified. It should be emphasized, however, that the setting up of a particular group ought to depend on the availability of a group leader of the highest quality; thus it might not be possible to set up all the groups at the beginning.

(*i*) *Structure of biological macromolecules* (X-ray and electron microscope studies of proteins, nucleic acids, lipids, etc.)
(*ii*) *Physico-chemical studies of biological macromolecules* (applications of optical, radiation, hydrodynamic, electrophoretic and other techniques to biological macromolecules).
(*iii*) *Protein and nucleic acid chemistry* (amino-acid and purine-pyrimidine base sequence studies, as well as general chemical investigations).
(*iv*) *Viruses* (studies of virus structure using electron microscope, X-ray and chemical techniques; the virus-host relationship).
(*v*) *Immunology* (the molecular basis of the antigen-antibody relationship).
(*vi*) *Molecular genetics* (study of hereditary information transfer by genetic techniques).
(*vii*) *Protein and nucleic acid synthesis* (intracellular information transfer).
(*viii*) *Control systems* (mechanisms of control of metabolic processes and of genetic expression).
(*ix*) *Enzyme function and co-ordination* (relationship between structure and function of enzymes, co-ordination of metabolic chains).
(*x*) *Differentiation and embryology* (the molecular basis of cellular differentiation and recognition; malignant conditions such as cancer).
(*xi*) *Membranes* (the structure and functioning of biological membranes).
(*xii*) *The nervous system* (molecular basis of nervous transmission and of the function of the central nervous system, memory storage, etc).
(*xiii*) *Energy transfer systems* (structural aspects of photosynthesis, and other energy transfer systems).
(*xiv*) *Contractile tissues* (molecular basis of contractility in muscle and analogous tissues).

3. Size

Having regard to the number of research groups which we think the laboratory should contain, and believing that, although individual groups might vary in size, they should average ten or twelve scientifically-qualified research workers each, we conclude that the plan should be for a laboratory whose scientifically qualified population should be about 150; in the beginning it would, of course, be smaller, and it would only build up to this figure after the first few years of its existence.

We know of several successful laboratories in this field in which the total number of other categories of staff (technicians, assistants, administrators,

cleaners, canteen staff, etc) does not exceed the number of scientists. It is our opinion that the ratio of scientists to the rest should be kept as high as possible, but that while it might not be less than 1:1, planning should be on the basis of 1:1·5. The total population of the laboratory would thus build up to not more than 375 during the first few years. The staff would be smaller since at any time the laboratory would house a number of senior visitors, visiting fellows, etc, whose salaries would not be a charge on the laboratory budget.

Turning to the question of floor area, we think that the plans should be made on the basis of 70 m^2 (750 sq ft) gross space per scientifically-qualified worker. Thus the total (gross) area of space in the building would be 10,500 m^2 (113,000 sq ft) or, say, 6,300 m^2 (68,000 sq ft) net space.

4. Staffing policy

(*a*) The most important criterion is quality. The laboratory would not succeed, and would not be worth establishing, unless its staff were of quite first class quality, especially the group leaders on whom the general direction of the work would depend. Hitherto it has been impossible, for obvious reasons, to make definite inquiries of likely recruits, or to seek any kind of commitments from them. However, the wide interest in the proposal for an international laboratory which has been evident among molecular biologists, and a number of specific inquiries which have been made by very good biologists interested in a position in it, encourage the belief that staff of high quality could be secured. In particular it seems likely that several very good European biologists who have taken up permanent positions outside of Europe could be persuaded to return to an international laboratory of the kind proposed.

(*b*) Permanent or long-term scientific appointments should be restricted to 10–15 per cent of the whole, that is to 15 or 20 members of the eventual complement of 150 scientists. This policy would be to the advantage of the laboratory itself, by ensuring a constant flow of younger research workers through it, and should satisfy contributing nations that none of them would suffer a significant loss of talent, particularly if some of the permanent appointments were of research workers who at present are outside Europe – indeed in the long run national laboratories would certainly gain as a result of the training programme of the laboratory.

It may be mentioned in parenthesis that the proposal for a restriction of

long-term appointments to 10–15 per cent of the total scientific staff is based on the practice in CERN, where it is understood that a similar policy has been completely successful. As an indication of the rate of turnover in CERN it may be noted that out of an average complement of about 84 research physicists and mathematicians there have been 30 departures in the four years 1961–4, mostly returns to the country of origin (engineers and non-research physicists have been excluded from these figures since these categories would not be comparable to any staff members of the proposed biological laboratory).

(*c*) The bulk of the scientists working in the laboratory would be post-doctoral fellows and short-term senior visitors. Thus a substantial proportion of the scientific staff (at least a third) would not receive their salaries from the laboratory budget.

(*d*) The laboratory would undertake only a very limited pre-doctoral (PhD) programme, probably accepting only a small number of PhD candidates for a part of their training and not accepting responsibility for complete PhD courses. (The laboratory would not, of course, itself confer degrees, although collaboration would be worked out with requesting universities.)

(*e*) In setting up the laboratory the first and crucial step would be to secure the appointment of ten or twelve senior staff members of the highest quality. The work of the laboratory could only be maintained at a high level if a substantial flow of short-term staff and visitors of very good quality were available – and these would certainly be attracted if the senior long-term staff were of the highest calibre.

However, though the selection of a few key men for the senior positions would be of critical importance, and though the laboratory would certainly attract many senior visitors of very high quality from all over the world, the laboratory would be essentially a place for the young. It would be a training ground for post-doctoral fellows, and it would provide short-term appointments for young men awaiting permanent positions in the universities. The majority of the staff positions would last from three to six years, and this limited tenure would encourage a flow back to the universities.

5. Participation in advanced training programme of EMBO

Quite apart from the training of its own resident fellows, the laboratory would participate in the EMBO programme for advanced teaching in the shape of summer schools, training courses, symposia and study groups;

and appropriate facilities (auditoria, teaching laboratories, class-rooms) should be provided for these activities in the laboratory.

6. Location

Since political and other external considerations would certainly weigh heavily in the choice of location, it seems unprofitable to make definite proposals as to the location of the EMBO laboratory at the present stage. The following criteria are, however, thought to be of great importance.

(*a*) Good intellectual milieu. The scientific work of the laboratory would greatly benefit from distinguished intellectual surroundings, both in the strictly scientific and the general cultural sense.

(*b*) Good amenities – climate, housing, international schools, language, countryside. Such factors would be important in attracting the senior visitors (and their families) whose presence in numbers would be essential.

(*c*) Attitude of host country. A positive welcome and enthusiasm by the host country would greatly assist the establishment and continued health of the laboratory.

Although any definite commitment as to a site would be premature at the present stage, it may be worth mentioning that in discussions of the EMBO Council the general consensus has been that the neighbourhood of CERN, which represents a sister organization, would offer unusual advantages.

7. Constitution

(*a*) Scientific merit should be the over-riding consideration in the appointment of staff. In an international laboratory sponsored by national governments some regard must inevitably be paid to considerations of national representation, but these should be subsidiary to considerations of merit and the problem of geographical representation should not be allowed to interfere with securing the highest quality research workers. It would be fatal to impose any kind of geographical quota system, particularly for the top-level appointments, a few of whom might, for example, be recent emigrants to America who would welcome an opportunity of returning to Europe, or even American-born scientists. The doors should also be open to senior visitors and post-doctoral fellows from the whole world. These policies would be closely in line with those of CERN, where they have worked successfully and without undue difficulty.

(*b*) The successful example of CERN might be followed also in establishing

a constitution for the laboratory. Thus there might be a supreme governing Council composed of representatives of the governments of contributing nations, assisted by a scientific advisory body selected on a scientific rather than a geographical basis. The laboratory itself should have *de jure*, or at least *de facto*, freedom to appoint all staff (with the exception of the Director) without outside interference.

(*c*) In summary, the scientific integrity of the laboratory should be protected, by the terms of its constitution and by the setting up of an appropriate scientific advisory body, both from national pressures and from external influences on its research programme.

8. Cost

The cost of the laboratory would depend on the country in which it was established. The following figures may be quoted as a general indication of the likely cost (at present money values).

(*a*) *Capital cost of building.* SF $15{\cdot}75\times10^6$ (£$1{\cdot}3\times10^6$; \$$3{\cdot}7\times10^6$) (based on gross area of 10,500 m^2 or 113,000 sq ft and building costs of SF 1,500 per m^2 or £11·4 or \$32·5 per sq ft).

(*b*) *Initial equipment.* SF $12{\cdot}7\times10^6$ (£1×10^6; \$$3\times10^6$) based on 150 scientists, SF 85,000 or £7,000 or \$20,000 per scientist).

(*c*) *Annual budget.* SF 12·7 to 15×10^6 (£1 to $1{\cdot}2\times10^6$; \$3 to $3{\cdot}5\times10^6$) (based on 150 scientists, SF 85,000 to 100,000 or £7,000 to 8,200 or \$20,000 to 23,000 per scientist).

IV. The financial commitment

In Sections II and III a detailed programme for implementing the EMBO philosophy has been outlined without any estimate of costs except in the case of the laboratory. For the other parts of the programme – travel grants, fellowships, advanced courses, professorships and research grants – it is impossible to make a firm estimate of needs in advance of some working experience.

Through the generosity of the Volkswagen Foundation, of the Government of Israel and of Interpharma, EMBO is now able to launch a modest pilot programme in all areas except for the laboratory and for research grants. Below, in Schedule A, is outlined a tentative budget adopted by the EMBO Council for the utilization of the financial resources so far available, covering the next three years. This plan gives an idea of current EMBO thinking as regards fellowships, travel grants, professorships, and courses.

Schedule B contains a very tentative long-term budget for the Fund as a whole, including long-term appointments in addition to the above-mentioned items. It should be emphasized that any such proposed budget must be subject to modification in the light of experience and of the changing conditions which will follow the eventual establishment of a laboratory; moreover, the *full* budget of the EMBO Fund will have to make provision for research grants, which, in the end, may well become the largest single item, perhaps up to half the total.

SCHEDULE A

Approximate Budget for pilot programme based on presently available resources

	1st Year SF	*2nd Year* SF	*3rd Year* SF
Administration	90,000	110,000	115,000
Post-doctoral fellowships	225,000	500,000	800,000
Short-term fellowships	40,000	110,000	215,000
Visiting professorships	50,000	95,000	140,000
Courses	45,000	90,000	135,000
Planning of laboratory	—	125,000	120,000
	SF 450,000	SF 1,030,000	SF 1,525,000

Grand Total – SF 3,005,000

SCHEDULE B

	SF
Administration	150,000
Post-doctoral fellowships	2,000,000
Short-term fellowships	240,000
Visiting professorships	475,000
Courses	130,000
Long-term appointments	300,000
	SF 3,295,000

Appendix: Members of EMBO Council

Professor J. Brachet (Belgium)

Professor A. Butenandt (Germany)

Professor A. A. Buzzati-Traverso (Italy)

Professor A. Engström (Sweden)

Professor H. Friedrich Freksa (Germany)

Professor F. Jacob (France)

Professor E. Katchalski (Israel)

Professor E. Kellenberger (Switzerland)

Dr J. C. Kendrew (United Kingdom)

Professor A. M. Liquori (Italy)

Professor O. Maaløe (Denmark)

Dr M. F. Perutz (United Kingdom) (*Chairman*)

Professor C. Sadron (France)

Professor A. Tiselius (Sweden)

Dr J. Wyman (Italy) (*Secretary General*)

Statutes of European Molecular Biology Organization *(L'Organisation Européenne de Biologie Moléculaire)* EMBO

Title 1: *Name – Headquarters – Permanence – Objects*

Article 1.

1. An incorporated association under the name of 'The European Molecular Biology Organization' (L'Organisation Européenne de Biologie Moléculaire) (E.M.B.O.), has been set up under the provisions of Articles 60 and following of the Swiss Civil Code.

2. It is a permanent body.

3. Its headquarters are in Geneva, Switzerland.

Article 2.

1. The object for which E.M.B.O. has been established are to promote and encourage the development of molecular biology in Europe and in neighbouring countries.
2. E.M.B.O. shall be able to use all legitimate means to achieve these objects and in particular it shall be able:

(a) to establish a European foundation for biology, whose objects shall be to make grants to existing centres of research (the making of research grants), to award scholarships for study and refresher courses, to provide travel allowances in order to facilitate the exchange of scientists between centres of research, or for other similar objects;

(b) to work out plans for the creation of a European laboratory, to become a European centre for biological research.

Title 2: *Membership*

Article 3.

1. Membership of E.M.B.O. shall be open to all physical persons concerned with molecular biology or other scientific subjects related to it.
2. The number of new members to be admitted each year and the method of electing them are provided for in the Rules.

Article 4.

In addition to the ordinary members, the General Assembly shall have power to elect associate members, who shall not have the right to vote.

Article 5.
Membership, whether as an ordinary or associate member, implies a strict compliance with the Statutes, the Rules, and any decisions or resolutions made or to be made by the General Assembly or by the Council.

Article 6.
Membership of E.M.B.O. may be terminated:
(a) by resignation, which may be tendered by means of not less than 6 months prior notice, to take effect at the end of the calendar year;
(b) by expulsion.

Article 7.
The members shall not be personally liable for the contracted debts of E.M.B.O.; liability is limited to the assets of the Company.

Title 3: *Internal Management*

Article 8.
The organs of E.M.B.O. shall be as follows:
– General Assembly;
– Council;
– Auditors.

A. *General Assembly*

Article 9.
1. The General Assembly of members shall be convened from time to time during the month of January at a place to be fixed by the Council.

2. It shall be lawful for the members of E.M.B.O. after being consulted by post, to make any of the decisions or proceed to any of the nominations or elections normally reserved for the General Assembly by the general law or these Statutes, except a decision to wind up E.M.B.O.

3. If in any year there is no meeting of the General Assembly, the Council shall, on at least one occasion during the month of January or February, take steps to consult the members by post.

4. The term 'General Assembly' is used in these Statutes and in the Rules to signify the actual meeting of the members in General Assembly as well as the consultation of members by post.

Article 10.
A meeting of members in General Assembly or an extraordinary consultation by post shall take place upon a decision of the Council or upon a written request of one fifth of the ordinary members, who must both give details of the agenda or the topics which they are proposing to be discussed.

Article 11.
1. The General Assembly is the supreme organ of E.M.B.O.
2. It shall in particular have the inalienable right:
(a) To agree to and alter the Statutes;
(b) To choose the members to be elected to the Council in accordance with Article 15 below, to appoint the auditors, and to elect the new members both ordinary and associate;
(c) To provide for, if necessary, annual contributions to be made and to fix their amount;
(d) To vote on the reports presented to them;
(e) To decide upon the merger, alteration, and winding up the Association;
(f) To decide upon the expulsion of ordinary or associate members for just reason.

Article 12.
No member is obliged to agree to the alteration of the Association's objects.

Article 13.
1. If a decision is made by the members at a meeting of the General Assembly, at which less than one half of the members are present, that decision shall be notified to all ordinary members by the Secretary General by registered letter.

2. Within a period of 40 days from the date of sending the said letter, the ordinary members or the Council shall have the right to request that the decision in question should become the subject of a consultation by post.

3. If one eighth of the ordinary members request such a consultation, the Secretary General shall organize the same.

4. To be valid, one-half of the members must participate therein.

B. *The Council of E.M.B.O.*

Article 14.
1. E.M.B.O. shall be managed and directed by a Council consisting of:

– Nine members elected by the General Assembly;
– Six co-opted members.

2. The Council shall choose from among its members a board which shall consist of:
(a) A Chairman elected for one year, who shall also be chairman of E.M.B.O.;
(b) A Vice-chairman elected for one year;
(c) A Secretary General who may be chosen from outside the Council.

Article 15.
1. The term of office for the elected members of the Council is three years.

2. They shall be eligible for immediate re-election, but only for one further term of office.

3. Each year five members of the Council shall retire and shall be replaced by three members elected by the General Assembly and two members co-opted by the Council.

4. Membership of the Council is only open to ordinary members of E.M.B.O.

Article 16.
1. The Council's functions cover everything which is of general concern and interest to E.M.B.O. It may make any decision which is not reserved for the General Assembly or the Auditors by the general law or these Statutes.

2. The activities of the Council include in particular:
(a) The achievement of the objects of E.M.B.O., as set out in Article 2 of these Statutes;
(b) The management of the property of E.M.B.O.
(c) The appointment of Commissions to undertake specific duties within the field of activity of E.M.B.O., and in particular of a committee for the European Foundation of Biology and of a Laboratory committee;
(d) The convening of the General Assembly in accordance with these Statutes;
(e) The presentation to the General Assembly of a report on the activities of the Association during the year and of the financial accounts and the Auditors' report;
(f) The appointment of delegates to congresses and meetings to which E.M.B.O. is invited;
(g) The carrying out of decisions of the General Assembly;
(h) The organization of consultations by post.

Article 17.
The Council is responsible for the proper management of gifts and legacies left to E.M.B.O.

Article 18.
E.M.B.O. shall be bound by the signature of its Chairman or, if he is indisposed, of its Vice-chairman. The Chairman shall have power, with the consent of the Council, to delegate certain of his powers to the Secretary General or to an administrative secretary.

C. *Auditors*

Article 19.
1. The General Assembly shall each year appoint two members and a firm of accountants to submit an auditors' report. The Auditors shall be entitled to require the production at any time of the books and bookkeeping documents of E.M.B.O. and to examine its cash balance.

2. They may be reappointed.

Title 4: *Finances*

Article 20.
1. The Finances of E.M.B.O. shall consist of:
(a) Contributions from members, if the General Assembly decide to levy such;
(b) Gifts and legacies;
(c) Grants which may be accorded to it;
(d) Any other receipts from meetings organized by E.M.B.O.

2. To achieve the objects set out in Article 2 and to ensure its proper functioning E.M.B.O. shall have at its disposal a fund known as the 'General Reserve'. This fund shall be kept separate from any other funds such as those of the European Foundation of Biology or the European Centre for Biological Research.

Article 21.
The financial year shall correspond to the calendar year.

Title 5: *Winding up*

Article 22.
1. A resolution for the winding-up, merger, or alteration of the Association can only be passed by a vote of members consisting of not less than two-thirds of the votes of all members of the Association.

2. A resolution to wind up the association must be made by the members meeting in General Assembly.

Article 23.
On a winding up, the Council may decide to dispose of the balance of the assets of the Association to a similar scientific body.

Title 6: *Transitional Provisions*

Article 24.
1. The term of office of the first Council shall run from the date of foundation until the end of 1966.

2. The Rules set out the method of establishing the rotation of Council members provided for in Article 15 of these Statutes.

Rules of European Molecular Biology Organization *(L'Organisation Européenne de Biologie Moléculaire)* EMBO

I. MEMBERSHIP

Article 1.
1. Nominations for new members of E.M.B.O. may be made either by the Council

or by a member supported by four other members. A member can only put forward one candidate in any year.

2. Nominations must reach the Secretary General by November 15 at the latest.

Article 2.
1. The Secretary General shall send the list of nominations to the members of the Council who shall choose 20 candidates. This choice shall be valid if two-thirds of the members of the Council have replied.

2. The list of 20 candidates shall be sent to the members of the E.M.B.O. who shall elect ten new members in the course of the annual meeting of the General Assembly or, if there is no meeting of the General Assembly, in the course of the consultation by post.

3. The election shall be valid if one-fifth of all the members has returned their ballot papers.

4. The new members shall be elected by a simple majority. In case two candidates obtain the same number of votes and there is only one vacancy left, the Council shall choose between them.

5. The Council shall have power to change the number of new members who may be admitted in any year by a decision taken by a simple majority.

Article 3.
1. Associate members are to be elected by the same procedure as ordinary members

2. The number of new associate members to be elected in any year is five, but this number can be changed by a decision of the Council.

II. GENERAL ASSEMBLY

Article 4.
1. Each member shall be notified by ordinary post of meetings of the General Assembly.

2. The notice, setting out the agenda, shall be sent to members not less than 30 days before the date of the meeting.

Article 5.

1. Where members are consulted by post, a circular shall be sent to each member setting out the resolution; this circular shall be accompanied by a ballot paper and shall fix a period of not less than 20 days for a reply.

2. The counting of ballot papers shall be carried out by the Secretary General or his nominee, with the help of two tellers chosen by lot.

3. Minutes of the results of a vote shall be drawn up and communicated to all the members either during the course of a meeting of the General Assembly or by letter.

4. In general a consultation of members by post is valid if one-fifth of the ordinary members return their ballot papers. When the question to be voted upon is important, the Council shall have power to fix a higher quorum and shall so inform the members when the ballot papers are sent out.

Article 6.

1. Only matters set out in the agenda can be the subject of a decision of the General Assembly or can give rise to a consultation by post, in accordance with Article 18 of the Statutes.

2. Every resolution to be placed on the agenda of a meeting of the General Assembly or a consultation by post must reach the Council not latter than the month of November prior to the meeting of the General Assembly or the consultation.

3. Provided that it shall not be necessary to give advance notice of resolutions and topics for discussion which need not be voted upon.

Article 7.

1. The General Assembly shall be presided over by the Chairman of the Council; in his absence by the Vice-chairman or in his absence by an ordinary member elected under the temporary chairmanship of the oldest member of the Council present.

2. The Secretary General of the Council shall act as a Secretary of the Assembly; if he is indisposed the Chairman shall appoint another member of the Council.

3. The Chairman shall appoint two tellers for votes and elections.

4. The Chairman shall preside over discussions, and may limit the time allowed to each speaker to speak.

Article 8.
1. Voting shall be carried out by a raising of hands or by a secret ballot if at least ten members so request, except on the matters provided for in Article 11 paragraphs (b) and (f) of the Statutes for which a secret ballot shall be required.

2. Every ordinary member shall have one vote; associate members do not have the right to vote.

3. The Assembly shall reach its decisions by an absolute majority of those present.

4. If a second ballot is necessary, a simple majority is sufficient.

5. Elections shall be by a simple majority.

6. In case of an equal division of votes, the Chairman shall have a casting vote.

7. (a) Subject to the above, a quorum of two-thirds of the members and a majority of two-thirds of the votes cast shall be required for the merger, alteration or winding up of the Association.

(b) An alteration of the Statutes requires a quorum of one more than half of the ordinary members and a majority of two-thirds of the votes cast.

III. THE COUNCIL

Article 9.
1. The Council shall meet not less than once a year, normally in January or February, and shall be convened by the Chairman, as and when he deems it necessary.

2. The Council shall meet at the written request of four of its members setting out the agenda.

3. If a member of the Council is indisposed, the Chairman shall have power to invite him to nominate a representative who can attend the meeting as an observer.

Article 10.
The Council shall reach its decisions by a simple majority of the votes of the members present. In case of an equal division of votes, the Chairman shall have a casting vote.

Article 11.
1. Elections to the Council shall be made from lists of candidates which should be sent to the Secretary General not later than November 15.

2. Nominations should be signed by six ordinary members.

3. No member shall have the right to support more than one candidate.

4. The list of candidates shall be sent to members at the time of the annual meeting of the General Assembly or, if there is no meeting of the General Assembly, at the time of the consultation by post. Elections shall take place in the course of the said meeting of the General Assembly or, if there is no meeting of the General Assembly, in the course of the said consultation by post.

Article 12.
1. At the first meeting following the annual consultation of members, the Council shall proceed to the co-option of two new members of the Council.

2. During this meeting the period of office of the retiring members shall expire, and the new members, both elected and co-opted, shall take their place.

IV. TRANSITIONAL PROVISIONS

Article 13.
1. During the meeting prior to the election of new members of the Council at the end of the year 1966 the names of the five members due to retire shall be drawn by lot.

2. The Secretary General shall inform all members of the Association of the names of the Members of the Council who are due to retire and shall state the names of those who are willing to stand for re-election.

3. The election and co-option shall take place in accordance with Article 15 of the Statutes.

4. The same procedure shall be followed at the end of 1967 and 1968.

V. FINAL PROVISION

Article 14.
The present Rules may be altered by a vote of two-thirds of the members of the Council.