

# News from the International Union for Pure and Applied Biophysics

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At the Opening Session of the Fifth International Biophysics Congress, held in Copenhagen from 4-9 August 1975, the President, Professor F. Lynen, spoke as follows:

## President's Report

On behalf of the International Union for Pure and Applied Biophysics, it is both my duty and my privilege to express our deep gratitude to our Danish hosts, who have invested a great deal of time and trouble in organizing this congress. Special thanks are due to Professor Lowy, the Secretary General of the Congress, who, together with his colleagues, has taken great pains to enable us to meet here today and hold such a well-organized Congress.

This is the fifth Congress of the International Union for Pure and Applied Biophysics, with which we return to one of the Scandinavian countries which sponsored our founding Congress. Some of you here today will remember our first conference in Stockholm. The scientific level of that occasion was high, and the conference was surrounded by a hospitality typical of Scandinavia. We are delighted to be able to enjoy that hospitality once again.

In this last respect, nothing has changed; we have, however, noted with concern certain changes, both within the scientific world and outside it. In organizing and financing this congress we were faced with partially unforeseen problems, which were not easy to overcome. At this point, may I express particular thanks to Professor Richard Keynes, the Secretary General of the Union, whose successful intervention saved us from having to cancel the Congress. I would like to take this opportunity of thanking most warmly both him and all those who assisted us at this critical time with aid and advice. Leaving aside the difficulties of administration and finance encountered by the organizers of international conferences, the question nevertheless arises, of whether large-scale congresses can still meet the demand for a satisfactory exchange of views, keeping up with developments in our technological age... The Union, the Council and its Executive Committee take this question

seriously; I have given this a good deal of thought myself. The sheer size of these congresses presents an immediate problem: it obliged us to run simultaneous sessions. It would of course be possible to limit the number of participants, but we are reluctant to do so. It cannot be the job of the organizers of international congresses to decide who has legitimate interest in such meetings and who has not. The purpose of international congresses is to allow in particular young scientists to familiarize themselves with the latest developments in research, through contact with more experienced scientists. Furthermore, congresses can help especially those who have what is perhaps their first opportunity of presenting their results on their own initiative and responsibility without needing any specific invitation. We have always been aware that international congresses should not be the sole forum for discussion. Experts must also be provided with an opportunity to meet in smaller groups. To this end the Union has set up a series of commissions, whose function is to organize symposia in specialized fields. A considerable number of these symposia have since taken place and, in my view, they have made an appreciable contribution to the success of this international organization. Should any of you be of the opinion that the Union ought not to confine itself to these forms of activity or if you have suggestions concerning other possibilities, we would be most interested to hear your views.

As a biochemist I am not in a position to present a detailed survey of the most recent work in biophysical research. I would prefer to pursue a more general line of thought, which may be of some interest to you.

It cannot be doubted that physics and chemistry, particularly in the bio-sciences, have become increasingly influential over the last twenty years. Their influence is evident in several areas. Important technological progress has placed new materials at our disposal; new and refined techniques of measurement have also been developed, with which we can analyze and understand processes formerly beyond our range. However, it appears to me that their real influence is of a more subtle kind, relating to questions of basic principle. That is to say, that the form of enquiry which might be said to characterize physics and chemistry has gained increasing influence on other areas of the natural sciences. Proceeding from its basis in the laws of physics and chemistry, this form of enquiry consists in the collation of experimental findings, which are then represented in the form of a phenomenological theory. The observations from the experiment can be reduced to a set of principles, whose molecular realization is, in many cases, the explicit goal

of the analysis. This so-called reductionist method occasionally comes in for criticism, for since 'the whole is greater than the sum of its parts', the reduction of all phenomena to their atomic structure becomes an absurd enterprise. Such is the criticism. We know, however, that molecules are involved in reciprocal reactions, which influence decisively the nature of phenomena – from which it becomes evident that the whole is indeed greater than the sum of its parts. I think we may conclude from this that the controversy between a reductionist approach on the one hand and a holistic approach on the other, is a wholly fruitless debate.

Here I would like to touch on a further point raised, with many others, by the application of the method which characterizes physics and chemistry. We all know that the quantitative analysis of biological systems appears, at least at first sight, exceptionally complex and difficult. This observation conflicts to a certain extent with our experience in large areas of, chiefly, classical physics, in which observed phenomena can be adequately described by using so-called linear mathematical methods. This field in physics and in the natural sciences in general is the simpler, insofar as there are general solutions which can be adapted to each particular problem. The specific linear problem can only lead to solutions already contained within the general axiom. With most problems in the bio-sciences, however, matters are less simple, because we are generally dealing with systems comprising a number of elements, within which and between which reciprocal reactions take place. Since these reactions are frequently of a non-linear kind, they are not accessible to description and analysis by linear means. In dealing with such non-linear systems we must resort to mathematical methods which usually have to be developed afresh to meet each specific problem, since there are by definition no general solutions. And it thus allows that the quantitative values of the parameters of the system under examination exercise a decisive influence in its function both in quantitative and in qualitative terms. It is here that we would expect to find one of the essential reasons why an analysis of biophysical systems requires such a broad-based and detailed knowledge, grounded in experiment, of the parameters which determine structure and function; this being a necessary precondition for any adequate theoretical treatment. I believe that this perspective I have outlined will be reflected in the results of this congress.

The mode of approach common to physics and chemistry in particular

and to scientific thinking in general, stems from the justifiable belief that any phenomenon which can be observed can, at least potentially, be analyzed and understood. The natural sciences have in fact a non-scientific basis, to the extent that they are grounded in the conviction that objectivity and truth are valid criteria, and that the search for this truth represents an ethical value per se. It seems to me that this emotional dimension of the natural sciences is a crucial factor in any scientific undertaking, not merely at the outset, but throughout its entire course. Which scientist has not experienced that sense of excitement which accompanies the careful planning of an experiment and, at its conclusion, the feeling of elation resulting from the possibility of an advance in scientific knowledge. I would like to point out that scientific knowledge is only one aspect of our existence, because ethical values and qualities belonging to the sphere of personal relationships are not, after all, open to scientific definition. Right and wrong, good and evil, joy and sorrow, to name but a few of these qualities, lie beyond the bounds of science. Science provides us with the means to describe and to comprehend observable phenomena, but not all aspects of human experience are within its grasp. We note today a certain sense of unease, particularly among younger scientists, which in my opinion is to be attributed to a misunderstanding of the scope of scientific knowledge, falsely confusing objective fact with philosophical, ethical, religious and artistic values. Both areas are necessary; they complement each other. However, too much emphasis on the one leads to a neglect of the other – and we are left with an uneasy feeling. Outlining this viewpoint, I choose my words with care, as I do not wish to imply that scientific thinking must necessarily take account of other systems. The answers which science can provide are either right or wrong; in any case they are not influenced by the areas which I mentioned above, and they remain independent from any political or social system. But scientific knowledge only covers a part of a world whose fascination never dwindles. As Einstein said ‘The most incomprehensible fact of nature is the fact that nature is comprehensible’. As for those other aspects of experience we can conclude by saying with the philosopher Wittgenstein ‘What we cannot speak about we must pass over in silence’.

F. LYNEN

At the Sixth General Assembly of IUPAB held in Copenhagen on 6 August 1975, Officers and Council Members for 1975–78 were appointed as follows:

- B. Chance (U.S.A.) *President*
- S. Ebashi (Japan) *Vice-President*
- P. G. Kostyuk (U.S.S.R.) *Vice-President*
- F. Lynen (Fed. Rep. Germany) *Hon. Vice-President*
- R. D. Keynes (United Kingdom) *Secretary-General*
- J. Coursaget (France)
- M. Errera (Belgium)
- A. R. Gopal-Ayengar (India)
- O. Maaløe (Denmark)
- M. Montal (Mexico)
- D. C. Phillips (United Kingdom)
- F. M. Richards (U.S.A.)
- M. Sela (Israel)
- J. Tigyí (Hungary)
- H. T. Witt (Fed. Rep. Germany)
- K. Wüthrich (Switzerland)

Members of the reconstituted Special Commissions for 1975–78 will be:

*I. Commission on Subcellular and Macromolecular Biophysics*

- S. Asakura (Japan)
- M. Baltscheffsky (Sweden)
- V. Bystrov (U.S.S.R.)
- M. Brunori (Italy)
- E. Carafoli (Switzerland)
- R. Estabrook (U.S.A.)
- C. Helene (France)
- F. Jung (G.D.R.)
- A. W. Linnane (Australia)
- N. K. Notani (India)
- R. H. Pain (U.K.)
- O. Ptitsyn (U.S.S.R.)
- D. C. Phillips (U.K.)
- G. K. Radda (U.K.)
- H. Scheraga (U.S.A.)
- K. Simons (Finland/E.M.B.L.)

F. M. Richards (U.S.A.) *Chairman and Council Representative*  
N. Unwin (U.K.)  
K. L. Wierzchowski (Poland)  
K. Wüthrich (Switzerland)

II. *Commission on Radiation and Environmental Biophysics*

J. W. Boag (U.K.)  
J. Coursaget (France)  
M. Errera (Belgium) *Council Representative*  
H. Glubrecht (F.R.G./I.A.E.A.) *Chairman*  
A. R. Gopal-Ayengar (India)  
Z. Karpfel (Czechoslovakia)  
L. Kayushin (U.S.S.R.)  
K. Kruglyakova (U.S.S.R.)  
A. M. Kuzin (U.S.S.R.)  
B. Larsson (Sweden)  
A. Muhammed (Pakistan)  
O. Nishimura (Japan)  
S. Okada (Japan)  
E. Penna-Franca (Brazil)  
R. B. Setlow (U.S.A.)  
B. B. Singh (India) *Secretary*  
C. A. Tobias (U.S.A.)

III. *Commission on Communication and Control Processes*

E. De Boer (Netherlands) *Secretary*  
A. Borsellino (Italy)  
C. Challice (Canada)  
J. D. Cowan (U.S.A.)  
S. V. Fomin (U.S.S.R.)  
A. Flock (Sweden)  
R. Glaser (G.D.R.)  
M. I. El Gohary (Egypt)  
K. G. Götz (F.R.G.)  
V. S. Gurfinkel (U.S.S.R.)  
M. Imbert (France)  
P. I. M. Johannesma (Netherlands)  
D. Mackay (U.K.) *Chairman*  
D.-G. Măgineanu (Romania)  
J.-I. Nagumo (Japan)

M. B. Sachs (U.S.A.)  
W. M. Siebert (U.S.A.) *Executive Committee*

IV. *Commission on Cell and Membrane Biophysics*

M. Burger (Switzerland) *Chairman*  
R. Caplan (Israel)  
F. Conti (Italy)  
S. Ebashi (Japan) *Executive Committee*  
G. Frank (U.S.S.R.)  
C. M. Gary-Bobo (France)  
R. Henderson (U.K.)  
A. F. Horwitz (U.S.A.)  
A. Ikegami (Japan)  
G. R. Ivanitsky (U.S.S.R.)  
P. G. Kostyuk (U.S.S.R.) *Executive Committee*  
J. Lowy (Denmark) *Executive Committee*  
P. Läuger (F.R.G.)  
M. Montal (Mexico) *Secretary and Council Representative*  
S. Przystalski (Poland)  
J. Requena (Venezuela)  
O. F. Schanne (Canada)  
M. Schara (Yugoslavia)  
R. Schön (G.D.R.)  
V. Vasilesci (Romania)  
J. G. Vassileva-Popova (Bulgaria)

V. *Commission on Education and Development in Biophysics*

E. H. Belcher (U.K./I.A.E.A.)  
L. R. Caldas (Brazil)  
B. Chance (U.S.A.)  
N. Düzgünes (Turkey)  
P. C. Hanawalt (U.S.A.)  
C. G. Heden (Sweden) *Chairman*  
R. Glaser (G.D.R.)  
F. Hutchinson (U.S.A.)  
M. M. Hoda (India)  
A. Hollaender (U.S.A.) *Executive Committee*  
R. D. Keynes (U.K.) *Secretary*  
S. Maricic (Yugoslavia)

A. Muhammed (Pakistan) *Representative on COSTED*

H. Mel (U.S.A.)

L. Nwoye (U.K.) (Nigeria)

J. W. S. Pringle (U.K.)

B. Pullman (France)

M. Sela (Israel)

K. Sunderam (India)

J. Tigyí (Hungary) *Council Representative*

A. Vecli (Italy)

Y. Vladimirov (U.S.S.R.)

A. Wada (Japan)

G. Wittembury (Venezuela)

## Forthcoming Meetings

1976

### *March*

22–27 5th International Conference on the Global Impacts of Applied Microbiology. Kuala Lumpur, Malaysia. Write: Secretariat, c/o Botany Department, University of Malaya, Kuala Lumpur, 22–11, Malaysia.

29–2 April 9th International Symposium on Metal–Ligand Interactions in Organic and Biochemistry. Jerusalem. Write: Professor B. Pullman, Foundation Edmond de Rothschild, 13 rue P et M. Curie. 75005 P. Paris, France.

### *April*

20–23 Third European Meeting on Cybernetics and Systems Research. Vienna, Austria. Write: Secretariat of the Austrian Society for Cybernetic Studies, Schottengasse 3, A-1010, Wien.

### *May*

3–6 Symposium on The Organization and Expression of Eukaryotic Genomes. University of Tehran. Write: Dr K. Javaherian, Biophysics Laboratory, Portsmouth Polytechnic, Gun House, Hampshire Terrace, Portsmouth.

*May/June* IUPAC 5th International Fermentation Symposium, W. Berlin, BRD.

IUPAC 50th Anniversary Meeting of American Chemical Society. Division of Colloid and Surface Chemistry, Puerto Rico, U.S.A.



*June*

- 28-1 *July* 5th Biennial Int. CODATA Conference. Boulder, Col. U.S.A. Write: CODATA Secretariat, 51 Bd. de Montmorency, F-75016 Paris, France.

*July*

- 12-16 IUPAC 6th International Congress on Catalysis. London, U.K.  
25-30 Congress of the International Union of Physiological Sciences. Ireland. Write: Professor R. W. Hunsperger, Physiologisches Institut, Ramistrasse 69, CH-8001 Zurich, Switzerland.  
25-31 10th International Congress of Biochemistry. Hamburg, F.R.G. Write: Dr W. Fritsche, Varrentrappstr. 40/42 PO 900440 D-6000 Frankfurt a.M. 90, FRG.  
28- 11th European Marine Biological Symposium. Galway, Ireland. Write: Professor O'Ceidigh, University College, Galway, Ireland.

*August*

- 2-6 11th International Conference on Medical and Biological Engineering. Ottawa, Canada. Write: Mr J. A. Hopps, National Research Council, Ottawa K1A 0R8, Canada.  
15-21 IUPAC 8th International Symposium on Carbohydrate Chemistry: Kyoto, Japan.  
23-28 IUPAC 10th International Symposium on Chemistry of Natural Products. Dunedin, New Zealand.  
29-3 *September* 5th International Congress of Histochemistry and Cytochemistry. Bucharest, Romania. Write: Dr D. Onicescu, 8 Progresului str. Bucharest, Romania.

*September*

- 6-11 International Congress for Cell Biology. Boston, U.S.A. Write Dr K. R. Porter, University of Colorado, P.O. Box ICCB Boulder, Co. 80302, U.S.A.  
3rd IUPAC Conference on Physical Organic Chemistry, Montpellier, France.  
VIIth International Conference on Magnetic Resonance in Biological Systems to be held in Quebec. Write: Dr I. C. P. Smith, Division of Biological Sciences, National Research Council of Canada, Ottawa, Ontario, K1A 0R6, Canada.

*October*

10-16 16th General Assembly of ICSU. Washington D.C., U.S.A.  
Write: ICSU Secretariat, 51 Boulevard de Montmorency, F-75016  
Paris, France.

1977

*July*

18-23 IUPAC 18th International Conference on Coordination  
Chemistry, Sao Paulo, Brazil.

*September*

4-10 26th IUPAC Congress, Tokyo, Japan.

*Autumn* VIth International Symposium on Magnetic Resonance  
Banff, Alberta. Write: Dr L. W. Reeves, Department of Chemistry,  
University of Waterloo, Waterloo, Ontario, Canada N2L 3G1.

*Dates unknown*

International Congress of Physiological Sciences Paris, France.  
Write: Professor M. Fontaine, Museum Nat. d'Histoire Naturelle,  
57 rue Cuvier, F-75005 Paris, France.