

## International Union of Crystallography

### Report of Executive Committee for 1968

#### Meetings

During the period 24–28 June 1968, an international meeting on Accurate Determination of X-ray Intensities and Structure Factors was held in Churchill College, Cambridge, U.K., organized by the Commission on Crystallographic Apparatus of the Union. It was attended by 167 active participants from 19 countries, and included 39 lectures. Sir Lawrence Bragg gave an opening talk. Part 1 of *Acta Crystallographica* Volume A25 (1969) was devoted to the meeting's proceedings.

Immediately after the meeting, the Executive Committee held its statutory intermediate meeting in Churchill College, on 29 and 30 June. Much business was transacted, the most important items being: (1) the withdrawal of the Deutsche Vereinigung für Kristallographie (DVK) of the Deutsche Gesellschaft für Geologische Wissenschaften (German Democratic Republic, D.D.R.) from the Joint Adhering Body previously formed with the Sektion für Kristallkunde of the Deutsche Mineralogische Gesellschaft (Federal Republic of Germany, B.R.D.) during the Seventh General Assembly in Moscow, 1966; and the application of the DVK for separate membership of the Union; (2) the proposed amendments to the Union's Statutes and By-Laws; (3) the report and recommendations from the Advisory Panel on Future Meetings and Congresses; (4) the arrangements for the Eighth General Assembly and Congress in August 1969 in the U.S.A.; (5) the progress of the Union's journals after the expansion of *Acta Crystallographica* into two Sections (A and B) from January 1968 and the launching of the *Journal of Applied Crystallography* in April of that year; (6) the Pilot Edition for the new and extended edition of *International Tables*; (7) the establishment of an *ad-interim* Commission on Crystallographic Studies at Controlled Pressure and Temperature Conditions; (8) the appointment of a Union Executive Secretary; (9) the appointment of an assistant to the Technical Editor; (10) the progress of the preparations for a book containing (parts of) early papers on diffraction of X-rays by crystals; (11) the arrangements for the Ninth General Assembly and Congress in 1972; (12) a proposal to hold a crystallography meeting in Australia in 1974.

#### Amendments to the Statutes and By-Laws

After lengthy discussion of the suggestions put forward by the Sub-Committee on Statutes and By-Laws, set up by the Executive Committee and approved by the Seventh General Assembly (1966), a set of draft amendments was agreed (subject to further discussion by the Sub-Committee), to be circulated to the National Committees and the Union's Commissions for their consideration.

#### Future Meetings and Congresses

The Executive Committee accepted the recommendations of the Advisory Panel, one of which was that the triennial Congresses should be continued, with maximal scientific content. Following another recommendation, the Executive

Committee appointed a permanent Sub-Committee on the Union Calendar, with a member of the Executive Committee as Chairman, to be responsible for coordination and encouragement of Union-sponsored or co-sponsored meetings, and to aim at obtaining commitments for a calendar of meetings of appropriate size and good scientific continuity extending at least three years ahead. The meetings should be distributed as evenly as possible in time, participation and geography.

#### Substitutions and appointments

In 1968, the Executive Committee approved of the appointment of (1) R. D. Heidenreich and R. Uyeda as Co-editors of the *Journal of Applied Crystallography* by its Editor, Prof. A. Guinier [Prof. Guinier was appointed Editor in 1967, and had obtained Executive approval for the appointment of H. P. Rooksby, E. R. Wölfel, P. M. de Wolff and R. A. Young as Co-editors in that year]; (2) M. M. Woolfson as Book-Review Editor for *Acta Crystallographica A & B* and the *Journal of Applied Crystallography*; (3) W. C. Hamilton as Co-editor of *Acta Crystallographica A & B*; (4) A. W. Hanson as Co-editor of *Structure Reports* [the appointment of B. Beagley was approved in 1967]; [(5) in 1967 E. Hellner was appointed as Co-editor of *International Tables*].

At his request, the Executive Committee accepted the resignation of D. W. J. Cruickshank as Chairman of the Commission on Crystallographic Computing, and appointed F. R. Ahmed to serve in that capacity until the close of the Eighth General Assembly.

With the authorization of the Executive Committee, appointment committees appointed Mrs M. E. Douglas as Assistant to the Technical Editor in mid-1968, and in December of the year Dr J. N. King as Executive Secretary of the Union, the latter to take over the day-to-day administration from the General Secretary and the Treasurer, and to work under their supervision. Dr King was appointed on a temporary basis for a period up to the Eighth General Assembly; the Assembly would be asked to confirm the appointment of an Executive Secretary on a full-time salaried basis.

#### Publications

The first issues of 1968 of the expanded *Acta Crystallographica*, namely Part 1 of Volume A24 and Part 1 of Volume B24, were devoted to a 'Festschrift' in honour of Prof. P. P. Ewald on the occasion of his 80th birthday on 23 January. The success of both Sections became clear quite soon, and in particular the size of Section A (714 pages in Volume A24) constitutes a justification of the creation of this journal on the more physical aspects of crystallography.

In April 1968 the first issue of the *Journal of Applied Crystallography* came out as announced (*Acta Cryst.* (1968) A24, 705). Three issues out of the five planned for that year were published in 1968. [The other two, carrying the nominal date 1968, were published in March and April 1969.]

Volumes 22 (for 1958) and 24 (for 1960) of *Structure Reports* were published in the autumn of 1968, with Volume 26 (for 1961) not far behind, while Volumes 25 (decennial index 1951–60) and 27 (for 1962) are expected to come out in the second half of 1969.

Following the reprinting (with corrections only) of Volume II of *International Tables for X-ray Crystallography* in 1967, Volume III so reprinted became available in the autumn of 1968, while a second reprinting of Volume I is expected to be ready in 1969.

In January of the year under review the Bibliography 3: *Methods of Obtaining Monochromatic X-rays and Neutrons*, prepared under the auspices of the Commission on Crystallographic Apparatus, was despatched free of charge to the 1967 mailing list of *Acta Crystallographica*. Bibliography 4: *Small-angle Scattering* became ready for press.

### Adhering Bodies

On the assumption that the situation relating to the adherence of the German crystallographers would be adequately dealt with in amendments to the Statutes and By-Laws, the General Secretary was authorized to make *ad interim* arrangements in accordance with By-Law 2.9(a), pending action by the General Assembly.

The replacement of the Ministry of Scientific Research and Cultural Affairs as Adhering Body for India by the National Institute of Sciences of India was accepted by the Executive Committee, subject to confirmation by the Eighth General Assembly.

An application for membership from the Ministry of Scientific Research of the United Arab Republic was received in mid-1968. Further information on the membership of the National Committee was requested.

The latest list of the Adhering Bodies of the Union and of the names and addresses of the Secretaries of National Committees is given in Table 1. The total number of Adhering Bodies listed is thirty-one, but the adherence of the *Sektion für Kristallkunde* of the *Deutsche Mineralogische Gesellschaft* mentioned after B.R.D. and of the *Deutsche Vereinigung für Kristallographie* of the *Deutsche Gesellschaft für Geologische Wissenschaften* mentioned after D.D.R. is subject to discussion by the Eighth General Assembly in 1969; consequently, the likely Group of adherence is mentioned in square brackets.

As compared with the lists of memberships of National Committees given in the *Report of Seventh General Assembly* and the *Report of Executive Committee for 1967*, the following changes should be mentioned:

*Argentina*: omit A. E. VIDOZ.

*Belgium*: omit R. E. DE STRYCKER (deceased), and add M.

DENAAYER, A. HACQUART, S. LEFEBVRE, P. MICHOT, P.

PIRET, J. TIMMERMANS, J. THOREAU.

*B. R. D.*: add W. HOPPE.

*Denmark*: add S. JORGO JENSEN.

*Hungary*: omit Z. GYULAI (deceased).

*India*: omit J. SHANKAR, and add G. B. MITRA, L. M. PANT, R. SRINIVASAN.

*Israel*: change J. LIPSON to J. COHEN (née Lipson).

*Japan*: add G. SHINODA.

*Netherlands*: omit J. J. DE LANGE, and add G. DALLINGA, J. A. GOEDKOP, H. MENDEL, C. G. VONK.

*Norway*: O. C. A. BASTIANSEN, O. FOSS, S. V. FURBERG, F. GRØNVOLD, C. RØMMING, H. SØRUM (new membership).

*Spain*: L. BRÚ (Chairman), J. DOETSCH, M. FONT-ALTABA, S. GARCÍA-BLANCO, A. HOYOS, J. MARTIN VIRALDI, J. RODRIGUEZ (new membership).

*Sweden*: S. ABRAHAMSSON, B. AURIVILIUS, O. BECKMAN, D. CALRSTRÖM, G. HÄGG, G. JOHANSSON, P. KIERKEGAARD, R. KIESSLING, I. LINDQVIST, G. LUNDGREN, S. LUNDQVIST, A. MAGNÉLI, O. MELLIS, I. OLOVSSON, A. WESTGREN (new membership).

*U.K.*: omit Lord FLECK (deceased).

*U.S.A.*: omit H. BROWN, M. J. BUEGER, J. D. H. DONNAY, E. L. GOLDWASSER, E. W. HUGHES, H. A. LEVY, W. N. LIPSCOMB, and add R. D. BURBANK, D. HARKER, K. HEDBERG, L. H. JENSEN, W. KEHL, E. A. WOOD, R. A. YOUNG.

### Work of the Commissions

#### Commission on Journals

The *ad interim* Commission on Journals was set up on a provisional basis by the Executive Committee in 1967, subject to ratification by the Eighth General Assembly. Its main task has been to establish a new *Journal of Applied Crystallography*. As mentioned above, it was planned to publish five issues in 1968; three actually appeared in 1968. [The other two, bearing the nominal date 1968, appeared early in 1969.] In spite of this delay, there is every indication that the new journal will fill a real need. In Table 2 the statistics of the first volume are shown.

#### Commission on Acta Crystallographica

During 1968, Volume 24 of *Acta Crystallographica* was published, the first divided into two Sections: A (crystal physics, diffraction, theoretical and general crystallography) and B (structural crystallography and crystal chemistry). The January issues of the two sections constituted a 'Festschrift' in honour of the eightieth birthday of Professor P. P. Ewald. During the year 714 pages of Section A and 1706 of Section B were published, a total of 2420, plus 24 pages of the joint (A+B) index. This marks a distinct increase over Volumes 20 and 21 published in 1966, the largest earlier year. A survey of the contents of *Acta Crystallographica* for the last six years is given in Table 2.

The Commission has not met during the year, and it is expected that this will be its last report, as it will be merged in the new Commission on Journals during the forthcoming Eighth General Assembly.

#### Commission on Structure Reports

The year 1968 has been a good year for *Structure Reports*: the long-delayed Volume 22 (for 1958), and Volume 24 (1960) were published; the ten-year cumulative index Volume 25 (1951–60), and Volumes 26 (1961) and 27 (1962) are to follow soon. Although parts of Volume 28 (1963) are delayed, good progress is being made with Volumes 29 (1964) and 30 (1965).

Volume 28 will start a new format for *Structure Reports*, in which critical reports will only be written on papers giving full structural determinations. Determination of cell dimensions and space group, spectroscopic interatomic distances, lattice parameters as a function of temperature, pressure or composition will be presented in tabular form with brief critical comment.

Establishing a uniform format throughout the three sections (metals, inorganic and organic) will initially involve considerable editorial effort; at present further progress is delayed until the manuscript for a whole volume (either 28, 29 or 30) can be assembled. Once a new uniformity of

Table 1. *Adhering Bodies (as at 31 July 1969)*

Country	Group*	Adhering body	Secretary of National Committee
Argentina	I	Consejo Nacional de Investigaciones Científicas y Técnicas	MARÍA JIMÉNEZ DE ABELEDO, Laboratorio de Difracción, Comisión Nacional de Energía Atómica, Avenida del Libertador General San Martín 8250, Buenos Aires
Australia	III	Australian Academy of Science	J. DEEBLE, Australian Academy of Science, Gordon Street, Canberra City, A.C.T.
Austria	I	Österreichische Akademie der Wissenschaften	J. ZEMANN, Mineralogisches Institut der Universität, Dr Karl Lueger-Ring 1, 1010 Vienna
Belgium	II	Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique	R. PANKOWSKI-FERN, Institut des Matériaux, U.L.B., 87 Avenue Adolphe Buyl, Brussels 5
Brazil	I	Conselho Nacional de Pesquisas	R. R. FRANCO, Conselho Nacional de Pesquisas, Avenida Marechal Camara 350, Rio de Janeiro, G.B.
B.R.D. (German Federal Republic)	[IV]	Sektion für Kristallkunde of the Deutsche Mineralogische Gesellschaft	H. O'DANIEL, Institut für Kristallographie der Universität, Senckenberg-Anlage 30, 6 Frankfurt/Main
Canada	III	National Research Council	F. R. AHMED, Division of Biochemistry, National Research Council, Ottawa 7, Ontario
Chile	I	National Committee for Crystallography	I. GARAYCOCHEA, Laboratorio de Cristalografía, Universidad de Chile, Casilla 5487, Santiago
Czechoslovakia	I	Československá Akademie Věd	A. LÍNEK, Institute of Solid State Physics, Československá Akademie Věd, Cukrovarnická 10, Prague 6
D.D.R. (German Democratic Republic)	[II]	Deutsche Vereinigung für Kristallographie of the Deutsche Gesellschaft für Geologische Wissenschaften	H. NEELS, Institut für Mineralogie und Petrographie der Karl-Marx-Universität, Scharnhorststrasse 20, 703 Leipzig
Denmark	I	Akademiet for de Tekniske Videnskaber	S. JORGO JENSEN, Aarhus Tandlægehøjskole, Vennelyst Boulevard, Aarhus C
Finland	I	Suomalainen Tiedeakatemia	K. A. MANSIKKA, Wihuri Physical Laboratory, University of Turku, Vesilinnantie 5, Turku
France	IV	Académie des Sciences (Institut de France)	A. AUTHIER, Faculté des Sciences de l'Université de Paris, Laboratoire de Minéralogie-Cristallographie, 9 Quai Saint Bernard, Tour 16, Paris Ve
Hungary	I	Magyar Tudományos Akadémia	L. ZSOLDOS, Department of Experimental Physics, L. Eötvös University, Muzeum krt 6-8, Budapest VIII
India	I	National Institute of Sciences of India	R. SRINIVASAN, Department of Physics, University of Madras, Guindy, Madras 25
Israel	I	Israel Crystallographic Society	D. RABINOVICH, The Weizmann Institute of Science, Department of Chemistry, Rehovoth
Italy	III	Consiglio Nazionale delle Ricerche	G. COCCO, Istituto di Mineralogia della Università di Perugia, 06100 Perugia
Japan	IV	Science Council of Japan	R. SADANAGA, Mineralogical Institute, Faculty of Science, University of Tokyo, Hongo, Tokyo
Netherlands	III	Stichting voor Fundamenteel Onderzoek der Materie met Röntgen- en Elektronenstralen	P. M. DE WOLFF, Laboratorium voor Technische Natuurkunde der T. H., Lorentzweg 1, Delft
New Zealand	I	The Royal Society of New Zealand	P. P. WILLIAMS, Chemistry Division, D.S.I.R., Private Bag, Petone
Norway	I	Det Norske Videnskaps-Akademi	S. FURBERG, Kjemisk Institutt C, Universitetet i Oslo, Blindern, Postboks 1033, Oslo 3
Pakistan	I	Pakistan Council of Scientific and Industrial Research	M. M. QURASHI, Pakistan Council of Scientific and Industrial Research, Off University Road, Karachi-32
Poland	I	Polska Akademia Nauk	K. ŁUKASZEWICZ, Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Plac Katedralny 1, Wrocław
South Africa	I	South African Council for Scientific and Industrial Research	G. GAFNER, National Physical Research Laboratory, P.O. Box 395, Pretoria
Spain	III	Consejo Superior de Investigaciones Científicas	S. GARCÍA-BLANCO, Instituto de Química Física 'Rocasolano', Consejo Superior de Investigaciones Científicas, Serrano 119, Madrid 6
Sweden	II	Kungliga Vetenskapsakademien	I. LINDQVIST, Department of Agricultural Chemistry I, Royal Agricultural College of Sweden, Uppsala 7
Switzerland	II	Société Suisse de Minéralogie et de Pétrographie	F. H. LAVES, Institut für Kristallographie und Petrographie der E.T.H., Sonneggstrasse 5, 8006 Zürich
U.K.	V	The Royal Society	D. C. MARTIN, The Royal Society, 6 Carlton House Terrace, London S.W.1

Table 1 (cont.)

U.S.A.	V	National Academy of Sciences – National Research Council	W. PARRISH, Code RMC, NASA, Electronics Research Center, Cambridge, Mass. 02139
U.S.S.R.	V	Akademija Nauk S.S.S.R.	V. I. SIMONOV, Institute of Crystallography, Leninsky Prospekt 59, Moscow B-333
Yugoslavia	I	Jugoslavenska Akademija Znanosti i Umjetnosti	B. KAMENAR, Laboratory of General and Inorganic Chemistry, Faculty of Science, Ul. Soc. Revolucije 8, Zagreb

\* Adherence to the Union is in one of five Groups I–V, with corresponding voting powers and contributions as set out in Statutes 2.6, 4.5 and 8.4.

Table 2. Survey of the contents of the Union journals

Acta Crystallographica									
Vol.	Year	Number of pages	Articles			Short Communications			
			Number	Number of pages	Average length	Number	Number of pages	Average length	
16*	1963	1471*	198	1099	5.55	101	117	1.16	
17	1964	1631	242	1406	5.81	127	162	1.28	
18 & 19	1965	2172	330	1943	5.89	134	161	1.20	
20 & 21†	1966	2273†	287	1751	6.10	118	159	1.35	
22 & 23	1967	2094	315	1843	5.85	97	126	1.30	
A 24 } B 24 }	1968	714 } 2420‡ 1706 }	108 } 359 251 }	688 } 2375§ 1687 }	6.37 } 6.72 }	6.54§ 6.2 } 89	27 } 89 34 } 123§ 89 }	1.25 } 1.44 }	1.34§ 1.34§

  

Journal of Applied Crystallography								
Vol.	Year	Number of pages	Articles			Short Communications		
			Number	Number of pages	Average length	Number	Number of pages	Average length
1	1968	330	54	303	5.60	7	10	1.39

\* Volume 16 includes the report of the Rome Congress, involving 198 pages of abstracts.

† Volume 21 includes 304 pages of abstracts of papers presented at the Moscow Congress.

‡ Plus 24 pages of joint (A + B) index.

§ For the first time the number of plate-pages has been included in the number of pages per paper.

style is established this can serve as a model for later works. It appears that the new arrangements are finding favour with the Co-editors and when a new format is established in print, their work in handling the increasing amount of data should be easier.

#### Commission on International Tables

The year under review saw the publication of the reprint of Volume III of *International Tables*. At the end of the year it became evident that a second reprint of Volume I would be needed in 1969, and preliminary work for this was begun.

There were no full meetings of the Commission or of the Editorial Committee, but advantage was taken of several personal contacts to further the work on the Pilot Edition for the new future edition. It was found not possible to have the Pilot Edition ready by the end of the year, but technical preparations were completed and publication is expected in mid-1969. The work on Lattice Complexes (in connexion with Part 4, Synoptic Tables) was completed, and it was decided to accept the offer of publication from the U.S. National Bureau of Standards. It will form a separate and separately available publication, although it was produced in association with the Pilot Edition of which it will form a part also.

The work on Part 6, Generalized Symmetry (*cf. Acta Cryst.* (1968) A24, 707), was so near to completion that

it was decided to publish it as Part 5. The part on Physical Properties in Symmetric Media would then become Part 6.

#### Commission on Crystal Growth

The Commission has organized for the Eighth Congress a Topical Meeting on Crystal Morphology and its Relation to Crystal Structure and Environmental Conditions.

An enquiry has been held by A. A. Chernov and A. N. Lobachev among crystallographers interested in crystal growth in order to assess what subjects both of theoretical and experimental study are expected to be of importance in the coming five years.

Work has been done on the preparation of a list of films on crystal growth and on a glossary of terms used in the field, in four languages.

Preliminary work has been started by P. Hartman for a Summer School on Crystal Growth in 1971.

The Commission will meet for the first time during the Eighth General Assembly, after having conducted its work by correspondence since its establishment at the end of 1966.

#### Commission on Crystallographic Apparatus

The various activities of the Commission were:

1. *Inter-Congress Meeting on Accurate Determination of X-ray Intensities and Structure Factors* (A. McL. Mathieson). The early part of 1968 was occupied by prepara-

tions for the meeting, Circular 3 being sent out to participants in May. The meeting took place from 24 to 28 June, inclusive, in Churchill College, Cambridge, U.K., which proved an excellent venue. The considerable load of coping with local arrangements, particularly during the week of the meeting, was ably carried by the Local Member of the Organizing Committee: Dr U. W. Arndt. The contributions and much of the consequent discussion were prepared for publication in *Acta Crystallographica* (1969) A25, Part 1 as the Proceedings of the Meeting, where further details are available.

2. *Single Crystal Intensity Measurement on Diffractometers* (S. C. Abrahams). During the year, the result from Phase I of this Project underwent extensive discussion. Receipt of comments from participants and discussion between authors allowed reappraisal of the significance of the results and of the probable conclusions. From this close reassessment, the report is near its final form.
3. *Powder Intensity Project* (F. H. Herbstein). The results of this Project were presented at the Inter-Congress Meeting by L. D. Jennings and the report is published in the Proceedings. No further elaboration of this Project is being actively pursued but consideration as to future activity in this field will be given at the Open Session of the Commission at the Eighth Congress in August 1969.
4. *Bibliographies* (E. G. Steward, member of the Commission on Crystallographic Data). After consideration of the production of bibliographies in relation to the publication policy of the Union and discussion with the Commission on Crystallographic Data, it was decided that no further bibliographies would be sought. The situation may warrant reassessment at a later date. The Bibliography 4 on *Small-angle Scattering* by M. Renouprez is in process of publication.
5. *Index of Crystallographic Supplies* (V. Scatturin). No progress has been made in developing this project.

At Cambridge, a meeting-in-person of the Commission took place. The current and future activities of the Commission were reviewed. The main items of future activities related to the Eighth Congress of Crystallography. It was decided to hold an Open Session of the Commission at which the basis of a Phase II of the Project mentioned under 2 above would be considered. Arrangements were also made to organize at the Congress exhibitions of (i) non-commercial apparatus and (ii) photographs of crystallographic interest. For the latter, F. H. Herbstein will be the member responsible while Dr E. County (Art Department, State University of New York at Stony Brook) will be the local organizer for arrangement of the display. For the apparatus exhibition Dr R. Rudman (Adelphi University) has been appointed organizer.

#### *Commission on Crystallographic Computing*

There have been two active projects in 1968:

1. *Standard Test Calculations*. Sample test cases in the triclinic, monoclinic, orthorhombic and cubic systems have been laid out. They cover the calculation of structure factors, interatomic distances, valence angles, e.s.d.'s, Fourier syntheses, isotropic and anisotropic refinement by block diagonal and full matrix least squares including the occupancy factor and scale with equal and with different weights.
2. *International Summer School on Crystallographic Computing*. The School will be held at Carleton University,

Ottawa, 4-12 August 1969. The course will cover the main mathematical procedures involved in the determination and refinement of crystal structures and the techniques of programming them for digital computers. The topics, Topic Chairmen, and Lecturers have been selected and two circulars have been sent out to interested crystallographers. The proceedings will be published in a book; for the preparation of the manuscript a contract was signed between the Union and Unesco for financial assistance under the Unesco Pilot Project on the Teaching of Crystallography in relation to the Physics and Chemistry of Solids.

D. W. J. Cruickshank resigned as Chairman but remained as a member of the Commission; F. R. Ahmed was appointed in his place starting in July 1968.

#### *Commission on Crystallographic Data*

The Commission continued working on the recommendations on the publication of powder data, by correspondence. The manuscript is now ready for submission to the Executive.

The Chairman of the Commission has attended the meeting of the ICSU Committee on Data for Science and Technology (CODATA) in her capacity of *ex-officio* Representative, and, as deputy, the meeting of the ICSU Abstracting Board. The Commission has kept in touch with other Scientific Unions and national organizations about developments in the compilation and utilization of data.

Preparations for a joint meeting on Storage, Evaluation and Utilization of Crystallographic Data, to be held at the Eighth Congress, have been started.

#### *Commission on Crystallographic Nomenclature*

The Commission has not met during 1968, but there has been some correspondence, mainly concerned with symbols for groups of faces and groups of directions. Participation in a joint open session with the Commission on *International Tables*, to be held during the Eighth Congress, has also been discussed.

#### *Commission on Crystallographic Studies at Controlled Pressure and Temperature Conditions*

At the Seventh General Assembly, a proposal for the formation of a Commission of this nature was submitted by the U.K. National Committee and the Assembly accepted the suggestion from the Executive that someone be invited to investigate this proposal (*Acta Cryst.* (1967) 22, 609, item 18). Dr C. J. M. Rooymans (Netherlands) was invited, and, in conjunction with Dr H. J. Milledge (U.K.), he circulated a questionnaire to some 200 people known to be active in the fields of high or low pressures and temperatures. About 60% responded and on the basis of the results so obtained, Dr Rooymans recommended to the Executive to set up such a Commission *ad interim*, as the Commission would then be able to arrange more effectively both Frontier Topics and an Open Session. At their meeting in 1968, the Executive Committee adopted the recommendation and appointed the following membership: C. J. M. Rooymans (Netherlands), Chairman, and M. Foex (France), H. J. Milledge (U.K.), S. Ogawa (Japan), C. B. Sclar (U.S.A.), members.

Provisional terms of reference for the Commission and possible nominations for membership will be submitted for approval to the Eighth General Assembly if the sessions demonstrate sufficient interest to warrant this.

*Commission on Crystallographic Teaching*

The manuscript of the book on Early Papers on Diffraction of X-rays by Crystals (J. M. Bijvoet, W. G. Burgers, G. Hägg) was completed and a first part, containing about half the total manuscript, will be published before the Eighth Congress. A contract was signed between the Union and Unesco for financial assistance under the Unesco Pilot Project on the Teaching of Crystallography in relation to the Physics and Chemistry of Solids.

While the making of a film on Coordination Polyhedra (A. L. Mackay) had to be abandoned, the film on Liquid Crystals (P. Chatelain) was finished. Copies of the latter can be obtained from the Service de Films Scientifiques, 91 Bld. Raspail, Paris 6e, France. It was made with a Unesco subvention for the making of teaching films.

The Unesco Pilot Project mentioned above has given rise to several contracts between Unesco and individual crystallographers: (1) with C. A. Taylor for an Atlas of Optical Transforms; (2) with C. H. MacGillavry (H. Schenk) for two texts of programmed instruction: Two-dimensional Space Groups and Applications of Fourier Methods; (3) with K. Lonsdale and H. J. Milledge for a brochure on the building of a two-circle ball-driller for the making of crystal-structure models; (4) with T. Zemcik for slides on Application of the Mössbauer Effect in Crystallography; (5) with M. Černohorský (J. Komrská) for Tables for Indexing of Electron Diffraction Spot Patterns from Single Crystals; (6) with L. Zsoldos for a Laboratory Manual on Crystal Growth; (7) with O. Pério for the preparation of material for laboratory experiments on X-ray emission spectra. The contracts with the Union, for the preparation of (a) the manuscript of the book containing lectures given at the 1969 Computing Summer School and (b) the manuscript of the book on Early Papers on Diffraction of X-rays by Crystals, were mentioned already.

It has not proved possible to find a person who would edit Supplements to the *Crystallographic Book List* in the same way as done by Dr H. D. Megaw for the first one. A less ambitious scheme has now been adopted, according to which the Book-Review Editor, M. M. Woolfson, is to prepare a list, mainly based on the books received for reviewing by the Union journals. The list will be published in *Acta Crystallographica* Section A, with cross references in Section B and the *Journal of Applied Crystallography*.

*Commission on Electron Diffraction*

There was no special activity of the Commission during 1968, although it did advise on topics for the Eighth Congress in the field of electron diffraction; an Open Session on Electron Diffraction by Gases: Novel Methods and Novel Species will be held.

The Commission will discuss plans for a smallish meeting to take place between 1970 and 1973.

*Commission on Neutron Diffraction*

The Commission has carried out an extensive revision of the table of neutron-scattering amplitudes and an up-to-date list has been published in *Acta Crystallographica* (1969) A25, 391. Compared with the list which appears in Vol. III of *International Tables*, values are given for 40 additional elements and isotopes and there are over 30 modifications of existing values. It has not been found possible to quote accuracies of the values given but references to original papers are provided for most of the new and modified data in order that their probable accuracies can be individually assessed.

**Representation on other Bodies***Abstracting Board of the International Council of Scientific Unions*

The Union was elected to Full Membership in July 1968, just prior to the Board's General Assembly. The Executive Committee had decided to appoint the Editor of *Structure Reports*, Dr W. B. Pearson, *ex-officio*, as the Union Representative, with *ex-officiis* the Editors of *Acta Crystallographica* and the *Journal of Applied Crystallography*, respectively, as alternates (A. J. C. Wilson and A. Guinier). As neither the Representative nor any of the two alternates was able to attend, the Chairman of the Commission on Crystallographic Data agreed to attend the General Assembly and further meetings held in Goslar, B.R.D. Reports were given by various categories of members and also by working groups. A plan was presented to extend the scope of the Board to cover all aspects of information services, and a working party was to be appointed to study this question.

*Inter-Union Commission on Science Teaching of the International Council of Scientific Unions*

The Commission organized a Congress in Drushba, Bulgaria, 11–19 September 1968 on the Integration of Science Teaching. One of the Union Representatives, Prof. J. Zemmann, attended the Congress. Crystallography has always been integrated into other fields of science in secondary education, but teachers do not generally have any training in crystallography. It has, therefore, been suggested that an authoritative text for teachers at the secondary level should be prepared.

The Commission was dissolved by the ICSU General Assembly of Paris, 1968, and replaced by an ICSU Committee on Science Teaching. The ICSU Executive Committee would appoint six members and would nominate the first Chairman. Each Union wishing to participate may nominate a representative and contribute U.S. \$200 annually (as was the case for the previous Commission). The Committee would be renewable at the discretion of the next General Assembly of ICSU. The Commission on Crystallographic Teaching recommended to the Executive that the Union should also be represented on the new Committee.

*Committee on Data for Science and Technology (CODATA) of the International Council of Scientific Unions*

The Representative of the Union, Mrs O. Kennard, attended the third meeting of CODATA, held in Frankfurt/Main, B.R.D., in June 1968, and the subsequent First International CODATA Conference at Arnoldshain. She gave a report on the activities of the Union and contributed to the discussion on the role of Scientific Unions in the field of data and documentation. At both meetings, the future of CODATA and its relation to a world-wide information network were discussed.

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

During 1968, there has been considerable discussion about sponsorship of conferences by IUPAP, particularly in relation to the many requests and the limited funds available. It is generally agreed that the number of sponsored meetings should be reduced and that selection should be considered more carefully: organizing committees should admit only outstanding papers.

The mammoth conferences (1000 or more) are considered generally as of low value except for the informal contacts which are made, and the possibility of good non-parallel general sessions and invited talks. Scientifically, the small meetings (some 150) are considered to be more useful.

#### *International Committee on Crystal Growth*

The Second International Conference on Crystal Growth was held at Birmingham, U.K., 15–19 July 1968. It was initially sponsored by the Comité International de Croissance Cristalline (CICC), and was attended by about 500 persons. 220 abstracts of papers were received, and finally about 160 papers have been published in two special volumes of the *Journal of Crystal Growth*. Of these papers, about 30% were from the U.S.A., 20% from the U.K., and 20% from Eastern Europe. An exhibition of crystals and growing equipment and a crystal-growing film-show were held. Finance was provided by an initial loan from CICC and by contributions from the British Ministry of Technology, the U.S. Air Force and 21 British firms.

A questionnaire was sent out to participants to elicit views on organization for the benefit of future CICC-sponsored meetings. National branches comparable to the National Committees for Crystallography have been and are being set up.

At their meeting in Birmingham, the CICC admitted as representatives of the Union Prof. R. Kern and Dr R. F. Strickland-Constable, Chairman and member of the Union's Commission on Crystal Growth, respectively.

The Third International Conference on Crystal Growth will be held in Marseille, France, with as Co-Chairmen Prof. W. Dekeyser (Belgium) and Prof. R. Kern.

#### **International Council of Scientific Unions**

The Union was represented at the 8th ICSU Executive Committee meeting by the President, Prof. N. V. Belov, and at the Extraordinary and the 12th ICSU General Assembly by Prof. Belov and the General Secretary, Dr G. Boom. The meetings were held in Paris, France, 28 September–2 October 1968. The International Union of Nutritional Sciences was admitted as Union Member, and Turkey as National Member. A new category: Scientific Affiliates was created. These would pay no dues and receive no subventions, but would enjoy the privilege of participation in discussions of the General Assembly, without the right to vote. Most of the discussions were not of direct interest to the Union, except perhaps the progress made in the study of the feasibility of a World Science Information System. The conclusion reached by the ICSU-Unesco Central Committee on the Study of the Feasibility of the WSIS was that it was indeed feasible, and that the next step would be the planning of the realization. The name given to the system was UNISIST (*Unesco-ICSU Science Information System*).

The Abstracting Board, CODATA and the Inter-Union Commission on Science Teaching were also discussed, as mentioned above.

The next meeting of the ICSU Executive will be in Erevan, U.S.S.R., on 2 and 3 October 1969.

#### **Finances**

The audited accounts of the Union for the year 1968 are given at the end of this Report. For comparison the 1967

figures are provided in italics. Negative quantities are indicated by parentheses.

The *Acta Crystallographica* account for 1968 shows a profit of \$22,243 as compared with a deficit of \$1,835 in 1967. This profit, which is due to the increase in subscription rates, has increased the balance on the fund account to \$46,642. The income from advertisements is slightly lower than for the previous year. Editorial expenses increased slightly following the appointment of an Assistant to the Technical Editor in July 1968. In spite of a smaller expenditure on reprinting earlier volumes in 1968, the total publication expenses have increased from \$98,179 to \$109,555. This increase is chiefly the result of publishing more pages, 2444 in 1968 as compared with 2094 in 1967. Owing to the ever increasing number of pages submitted, the financial situation of the journal now requires immediate attention. The number of pages to be printed in 1969 seems certain to be well over 3000 and a net loss for 1969 is likely.

The *Journal of Applied Crystallography* was launched in 1968 and \$15,000 was transferred from the General Publications Fund account to open the journal's account. The net profit for 1968 was \$7,134. 989 subscriptions were received by the time Volume 1 was completed early in 1969. At 31 December 1968 the total number of subscribers to Union journals was 2,517, an increase of 135 over the number subscribing to *Acta Crystallographica* alone in 1967.

The *Structure Reports* account shows a profit of \$1,076 as compared with a loss of \$112 in 1967. Volumes 22 and 24, covering 1958 and 1960 respectively, were published in 1968 and their publication costs and some of their previous editorial expenses have been covered by the income from their sales during the year. The introduction of a special reduction to purchasers of ten-year sets of *Structure Reports* is proving quite popular.

The *International Tables* account shows a small loss of \$802, which is primarily due to the expense of reprinting Volume 3. Owing to increased distribution costs and the costs of reprinting it was necessary to raise the price of each volume slightly to £6.10.0. in 1968. Volumes 2 and 3 had been out of print during parts of 1967 and 1968; their reprinting resulted in the net income increasing from \$6,572 in 1967 to \$9,630 in 1968. The accumulated balance, together with the income which will accrue from the sale of the reprinted volumes, should be adequate to finance the new series now being planned.

In 1968 \$515 were received from the sales of 63 copies of *Fifty Years of X-ray Diffraction* with the result that the previous deficit in the account was changed to a balance of \$70. The sales of *Symmetry Aspects of M. C. Escher's Periodic Drawings* were slightly lower than last year, but the 423 copies sold yielded a net income of \$1,746 changing the deficit in this account to a balance of \$213.

The balance of the General Publications Fund account was affected only by the transfer of \$15,000 to open the *Journal of Applied Crystallography* account.

The General Fund account shows an excess of income over expenditure of \$9,282, as compared with \$17,221 in 1967. The net cost to the Union of the meeting at Cambridge, England, organized by the Commission on Crystallographic Apparatus in June 1968, was less than anticipated. However, administration expenses in 1968 were \$8,643 as compared with \$5,065 in 1967. This rise is a reflexion of the increasing volume of business which has fallen on the Union's Officers, and which has since required the appoint-

ment of a salaried Executive Secretary. High expenses for meetings are expected in 1969.

The subvention received from UNESCO through ICSU remained constant at \$5,250. ICSU also assisted by refunding the subscription paid by the Union in 1967. The subscriptions from the Adhering Bodies remained at \$13,500. Interest from investments and deposit accounts increased from \$5,949 to \$8,593.

In 1968 a profit of \$1,293 was made on redemptions of *f.*1,000 3% Nederland 1937, \$11,000 3% Nederland 1947, *f.*3,000 4½% Nederland 1958, *f.*5,000 4½% Nederland 1960(I) and *f.*5,000 4½% Nederland 1964. Additional investments were purchased during 1968, namely *f.*32,000 4½% Nederland 1958, *f.*35,000 4½% Nederland 1959, *f.*32,000 4½% Nederland 1960(I) and \$37,000 6¾% Denmark 1982. As on previous Balance Sheets the investments have been valued according to their quotations at the end of the year. Their depreciation in value, together amounting to \$3,729, has not been charged against the General

Fund, but has again been included as an asset on the Balance Sheet to avoid annual fluctuations in value influencing the General Fund account.

The larger parts of the balances with the Banks are still placed on deposit accounts, namely at the end of 1968, *f.*24,214 with the Amsterdam-Rotterdam Bank N.V., \$16,725 with the First National City Bank, Sw. Kr.62,821 with A.B. Svenska Handelsbanken and £11,295 with the Westminster Bank Ltd. The amounts shown on the Balance Sheet for Debtors and Creditors relate to sums, principally on the publishing accounts, due at 31 December 1968. Where appropriate these amounts have since been settled.

The Balance Sheet shows that the assets of the Union have increased during the year from \$192,859 to \$234,051, excluding stocks of unsold publications.

During the year under review our auditors Litton, Pownall, Blakey & Higson amalgamated their practice with that of Mann Judd & Co., of London, and the audit report has therefore been signed in that name.





## General Fund Account for the year ended 31 December 1968

	U.S. Dollars		U.S. Dollars	
	1968	1967	1968	1967
Subscription to ICSU (2% of subscriptions received from Adhering Bodies in 1967)		244-00		157-20
Subscription to ICSU Inter-Union Commission on Science Teaching Administration Expenses:		200-00		200-00
Honoraria: General Secretary, Treasurer and Secretarial Assistance	5,837-22		2,276-00	
Audit and Accountancy Charges	660-00		780-00	
Postages, Stationery, Printing and Sundries	887-45		796-71	
Travelling Expenses	459-89		1,075-33	
Bank Charges and Differences on Exchange	(35-50)		78-05	
Advertising and Expenses re appointment of Executive Secretary	800-66		-	
Depreciation of Office Equipment	33-00	8,642-72	59-24	5,065-33
Meeting of Executive Committee		3,116-47		
Seventh General Assembly and International Congress Moscow, USSR: Printing of Report	-		1,175-00	
Meeting of Programme Committee for Eighth International Congress	2,459-31	2,459-31	-	1,175-00
Anniversary Meeting on Electron Diffraction in London, U.K.:				
Travel Grants to participants	-			1,319-36
Net cost of International Conference Cambridge, England (See separate account)	2,655-11			
Travel Expenses of I.U.Cr. Representatives on other bodies	499-70			431-20
Expenses of Commissions	83-88			
Final payments for teaching films	-		800-00	
Co-ordination Polyhedra	-		1,500-00	
Cristaux Liquides	-			2,300-00
Cost of Printing and Distributing Bibliography No. 3	2,215-92			
Less Income from Advertisements	168-00	2,047-92		
Printing and Distributing first supplement to <i>Crystallographic Book List</i>	-			167-11
Excess of Income over Expenditure carried to Balance Sheet	9,281-57	17,220-82		
	<u>\$ 29,230-68</u>	<u>\$ 28,036-02</u>	<u>\$ 29,230-68</u>	<u>\$ 28,036-02</u>

**Acta Crystallographica Account for the year ended 31 December 1968**

	U.S. Dollars	
	1968	1967
Publication Expenses:		
Printing and Binding Volumes A 24 and B 24 (1967 22 and 23)	87,314.52	71,734.02
Distribution and Postage	12,057.75	11,373.40
	<u>99,372.27</u>	<u>83,107.42</u>
Reprinting Volumes 1, 7 and 8 (1967 Volumes 5, 6 and 9)	10,182.94	15,071.51
	<u>10,182.94</u>	<u>15,071.51</u>
Editorial Expenses:		
Editorial Honoraria	4,240.70	4,436.79
Secretarial Assistance	1,032.40	517.60
Postages, Telephone and Office Sundries	1,316.32	1,937.49
Travelling Expenses	147.45	282.84
Technical Editing:		
Salaries and Expenses	12,628.82	12,011.54
Depreciation of Office Equipment	165.02	140.85
	<u>165.02</u>	<u>140.85</u>
	22,242.56	(1,834.77)
	<u>22,242.56</u>	<u>(1,834.77)</u>
Excess of Income over Expenditure carried to Balance Sheet	\$ 151,328.48	\$ 115,671.27

	U.S. Dollars	
	1968	1967
Subscriptions to Volumes A 24 and B 24 (1967 22 and 23)	147,036.66	105,284.65
Sale of Back Numbers and Single Copies	18,105.71	18,603.63
	<u>165,142.37</u>	<u>123,888.28</u>
Less Publishers' Commission on Sales	20,642.80	15,486.03
	<u>7,988.31</u>	<u>8,585.78</u>
Income from Advertisements Less Advertising Agents' Commission and Expenses	1,159.40	1,316.76
	<u>1,159.40</u>	<u>1,316.76</u>
	\$ 151,328.48	\$ 115,671.27

**Journal of Applied Crystallography Account for the year ended 31 December 1968**

Publication Expenses:	
Printing and Binding Volume 1	12,225.93
Distribution and Postage	803.09
	<u>13,029.02</u>
Editorial Expenses:	
Editorial Honoraria	307.85
Secretarial Assistance	369.08
Postages, Telephone and Office Sundries	20.17
Travelling Expenses	141.50
Technical Editing:	
Salaries and Expenses	1,722.11
	<u>2,560.71</u>
Excess of Income over Expenditure carried to Balance Sheet	\$ 7,133.60
	<u>\$ 22,723.33</u>

Subscriptions to Volume 1	26,430.40
Sale of Single Copies	36.00
	<u>26,466.40</u>
Less Publishers' Commission on Sales	3,969.96
	<u>307.40</u>
Income from Advertisements Less Advertising Agents' Commission and Expenses	80.51
	<u>80.51</u>
	\$ 22,723.33



**Escher Drawings Account for the year ended 31 December 1968**

	U.S. Dollars	
	1967	1968
Publication Expenses:		
Cost of further Binding	-	2,294-00
<i>Excess of Income over Expenditure</i>	934-58	
<i>carried to Balance Sheet</i>	1,738-02	401-45
		146-88
	<u>\$ 1,745-67</u>	<u>548-33</u>
	<u>\$ 2,672-60</u>	<u>\$ 1,745-67</u>
		2,294-00
		613-02
		217-36
		<u>830-38</u>
		<u>\$ 2,672-60</u>

**Fifty Years of X-ray Diffraction Account for the year ended 31 December 1968**

<i>Excess of Income over Expenditure</i>		
<i>carried to Balance Sheet</i>	514-97	624-21
	580-71	703-89
	<u>\$ 514-97</u>	<u>109-24</u>
	<u>\$ 580-71</u>	<u>514-97</u>
		703-89
		123-18
		<u>580-71</u>
		<u>\$ 580-71</u>

**International Conference held at Cambridge, U. K., 24-28 June 1968  
Income and Expenditure Account**

Accommodation, Dinner and Reception	7,679-29	5,330-00
Grants to Speakers	6,544-42	6,689-41
Printing, Secretarial and Sundries	282-38	127-57
Cost of supplying Participants with Record of Proceedings ( <i>Acta Cryst.</i> (1969), A25, Part 1)	296-00	2,655-11
	<u>\$ 14,802-09</u>	<u>\$ 14,802-09</u>
		5,330-00
		6,689-41
		127-57
		2,655-11
		<u>\$ 14,802-09</u>

We have examined the annexed Balance Sheet, and income and Expenditure Accounts, and have obtained all the information and explanations which we considered necessary.

In our opinion these accounts give a true and fair view of the state of affairs of the Union at 31 December 1968 and of the results for the year ended on that date.  
Manchester, England

28 May, 1969

Signed: MANN JUDD & Co

Chartered Accountants