

International Union of Crystallography

Fifth General Assembly, International Congress and Symposia

By joint invitation of the Royal Society and the University of Cambridge, the Fifth General Assembly and International Congress of the Union, and two subsequent Symposia, were held in Cambridge from 15 to 24 August 1960. The Executive Committee and most Commissions of the Union met during the three days preceding this period.

The Congress and the Symposia were attended by more than 1200 active and 200 accompanying members from the following thirty-one countries: Argentina, Australia, Austria, Belgium, Canada, Chile, Czechoslovakia, Denmark, Finland, France, Germany, Ghana, Hungary, India, Israel, Italy, Japan, Netherlands, Norway, Poland, Rhodesia, Spain, Sweden, Switzerland, Union of South Africa, Union of Soviet Socialist Republics, United Arab Republic, United Kingdom, United States of America, West Indies and Yugoslavia. The attendance of a number of invited speakers was made possible by a subvention received from UNESCO through ICSU, and in addition the International Union of Pure and Applied Physics contributed to the cost of one of the Symposia.

The Assembly and Congress were formally opened in the Senate House of the University on Monday 15 August. Representing the Vice-Chancellor of the University of Cambridge, who was unable to attend, N. F. MOTT presided at this ceremonial opening session. On behalf of the University he welcomed the members of the meetings to Cambridge where crystallography, associated with geology and mineralogy as well as with physics and chemistry, had an ancient history dating from the foundation of the Woodwardian professorship of geology in 1727. [For the information of the members of the Congress, a pamphlet entitled 'A sketch of the study of crystallography and mineralogy in Cambridge, 1808-1931' had been prepared by A. J. Berry.] SIR GERARD THORNTON, Foreign Secretary of the Royal Society, was the next speaker, and he gave a short address of welcome on behalf of the Royal Society. The President of the Union, J. WYART, expressed the gratitude of all participants to their British hosts. In his address he reviewed the work carried out by the Union since the Fourth General Assembly, and summarized the activities planned for the three-year period 1960-1963, which were to be discussed by the present (Fifth) General Assembly. He recalled the loss suffered by the community of crystallographers through the death of Charles Mauguin in April 1958, and of the Honorary President of the Union, Max von Laue, in April 1960.

The closing ceremonies took place on Saturday 20 August. After the Assembly had passed its votes of thanks (see section (21) below), the President gave a short address in which he again expressed the thanks of the Union and his personal thanks to the British hosts, and his gratitude to all who had helped him during his Presidency. He then declared the Fifth General Assembly and International Congress closed.

Fifth General Assembly

Twenty-four Adhering Bodies, including the four new members whose adherence was ratified in Cambridge, were represented by delegates; no delegates had been appointed by the Adhering Bodies for Brazil and India. The Assembly met in the Senate House of the University on Monday morning 15 and on Saturday afternoon 20 August, and in the Maxwell Room of the Cavendish Laboratory on Thursday evening 18 August. A detailed report will be published and sent to the Secretaries of the National Committees. The following is a summary of the business transacted.

(1) *Adhering Bodies*

(a) It was reported that, in accordance with the request of the Fourth General Assembly, the German crystallographers had arranged for a single representation in the Union through the Deutsche Mineralogische Gesellschaft, and that accordingly the Deutsche Akademie der Wissenschaften zu Berlin had withdrawn its application for membership. The change in membership of the Deutsche Mineralogische Gesellschaft, and the change in its adhesion from one in Group VI into one in Group VIII [new Group V], were approved.

(b) The change in membership of the Science Council of Japan from one in Group III into one in Group IV (Group numbers according to the amended Statutes) was approved.

(c) Adhesion to the Union in Group I of the following four new members was approved: the Royal Society of New Zealand, the Israel Crystallographic Society, the [Argentine] Consejo Nacional de Investigaciones Científicas y Técnicas, and the Suomalainen Tiedeakatemia [Finland].

(d) In accordance with a request received from the Chairman of the Polish National Committee for Crystallography, it was agreed to adjourn the question of the adherence of the Polskiej Akademii Nauk. In 1959 this Academy had applied for membership, and the application had been considered by the Executive Committee to be in good order.

(2) *Minutes of the Fourth General Assembly*

The minutes of the meetings of the Fourth General Assembly, held in Montreal, Canada, on 10 and 17 July 1957, were approved.

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

A number of amendments to the Statutes and By-Laws were adopted. The most important changes were (i) a reduction of the number of Groups in which adherence is possible, from eight to five; (ii) an extension of the maximum service on a Commission from three to four consecutive full terms, but only for service as Chairman

during the fourth term; and (iii) a more precise regulation of the procedure for elections. The Statutes and By-Laws in their new form are printed elsewhere in this issue.

(4) *Statutory Reports*

The statutory reports of the Executive Committee and of the Commissions concerning the activities since the Fourth General Assembly were taken as read, and accepted without discussion. In addition to these reports, verbal reports were given on later activities (see following sections).

(5) *Commission on Acta Crystallographica*

The Editor of the journal, A. J. C. WILSON, reported on the meetings the Commission had held in Cambridge, at which many technical and administrative problems had been discussed. Considering the increasing number of papers in German, the Commission had agreed on the appointment of a German Co-Editor, and H. Jagodzinski had been found willing to fill this post with effect from September 1960. The Commission had further reached two decisions on points of principle concerning the publication of papers on computing methods and of review articles in *Acta Crystallographica*. Computing papers in two classes would be considered for publication: (i) very brief descriptions of programs available for commercial devices; and (ii) papers giving new computing methods for a general class of computer but not giving detailed programs. Review articles of high standard would also be considered provided that (i) no good equivalent reviews were easily accessible; (ii) the reviewer exercised his critical judgment; and (iii) the work reviewed had appeared largely in other journals. Reviews resulting from the work of the Commissions would be particularly welcomed. Reviews would be published in a special section with an appropriate heading near the end of the journal, and for the time being they should be sent directly to the Editor, and not to any of the Co-Editors.

(6) *Commission on Structure Reports*

The report on the meetings of the Commission was presented by the Editor of *Structure Reports*, W. B. PEARSON. The main problems discussed were the questions of how to produce the volumes more rapidly, and how to keep down, or even reduce, the cost. It was decided that (i) there should be no drastic reduction in the amount of information reported; (ii) minor reductions by omitting certain topics, and a rearrangement of the method of reporting data in the Metals Section, should be undertaken, and this would give a slight saving in the cost; and (iii) the speed of production should be increased by appointing three Co-Editors for both the Inorganic and the Organic Section, who would work simultaneously on different volumes. Other topics discussed had been the appointment of new Co-Editors, the question of nomenclature for structure types, and the rapid publication of lists of titles and authors of papers of structural interest which G. B. Bokij is arranging in the Soviet *Journal of Structural Chemistry*. As for the size of the Commission, it was agreed that in addition to the Editor, the Co-Editors and the *ex officio* members, there should only be two elected members as Correspondents for Japan and for the U.S.S.R. respectively.

(7) *Commission on International Tables*

In addition to the report circulated, DAME KATHLEEN LONSDALE, Chairman of the Commission and Editor of *International Tables*, stated that not many reviews of Vol. II had appeared although quite a number of copies had been sent to different journals. She asked delegates to make every effort to influence journals which they might know to be reviewing Vol. II, to publish these reviews soon so that they would come out before the appearance of Vol. III. This volume was nearly all in press, and some galley proofs were shown at the books exhibition. Concerning the meeting of the Commission, DAME KATHLEEN LONSDALE reported the decision made that any further tables should be published not as Supplements but as new Volumes. Vol. IV, therefore, would be the original Supplement on Cubic Space Groups; N. F. M. Henry would be Co-Editor for this volume and would invite assistance from selected authors. The Commission had accepted the resignation of J. S. Kasper, who had completed his work as Co-Editor for Vol. II. The Editor herself wished to resign when the publication of Vol. III is completed.

(8) *Commission on Crystallographic Apparatus*

The Chairman of the Commission, W. PARRISH, reported on the various projects on which the Commission had agreed for the three-year period 1960-1963. It was decided that a third edition of the *Index of Crystallographic Supplies* be published, and comments from the National Committees concerning the second edition would be welcomed. The second project would be the testing of commercially available X-ray films, to be undertaken in the laboratory of R. Uyeda. The question of radiation protection would be the subject of a third project. The Commission should further collaborate with the Editor of *Acta Crystallographica* in the selection of review articles on apparatus and techniques. Without making a decision, the question of automatic instrumentation and non-diffraction crystallographic apparatus had been considered. Another possible project discussed was an experimental comparison of methods for intensity measurements; the Commission had felt however that this project was too difficult to formulate yet, and action on it was postponed.

(9) *Commission on Crystallographic Data*

E. A. WOOD, member of the Commission, reported that the Commission had met with the Joint Committee on Chemical Analysis by Powder Diffraction Methods, which is composed of representatives of the A.S.T.M., the A.C.A. and The [British] Institute of Physics. The possibility of obtaining more data for the card file on crystallographic data had been discussed. To encourage projects to accumulate more diffraction data in some systematic way, it had been proposed to spend some of the money received from the sale of copies of the card file. Members of the Commission had assisted in the preparation of a second edition of the book *Crystal Data* which was expected to appear by the end of 1961. During the Congress an Open Meeting of the Commission had been arranged, at which fourteen papers were presented in two sessions.

(10) *Commission on Crystallographic Nomenclature*

DAME KATHLEEN LONSDALE, member of the Commission, reported that the Commission had been quiescent since the Fourth General Assembly, and that no meeting had been held. Contrary to a suggestion of one of the delegates, the Assembly agreed that the Commission should not be abolished, because it was still considered a useful body to which proposals and questions on nomenclature could be referred. It was, however, decided that the Commission should no longer have elected members; instead it should consist of the Editors of *Acta Crystallographica*, *Structure Reports* and *International Tables ex officio*, with the Editor of the first as Chairman.

(11) *Commission on Crystallographic Teaching*

The Chairman of the Commission, A. MAGNÉLI, reported that a pamphlet containing most of the papers of the 1956 meeting in Madrid had appeared; it had been prepared by J. L. Amorós and N. F. M. Henry, and was on sale during the Congress. In collaboration with the Commission on Crystallographic Data a Book Exhibition had been arranged for the Congress; arising from this it was planned to compile a classified bibliography of crystallographic books. Information on visual aids to teaching, notably films, had been collected and could be made available on request. A tentative scheme had been started by which syllabuses of existing teaching courses were filed with the Commission and sent out on request to anyone interested. At its meeting in Cambridge the Commission had discussed general aspects of its future work along these and other lines. Consideration was also given to the question of the size of the Commission. At the Assembly there was a lengthy discussion on the question whether the Commission should be small, and work with a large consultative panel, or whether all countries adhering to the Union should be represented by members on the Commission. It was finally decided that the Assembly should elect thirteen persons to the Commission.

(12) *Commission on Electron Diffraction*

The Chairman of the Commission, L. O. BROCKWAY, reported that the principal activities of the Commission had had to do with the Symposium held in Leningrad in 1959, and with a second Symposium which was expected to be held in 1961. At its meetings in Cambridge, the Commission had further considered the various activities already set out in the report circulated.

(13) *Commission on Crystallographic Computing*

Following the recommendations received from the *ad-hoc* Committee on Computing Methods, it was decided to set up a Commission on Crystallographic Computing with the following terms of reference:

(a) the Commission shall promote the collection and dissemination on an international scale of information relating to crystallographic computing, with special reference to general-purpose digital computers;

(b) the Commission may undertake any activity related to crystallographic computation;

(c) the Commission shall have power to appoint: (i) Consultants to assist and advice in all matters relating to specific machines, and (ii) Regional Correspondents to

assist in the collection and distribution of information on a geographical basis.

(14) *Representation on Other Bodies*

The reports of the representatives of the Union on other bodies, *viz.* the Commission on Macromolecules of the International Union of Pure and Applied Chemistry, the Commission on Solid-State Physics of the International Union of Pure and Applied Physics, and the ICSU Abstracting Board, were taken as read. In view of the fact that the Union's representatives on the IUPAP Commission on Solid-State Physics had been unaware of any activities of this Commission since 1957, in which year the structure and entire character of the Commission were changed without any prior or later notification to the Union's representatives, the proposal was made that the Union should withdraw from this Commission and set up its own Commission on Solid-State Physics. After some discussion, it was agreed that the Assembly should not reappoint representatives on the IUPAP Commission, leaving it to the Executive Committee to do so during the period until the Sixth General Assembly if it should appear desirable.

(15) *Size of the Commissions*

It was agreed that before the elections the size of each Commission should be determined for the period until the Sixth General Assembly, with the proviso that, if necessary during this period, co-option of one or more members would be possible in accordance with Statute 7.2. The numbers of persons to be elected by the Assembly on the individual Commissions were then determined.

(16) *World Directory of Crystallographers*

A second edition of the *World Directory of Crystallographers*, containing biographical information concerning 3557 crystallographers and other scientists from 54 countries, had been compiled by D. W. Smits; Sub-Editors in the individual countries had helped him in collecting the biographical information. The Directory had appeared just in time before the opening of the Cambridge meetings. Its cost of production was expected to be fully recovered from the sale of copies which had already been ordered in advance at the reduced price for block orders. The Editor of the second edition expressed his thanks to all those who had collaborated in the project, and in particular to his team of Sub-Editors. He further reported that the Executive Committee had already discussed the probable arrangements for a third edition to appear in 1963. Such action was approved by the Assembly, and the Editor was thanked for his work by acclamation.

(17) *Finances*

(a) The financial report based on the audited accounts for the years 1957, 1958 and 1959 was taken as read, and accepted without discussion. The General Secretary was thereafter discharged from liability to the Union.

(b) The budget estimates for general expenditure for the three-year period 1960-1963, showing an estimated deficit of *f.* 14,560, were approved.

(c) The accumulated balance in the General Fund was considered sufficiently high to allow a deficit during the above-mentioned period. It was therefore decided not to

increase the unit contribution, and to leave it at sixty U.S.A. dollars for each of the years 1961, 1962 and 1963.

(18) *Future meetings*

The following invitations for meetings during the three-year period 1960–1963 had been received, and they were accepted with gratitude.

(a) An invitation from the Science Council of Japan to join in sponsorship of an International Symposium on Electron and Neutron Diffraction, to be held in Kyoto, Japan, 25–30 September 1961. The Commission on Electron Diffraction would collaborate in the organization of this Symposium, which would run parallel with a Conference on Magnetism and form with it an International Conference on Magnetism and Crystallography.

(b) An invitation of the Bayerische Akademie der Wissenschaften and the University of Munich to join in the organization of a Symposium, to be held in Munich, 24–27 July 1962, in commemoration of the 50th anniversary of the discovery of X-ray diffraction and of crystal-structure analysis.

(c) An invitation of the Consiglio Nazionale delle Ricerche to hold the Sixth General Assembly and International Congress in Rome, Italy, in 1963. After the Chairman of the Italian delegation, E. ONORATO, had explained that the meetings could be held either around Easter or in September, some discussion was devoted to the question of the most convenient time. It was agreed that early September would be the best choice.

(19) *Appointment of Editors*

The following appointments by the Executive Committee of Editors of the Union's three main publications, for the period until the Sixth General Assembly, were confirmed:

Acta Crystallographica: A. J. C. WILSON
Structure Reports: W. B. PEARSON
International Tables: DAME KATHLEEN LONSDALE

It was later reported that the Executive Committee had approved the appointments by the above Editors of the Co-Editors whose names are listed in the next section.

(20) *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. In considering the list, the following points should be kept in mind: (i) one Vice-President and three ordinary members of the new Executive Committee were elected by the Fourth General Assembly to serve until the close of the Sixth General Assembly in 1963; (ii) at the Fourth General Assembly it was agreed that no new members should be appointed on the *Acta Crystallographica* Advisory Board, and that the members of this Board should be considered as having been appointed until their service terminates by resignation or death; (iii) according to Statute 6.3 the Editors and Co-Editors are automatically members of the Commissions set up for their respective publications; (iv) the Fifth General Assembly resolved that the Commission on Crystallographic Nomenclature should consist of the Editors of *Acta Crystallographica*, *Structure Reports* and *International*

Tables ex officio, with the Editor of the first as Chairman; and (v) according to By-Laws 3.1 and 4.1, the President and the General Secretary are *ex officio* members of all Commissions.

Executive Committee

President:

P. P. EWALD*, 19 Fordyce Road, New Milford, Conn., U.S.A.

Vice-Presidents:

N. V. BELOV* (U.S.S.R.)
 DAME KATHLEEN LONSDALE† (U.K.)

General Secretary:

D. W. SMITS,* Mathematisch Instituut, University of Groningen, Reithdiepskade 4, Groningen, Netherlands

Retiring President:

J. WYART* (France)

Ordinary Members:

W. H. BARNES† (Canada)
 O. C. A. BASTIANSEN* (Norway)
 F. H. LAVES* (Switzerland)
 I. NITTA* (Japan)
 B. E. WARREN† (U.S.A.)
 G. S. ZHDANOV† (U.S.S.R.)

Acta Crystallographica Advisory Board

SIR LAWRENCE BRAGG (U.K.)
 L. PAULING (U.S.A.)
 R. W. G. WYCKOFF (U.S.A.)

Commission on Acta Crystallographica

Editor and Chairman:

A. J. C. WILSON, Department of Physics, University College, Cathays Park, Cardiff, Wales

Co-Editors:

R. W. ASMUSSEN (Denmark)
 I. FANKUCHEN (U.S.A.)
 E. W. HUGHES (U.S.A.)
 H. JAGODZINSKI (Germany)
 H. LIPSON (U.K.)
 I. NITTA (Japan)
 J. WYART (France)

Commission on Structure Reports

Editor and Chairman:

W. B. PEARSON, Division of Pure Physics, National Research Council, Ottawa 2, Ontario, Canada

Co-Editors:

J. M. BIJVOET (Netherlands)
 J. W. CHRISTIAN (U.K.)
 J. DONOHUE (U.S.A.)

* Until the close of the Sixth General Assembly (1963).

† Until the close of the Seventh General Assembly (1966).

J. D. DUNITZ* (Switzerland)
 A. J. FRUEH (Canada)
 J. M. ROBERTSON (U.K.)
 J. WYART (France)

Elected Members:

G. B. BOKIJ (U.S.S.R.)
 T. WATANABÉ (Japan)

Ex-officio Member:

J. D. BERNAL (U.K.) (as Chairman of the Commission on Crystallographic Data)

*Commission on International Tables**Editor and Chairman:*

DAME KATHLEEN LONSDALE, Chemistry Department, University College, Gower Street, London W.C. 1, England

Co-Editors:

M. J. BUERGER (U.S.A.)
 N. F. M. HENRY (U.K.)
 C. H. MACGILLAVRY (Netherlands)
 G. D. RIECK (Netherlands)

*Commission on Crystallographic Apparatus**Chairman:*

W. PARRISH, Philips Laboratories, Irvington-on-Hudson, N.Y., U.S.A.

Elected Members:

A. McL. MATHIESON (Australia)
 R. PEPINSKY (U.S.A.)
 A. J. ROSE (France)
 E. G. STEWARD (U.K.)
 M. M. UMANSKIJ (U.S.S.R.)
 R. UYEDA (Japan)

*Commission on Crystallographic Data**Chairman:*

J. D. BERNAL, Department of Physics, Birkbeck College, Malet Street, London W.C. 1, England

Secretary:

O. KENNARD, † National Institute for Medical Research, The Ridgeway, Mill Hill, London N.W. 7, England

Elected Members:

J. D. H. DONNAY (U.S.A.)
 W. KLEBER (Germany)
 W. NOWACKI (Switzerland)
 R. PEPINSKY (U.S.A.)
 B. POST (U.S.A.)
 H. P. ROOKSBY (U.K.)
 R. SADANAGA (Japan)
 N. L. SMIRNOVA (U.S.S.R.)
 J. V. SMITH (U.S.A.)
 A. VACIAGO (Italy)
 P. M. DE WOLFF (Netherlands)
 J. WYART (France)

Ex-officio Member:

W. B. PEARSON (Canada) (as Chairman of the Commission on *Structure Reports*)

*Commission on Crystallographic Nomenclature**Chairman:*

A. J. C. WILSON, Department of Physics, University College, Cathays Park, Cardiff, Wales

Other Members:

DAME KATHLEEN LONSDALE (U.K.)
 W. B. PEARSON (Canada)

*Commission on Crystallographic Teaching**Chairman:*

A. J. FRUEH, Department of Geological Sciences, McGill University, Montreal, Quebec, Canada

Secretary:

H. CURIEN, † Laboratoire de Minéralogie-Cristallographie, 1 Rue Victor Cousin, Paris 5, France

Elected Members:

E. ALEXANDER (Israel)
 J. L. AMORÓS (Spain)
 I. FANKUCHEN (U.S.A.)
 T. FUJIWARA (Japan)
 S. FURBERG (Norway)
 F. HANIC (Czechoslovakia)
 N. JOEL (Chile)
 F. MAZZI (Italy)
 H. D. MEGAW (U.K.)
 I. I. SHAFRANOVSKIJ (U.S.S.R.)
 J. ZEMANN (Germany)

*Commission on Electron Diffraction**Chairman:*

L. O. BROCKWAY, Chemistry Department, University of Michigan, Ann Arbor, Mich., U.S.A.

Elected Members:

O. C. A. BASTIENSEN (Norway)
 M. BLACKMAN (U.K.)
 J. M. COWLEY (Australia)
 S. MIYAKE (Japan)
 Z. G. PINSKER (U.S.S.R.)
 H. A. RAETHER (Germany)
 J. J. TRILLAT (France)

*Commission on Crystallographic Computing**Chairman:*

G. A. JEFFREY, Chemistry Department, University of Pittsburgh, Pittsburgh 13, Pa., U.S.A.

Elected Members:

T. HAHN (Germany)
 M. A. PORAJ-KOSHITS (U.S.S.R.)
 D. ROGERS (U.K.)
 D. P. SHOEMAKER (U.S.A.)

* Appointed after the close of the General Assembly.

† Elected as member of the Commission by the General Assembly, and appointed as Secretary by the Commission.

*Commission on Macromolecules of the International
Union of Pure and Applied Chemistry*

Representative:

C. W. BUNN, I.C.I. Ltd, Plastics Division, Black
Fan Road, Welwyn Garden City, Herts., Eng-
land

*Abstracting Board of the International Council of
Scientific Unions*

Observers:

W. B. PEARSON, Division of Pure Physics, National
Research Council, Ottawa 2, Ontario, Canada
A. J. C. WILSON, Department of Physics, Univer-
sity College, Cathays Park, Cardiff, Wales

(21) *Votes of thanks*

At the ceremonial closing session of the Assembly, the following votes of thanks were passed by acclamation:

(a) To UNESCO for financial support which had contributed greatly to the success of the meetings held in Leningrad and in Stockholm in 1959, and of the current meetings in Cambridge.

(b) To the Academy of Sciences of the U.S.S.R. for inviting the Union to participate in the Symposia held in Leningrad in May 1959, and for all arrangements made by the Academy on that occasion; to the organizers of these Symposia for their work in respect of the scientific programme as well as for the wonderful programme of social events; and to the Russian hosts for the many facilities which had made the stay in Leningrad so pleasant and interesting, and for all help and hospitality received.

(c) To Karolinska Institutet and to the Swedish hosts, in particular A. Engström, for the hospitality received in Stockholm in June 1959, and for their assistance in the organization of the three very successful Conferences held there by the Commission on Crystallographic Apparatus.

(d) To the Royal Society and the University of Cambridge for inviting the Fifth General Assembly and International Congress to Cambridge, and for their invaluable help in the organization of these meetings; to N. F. Mott for making available the facilities of the Cavendish Laboratory; to the Congress Executive consisting of W. H. Taylor (Chairman), E. G. Cox, D. M. Hodgkin, Dame Kathleen Lonsdale and A. J. C. Wilson (members), and to the Congress Finance Committee consisting of Sir Lawrence Bragg (Chairman), D. A. Oliver and H. P. Rooksby (members), for all the work that they had devoted to the organizing; to the fifty British organizations and institutions which had given generous financial support; and in particular to W. H. Taylor and his team of co-workers, R. C. Evans, P. Gay, N. F. M. Henry, (Mrs) M. A. Hirsch, Christine H. Kelsey and many others, for the superb organization of all arrangements for the meetings, which had almost double the attendance of the previous Assembly and Congress, and which had demanded so much effort and time in arranging the innumerable details which are necessary for the smooth operation of a Congress of this size.

(e) To the Programme Committee consisting of W. H. Taylor (Chairman), R. E. Rundle, E. H. Wiebenga and G. S. Zhdanov (members), to the organizers of the two Symposia, G. E. Bacon and P. B. Hirsch, and to all

others who had assisted in arranging the scientific programme of the Congress and Symposia, for their contribution to the organization of the Cambridge meetings.

(f) To the Executive Committee, in particular to the President, J. Wyart, to the Officers who were retiring, A. Guinier, C. H. MacGillavry, A. J. C. Wilson and R. W. G. Wyckoff, and to the General Secretary, D. W. Smits, for the work they had done for the Union during the period since the Fourth General Assembly.

Fifth International Congress

(1) *Scientific Programme*

The scientific programme of the Congress consisted of:

(a) A Congress Discourse on 'The growth in the power of X-ray analysis' given by SIR LAWRENCE BRAGG on 17 August.

(b) The following five General Lectures presented by invited speakers:

'The crystal chemistry of silicates, Chapter 2' by N. V. BELOV;

'Theory of metals', four statements given in succession by N. F. MOTT, J. C. SLATER, R. E. RUNDLE and D. P. SHOEMAKER [the latter two speakers substituted for L. PAULING whose original paper is included in the Abstracts];

'Magnetic alignment' by J. H. VAN VLECK;

'Structure of crystalline proteins' by M. F. PERUTZ; and

'Theory and practice of direct methods of structure analysis' by B. K. VAINSHTEIN and co-authors.

(c) More than 400 contributed papers arranged in nineteen groups of topics, and presented during the five days of the Congress at four to eight simultaneous morning and afternoon sessions. A novelty at the Congress was the use of a Rapporteur System in order to reduce the total number of sessions. Five topics had been selected for treatment under this system: (i) Minerals (including clay minerals); (ii) Metals and alloys; (iii) Inorganic structures; (iv) Organic structures; and (v) Proteins and related compounds. All papers offered in these groups, together amounting to nearly 200, were included in critical reviews of groups of related papers, which were given by eighteen invited Rapporteurs. At the session concerned the authors of the papers included in the review of the Rapporteur had to be present to take part in the discussion which followed.

Diverging opinions about the value and usefulness of the Rapporteur system were expressed during the Congress, varying from strongly in favour to very much opposed. As was to be expected, some authors would have preferred to read their own papers, and some Rapporteurs succeeded better with their reviews than others. The condensation achieved with related papers, and the time for discussion gained thereby, were, however, considered features encouraging a further try-out of the Rapporteur System.

Abstracts of the papers presented at the Congress, including those included in the Rapporteurs' reviews and those which were read in title only, had been distributed in advance, and they are reprinted elsewhere in this issue.

(2) *Exhibitions*

(a) An exhibition of commercial apparatus had been organized by E. J. W. Whittaker and the Equipment