

International Union of Crystallography

Fourth General Assembly and International Congress

By kind invitation of the National Research Council of Canada, the Fourth General Assembly and International Congress of the Union was held in Montreal in the buildings of McGill University from 10 to 17 July 1957. The Congress was followed by two Symposia held on 18 and 19 July, and by two excursions of mineralogical interest during the period 18 to 26 July.

The Congress was attended by about 600 active and 140 accompanying members from the following twenty-one countries: Australia, Austria, Belgium, Canada, Cuba, Denmark, France, Germany, Ghana, Israel, Italy, Japan, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, Union of Soviet Socialist Republics, United Kingdom, and United States of America.

The Congress was formally opened on 10 July. The President of the National Research Council, E. W. R. STEACIE, speaking on behalf of the Government of Canada and of the National Research Council, welcomed the members of the Congress to Canada. His speech was followed by short addresses of welcome on behalf of McGill University by F. CYRIL JAMES, Principal and Vice-Chancellor, and on behalf of the University of Montreal by G. DENIGER, Vice-Rector, representing the Rector who was unable to attend. After reading a special message from M. VON LAUE, Honorary President of the Union, the President of the Union, R. W. G. WYCKOFF, who presided at the Opening Ceremony, gave a short address and declared the meetings open.

Fourth General Assembly

At the General Assembly seventeen Adhering Bodies were represented by delegates. Detailed minutes of the meetings, which were held on 10 and 17 July, will be sent to the Secretaries of the National Committees. The following is a summary of the business transacted.

(1) *Minutes of the Third General Assembly*

The minutes of the meetings of the Third General Assembly held in Paris, France, on 21 and 28 July 1954 were approved.

(2) *Revision of Statutes and By-Laws*

At the Third General Assembly it was decided that the Executive Committee should undertake a complete review of the Statutes and By-Laws, and that their proposals be brought before the Fourth General Assembly. Following these decisions the Executive Committee appointed a Sub-Committee under the chairmanship of A. L. Patterson, with L. O. Brockway, G. Hägg and A. J. C. Wilson as ordinary members, and the President and the General Secretary of the Union as *ex-officio* members. This Sub-Committee prepared and discussed successive drafts of revised Statutes and By-Laws, taking into consideration the comments received from National Committees, to which two drafts were circulated. The final proposals of the Sub-Committee were presented by

the Executive Committee to the Fourth General Assembly, which devoted its morning and afternoon sessions on 10 July fully to this item of the Agenda. A number of amendments, most of which were of a verbal character only, were made in the draft, after which the new rules were adopted and came into force for the subsequent proceedings of the Assembly. A vote of thanks to the Sub-Committee for its work was passed. The new Statutes and By-Laws are printed elsewhere in this issue, with the exception of the *interim* clauses which were to be deleted at the close of the Assembly at which the new rules were adopted.

(3) *Adhering Bodies*

(a) It was reported that notice was received from Czechoslovakia, which adhered to the Union through its National Research Council, that the Československá Akademie Věd should act as Adhering Body as from the end of 1956.

(b) The application for adherence to the Union received from the Deutsche Akademie der Wissenschaften zu Berlin on behalf of crystallographers in the German Democratic Republic was discussed by the Assembly in closed session. It was decided to request the German crystallographers to find a means whereby adequate representation of crystallography in Germany be achieved through a single Adhering Body, and action on the application was deferred. At its final session the Assembly was informed that the two German delegations present in Montreal had agreed to put a proposal for a single Adhering Body before the Deutsche Mineralogische Gesellschaft (the Adhering Body to the Union on behalf of the German Federal Republic) and the Deutsche Akademie der Wissenschaften zu Berlin, and that the application for adherence of this latter body should be suspended.

(4) *Report of Executive Committee*

The report of the Executive Committee on the activities of the Union since the Third General Assembly was presented by the General Secretary, D. W. SMITS, and approved by the Assembly.

(5) *Commission on Acta Crystallographica*

The report of the Commission was presented by the Editor of the journal, P. P. EWALD, and was approved by the Assembly. He reported that the appointment of the additional Co-Editors E. W. Hughes and H. Lipson as from the beginning of 1956 had been the most important change since 1954, and that this appointment had alleviated the task of the former five Editors. The second innovation during the period under review was the acceptance of advertisements as from Vol. 8 (1955). The Editor further reported that the size of the journal, which was kept constant during the years 1953 to 1955 inclusive, had been increased as from Vol. 9 (1956). This increase

in size was financially allowed by the steady increase in the number of subscribers to the journal.

At the final session of the Assembly P. P. EWALD reported that the Editors of the journal had had several meetings during the Congress, and that, considering the steadily increasing number of subscribers and the continuing sales of backnumbers, the Executive Committee had approved that the printing order be increased from 2000 to 3000 copies.

(6) *Commission on Structure Reports*

The report of the Commission was presented by the Editor of *Structure Reports*, A. J. C. WILSON, and was approved by the Assembly. He reported that since 1954 three volumes of *Structure Reports* had appeared, covering six years, namely Vol. 13 (for 1950), Vol. 9 (for 1942-4) and Vol. 8 (for 1940-1). However, five of these years were lean years, and the Editor stated that the Commission did not feel entirely satisfied with the rate at which the volumes were appearing. It had been hoped that Vol. 15 (for 1951) would have been ready to be shown at the Congress, but this had unfortunately not been possible. During the period under review J. Wyart succeeded J. M. Bijvoet as Editor of the Inorganic Section. It was reported with regret that N. C. Baenziger had announced his wish to resign as Editor of the Metals Section.

At the final session of the Assembly the Editor reported that the Commission had met twice during the Congress. Among the problems discussed were the replacement of the Editor of the Metals Section, and of the full-time Assistant Editor who had tendered his resignation in order to take up a teaching appointment. The Editor stated that the Commission had found W. B. Pearson willing to succeed N. C. Baenziger as Editor of the Metals Section. He further reported that methods of reducing the delay in preparation and publication had also been discussed by the Commission, and that the most promising method seemed to be the appointment of two teams of Editors, working simultaneously on different years. He was pleased to report the willingness of the former Editor of the Inorganic Section, J. M. Bijvoet, to prepare this section again for Vol. 18 (for 1954) and Vol. 19 (for 1955). [J. Donohue has since agreed to edit the Organic Section of these volumes.]

(7) *Commission on International Tables*

The report of the Commission was presented by the Editor, DAME KATHLEEN LONSDALE, and was approved by the Assembly. The Editor stated that part of Vol. II was in the page-proof stage. Unfortunately the collection of a number of sections of this volume had taken more time than was expected, but the Commission hoped that the volume would be completed by the end of 1957. It was further reported that work on Vol. III was proceeding quite well, and that probably much less delay would occur between Volumes II and III than between Volumes I and II.

At the final session of the Assembly the Editor reported that the Commission had met several times during the Congress in order to consider details of Vol. III. She further stated that the intended First Supplement to Vol. I, which is in active preparation, would consist mainly of the diagrams of cubic space groups, and would

also contain corrections to Vol. I. She invited crystallographers to communicate to her any such corrections as soon as possible.

(8) *Commission on Crystallographic Apparatus*

The report of the Commission was taken as read and approved without discussion. In the report the following activities of the Commission since the Third General Assembly were mentioned: the preparation and publication of an *Index of manufacturers of apparatus and materials used in crystallography*; an experimental comparison of the properties of some forty types of X-ray film; a recommendation on the standardization of goniometer heads; the publication of a survey article on fine-focus X-ray tubes.

At the final session of the Assembly the Chairman of the Commission, A. GUINIER, reported the preliminary results of the comparison of methods for the accurate determination of lattice parameters. In this project, which is carried out under the auspices of the Commission, some twelve laboratories from seven countries are participating. Unexpected discrepancies exceeding the experimental errors stated by the authors were found between the measurements by different laboratories. The project is continuing.

A report on 'X-ray protection' is being prepared for publication.

(9) *Commission on Crystallographic Data*

The report of the Commission was taken as read and approved without discussion. Although the actual work of collecting and editing crystallographic data had been carried out by various institutions and persons independent from the Commission, the latter had certainly stimulated some of these contributions to data compilations. The Commission had arranged for an open meeting during the Congress, at which some fundamental aspects of measuring and presenting X-ray powder data were discussed in a series of papers.

At the final session of the Assembly the Chairman of the Commission, P. M. DE WOLFF, reported that in addition to its open meeting the Commission had met once during the Congress. He stated that the question had been discussed whether the members of the Commission, who are collecting single-crystal data with a view to publishing a second edition of J. D. H. Donnay's *Crystal Data*, could be brought together in a small group so as to facilitate their work. This discussion had led to the recommendation that the Commission should form two sections, one for single-crystal data and one for powder data, each section with its own chairman; both chairmen should, however, remain responsible to the general chairman of the Commission.

(10) *Commission on Crystallographic Nomenclature*

The report of the Commission was taken as read and approved without discussion.

At the final session of the Assembly the Chairman of the Commission, W. L. BOND, proposed that the membership of the Commission be decreased because it was thought that a small group could be more active. On behalf of the Commission he further made the recommendation that the use of curly brackets around Hermann-

Mauguin symbols (preferably in standard form) be recognized as a means of denoting a point group or space group without implying an orientation of the symmetry elements, this being in agreement with the face versus form notation in crystal morphology. After discussion of this recommendation, a motion to accept was passed.

(11) *Commission on Crystallographic Teaching*

The report of the Commission was taken as read and approved without discussion. In the report the following activities of the Commission since its establishment at the Third General Assembly were summarized: the circulation all over the world of a questionnaire concerning the teaching of crystallography; the organization of a series of open meetings on topics concerned with teaching, held in Madrid in conjunction with the Symposium held there by the Union in 1956; and the preparation for the publication of the papers presented at these meetings.

As in 1956, the Commission had arranged for a small exhibition of apparatus, photographs, films and charts at the Montreal Congress, as well as for an open meeting at which a series of papers were presented.

At the final session of the Assembly G. DONNAY, substituting for the Chairman of the Commission, reported that the Commission had met twice during the Congress to discuss its work. Among the business transacted at these meetings were the discussion of Rules of Procedure, and the decision that the Commission should have the power to appoint Consultants to co-operate in the work of the Commission.

(12) *Commission on Electron Diffraction*

In support of a proposal by a group of electron-diffraction workers present at the Congress, it was decided to establish a Commission on Electron Diffraction with the following terms of reference:

- (a) to assist the Programme Committee in organizing electron-diffraction sessions at congresses and conferences of the Union;
- (b) to recommend special conferences and meetings on electron diffraction;
- (c) to promote scientific exchange between countries in the field of electron diffraction;
- (d) to provide a source of expert assistance to the other Commissions of the Union on matters dealing with electron diffraction;
- (e) to co-operate with other international bodies interested in the various aspects of electron diffraction.

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

The report of the Representative of the Union on this Commission, C. W. BUNN, was taken as read.

(14) *Commission on Solid-State Physics of the International Union of Pure and Applied Physics*

P. P. EWALD, one of the three Representatives of the Union on this Commission, reported about the successful 'Conference on current problems in crystal physics' which was convened by the Commission and held at the Massachusetts Institute of Technology from 1 to 5 July 1957.

A large number of crystallographers present in Montreal had been able to attend the Conference. The papers presented there will probably be published in a special issue of *Reviews of Modern Physics*.

(15) *ICSU Abstracting Board*

The Observer for the Union on the ICSU Abstracting Board, A. J. C. WILSON, reported that since 1954 the activities of the Board had been extended to chemistry, and that provisions had been made for further extending its work to biological sciences. An extension to the field of mineralogy was discussed at the General Assembly of the Board in Chamonix in 1956.

(16) *Extension of the publishing programme of the Union*

(a) The Executive Committee had discussed in detail a proposal that the Union should extend its publishing programme with reports on apparatus and techniques. It asked on *ad-hoc* Committee, consisting of A. Guinier, H. S. Peiser, H. P. Rooksby and A. J. C. Wilson, to consider the matter further and to report to the Assembly. W. Parrish was present at most of the discussions of the *ad-hoc* Committee. The report of the *ad-hoc* Committee was presented by A. J. C. WILSON. After discussing the proposals the Assembly authorized the *ad-hoc* Committee to continue its consideration of the feasibility of the proposed new project; it was understood that the new Chairman of the Commission on Crystallographic Apparatus should be co-opted on the Committee. The Assembly further decided that if the *ad-hoc* Committee and the Executive Committee find the project feasible, work could begin without waiting for authorization by the Fifth General Assembly. The Executive Committee was authorized to decide how the responsibility for the new publication should be shared by the bodies of the Union.

(b) At the proposal of the Editor of *International Tables*, DAME KATHLEEN LONSDALE, the Executive Committee was authorized to consider whether it is in the interests of crystallographers for the Union to have a share in the publication of L. E. Sutton's proposed compilation of interatomic distances, and in the preparation and publication of future supplements to this work, and to take action accordingly.

(17) *World Directory of Crystallographers*

A *World Directory of Crystallographers*, containing biographical information for 2260 crystallographers from 54 countries, had been compiled by W. Parrish and appeared just before the Montreal Congress. The author had offered that the Union should take over the publication, and that new editions appear every three years to coincide with Congresses. After passing a vote of thanks to the author for his work, the Assembly decided that he be requested to provide at a time suitable to him more information concerning the sales and the probable cost of publication of a second edition before action be taken by the Executive Committee.

(18) *Celebration of the 50th Anniversary of the Discovery of X-ray Diffraction*

It was decided that P. P. Ewald be authorized to take preliminary steps with regard to the organization of the

celebration in 1962 of the 50th anniversary of the discovery of the diffraction of X-rays by crystals.

(19) *Ad-hoc Committee on Computing Methods*

The Executive Committee reported that it had been asked to consider whether useful action could, and should, be taken to give crystallographers at regular intervals detailed information about electronic calculating machines. It further reported that it had decided to appoint an *ad-hoc* Committee for advice as to whether or not action is desirable at this time, and if so, what that action should be.

(20) *Financial Report*

The financial report based on the audited accounts for the years 1954 to 1956 inclusive was taken as read, and approved without discussion. The General Secretary was thereafter discharged from liability to the Union.

(21) *Budget Estimates for the Period to the Fifth General Assembly*

The budget estimates for the three-year period 1957-9 were presented by the General Secretary, D. W. SMITS. He stated that because of various uncertainties with respect to the Union's activities during this period, the figures given, in particular those for the years 1958 and 1959, should be considered with due reserve. After some discussion of the budget, a motion was passed that it be adopted as a tentative one.

(22) *Unit Contribution*

According to a recommendation of the Executive Committee, it was decided that the unit contribution for the years 1958, 1959 and 1960 be set at sixty U.S.A. dollars.

(23) *Symposium in 1959*

Recognizing the great success of the intermediate Symposium held in Madrid in 1956, it was decided that an intermediate Symposium be held again in 1959, provided that an invitation be received and suitable subjects be suggested.

(24) *Fifth General Assembly and International Congress*

The joint invitation of the Royal Society and the University of Cambridge that the Fifth General Assembly and International Congress be held in Cambridge, England, in 1960, was accepted with gratitude. In view of the trans-Atlantic transportation and summer holidays, preference was given to the period 15-23 August.

(25) *Appointment of Editors*

The following re-appointments by the Executive Committee of Editors of the Union's publications for the period to the Fifth General Assembly were confirmed:

Acta Crystallographica: P. P. EWALD
Structure Reports: A. J. C. WILSON
International Tables: K. LONSDALE

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

(26) *Elections*

Officers of the Union, Chairmen and members of Commissions, and Representatives of the Union on other bodies, were elected. The new membership of the Committees, 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 at the Third General Assembly to serve until the close of the Fifth General Assembly in 1960; (b) according to statements given during the discussion by the General Assembly of the draft of new Statutes and By-Laws, the members of the *Acta Crystallographica* Advisory Board are considered as having been appointed until their service terminates by resignation or death; and (c) according to the new Statute 6.3 the Editors and Co-Editors are automatically members of the Commissions set up for their respective publications.

Executive Committee

President: J. WYART (France)*
Vice-Presidents: N. V. BELOV (U.S.S.R.)†
 P. P. EWALD (U.S.A.)*
General Secretary: D. W. SMITS,* Laboratory of Inorganic and Physical Chemistry, Bloemsingel 10, Groningen, Netherlands
Retiring President: R. W. G. WYCKOFF*
Ordinary Members: O. C. A. BASTIANSEN (Norway)†
 A. GUINIER (France)*
 F. H. LAVES (Switzerland)†
 C. H. MACGILLAVRY (Netherlands)*
 I. NITTA (Japan)†
 A. J. C. WILSON (U.K.)*

Acta Crystallographica Advisory Board

SIR LAWRENCE BRAGG (U.K.)
 M. VON LAUE (Germany)
 C. MAUGUIN (France)
 L. PAULING (U.S.A.)
 R. W. G. WYCKOFF (U.S.A.)

Commission on Acta Crystallographica

Editor and Chairman: P. P. EWALD, Polytechnic Institute of Brooklyn, 99 Livingston Street, Brooklyn 1, N.Y., U.S.A.
Co-Editors: R. C. EVANS (U.K.)
 I. FANKUCHEN (U.S.A.)
 E. W. HUGHES (U.S.A.)
 H. LIPSON (U.K.)
 I. NITTA (Japan)
 J. WYART (France)

Commission on Structure Reports

Editor and Chairman: A. J. C. WILSON, Physics Department, University College, Cathays Park, Cardiff, Wales
Co-Editors: N. C. BAENZIGER (U.S.A.)
 J. M. ROBERTSON (U.K.)
 J. WYART (France)

* Until the close of the Fifth General Assembly (1960).

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

Other Members: J. D. BERNAL (U.K.) (as Chairman of the Commission on Crystallographic Data)
J. M. BIJVOET (Netherlands)
G. B. BOKIJ (U.S.S.R.)
V. LUZZATI (France)
I. NITTA (Japan)

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.

Other Members: U. W. ARNDT (U.K.)
R. PEPINSKY (U.S.A.)
A. J. ROSE (France)
E. G. STEWARD (U.K.)
M. M. UMANSKIJ (U.S.S.R.)
R. UYEDA (Japan)
E. R. WÖLFEL (Germany)

Commission on Crystallographic Data

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

Other Members: G. B. BOKIJ (U.S.S.R.)
E. G. COX (U.K.)
J. D. H. DONNAY (U.S.A.)
O. KENNARD (U.K.)
W. KLEBER (Germany)
F. W. MATTHEWS (Canada)
W. NOWACKI (Switzerland)
B. POST (U.S.A.)
H. P. ROOKSBY (U.K.)
R. SADANAGA (Japan)
E. TAVORÁ (Brazil)
A. J. C. WILSON (U.K.) (as Chairman of the Commission on *Structure Reports*)
P. M. DE WOLFF (Netherlands)
E. A. WOOD (U.S.A.)

Commission on Crystallographic Nomenclature

Chairman: W. L. BOND, Bell Telephone Laboratories, Murray Hill, N. J., U.S.A.

Other Members: H. A. L. BRASSEUR (Belgium)
J. D. H. DONNAY (U.S.A.)
DAME KATHLEEN LONSDALE (U.K.)

Commission on Crystallographic Teaching

Chairman: A. MAGNÉLI, Institute of Inorganic and Physical Chemistry, Kungstengatan 45, Stockholm, Sweden

Secretary: H. D. MEGAW, Crystallographic Laboratory, Cavendish Laboratory, Cambridge, England

Other Members: J. L. AMORÓS (Spain)
N. V. BELOV (U.S.S.R.)
C. J. B. CLEWS (Australia)
K. DORNBERGER-SCHIFF (Germany)
I. FANKUCHEN (U.S.A.)
R. B. FERGUSON (Canada)
M. FORNASERI (Italy)
A. J. FRUEH (U.S.A.)
S. FURBERG (Norway)
R. HOCART (France)
G. A. HOMÈS (Belgium)
N. JOEL (Chile)
A. L. MACKAY (U.K.)
W. NOWACKI (Switzerland)
W. G. PERDOK (Netherlands)
T. WATANABÉ (Japan)
A. F. WELLS (U.K.)*
H. G. F. WINKLER (Germany)
G. S. ZHDANOV (U.S.S.R.)

Commission on Electron Diffraction

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

Other Members: O. C. A. BASTIANSEN (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 Macromolecules of the International Union of Pure and Applied Chemistry

Representative: C. W. BUNN, I.C.I. (Plastics) Ltd, Black Fan Road, Welwyn Garden City, Herts., England

Commission on Solid-State Physics of the International Union of Pure and Applied Physics

Chief Representative: P. P. EWALD, Polytechnic Institute of Brooklyn, 99 Livingston Street, Brooklyn 1, N.Y., U.S.A.

Other Representatives: H. CURIEN (France)
P. B. HIRSCH (U.K.)

Abstracting Board of the International Council of Scientific Unions

Observer: A. J. C. WILSON, Physics Department, University College, Cathays Park, Wales

(27) *Votes of thanks*

At the conclusion of the Assembly the following votes of thanks were passed:

(a) To UNESCO for their financial support which had

* Co-opted after the close of the General Assembly.

made possible the very successful Symposia in Madrid in 1956 and in Montreal in 1957.

(b) To the Consejo Superior de Investigaciones Científicas, Spain, for inviting the 1956 Symposium to Madrid and for providing the place for it; to the Spanish Local Committee under the chairmanship of A. Durán, and to the many other Spanish persons who assisted, for the work done by them in organizing the meetings and for providing a most pleasing and most interesting programme of social events; and to the Programme Committee under the chairmanship of A. Guinier for arranging the scientific programme of the Madrid Symposium.

(c) To the Canadian crystallographers, in particular to the Local Committee consisting of W. H. Barnes (Chairman), and L. G. Berry, R. L. Cunningham and F. W. Matthews (members), for the hospitality which Canada had extended to the members of the Fourth International Congress, and for their great efforts to make the Congress such a success; they were asked to convey the thanks of the Union to the National Research Council for inviting the Fourth General Assembly and International Congress to Canada, to McGill University for providing the place for these meetings, and to these institutions as well as to the University of Montreal, the Province of Quebec and the City of Montreal for their generous hospitality.

(d) To the Programme Committee consisting of W. N. Lipscomb (Chairman), and L. G. Berry, C. H. MacGillavry, W. H. Taylor and G. S. Zhdanov (members), and to the organizers for the two Symposia, G. A. Jeffrey and J. M. Cowley, for their work in arranging the scientific programme of the Congress and Symposia.

(e) To the U.S.A. National Committee for Crystallography for their assistance which made it possible for a number of scientists from various countries to come to Montreal and to attend the Congress and Symposia.

(f) To the retiring President, R. W. G. Wyckoff, the retiring Vice-President, G. Hägg, and the retiring ordinary members of the Executive Committee, J. D. Bernal and A. Tovborg Jensen, for their services to the Union during their period of office; and to the General Secretary, D. W. Smits, for his work for the Union since 1954.

Fourth International Congress

(1) *Scientific Programme*

The scientific programme of the Congress consisted of:

(a) A special evening lecture on 'Electron microscope studies of macromolecules' presented by the President of the Union, R. W. G. WYCKOFF, at the University of Montreal on 12 July. An introductory speech was first given by J. WYART. Prior to the lecture tours were arranged through laboratories of the University of Montreal.

(b) The following five invited general lectures presented as first topics on the successive days of the Congress:

D. G. JENKIN, J. S. TAYLOR & L. E. SUTTON. Some remarks about our present knowledge of interatomic distances and molecular configurations.

P. B. HIRSCH. Imperfect structures.

G. S. ZHDANOV. Crystal chemistry.

G. W. BRINDLEY. Clay minerals.

D. HODGKIN. Towards the X-ray analysis of proteins.

(c) About 240 contributed papers read during the five

days of the Congress at either four or five simultaneous morning and afternoon sessions. Except for about four of these papers, the time allowed for each paper, including the discussion, did not exceed twenty minutes.

(d) Papers read at the open meetings which had been organized by the Commission on Crystallographic Data, by the Commission on Crystallographic Teaching, and by the Joint Committee on Chemical Analysis by Powder Diffraction Methods.

Abstracts of the papers presented at the Congress were distributed in advance, and they are reprinted elsewhere in this issue.

(2) *Exhibitions*

An exhibition of various non-commercial devices such as apparatus, gadgets, charts, new materials, methods, etc., was organized by the Commission on Crystallographic Apparatus, and the Commission on Crystallographic Teaching had arranged for a similar exhibition of teaching aids. In addition, a general exhibition of commercial apparatus and books of crystallographic interest was held throughout the Congress; sixteen firms, some representing several manufacturers, participated in this exhibition. The thanks of the Union are due to A. O. McIntosh for his work in organizing the various exhibitions.

(3) *Social arrangements*

(a) For the convenience of the members of the Congress the Local Committee had made various arrangements which provided great opportunities of making and renewing personal contacts, and in this way greatly contributed to the success of the Montreal Congress. So it had arranged that about 275 members, most of them from overseas, could stay in the Royal Victoria College, and the Union owes a deep debt of gratitude to the College and its staff for their work and the great hospitality received. The warm thanks of the Union are also due to the McGill University Faculty Club for making its facilities available to the members of the Congress.

(b) A programme of social events was organized for the members of the Congress. On 10 July a reception and garden party were given by the Principal of McGill University on the campus of the University. On 11 July Philips Industries Ltd arranged a cocktail reception in the Ritz-Carlton Hotel. On 12 July, after the special evening lecture, the University of Montreal offered the members of the Congress a *Vin d'Honneur*. On Saturday afternoon 13 July a sightseeing tour was held to a section of the St Lawrence Seaway Project. A cruise on a chartered steamer on the St Lawrence River to Sorel took place on Sunday 14 July; on the evening of the same day the Minister of Mines for the Province of Quebec, the Honourable W. M. Cottingham, offered on behalf of the Province a reception and buffet supper in the Windsor Hotel. On 15 July a reception and buffet supper were given on behalf of the City of Montreal by the Mayor of the City, Jean Drapeau, in the Montreal Royal Chalet on the Mount Royal; the reception was followed by a performance of Canadian folk songs and square dances, and by other entertainment.

(c) For the accompanying members a further programme of social events was arranged, and the warm thanks are due to the Ladies Committee under the chairmanship of Mrs W. R. Blackmore for their efforts in