

International Union of Crystallography

Acta Cryst. (1971). A27, 497

Eighth General Assembly and International Congress of Crystallography

By invitation of the U.S. National Academy of Sciences, the Eighth General Assembly and International Congress of Crystallography were held at the State University of New York at Stony Brook, U.S.A., from 13 to 21 August 1969. Meetings were held in the Lecture Hall Center, the Earth and Space Sciences Building and the Social Sciences Building. In addition, Topical Meetings were held at the State University College at Buffalo from 7 to 12 August, the State University of New York at Stony Brook from 22 to 24 August, and Brookhaven National Laboratory from 22 to 23 August.

The meetings were attended by about 750 scientists and 310 accompanying members from the U.S.A. and 750 scientists and 80 accompanying members from the following thirty-five countries: Argentina, Australia, Austria, Belgium, Brazil, B.R.D., Bulgaria, Canada, Czechoslovakia, D.D.R., Denmark, Finland, France, Hungary, India, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Rumania, South Africa, Spain, Sweden, Switzerland, Uruguay, U.K., U.S.S.R., West Indies, Yugoslavia and Venezuela.

The General Assembly and Congress were formally opened on the evening of 13 August. The Chairman of the U.S.A. National Committee for Crystallography, Professor D. P. SHOEMAKER, presided over this opening session and welcomed all the crystallographers attending the Assembly and Congress and also thanked the many donors for their support of the meeting. T. F. MALONE, representing the National Academy of Sciences - National Research Council, was the next speaker. He read out a telegram from Professor P. HANDLER, President of the National Academy of Sciences, to Professor Belov. He noted with pleasure that this was the second General Assembly and Congress of the I.U.Cr. to be held in the U.S.A. E. B. NYQUIST, Acting Commissioner for Education in the State of New York, greeted the members on behalf of the State Government of New York and the Regents' Board. He was pleased to note that a large proportion of those attending the Congress had come from overseas and he hoped that this might lead to better international understanding. J. S. TOLL, President of the State University of New York at Stony Brook, welcomed members of the Congress on behalf of the University. He said that this was the largest scientific gathering that had been held on the Campus so far and, although he regretted that some of the facilities which he would have liked to have been ready were not yet completed, all the facilities available would be used to assist members in every way possible. The President of the Union, N. V. BELOV, thanked all the eminent guests for their kind speeches of welcome. He expressed his gratitude to the U.S.A. National Committee for Crystallography and especially its Chairman, Professor D. P. Shoemaker, and the members of the Organizing Committee for all the work done in order to make this Congress possible. W. C. HAMILTON, President of the American Crystallographic Association, and local Chairman of the Organizing Committee at Stony Brook, welcomed members of the Congress. He reminded those who had come from other countries that they would find

the local crystallographers very pleased to meet them and eager to have them visit their laboratories. W. PARRISH, speaking on behalf of the National Aeronautics and Space Administration, reported on the recent American landing of men on the moon and on the preliminary scientific evaluation of the rock specimens brought back from the moon. D. HARKER, Programme Chairman for the Topical Meeting at Buffalo, introduced L. PAULING, who opened the Congress with a lecture on *The Importance of Being Crystallized* in which he reminisced on some of the great crystallographic discoveries in the last 50 years.

Following these speeches a reception by the State University of New York at Stony Brook was given to all members of the Congress, in the University Gymnasium.

Eighth General Assembly

Twenty-seven Adhering Bodies, including those members whose applications were ratified at Stony Brook, were represented by delegates. No delegates had been appointed by the Adhering Bodies for Belgium, Brazil, Chile and Pakistan.

The first session of the Assembly was held in the Lecture Hall Center on Thursday afternoon 14 August. The Assembly met again in the Earth and Space Sciences Building on Saturday evening 16 August and on Thursday morning 21 August, prior to the Closing Ceremony. A detailed report of the work of the Assembly is being published separately and will be sent to Secretaries of the National Committees for Crystallography. The following is a summary of the business transacted.

(1) *Amendments to Statutes and By-Laws*

The first item on the Agenda should ordinarily be matters concerning adherence to the Union. However, the General Assembly accepted the rearranged Agenda whereby those amendments to the Statutes and By-Laws of the Union relevant to adherence to the Union were dealt with before consideration of the applications for adherence. The President requested the non-voting audience to withdraw until after these amendments and the applications for adherence had been dealt with; the transactions were resumed after the withdrawal of all those so requested. After some discussion the wording of the proposed By-Law 1.5B was changed. All the other amendments proposed by the Executive Committee and relating to group adherence were adopted unanimously without discussion. The applications for membership of the Union and the replacement of Adhering Bodies could now be dealt with under these newly amended Statutes and By-Laws.

Further amendments to the Statutes and By-Laws were considered later on during the Assembly and all these amendments are included in the Statutes and By-Laws which are printed in the detailed report of the Eighth General Assembly.

(2) *Adhering Bodies*

(a) The request by the Deutsche Vereinigung für Kristallographie, Deutsche Demokratische Republik, to with-

draw from their group adherence to the Union and to apply for separate adherence could now be dealt with under the new Statutes and the adherence of the Deutsche Vereinigung für Kristallographie in Category II was approved unanimously. As a consequence of this change the Sektion für Kristallkunde of the Deutsche Mineralogische Gesellschaft, B.R.D., would be the Adhering Body representing the B.R.D. crystallographers in the Union. The change in adherence of the Sektion für Kristallkunde to Category IV was confirmed.

(b) An application for adherence had been received from the Ministry of Scientific Research of the United Arab Republic but, in the absence of information on a National Committee for Crystallography, this application could not be considered by the Assembly.

(c) The replacement of the Ministry of Scientific Research and Cultural Affairs by the National Institute of Sciences of India as the Adhering Body in India was reported to and accepted by the General Assembly. [In 1970 the name of the Adhering Body in India was changed from *National Institute of Sciences of India* to *Indian National Science Academy*.]

The delegates of the Deutsche Vereinigung für Kristallographie, the Sektion für Kristallkunde and the National Institute of Sciences of India were then welcomed to the General Assembly.

(3) Minutes of the Seventh General Assembly

The Minutes of the meetings of the Seventh General Assembly held in Moscow, U.S.S.R. on 12, 15 and 19 July 1966 were approved.

(4) Resignation of A.M. Liquori

A. M. Liquori, Ordinary Member of the Executive Committee, had offered his resignation in July 1969. The Executive Committee, at its meeting on 11 August, accepted his resignation but decided not to co-opt a new member to replace him, because of the very short time-interval until the Eighth General Assembly. The Assembly formally approved this decision.

(5) Statutory Reports

The statutory reports of the Executive Committee, the Treasurer, the Commissions of the Union and the Representatives on bodies not belonging to the Union, were taken as read. In addition to these reports, verbal reports were given on later activities and on matters discussed at Stony Brook by the bodies concerned. The reports are summarized in the next sections.

(6) Financial Report

The financial report presented to the Assembly had been prepared by the Treasurer and covered the calendar years 1966, 1967 and 1968. With reference to the *Acta Crystallographica* account he reviewed the rises in subscription rates since 1966 and explained that there must be a substantial price increase in 1970 because of the increased size of the journal as well as rising costs. The other publication accounts had been satisfactory, as had the General Fund account. The Treasurer stressed that the Union finances are quite large, which consideration bears on Union incorporation. The Union's assets totalled almost \$240,000 and the custody and good management of these funds, in particular the publication accounts, demanded considerable time and attention which was one reason why

the Union needed an Executive Secretary. The report was accepted and the Treasurer and any other Officer or Chairman of a Commission were released from financial or other liability to the Union.

(7) Commission on Journals

The Chairman of the Commission and Editor of *Acta Crystallographica*, A. J. C. WILSON, observed that the highlights of the past triennium had been the establishment of the *Journal of Applied Crystallography* and the publication of *Acta Crystallographica* in two sections, beginning with the Ewald *Festschrift* in January 1968. These ventures had fully justified themselves, but the increasing number of pages published had given rise to several problems. The Commission had given much consideration to these financial problems and he mentioned some proposals for reducing costs. The Commission had recommended increased subscription rates to *Acta Crystallographica* from 1970 onwards, which had been accepted by the Executive Committee.

The issues of the *Journal of Applied Crystallography* were being published more regularly now and the publication time, from the date of receipt to the actual appearance of the journal, now averaged just under six months.

(8) Commission on Structure Reports

The Chairman of the Commission and Editor of *Structure Reports*, W. B. PEARSON, reported that the Commission had seriously reviewed the likely rôle of *Structure Reports* in the future, and had concluded that there would continue to be a need for critical reports on new structures. The Commission was concerned that volumes of *Structure Reports* were currently being published nine years after the original research, and had decided to increase the number of Co-editors so that work could be started on all the volumes up to that dealing with the current year. There would be a change in format for volumes from 1963 onwards and further changes from 1967 onwards.

(9) Commission on International Tables

The Chairman of the Commission and Editor of *International Tables*, N. F. M. HENRY, reminded delegates that the Pilot Edition for a considerably expanded edition of *International Tables*, Volume I, would appear in six parts, two parts having been published to date. Copies of the Pilot Edition would be distributed to over 200 laboratories where crystallographers would use them for one year and then make comments and suggestion to the Commission. In the meantime all three volumes of the present edition have had to be reprinted, and the work on Volume IV is progressing.

(10) Commission on Crystal Growth

The Chairman of the Commission, R. KERN, reported that the Summer School on Crystal Growth which the Commission would organize, would be held in Leiden, The Netherlands, preceding the Third International Conference on Crystal Growth, Marseille, France. The Commission had discussed a report on those topics of crystal growth which might be of interest during the next five years. A glossary of terms, including Russian terms, and a bibliography of papers on crystal growth were being prepared.

(11) Commission on Crystallographic Apparatus

The Chairman of the Commission, A. MCL. MATHIESON,

mentioned that the report of the International Meeting on Accurate Determination of X-ray Intensities and Structure Factors, which had been organized by the Commission, had been published in *Acta Cryst.* (1969) A25, 1, and the report of the Commission's Single Crystal Intensity Measurement Project had been submitted for publication [*Acta Cryst.* (1970) A26, 1 and 18]. The Commission had held Open Sessions on the two intensity measurement projects. Plans for the second phase of the single-crystal project would be developed while work on the powder specimen project would be referred back to the individual scientists involved. R. Rudman would work on the *Index of Crystallographic Supplies*. The Commission also planned to consider the effect of radiation damage on crystals. Dr Mathieson also thanked F. H. Herbstein, E. Countey and R. Rudman for their help in organizing and arranging the exhibitions of photographs and non-commercial equipment.

(12) *Commission on Crystallographic Computing*

The Chairman of the Commission, F. R. AHMED, reported that the recent meeting on Crystallographic Computing, which the Commission had organized in Ottawa, Canada, 4–12 August, had been attended by 169 crystallographers including 37 lecturers. The lectures and discussions would be published by Munksgaard under the title *Crystallographic Computing*. The manuscript for this book had been prepared with the aid of a UNESCO contract.

The Commission had appointed two representatives to consider the publication of structure-factor tables with two representatives of the Commission on Crystallographic Data (one of whom was the Chairman of the Commission on Journals). The Commission would extend its preparation of standard tests for crystallographic computer programs and would consider the compilation of a new edition of the *World List of Crystallographic Computer Programs*. It would also work closely with crystallographers engaged in the development of methods of crystal-structure determination.

(13) *Commission on Crystallographic Data*

The Chairman of the Commission, O. KENNARD, referred to the joint meeting of the Commissions on Crystallographic Computing, Crystallographic Data, Journals and *Structure Reports* on Saturday 16 August when the problems of storage, evaluation and utilization of crystallographic data, including the storage of structure-factor tables, had been discussed. She also reported that the Commission was considering the distribution of census cards to about 3000 crystallographers and also the implications if it were to take on the publication of crystallographic data.

(14) *Commission on Crystallographic Nomenclature*

The Chairman of the Commission, A. J. C. WILSON, reported that the Commission had proposed to the Executive Committee some names for representatives of the Union on a joint Sub-committee on Nomenclature between the International Mineralogical Association and the Union.

(15) *Commission on Crystallographic Studies at Controlled Pressures and Temperatures*

The Chairman of this newly-established Commission, C. J. M. ROOYMANS, reported that the Commission had met twice at Stony Brook and had held an Open Session.

It wished to encourage the holding of a conference on crystallographic studies at very high temperatures in Odeillo, France in 1971.

(16) *Commission on Crystallographic Teaching*

The Chairman of the Commission, A. GUINIER, reported that some of the material prepared as a result of contracts signed between UNESCO and individual crystallographers had been shown at the Open Session of the Commission. He also referred to the UNESCO subventions for the books *Early Papers on Diffraction of X-rays by Crystals* and *Crystallographic Computing*. It was agreed that cablegrams be sent to Professor J. M. Bijvoet, in appreciation of his work on the former book, and to Dr N. Joel of UNESCO, in gratitude for his assistance.

(17) *Commission on Electron Diffraction*

L. S. BARTELL, deputizing for the Chairman of the Commission, reported that the Commission had organized successful Sessions on novel methods and species of electron diffraction and intended to organize similar meetings at future Congresses. The Commission had also considered topics for future inter-Congress meetings.

(18) *Commission on Neutron Diffraction*

The Chairman of the Commission, G. E. BACON, reported that the Commission had met but would like to meet also between Congresses, perhaps at a scientific meeting on an appropriate topic. He emphasized the need for more accurate basic data on neutron scattering factors.

(19) *Representation on other bodies*

(a) The Representatives on the IUPAP Commission on the Solid State, B. E. WARREN and E. F. BERTAUT, the ICSU Abstracting Board, A. J. C. WILSON, the ICSU Inter-Union Commission on Science Teaching, J. ZEMANN, and the ICSU Committee on Data for Science and Technology, O. KENNARD, had nothing further to report.

(b) R. KERN, one of the Representatives of the Union on the International Committee on Crystal Growth, reminded delegates that International Conferences on Crystal Growth were normally held triennially and had industrial sponsors. Previous Conferences had been held in 1966 and 1968 and the third one would be held in 1971.

(20) *Sub-committees*

(a) The Sub-committee on Statutes and By-Laws had been set up by the Executive Committee at the time of the Seventh General Assembly to scrutinize the Statutes and By-Laws and to make recommendations for amendments to the Executive Committee. The many amendments presented to the present General Assembly were testimony to the work of the Sub-committee and the members, D. W. Smits (Convener), D. P. Shoemaker and A. J. C. Wilson, were thanked for their work. The Sub-committee had now been dissolved by the Executive Committee.

(b) The members of the Publications Sub-committee, D. W. J. Cruickshank (Convener), J. M. Cowley, A. Guinier and A. J. C. Wilson, were thanked for their work. The Sub-committee had now been dissolved by the Executive Committee.

(c) The members of the Sub-committee on Structure-type Designation, which was established at the Sixth General Assembly in 1963, were F. Laves (Chairman), N. V. Belov, J. D. H. Donnay, J. D. Dunitz, E. Hellner, O.

Kennard and W. B. Pearson. It had done little work since 1963 and the Executive Committee had decided to dissolve it and set it up again if the need arose in the future.

(d) The Sub-committee on the Union Calendar had been set up in June 1968 but had been inactive. The new membership of the Sub-committee is: A. Linek (Chairman), E. F. Bertaut, W. C. Hamilton, N. Kato and A. McL. Mathieson with the General Secretary and the Treasurer as *ex-officio* members.

(21) *Size of Commissions*

The Assembly determined the numbers of elected members of each Commission, as follows:

Commission on Journals	0
Commission on <i>Acta Crystallographica</i>	0
Commission on <i>Structure Reports</i>	0
Commission on <i>International Tables</i>	0
Commission on Crystal Growth	7
Commission on Crystallographic Apparatus	7
Commission on Crystallographic Computing	7
Commission on Crystallographic Data	8
Commission on Crystallographic Nomenclature	0
Commission on Crystallographic Studies at Controlled Pressures and Temperatures	5
Commission on Crystallographic Teaching	9
Commission on Electron Diffraction	8
Commission on Neutron Diffraction	6

(22) *Incorporation*

The Executive Committee unanimously recommended the adoption of the following resolution, as set out in an addendum to the Agenda:

'The Eighth General Assembly resolves:

- (i) that the Union be incorporated in Geneva, Switzerland;
- (ii) that for this purpose the Statutes and By-Laws of the Union be amended as listed below;*
- (iii) that in the event that the Swiss authorities require further changes in the Statutes, the Executive Committee refer proposed amendments to a postal ballot of the Adhering Bodies. If the proposed amendments obtain affirmative votes amounting to more than half the total number of votes of all Adhering Bodies, the amendments are adopted.'

The addendum also set out the changes required in the Statutes and By-Laws of the Union for incorporation. A report explaining the need for incorporation of the Union had been distributed to the National Committees and the Commissions of the Union in June, 1969.

Speaking on behalf of the Executive Committee, the Treasurer explained that incorporation was a solution to the legal problems which could arise from the financial situation of the Union. The Union had an annual turnover of the order of \$250,000 and it had assets of a similar amount. Furthermore, it now had five employees and it might need to employ more people in future years.

At present, in terms of the laws of almost every country, the Union was without legal personality. It could not enter into contracts and, if a dispute were to arise between the Union and one of its publishers or one of its employees, the Union could not have recourse to courts of law. On the

other hand, one of our employees might well sue personally the individual Officer who had made the offer of employment. The Executive Committee considered it imperative that past and present Officers and other individuals be protected against legal action.

Another problem was that of taxation. An organization could be liable to taxation on its operations in every country in which it operated or received interest from investments or bank accounts (currently, for the Union, these were The Netherlands, U.K., U.S.A., Sweden and Denmark) and it could be liable to taxation on its entire operations in the country of its legal domicile. The Union's Statutes (1966 version) claim that its domicile is 'the place where the Treasurer conducts his business'. So far, the Union's Treasurers have resided in the U.K. or The Netherlands, and the tax situations in these countries have been generally favourable.

If a future Treasurer were of a different nationality, tax uncertainties would again arise. Thus there is a need for a permanent seat or domicile for the Union, so that the tax position could be put on an unchanging base.

Other scientific Unions had faced this problem and several had incorporated in recent years, including larger Unions needing to employ more people. Very careful enquiry had shown that Switzerland was the country best suited to the Union's need and that the Union could incorporate there with little trouble. The Swiss lawyer who had made enquiries from the Swiss Authorities on behalf of the Union was confident that the Union could be registered at the Commercial Registry and would be granted exemption from Swiss taxation. It would not be necessary to have a Swiss member on the Executive Committee.

The Treasurer then explained the amendments to the Statutes and By-Laws which would be necessary for the Union to incorporate in Switzerland. After discussion the Assembly approved the resolution as given above, with no votes against and five abstentions.

(23) *Confirmation of the establishment of the Commission on Journals*

The Assembly officially established the Commission on Journals, which had been set up, *ad interim*, by the Executive Committee in 1967, having as its responsibility the publication of *Acta Crystallographica* and the *Journal of Applied Crystallography* and consisting of the Editorial Boards of these journals.

(24) *Dissolution of the Commission on Acta Crystallographica*

Following the establishment of the Commission on Journals, the Assembly dissolved the Commission on *Acta Crystallographica* as this Commission was now redundant.

(25) *Confirmation of the establishment of the Commission on Crystallographic Studies at Controlled Pressures and Temperatures*

In October 1966 the Executive Committee, acting on a resolution of the Seventh General Assembly, asked C. J. M. Rooymans to consider the merits of establishing a Commission on Crystallographic Studies at Pressures and Temperatures other than Normal and, if appropriate, to draft its terms of reference and to propose a membership. Acting on Dr Rooyman's recommendations, the Executive Committee agreed in June 1968 to the *ad interim* establishment of the Commission, with a slightly amended

* International Union of Crystallography (1971). *Report of Eighth General Assembly*, p. 10.

title, and a membership of C. J. M. Rooymans (Chairman), M. Foex, H. J. Milledge, S. Ogawa and C. B. Sclar, with one additional member from the U.S.S.R. to be sought.

The proposed terms of reference for the Commission were:

- (1) to assess the adequacy of existing organizations;
- (2) to devise appropriate ways of putting existing groups and isolated workers in touch with one another;
- (3) to make contact with other international bodies such as the International Geophysical Year, the Upper Mantle Project, or COSPAR with a view to promoting worthwhile studies on scarce materials such as meteorites or mohole cores;
- (4) to cooperate with the Commission on Crystallographic Apparatus in establishing the need for special types of apparatus for controlled pressure and temperature studies, with a view to encouraging manufacturers to meet identifiable needs;
- (5) to establish whether further publications, abstracts or data compilations concerning controlled pressures and temperatures would be useful;
- (6) to arrange meetings, or sessions at existing meetings, on work at controlled pressures and temperatures.

The Assembly approved the action taken by the Executive Committee and officially established the Commission, with the amended title of Commission on Crystallographic Studies at Controlled Pressures and Temperatures.

(26) *Approval of appointment of Executive Secretary*

Dame KATHLEEN LONSDALE reported that the Executive Committee decided at their meeting in 1968 to appoint a salaried Executive Secretary as soon as possible to work under the supervision of the General Secretary and the Treasurer to relieve them of most of their administrative loads which had surpassed acceptable levels.

The General Assembly confirmed the arrangement for a salaried Executive Secretary. Dame Kathleen Lonsdale explained that an Appointing Committee of the Executive Committee had selected Dr J. N. King for the post and she then introduced Dr King to the General Assembly.

(27) *Union Office*

The Treasurer reported that a Union Office would be established at 13 White Friars, Chester CH1 1NZ, England. This new office would be occupied by the Executive Secretary, the Technical Editor and their staff.

(28) *Publication Programme of the Union*

(a) The first five chapters of the manuscript of *Early Papers on Diffraction of X-rays by Crystals* had been published just prior to the General Assembly. It was hoped that the remainder of the manuscript would be published later.

(b) Copies of a book of the lectures given at a Summer School on the Dynamical Theory of Diffraction held at Harmoniá, Czechoslovakia, 20–30 July, 1966 were still obtainable from Dr F. Hanic.

(c) A contract had been signed between UNESCO and the Union for the preparation of the manuscript of a book containing the texts of the lectures given at the Summer School on Crystallographic Computing.

(d) The majority of the lists for the Fourth Edition of the *World Directory of Crystallographers* had come in. The total number of entries was estimated to be about 7500.

(29) *Relations with Adhering Bodies and National Committees*

In order to keep in touch with crystallographers throughout the world *via* the Adhering Bodies and National Committees for Crystallography formed by those Bodies, it was desirable that the correct names and addresses were known and that active correspondence took place when necessary. The General Secretary regretted that he did not receive replies to correspondence to many National Committees even when positive action was required. He requested delegates to convey his concern to their National Committees and Adhering Bodies.

(30) *Report of the Advisory Panel on Future Meetings and Congresses*

This Advisory Panel was set up by the Executive Committee at the request of the Seventh General Assembly. Its findings had been circulated to the National Committees and Commissions.

(31) *S.I. system of units*

The *Système International d'Unités* had been officially established in 1960 and had undergone some modifications since. In this system, the unit currently used by crystallographers and many others (the ångström) would not be allowable and would be replaced by either the nanometre (1 nm = 10 Å) or the picometre (1 pm = 0.01 Å).

The Union's Executive Committee and the ICSU Inter-Union Commission on Spectroscopy had both declared that the ångström should remain an acceptable unit for use in publications and papers in journals. The Treasurer pointed out that there was nothing in the S.I. rules to prevent an author from stating that he intended to use a unit of 10⁻¹⁰ metres in his paper and that he would call this unit 1 Å. A. J. C. WILSON, remarked that the ångström probably came within the S.I. units but not the restricted S.I. units. Several delegates expressed their desire that the ångström be retained as a unit, as it was ideal for describing interatomic distances.

(32) *Budget estimates and unit contribution*

(a) The budget estimates for the years 1969–71 were introduced to the Assembly by the Treasurer, who explained that they covered only the General Fund, and were based on a unit contribution of \$100. Future administrative expenses would be much larger because of the necessity of employing an Executive Secretary. The General Assembly approved the budget estimates.

(b) It was agreed that the unit contribution remain unchanged at \$100 for the years 1970, 1971 and 1972. Several delegates requested that as much notice as possible should be given of any future increases in the unit contribution.

(33) *Discussion of the future policy of the Union*

The General Secretary reported that the Union had already given sponsorship to several meetings in the period up to the next General Assembly.

E. A. WOOD proposed that there should be inter-Congress meetings of the Commissions and that the Executive Committee should consider the provision of financial support from the Union funds to encourage these meetings. The Treasurer reminded delegates that the present funds of the Union would not permit such expenses although, as a past Chairman of a Commission, he approved of the

proposal. A Commission meeting would cost at least \$2000, and this would mean an expense of \$20,000 spread over 3 years if most of the Commissions were to meet once between General Assemblies. It would be necessary to raise the unit contribution from \$100 to \$150 to make such a proposition possible. The Assembly approved the motion put by Dr Wood.

(34) *Collection of historic material*

Dame KATHLEEN LONSDALE reminded delegates that 1972 would mark the sixtieth anniversary of the discovery of X-ray diffraction. She considered that all crystallographers should make efforts to collect and preserve historical crystallographic material and she requested that anyone wishing to offer such material to the Union should contact her.

(35) *Date and place of Ninth General Assembly and Congress of Crystallography*

It was hoped that this Assembly and Congress would be held in Kyoto or Tokyo, Japan in 1972. The dates would be determined by the Executive Committee as soon as possible. [Subsequently the location decided upon was Kyoto and the dates were provisionally fixed as 27 August–7 September.]

(36) *Preliminary consideration of the activities of the Union for the three-year period following the Ninth General Assembly*

The Assembly was required to give preliminary consideration to the activities of the Union during this period. A. McL. MATHIESON spoke about the plans for a crystallographic meeting in Canberra, Australia during the third week in August 1974. No other activities were put forward for consideration.

(37) *Appointment of Editors*

The following appointment and reappointments by the Executive Committee of the Editors of the four main publications of the Union, for the period until the Ninth General Assembly, were confirmed:

<i>Acta Crystallographica</i> :	A. J. C. WILSON
<i>Journal of Applied Crystallography</i> :	R. A. YOUNG (from 1 January 1970)
<i>Structure Reports</i> :	W. B. PEARSON
<i>International Tables</i> :	D. P. SHOEMAKER

[D. P. Shoemaker resigned in November 1970. The Executive Committee subsequently appointed N. F. M. Henry to succeed him until the Ninth General Assembly.]

(38) *Elections*

Officers of the Union, Chairmen and members of the Commissions, and Representatives of the Union on other bodies, were elected. The new membership of the Executive Committee, the Commissions, *etc.*, is given below. When considering the list, the following points should be kept in mind: (a) one Vice-President and three Ordinary Members of the new Executive Committee were elected by the Seventh General Assembly to serve until the close of the Ninth General Assembly in 1972; (b) according to the Statutes, the Editors and Co-editors are automatically members of the Commissions set up for their respective publications; (c) the Fifth General Assembly resolved that the Commission on Crystallographic Nomenclature should

consist of the Editors of *Acta Crystallographica*, *Structure Reports* and *International Tables*, with the first Editor as Chairman: the Editor of the *Journal of Applied Crystallography* was added to this *ex officio* membership by the Executive Committee in 1968; (d) according to the By-Laws, the President, the General Secretary and the Treasurer are *ex officio* members of all Commissions; and (e) the Chairman of the Commission on Crystallographic Data is an *ex officio* member of the Commission on *Structure Reports* and *vice versa*, the Chairman of the Commission on Crystallographic Computing is an *ex officio* member of the Commission on Crystallographic Data and *vice versa*, and the Editor of the *Journal of Applied Crystallography* is an *ex officio* member of the Commission on Crystal Growth.

As no other nominations had been made by delegates, all persons nominated by the Executive Committee were considered as elected.

Executive Committee

President

A. GUINIER* (France)

Vice-Presidents

F. LAVES* (Switzerland)

B. E. WARREN* (U.S.A.)

General Secretary and Treasurer†

D. W. J. CRUICKSHANK* Department of Chemistry, University of Manchester Institute of Science and Technology, Manchester M60 1QD, England.

Immediate Past President

N. V. BELOV* (U.S.S.R.)

Ordinary members

D. C. HODGKIN† (U.K.)

N. KATO† (Japan)

A. LINEK* (Czechoslovakia)

A. McL. MATHIESON*§ (Australia)

B. K. VAINSHTEIN† (U.S.S.R.)

W. H. ZACHARIASEN* (U.S.A.)

Executive Secretary

J. N. KING, International Union of Crystallography, 13 White Friars, Chester CH1 1NZ, England.

Commission on Journals

Chairman and Editor of Acta Crystallographica:

A. J. C. WILSON, Department of Physics, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, England.

* Until the close of the Ninth General Assembly (1972).

† Until the close of the Tenth General Assembly (1975).

‡ G. Boom, who had been re-elected General Secretary at the Eighth General Assembly, resigned as from 3 April 1970. The Executive Committee recombined the offices of General Secretary and Treasurer and appointed D. W. J. Cruickshank, who had been re-elected Treasurer at the Eighth General Assembly, to this joint office as from 3 April 1970.

§ To replace A. M. Liquori, who resigned shortly before the opening of the Eighth General Assembly and who would otherwise have served until the close of the Ninth General Assembly.

Co-chairman and Editor of Journal of Applied Crystallography:

R. A. YOUNG (as from 1 January 1970), School of Physics and Engineering Experiment Station, Georgia Institute of Technology, Atlanta, Georgia 30332, U.S.A.

Co-editors:

A. GUINIER (France; *JAC*)
 W. C. HAMILTON (U.S.A.; *Acta*)
 R. D. HEIDENREICH (U.S.A.; *JAC*)
 H. JAGODZINSKI (B.R.D.; *Acta*)
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(39) *Votes of thanks*

The following votes of thanks were approved by acclamation:

(a) To the U.S.A. National Academy of Sciences for their invitation to hold the Eighth General Assembly and Congress in the U.S.A.; to the members of the Organizing Committee for all their work to make the meeting a success; and to the local Committee, the State University of New York at Stony Brook, the New York State Authorities and the Agencies of the U.S.A. Government for their kind hospitality during the meeting.

(b) To D. P. Shoemaker and J. S. Kasper, Chairman and Vice-Chairman, respectively, of the U.S.A. National Committee for Crystallography and B. Post, Congress Treasurer, on the successful organization of such a large meeting; to the members of the Programme Committee, G. A. JEFFREY (Chairman), E. F. Bertaut, A. R. Lang, H. Raether, Y. Saito and V. I. Simonov; the American Institute of Physics and S. C. Abrahams and E. A. Wood, who ensured good liaison between the organizers and the A.I.P.; to the local Chairman of arrangements at Stony Brook, W. C. Hamilton, and the Secretary-Treasurer of the U.S.A. National Committee for Crystallography, W. Parrish, who had organized the exhibition of commercial equipment at Stony Brook; to the chairmen and local organizing committees of the local meetings and laboratory visits which had been arranged in association with the Congress; and to the many people who had helped in various other ways with the running of the meetings.

(c) To J. S. Toll, President of the State University of New York at Stony Brook, E. K. Fretwell, President of the State University of New York College at Buffalo, and M. Goldhaber, Director of Brookhaven National Laboratory, for their hospitality; and to Natalie Fiess, Executive Secretary of the Congress Headquarters.

(d) To the retiring Officers of the Union and especially to the retiring President, N. V. Belov, the retiring Vice-President, I. Niitta, and the previous President, Dame Kathleen Lonsdale; and to all the retiring members of the Union's Commissions and the Sub-committees.

(e) To F. H. Herbstein, E. Countey and S. J. La Plata

for their work in connexion with the exhibition of photographs of crystallographic interest.

Eighth International Congress

(1) *Scientific Programme*

The main meeting of the Congress was held at the State University of New York at Stony Brook during the period of the General Assembly. The scientific programme consisted of the Congress Discourse by L. Pauling on *The Importance of Being Crystallized* and 484 papers presented at eight parallel sessions. In addition, the Commissions of the Union met and also organized 11 Open Sessions, at which papers were read and discussions were held on topics of primary interest to the Commissions concerned.

The meeting was preceded by a Topical Meeting on the Crystallography of Biologically Important Substances, held at the State University of New York College at Buffalo (6–12 August; 84 papers presented), and was followed by four Topical Meetings at Stony Brook (22–24 August), a Topical Meeting at Brookhaven National Laboratory (22–23 August) and tours of scientific laboratories at Washington D.C. (25–27 August). The Union's Commission on Crystallographic Computing organized a Summer School on Crystallographic Computing at Ottawa, Canada (4–12 August).

According to the arrangements made by the Programme Committee, and approved by the Executive Committee, each author was allowed to submit only one abstract. The organizing chairmen for each topic were responsible for the selection of papers to be presented and for the time allocated to speakers. Most speakers were allowed about 20 minutes, including discussion time. All Abstracts submitted were printed, by direct reproduction of the typescript copy supplied by the authors, in the book of Collected Abstracts and in a Supplement to *Acta Crystallographica* Section A. Advance copies were sent to registered participants who had requested this service. Other participants received their copy on arrival at Stony Brook. A copy of the Supplement was sent to all subscribers to *Acta Crystallographica* or *Journal of Applied Crystallography*.

(2) *Exhibitions*

On the occasion of the Assembly and Congress four exhibitions were held at Stony Brook, namely of Non-commercial Crystallographic Apparatus, Commercial Crystallographic Apparatus, a Book Exhibition and an Exhibition of Photographs of Crystallographic Interest. At the close of the Congress prizes were awarded to H. Waldmann (Switzerland) and K. Zinserling (U.S.S.R.) for the most pleasing photograph in colour and in black and white, respectively.

(3) *Social arrangements*

An extensive social programme had been arranged, including an all-day clambake on 18 August and an 'at home' night on 20 August when overseas participants were invited to one of the 42 private homes where local residents held evening parties. The organizers had also arranged a number of concerts, excursions and boat trips.

J. N. KING

Journal of Applied Crystallography Acta Crystallographica**Journal of Applied Crystallography**

The Executive Committee of the International Union of Crystallography announces that it is necessary to increase the regular yearly subscription rates for the *Journal of Applied Crystallography* from 1 January 1972. The subscription rates have remained constant since the journal was launched in 1968 although the number of papers submitted has increased substantially and the size of the volume for 1971 is likely to be nearly twice that for 1969. It is also necessary to cover the continued increases in the basic costs of production.

The new yearly subscription rates for 1972 (Volume 5) are:

Complete volumes, regular price per volume
D.kr.300 (\$40.50 or £16.90)

Complete volumes, reduced price for individuals
D.kr.150 (\$20.25 or £8.45)

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D.kr.75 (\$10.00 or £4.20)

At the present rates of exchange, orders are also accepted in U.S. dollars and pounds sterling at the prices shown in parentheses. Orders should be addressed to Munksgaard International Publishers Ltd, Nørre Søgade 35, 1370 Copenhagen K, Denmark or to any bookseller. Orders for complete volumes from subscribers in the North American area may alternatively be placed through Polycrystal Book Service, P.O. Box 11567, Pittsburgh, Pa. 15238, U.S.A. at the U.S. dollar prices shown above. The reduced rate subscriptions for individuals are ordinarily only available to members of recognized scientific societies, who must give a written undertaking accompanying their subscription application that the journal is for their personal use only, and will not be made available to libraries, institutions, etc.

Each annual volume of the journal contains six parts, except for Volume 1 (1968) which contained only five parts. The prices for back numbers published before 1 January

1972 (Volumes 1–4) will remain unaltered. At the present rates of exchange these prices are:

Complete volumes, regular price per volume
D.kr.240 (\$32.40 or £13.50)

Complete volumes, reduced price for individuals
D.kr.120 (\$16.20 or £6.75)

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D.kr.60 (\$8.10 or £3.40)

Acta Crystallographica

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Section A D.kr.60 (\$8.10 or £3.40)
Section B D.kr.100 (\$13.50 or £5.60)

Each annual volume of Section A (crystal physics, diffraction, theoretical and general crystallography) contains six parts and each annual volume of Section B (structural crystallography and crystal chemistry) contains twelve parts.

The prices for back numbers published before 1 January 1972 also remain unchanged. For a full list of these prices see *Acta Cryst.* (1969) A25, 718, *Acta Cryst.* (1969) B25, 2172 or *J. Appl. Cryst.* (1969) 2, 191.

Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (M. M. Woolfson, Physics Department, University of York, Heslington, York YO1 5DD, England). As far as practicable books will be reviewed in a country different from that of publication.

Fourier methods in crystallography. By G. N. RAMACHANDRAN and R. SRINIVASAN. Pp. xiii + 259. New York: John Wiley, Interscience, 1970. Price \$15.95, £7.50.

An X-ray diffraction pattern, in principle, contains all the information necessary to solve the crystal structure. Without the knowledge of phases the solution cannot be obtained by a straightforward single-step process and mathematical manipulation of the data is necessary to yield information about atomic positions or about phases.

The Madras school of crystallography has specialized for

many years in techniques involving the use of Fourier series with various types of coefficients and this book is devoted to a description of such methods.

The first three chapters (about 20 per cent of the book) deal with fairly basic theory relating to the electron-density equation, Patterson and Patterson-type syntheses and the interpretation of the Patterson function in terms of images of the structure. This part of the book is extremely well done; it is pleasant to see mathematical derivations with enough steps for the not-so-expert reader to be able to follow the proofs without difficulty. These chapters can even be thoroughly recommended to those of the crystallo-