

## International Union of Crystallography

### Report of Executive Committee for 1976

#### Meetings

The Union sponsored or co-sponsored the following meetings held in 1976: COSPAR Symposium on Materials Sciences in Space, Philadelphia, USA, 9–10 June; Inter-Congress Symposium on Direct Methods in Crystallography, Buffalo, USA, 3–6 August; Sagamore V Conference on Charge, Spin and Momentum Densities, Kiljava, Finland, 16–20 August; Second Europhysical Conference on Lattice Defects in Ionic Crystals, Berlin, Federal Republic of Germany, 30 August – 3 September; Third European Crystallographic Meeting, Zürich, Switzerland, 6–10 September; Fifth Iber-American Congress of Crystallography, Madrid, Spain, 10–17 December.

The Union's Commissions on *International Tables*, on Charge, Spin and Momentum Densities, on Crystal Growth, on Crystallographic Teaching and on Neutron Diffraction were able to hold meetings attended by most of their members and held at relevant scientific meetings. In almost every case these meetings were able to be held at no extra financial cost to the Union.

The Executive Committee met at Saint Nizier, near Grenoble, France, 23–25 August. The main items dealt with were (1) the audited accounts for 1975 and the estimates for the General Fund; (2) the proposed unit contribution for 1979–81; (3) sponsorship and financial support of scientific meetings; (4) the activities of the Union's Commissions; (5) Union representatives on other bodies; (6) the application by the International Organization for Crystal Growth for associated organization status; (7) several matters concerning the Union's journals, including subscription rates and economic methods of printing; (8) the publication of several volumes of *Structure Reports*, including cumulative indexes; (9) reprinting Volume I of *International Tables for X-ray Crystallography* and progress with the new volume on direct space; (10) reprinting *Symmetry Aspects of M.C. Escher's Periodic Drawings*; (11) the Fifth Edition of the *World Directory of Crystallographers*; (12) membership of the Programme Committee for the Eleventh International Congress, to be held with the Eleventh General Assembly in Warsaw, 3–12 August 1978; (13) invitations from host countries for the Twelfth General Assembly and Congress; (14) revision of the Statutes and By-Laws. Since it last met in August 1975 the Executive Committee had taken several decisions by postal ballot.

#### Resignations and Appointments

The Executive Committee approved the appointment of J. C. Joubert and D. Watanabe as Co-editors of the *Journal of Applied Crystallography*, and M. Ross and J. J. Papike as Union representative and alternate respectively on the ICSU Coordinating Committee for the Moon and Planets. The CODATA Task Group on Solubility Data had been terminated, and R. A. Laudise was thanked for representing the Union on this body since 1973. The International Organiza-

tion for Crystal Growth had accepted the invitation to appoint a representative on the Union's Commission on Crystal Growth and had appointed C. S. Sahagian.

#### Publications

Volume 32 of *Acta Crystallographica* and Volume 9 of the *Journal of Applied Crystallography* were published in 1976. *Structure Reports* Volume 40A (covering the metals and inorganic compounds for 1974) was published in July. A 60-Year *Structure Index* (1913–1973), divided into two parts A. *Metals and Inorganic Compounds* and B. *Organic and Organometallic Compounds*, was published in October as was a cumulative index to the seven volumes of *Strukturbericht*, covering the years 1913–1939. Volume 7 (Bibliography 1974–75) in the *Molecular Structure and Dimensions* series was also published in 1976.

#### Adhering Bodies

The latest list of Adhering Bodies of the Union and names and addresses of the Secretaries of National Committees for Crystallography is given in Table 1. A full list of memberships of National Committees is given in Annex IV to the report of the Tenth General Assembly and Congress [*Acta Cryst.* (1976). A32, 744–745]. The following changes to the memberships of committees had been communicated to the Executive Secretary by 1 July 1977:

Belgium:	M. Van Meerse has succeeded W. Dekeyser as Chairman and P. Piret has succeeded G. Jacobs as Secretary. W. Dekeyser and G. Jacobs continue as ordinary members.
Czechoslovakia:	J. Garaj has been elected Chairman and M. Černohorský Vice-Chairman. Ján Černák replaces F. Čech.
Israel:	New membership: D. Rabinovich (Chairman), I. Bar, Z. Shakked.
UK:	Omit K. Dunham and add M. G. P. Stoker and P. J. Wheatley.
USA:	Omit S. C. Abrahams, R. D. Burbank, W. R. Busing, J. A. Ibers and E. C. Lingafelter and add J. R. Clark, P. Coppens, Q. C. Johnson, R. E. Marsh and H. Steinfink.

#### Work of the Commissions

##### Commission on Journals

During 1976 the Commission on Journals produced Volume 32 of *Acta Crystallographica* and Volume 9 of the *Journal of Applied Crystallography*. The number of papers submitted for publication shows a tendency to increase. The number of pages published in *Acta A* was 1038, in *Acta B* 3360, and in the *Journal of Applied Crystallography* 514, plus, in each case, indexes. The total number of pages (excluding abstracts of Congresses) is greater than in any

previous year, in spite of the diminution in the size of the *Journal of Applied Crystallography*. The number of papers held over in *Acta B* is less than in previous years, and during 1977 it is expected that there will be no delay in publication for financial reasons. An analysis of the contents of the journals for the last six years is given in Table 2.

From January 1977 all three journals will be produced by

photocomposition and photolithography. Although the quality of printing is somewhat lower than that achieved by letterpress, the reduction in quality will not be obvious to most readers, and the difference in cost makes it possible to publish a much greater volume of material with only a small increase in subscription rates. *Acta B* will be produced in England, while the production of *Acta A* and of the *Journal*

Table 1. *Adhering Bodies*

Country	Category*	Adhering Body	Secretary of National Committee
Argentina	I	Consejo Nacional de Investigaciones Científicas y Técnicas	M. IPOHORSKI, Departamento de Metalurgia, Comisión Nacional de Energía Atómica, Avenida del Libertador 8250, Buenos Aires
Australia	III	Australian Academy of Science	The Executive Secretary, Australian Academy of Science, P.O. Box 783, Canberra City, A.C.T. 2601
Austria	I	Österreichische Akademie der Wissenschaften	A. PREISINGER, Institut für Mineralogie und Kristallographie der Universität Wien, Dr-Karl-Lueger-Ring 1, A1010 Vienna
Belgium	II	Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique	P. PIRET, Laboratoire de chimie physique et de cristallographie, Université de Louvain, 1 place Louis Pasteur, 1348 Louvain-de-Neuve
Brazil	I	Conselho Nacional de Pesquisas	R. RODRIGUES DA SILVA, Avenida Beira Mar, 2363 (Peidade), 50000 Recife
Canada	III	National Research Council	A. W. HANSON, Division of Biological Sciences, National Research Council of Canada, Ottawa, Ontario K1A 0R6
Chile	I	National Committee for Crystallography	I. GARAYCOCHEA-WITTKE, Departamento de Física, 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
Denmark	I	Akademiet for de Tekniske Videnskaber	I. KJØLLER LARSEN, The Royal Danish School of Pharmacy, Chemical Laboratory C, Universitetsparken 2, 2100 Copenhagen Ø
Finland	I	Suomalainen Tiedekatemia	P. PAALASSALO, Wihuri Physical Laboratory, University of Turku, 20500 Turku 50
France	IV	Académie des Sciences (Institut de France)	J. F. PETROFF, Association Française de Cristallographie, 4 place Jussieu, Tour 26, 75230 Paris CEDEX 05
German Democratic Republic	II	Vereinigung für Kristallographie in der G.G.W. der D.D.R.	H. PEIBST, Zentralinstitut für Elektronenphysik, Deutsche Akademie der Wissenschaften der D.D.R., Mohrenstrasse 40/41, DDR-108 Berlin
Germany, Federal Republic of	IV	Arbeitsgemeinschaft Kristallographie	H. SCHULZ, Max-Planck-Institut für Festkörperforschung, Bunsener Strasse 171, 7 Stuttgart 80
Hungary	I	Magyar Tudományos Akadémia	L. ZSOLDOS, Research Institute for Technical Physics, Hungarian Academy of Sciences, PO Box 76, H-1325 Budapest
India	I	Indian National Science Academy	R. CHIDAMBARAM, Nuclear Physics Section, Bhabha Atomic Research Centre, Trombay, Bombay 400 085
Israel	I	Israel Academy of Sciences and Humanities	Z. SHAKKED, Department of Structural Chemistry, The Weizmann Institute of Science, Rehovot
Italy	III	Consiglio Nazionale delle Ricerche	M. MAMMI, Istituto di Chimica Organica, Università di Padova, Via Marzolo 1, 35100 Padova
Japan	IV	Science Council of Japan	Y. SAITO, The Institute for Solid State Physics, University of Tokyo, Roppongi 7, Minato-ku, Tokyo 106
Netherlands	III	Stichting voor Fundamenteel Onderzoek der Materie met Röntgen- en Elektronenstralen	The Executive Secretary, FOMRE, Laan van Meerdervoort 53d, 's-Gravenhage
New Zealand	I	The Royal Society of New Zealand	W. T. ROBINSON, Chemistry Department, University of Canterbury, Private Bag, Christchurch
Norway	I	Det Norske Videnskaps-Akademi	CHR. RØMMING, Department of Chemistry, University of Oslo, P.O. Box 1033, Blindern, Oslo 3
Poland	I	Polska Akademia Nauk	A. PIETRASZKO, Instytut Niskich Temperatur i Badań Strukturalnych, Polskiej Akademii Nauk, Plac Katedralny 1, 50-950 Wrocław
South Africa	I	South African Council for Scientific and Industrial Research	J. COETZER, National Physical Research Laboratory, P.O. Box 395, Pretoria 0001
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	S. ABRAHAMSSON, Department of Structural Chemistry, University of Göteborg, Medicinarg. 9, S-400 33 Göteborg 33
Switzerland	II	Schweizerische Gesellschaft für Kristallographie	W. H. MEIER, Institut für Kristallographie und Petrographie, Sonneggstrasse 5, CH-8006 Zürich

Table 1 (cont.)

Country	Category*	Adhering Body	Secretary of National Committee
UK	V	The Royal Society	The Executive Secretary, The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG
USA	V	National Academy of Sciences - National Research Council	J. P. GLUSKER, The Institute for Cancer Research, 7701 Burholme Avenue, Fox Chase, Philadelphia, PA 19111
USSR	V	Akademija Nauk S.S.S.R.	V. I. SIMONOV, Institute of Crystallography, Leninsky prospekt 59, Moscow 117333
Yugoslavia	I	Jugoslavenska Akademija Znanosti i Umjetnosti	B. KAMENAR, Laboratory of General and Inorganic Chemistry, Faculty of Science, Ulica Soc. Revolucije 8, 41 000 Zagreb

\* Adherence to the Unions is in one of five Categories I-V, with corresponding voting powers and contributions as set out in Statutes 3-6, 5-5 and 9-4.

Table 2. Survey of the contents of the Union journals

		<i>Acta Crystallographica</i>						
		Articles		Short Structural Papers		Short Communications		
Vol.	Year	Number of pages*	Number	Average length	Number	Average length	Number	Average length
A27)	1971	700}	103}	6.3}	-	-	24}	1.4}
B27)		2494}	367}	6.6}	-	-	67}	1.3}
A28)†	1972	985}	107}	5.9}	-	-	35}	1.2}
B28)		3676}	584}	6.1}	4	2.6	75}	1.5}
A29)	1973	774}	118}	6.0}	-	-	26}	1.3}
B29)		2984}	457}	5.8}	74	2.3	56}	1.5}
A30)	1974	874}	135}	6.0}	-	-	37}	1.2}
B30)		2938}	470}	5.4}	131	2.6	32}	1.3}
A31)‡	1975	1218}	140}	6.1}	-	-	31}	1.4}
B31)		2944}	446}	5.2}	230	2.4	38}	1.3}
A32)	1976	1038}	152}	6.0}	-	-	36}	1.1}
B32)		3360}	535}	5.0}	260	2.5	28}	1.1}

*Journal of Applied Crystallography*

		Articles		Short Communications		Crystal Data		
Vol.	Year	Number of pages*	Number	Average length	Number	Average length	Number	Average length
4	1971	534	74	5.6	23	1.7	8	1.2
5	1972	448	69	4.9	27	1.6	12	1.2
6	1973	502	62	5.5	18	1.3	13	1.7
7§	1974	638	103	5.4	10	1.5	18	1.4
8	1975	698	98	5.8	17	1.7	25	1.5
9	1976	514	71	5.8	19	1.6	25	1.6

\* Excluding indexes.

† Volume A28 includes 303 pages of abstracts communicated to the Kyoto Congress.

‡ Volume A31 includes 338 pages of abstracts communicated to the Amsterdam Congress.

§ Volume 7 includes 144 pages of papers and abstracts presented at the Third International Conference on Small-Angle Scattering, Grenoble, 1973.

|| Volume 8 includes 149 pages of papers and abstracts presented at the International Discussion Meeting on Studies of Lattice Distortions and Local Atomic Arrangements by X-ray, Neutron and Electron Diffraction, Jülich, 1974.

*of Applied Crystallography* will remain in Denmark. In addition to the change in the method of production, the cost of *Acta B* is being held down through the deposition of all extensive tables of thermal parameters, except in the few cases where immediate reference is necessary while reading a paper.

*Commission on Structure Reports*

Volume 40A (*Metals and Inorganic Compounds for 1974*) was published in 1976. In addition three indexes were published: *Strukturbericht Cumulative Index* (1913-39); *60-Year Structure Index* (Part A, *Metals and Inorganic Com-*

*pounds*, 1913-73); *60-Year Structure Index* (Part B, *Organic and Organometallic Compounds*, 1913-73). These indexes, particularly the *60-Year Structure Index*, should make the whole series much more easily accessible.

The following volumes are with the printer and should appear early in 1977: Volume 40B (*Organic Compounds for 1974*, 1227 pages in two parts); Volume 41A (*Metals and Inorganic Compounds for 1975*, 477 pages). Co-editorial work is proceeding on Volumes 41B, 42A and 42B.

*Commission on International Tables*

D. S. Fokkema continued his work on the computer pro-

duction of Volume B (*Direct Space*) of the new edition of *International Tables for Crystallography*. In May extensive phototypesetting tests of computer-produced page examples were completed and were distributed to the members of the Executive Committee and the Commission on *International Tables*. A line-printer copy for all 230 space groups was also prepared.

The Commission met in September during the Third European Crystallographic Meeting at Zürich, to discuss the new space-group tests. At this meeting the President of the Union informed the Commission that the Executive Committee had decided to postpone the decision on printing of Volume B until its next meeting in August 1977, in order to allow for complete and independent checking of all the data by several Commission members.

The changes in content and lay-out of the space-group tables decided at Zürich have been implemented in the program system. An important part of these corrections concerned the calculation of the symmetries of special projections in space groups. In December new space-group tests were carried out on the phototypesetting machine. Final tests will be made in the spring of 1977 when the new material on sub- and supergroups has been completed by H. Wondratschek and has been incorporated into the program system. An extensive set of space-group examples will then be distributed. It is hoped that these new calculations will form the basis for the publication of Volume B.

#### *Commission on Charge, Spin and Momentum Densities*

The main event sponsored by the Commission in 1976 was the Sagamore V Conference, organized by K. V. J. Kurki-Suonio and held in Finland in August. The conference was attended by 116 participants from 16 different countries; the seven review talks will be published in *Physica Scripta*. The preparation of the book on Compton scattering was completed by B. G. Williams and it will shortly be in print (*Compton Scattering*, published by McGraw-Hill). The comparison of different methods of calculating form factors and Compton profiles in ionic, covalent and metallic systems, coordinated by V. H. Smith, is continuing, 14 of the 25 groups originally approached having submitted data. A new project, aimed at gaining information about the consistency of diffraction studies of charge density, was initiated by E. N. Maslen. The crystal chosen is oxalic acid dihydrate.

The Commission gratefully acknowledges the Union's sponsorship of a seminar on electron density mapping in molecules and crystals, held in Rehovoth in April 1977. The next Sagamore conference will be held in Canada in 1979; the local organiser will be V. H. Smith.

#### *Commission on Crystal Growth*

The Commission met at the First European Crystal Growth Meeting in September, and will meet again at the Fifth International Conference on Crystal Growth in July 1977. The Commission has commenced a compilation of films on crystal growth and a study on the possibility of contributing to the standardization of nomenclature in the field of crystal growth, in collaboration with the International Organization for Crystal Growth and the International Union of Pure and Applied Chemistry. It is considering the possibility of organizing a Symposium on Growth Defects in 1979 or 1980.

The Commission does not feel that it is likely to be able to make a significant contribution to the project on solubility data, following the termination of the CODATA task

group, but is remaining in contact with the IUPAC sub-committee which has taken over the project (see the report on the CODATA task group).

#### *Commission on Crystallographic Apparatus*

All matters were attended to through correspondence.

1. *Small-Angle Scattering Absolute Intensity Project* (R. W. Hendricks). A final report on this project was completed and will be submitted to the *Journal of Applied Crystallography* for publication. The results obtained from measurements made by seven laboratories in six countries on standard glassy carbon and polystyrene samples were compared on the basis of several statistical analyses. It was found that systematic errors such as determining the zero of angle, dead time corrections, and termination errors in collimation corrections were of more significance than errors in absolute calibration.

2. *Powder Intensity Project* (P. Suortti and L. D. Jennings). Work has been completed on a critical appraisal of the measurement procedures used in accurate powder intensity determination [*Acta Cryst.* (1977), A33, 1012-1027].

3. *Single-Crystal Radiation Damage Project - Phase II* (R. Rudman and S. C. Abrahams). The proposals described in last year's annual report were rejected by the National Science Foundation.

4. *Single-Crystal Intensity Measurement Project - Phase II* (A. McL. Mathieson). The final report is being prepared.

5. *Accuracy of Intensities Determined Microdensitometrically* (S. Abrahamsson, P. Kierkegaard, G. Lundgren). A series of carefully prepared precession photographs have been prepared and are currently being circulated among a score of laboratories equipped with microdensitometers. The results will be statistically compared in terms of the instrumentation and processing of these data.

6. *Radiation Safety* (R. Rudman and M. Colapietro). A survey of current regulations in this area is in progress. A definitive report on the proper use of a survey meter for soft X-rays is being prepared by an authority in this field.

7. *Index of Crystallographic Supplies* (R. Rudman). A supplement to the current Third Edition is now being prepared on the basis of questionnaires that were submitted to manufacturers, and will be published in the *Journal of Applied Crystallography*.

8. *Future Projects*. Three new projects are currently in the planning stage: (a) A survey of the area of anomalous scattering factors is being prepared by S. Hosoya. (b) Preliminary studies have been initiated for an Inter-Congress meeting (1979) on Accuracy in Powder Diffraction. (c) The possibility of conducting a detailed comparison of X-ray film characteristics is being investigated.

#### *Commission on Crystallographic Computing*

All matters were attended to by correspondence. Following discussions at the Commission meeting held in Prague in 1975, there was further consideration of the *Recommendations for the Editors of Scientific Journals concerning the Reporting of Crystal Structure Determinations*, prepared by the Commission on Crystallographic Data. The Commission intends to organize an Inter-Congress meeting in 1977 and a computing school in the Far East in 1979. Current activities continued at a very low level because of various difficulties encountered by some members of the Commission. No progress was made with the 'bank of trial structures' or with the development of additional standard tests for computing.

*Commission on Crystallographic Data*

During the year the Commission has drawn up a list of *Recommendations for the Editors of Scientific Journals concerning the Reporting of Crystal Structure Determinations*. It is intended to encourage and help editors in providing guidelines for authors of crystallographic papers. The document will shortly be circulated outside the Commission for 'final' comments.

Progress has been made towards defining a card image format (FICS-FORM) that would be suitable for the exchange of crystal structure data and programs. It is based on the formats used by the XRAY program system and the Cambridge Crystallographic Data Centre and is intended to be compatible with them. A final version should be ready before the next International Congress of Crystallography.

Following discussions at the Amsterdam Congress, a group of interested crystallographers met informally at the Third European Crystallographic Meeting in Zürich to plan the establishment of an *Inorganic Crystal Structure Data Base*, complementary to the organic data base which is maintained in Cambridge. In the latter part of the year Commission members G. Bergerhoff and I. D. Brown, together with G. Dittmar (Darmstadt), agreed to cooperate in setting up a data base on an experimental basis. This project would commence in January 1977.

Agreement has been reached on the question of the publication of a bibliography of mathematical crystallography. W. Nowacki will send specimen pages to the Union Office and the Technical Editor will advise on how the material should best be presented.

*Commission on Crystallographic Nomenclature*

The Commission has not met during the year, but some matters have been discussed by correspondence. The Joint Committee on Nomenclature of the International Union of Crystallography and the International Mineralogical Association, in which the Chairman of the Commission on Crystallographic Nomenclature has participated *ex-officio*, has completed its report, which will be published in *Acta Crystallographica* [*Acta Cryst.* (1977). A 33, 681–684] and in *The American Mineralogist*.

*Commission on Crystallographic Studies at Controlled Pressures and Temperatures*

During 1976 the Commission has planned a study by several laboratories of the transition in ZnS from the semiconductor to conductor state, which occurs at approximately 150 kbar. ZnS was chosen because the transition can be observed by several means, including optical and electrical. Thus the reproducibility of a transition pressure in the non-hydrostatic range can be determined by a variety of techniques, including crystallography.

In conjunction with the Commission on Crystallographic Apparatus, the Commission has made preliminary plans to hold an Inter-Congress meeting on Accuracy in Powder Diffraction, probably in June 1979 at the National Bureau of Standards, Washington DC, USA.

*Commission on Crystallographic Teaching*

This has been an active year for the Commission, with a high percentage of response and cooperation from the members and consultants.

1. *Pamphlet project*. In the early months of the year the manuscripts for the pamphlets on teaching particular topics began to come in and the following titles are now to hand:

*Introduction to the reciprocal lattice* by A. Authier;  
*Superposition methods and complementary structures* by E. Hoehne;  
*Derivation of symmetry operations by tensor methods* by G. Rigault;  
*Introduction to direct methods* by Y. Sasada;  
*New developments in laboratory teaching for crystallography* by C. H. L. Kennard;  
*Introduction to industrial uses of X-ray diffraction (e.g. titanium dioxide)* by M. Laing;  
*Anomalous dispersion of X-rays in crystallography* by S. Caticha-Ellis;  
*Introduction to Fourier synthesis* by C. A. Taylor.

These pamphlets will form a major input to the Summer School (see item 2 below).

2. *Summer School*. The Summer School on Teaching Crystallography for Today's Sciences, which was first discussed during the Amsterdam Congress, is in an advanced state of preparation. Some 14 lecturers and about 76 students representing 32 countries are already committed to attendance. Financial help has been forthcoming from the Union, Unesco, two or three commercial firms involved in making crystallographic products, the British Council, COSTED and other organizations. It was felt that a wide spreading of the financial load in this way was preferable to a massive subsidy from just one or two sources; though it does mean extra effort on the part of the organizers. The Director of the school is the Commission's secretary, A. Authier, and its local organizer is L. Riva di Sanseverino.

3. *Meetings of the Commission*. A meeting of some members of the Commission was held during the Third European Crystallographic Meeting at Zürich, at which the main item of discussion was the Summer School. An open session was also held and was attended by a satisfyingly large proportion of those attending the meeting.

4. The *Atlas of Optical Transforms*, which was the final element in the Commission's Pilot scheme with Unesco on teaching materials and was published last year, has been adopted as a required text by the UK Open University for a course for which some 500 students are expected to enrol each year.

5. The annual list of summer schools was produced by the Commission's secretary.

*Commission on Electron Diffraction*

Some members of the Commission were involved in the planning of the Conference to celebrate the Fiftieth Anniversary of the Discovery of Electron Diffraction, to be held in London, 19–21 September 1977. The programme committee made a good choice of nine invited lecturers, covering the theory and applications of LEED and HEED. Suggestions to include gas-phase electron diffraction and to consider historical aspects in the choice of lecturers were not taken into account by the working-steering committee of the conference.

The members of the Commission representing gas-phase electron diffraction are considering the question of how to improve quick communication among those engaged in this field. For the purpose of rapid distribution of information on newly completed work, the organization of a kind of periodical newsletter is under discussion. The Commission may consider the advantage of similar arrangements for the other special fields of LEED and HEED research.

*Commission on Neutron Diffraction*

In this year the 30th anniversary of the application of neutron diffraction to crystallographic problems was celebrated by a meeting in Gatlinburg, USA, sponsored by the Oak Ridge National Laboratory and USERDA. It gave a very impressive review of the type of problems which can now be tackled by the neutron diffraction method.

The Commission was able to meet during the conference. Of the problems on the agenda an important task was the appointment of a new editor for the *Neutron Diffraction Newsletter*. The former editor, B. Klar, had left the field of neutron diffraction and had resigned from the Commission. W. B. Yelon was appointed as the new editor. The *Newsletter* will now appear more frequently. It will be the proper forum for announcements about meetings, courses, schools, etc., and will contain notes about recent developments in instruments and techniques. It is hoped that it will serve as a convenient means of communication within the neutron diffraction community. Everybody active in this field is invited to send their communications to Dr W. B. Yelon (University of Missouri, Research Reactor Facility, Columbia, Missouri 65201, USA). Commercial announcements will also be accepted.

The powder profile refinement technique has proved itself a very valuable tool in the treatment of neutron diffraction data. As part of the spectrometer intercomparison project of the Commission, the results of this method on a standard  $\text{Al}_2\text{O}_3$  powder sample obtained under different experimental conditions will be compared. Invitations to participate in the project are now being sent out.

**Sub-Committee on the Union Calendar**

This Sub-Committee receives and considers requests for Union sponsorship and nominal financial support, and makes recommendations to the Executive Committee. The Union has endorsed the guidelines adopted by ICSU in 1974, regarding the free circulation of scientists and the sponsorship of meetings.

Acting on recommendations made by the Sub-Committee, during 1976 the Executive Committee approved sponsorship of, and usually financial support to, the following meetings:

1. Fifth Iber-American Congress of Crystallography (Madrid, Spain, 10–17 December 1976).
2. Bat-Sheva Seminar on Electron Density Mapping in Molecules and Crystals (Rehovoth, Israel, 18–28 April 1977).
3. Fourth European Crystallographic Meeting (Oxford, England, 30 August – 3 September 1977).
4. Summer School on Teaching of Crystallography for Today's Sciences (Erice, Italy, 5–15 September 1977).
5. 50th Anniversary of the Discovery of Electron Diffraction (London, England, 19–21 September 1977).

Other meetings held in 1976 which received Union support are listed at the beginning of this Report of the Executive Committee, under the heading *Meetings*. Organizers of meetings wishing to seek Union sponsorship should write, as early as possible, to the Chairman of the Sub-Committee, Professor D. P. Shoemaker, Chemistry Department, Oregon State University, Corvallis, Oregon 97331, USA. Unfortunately, severe limitation of the funds available to the Union necessitates strict restraint in the provision of financial support.

**IUCr-IMA Joint Committee on Nomenclature**

During 1976 a draft version of the final report of the Joint Committee was circulated to the officers and to the Nomenclature Committees of the IUCr and the IMA, as well as to the national delegates of the IMA. The comments received back were then reconsidered by the Joint Committee and a modified final report was prepared for publication. The report is being published in *Acta Crystallographica* [*Acta Cryst.* (1977). A33, 681–684] and in *The American Mineralogist*.

**Representatives on Other Bodies***Abstracting Board of the International Council of Scientific Unions*

The Abstracting Board held a series of meetings at the National Library of Medicine (Bethesda, Maryland, USA) during the period 21–25 June 1976. There was also a symposium on Information Demand and Supply for the 1980s, held in the auditorium of the National Academy of Sciences, Washington, DC, USA. The meetings of the Full Board included a technical session on the availability and use of on-line information services. During the business sessions three new member services were admitted (rather obscure in comparison with the large services that have been the main support of the Board in the past). The next meeting of the Board, which will be a General Assembly, will be held in York, England, the local arrangements being made by one of the member services, the *Zoological Record*.

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

The Fifth International Conference of CODATA was held in Boulder, Colorado, USA, 28 June – 1 July. It was followed by the Tenth General Assembly on 2–3 July. The General Assembly was attended by delegates from 13 nations and 8 International Unions, together with about 25 invited observers. During the Assembly reports were presented on the activities of the Task Groups and discussions ensued on future efforts of these groups. Some of the more generally applicable studies are outlined below.

1. *Flagging and Tagging of Data*. The initial study of the problem by a joint working group of CODATA and ICSU AB has been completed and the report published as *CODATA Bulletin* 19. D. G. Watson and A. J. C. Wilson participated in this study. Future activity in this area will be at the initiative of ICSU AB and may take the form of the development of an actual scheme for flagging/tagging.

2. *World Data Referral Centre*. The Task Group on the Accessibility and Dissemination of Data (ADD) has published the report of its feasibility study as *(CODATA) Special Report 2*. The Task Group has now drawn up a detailed plan of how to implement the proposals which emerged from the feasibility study. A contract has been signed with Unesco to provide for the acquisition of indexes and other materials necessary for the operation of such a centre. A planning committee has been appointed and D. G. Watson has been asked to act as chairman.

3. *Sourcebook for Data Handling*. The ADD Task Group, with the help of other CODATA Task Groups and individuals, plans to prepare a sourcebook on data handling. This will cover a wide range of topics such as publication and deposition of data, abstracting and indexing services, microforms, flagging of data, computer input–output, storage

devices, graphic displays, networks, etc. For each topic there will be a rather brief summary but it is hoped that good references to state-of-the-art reviews will be provided. S. A. Rossmassler and D. G. Watson are editors for this project.

4. *Directory of Data Sources.* The *CODATA Compendium*, now very out-of-date, is being updated and each chapter will appear as an issue of the *CODATA Bulletin*. Section editors have been appointed for various subject fields and the first chapter, on crystallography, has recently been completed by D. G. Watson. It covers 16 centres and 121 publications relating to compiled crystallographic data. It will be published as *CODATA Bulletin* 24.

5. *Interchange Formats.* The Task Group on Computer Use (CU), under the chairmanship of O. Kennard, has embarked on a study of the design of a computer format which is suitable for the interchange of files of numeric data.

6. *Use of Computer Networks.* The CU Task Group is also planning to study the use made of computer networks in the searching and retrieval of numeric data. Both this study and the study on interchange formats could be of interest to the users of crystallographic data files.

#### *Committee on the Teaching of Science of the International Council of Scientific Unions*

C. A. Taylor attended the following meetings during the year, on behalf of the Union:

1. A full meeting of the Committee and a seminar on the contributions of various disciplines to the teaching of science at school level, held in London in May.
2. A meeting of officers of the Committee, in Washington DC, 8–9 October.
3. A meeting of the Sub-committee on Mathematics Teaching, in Paris on 26 October.

J. L. Lewis has succeeded D. G. Chisman as Secretary of the Committee. Preparation of a series of pamphlets on *Teaching and Learning Strategies in Higher Education*, under a Unesco contract, is well under way and three or four of the ten commissioned manuscripts are already in hand. A publisher is available and it is hoped that the booklets will appear before the end of 1977. A similar project on 'Cooperation between Teachers of Science and Mathematics', in collaboration with the International Committee on Mathematics Instruction, is now being set up and will lead to the publication of papers and the holding of a seminar in 1978. A joint programme with COSTED on environmental education has already led to two regional seminars (one in Ghana and one in Malaysia), and a third in Latin America is being planned.

A major international conference on integrated science, which will review progress made since the Varna conference in 1968, is being planned for the spring of 1978 at Nijmegen in the Netherlands. The new International Council of Associations for Science Education, which was set up by the ICSU CTS in 1975, is the main organizer.

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

On the recommendation of the Commission, the IUPAP Executive Committee approved sponsorship of seven conferences for 1977: International Conference on the Physics of Transition Metals, Toronto, Canada; Fifth International Conference on Crystal Growth, Boston, USA (co-sponsored by IUCr); Seventh International Vacuum Congress and Third International Conference on Solid Surfaces, Vienna,

Austria; International Symposium on Solid State Physics, Calcutta, India; International Symposium on Lattice Dynamics, Paris, France; Fourth International Conference on Ferroelectricity, Leningrad, USSR (co-sponsored by IUCr); Sixth International Conference on Internal Friction and Ultrasonic Attenuation, Tokyo, Japan. Only three of these conferences received offers of financial grants.

For the first time in recent years the Commission met in person, in September 1976, with half the members present. Recommendations were made on clarifying relationships with other Commissions (Magnetism, Low Temperature, Semiconductors), on criteria for the sponsorship and support of conferences and on publicity for the activities and operational procedures of IUPAP.

#### *Conference Committee of the European Physical Society*

The representative of the Union took part in one meeting of the Committee and in postal ballots concerning sponsorship of various meetings by the European Physical Society.

The main function of the IUCr representative on the Committee is to facilitate the exchange of information on dates, places and subjects of scientific meetings which are of interest both to physicists and crystallographers.

#### *International Organization for Crystal Growth*

IOCG has obtained Associated Organization status with IUPAC and the arrangements to allow for similar association with IUCr are in progress. C. S. Sahagian has been nominated by IOCG as its *ex officio* member of the Union's Commission on Crystal Growth, and the cooperation between the IOCG and the IUCr is good. In particular, joint action is being considered for the standardization of nomenclature in the field of crystal growth.

#### *Ad hoc Group on Materials Sciences in Space of the Committee on Space Research*

In conjunction with the 19th Annual Meeting of the Committee on Space Research (COSPAR), held in Philadelphia, USA, in June, a Symposium on Materials Science in Space was organized and was co-sponsored by IUCr. The Union representative, E. Kaldis, and also R. A. Laudise and A. A. Chernov, participated in the work of the Programme Committee. The programme contained several interesting papers of scientific and technological background but also a few contributed papers of doubtful quality. The results of the COSPAR Symposia can be summarized as follows:

1. It became clear that serious judgement of the reported 'new' phenomena in space is not possible before a sound fundamental investigation of the influence of zero gravity on various physicochemical parameters has been performed.
2. Some important national institutions who substantially finance space research, in their wish to promote technological applications in space, tend to underestimate the primary importance and priority of fundamental investigations before applications become possible. As a result, poorly designed experiments have been supported which do not produce clear results.

In his address at the COSPAR Plenary Meeting, Dr Kaldis pointed out that, in the long run, this policy might be much more expensive, as nothing important could be expected from such hurried, 'trial-and-error' materials research. In fact, after substantial amounts of money had been spent on bad scientific policies, the bitter moment might come when various governments might abruptly stop

financing such adventures. In this way a unique opportunity for scientific research could be lost.

As a result of these discussions, the participants agreed to suggest to COSPAR that a COSPAR Working Group in Materials Science in Space be set up, on the understanding that this Group would try to improve the level of space research in this field. Most members of the Working Group are experienced materials scientists. This suggestion was accepted by COSPAR and the newly founded Working Group will hold its first meeting during the 20th COSPAR annual meeting in Tel-Aviv in June 1977.

#### *CODATA Task Group on Solubility Data*

The Union has been represented on this Task Group of ICSU Committee on Data for Science and Technology by R. A. Laudise. The original plan was for the Task Group to act in an advisory capacity on the compilation, critical evaluation and publication of solubility data in all physical systems of importance to various areas in science and technology. However, as the result of several difficulties there has been some reorganization. The Task Group has now been terminated and, with it, the Union's involvement in the project. The project has been taken over by the IUPAC Sub-Commission on Solubility Data. The IUCr has offered the Sub-Commission any assistance necessary in the future, should the need arise.

#### *Coordinating Committee for the Moon and Planets*

The Committee was convened by ICSU, following the 1965 meeting of the ICSU General Committee, the Union being represented by M. Ross, with J. J. Papike as alternate. Its aims are to further international cooperation in scientific studies and exchange of information on the moon and the planets of our solar system. It will also coordinate proposals for international meetings and study topics submitted by the various cooperating international Unions.

The first meeting of the Committee took place at Grenoble, 25–31 August, on the occasion of the Congress and General Assembly of the International Astronomical Union. The Committee recommended that a special evening program on Mars and Venus be given at the ICSU meeting in October 1976 and it also drafted a report to ICSU concerning possible activities for the International Solar System Decade Programme.

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

The Union was represented at the meeting of the ICSU General Committee and the 16th ICSU General Assembly, which were held in Washington, DC in October, by its Vice-President, Professor B. K. Vainshtein, and its Executive Secretary, Dr J. N. King.

Along with other decisions the General Assembly (1) accepted a report submitted by the *ad hoc* Committee on Recombinant DNA Molecules and resolved to establish a Scientific Committee on Genetic Experimentation to monitor, assist and report on such experimentation, with representation from the interested Unions and Committees; (2) accepted a modified proposal for an International Solar System Decade and authorised the establishment of an appropriate steering committee; (3) passed on to the General Committee and Executive Board a survey *ICSU and the Agricultural Sciences*; (4) invited all members of ICSU to give special consideration to the environmental problems defined in the report *Environmental Issues 1976*, prepared by

the Scientific Committee on Problems of the Environment; (5) transformed the Special Committee on Science and Technology in Developing Countries into a Scientific Committee; (6) invited all Unions to make known and follow the suggestions of the Committee on the Free Circulation of Scientists in the brochure *Advice to Organizers of International Scientific Meetings*; (7) recommended that all Unions adhere to the principle of the universality of science and not exclude from membership any community of scientists which effectively represent the scientific activity in a definite territory; (8) expressed its eagerness to welcome into ICSU and the Unions, national members (Adhering Bodies) representing the scientific community of the People's Republic of China; (9) changed the title of the Committee on Migration to the 'Committee on the Safeguard of the Pursuit of Science' and modified its terms of reference; (10) adopted the report of the Assembly Finance Committee and approved the accounts for the period since the 15th General Assembly.

#### **Finances**

The audited accounts for the year 1976 are given at the end of this Report. For comparison, the figures for 1975 are provided in italics. Negative quantities are indicated by parentheses.

The Unesco rates of exchange, as issued by the ICSU secretariat, have been used in the preparation of these accounts. As a consequence of the many fluctuations in exchange rates during the year, the following procedure has been adopted for the accounts. Assets and liabilities in currencies other than US dollars at 31 December 1976 have been translated into US dollars in the Balance Sheet at the rate operative at that date. For the Income and Expenditure Accounts, transactions have been translated into US dollars by applying the rates of exchange appropriate to the individual dates of these transactions. As a consequence of the fluctuations in exchange rates, a loss has arisen on the assets of the Union, in terms of US dollars, amounting to \$12 631. This loss has been divided amongst the eight Fund Accounts with credit balances, in direct proportion to the balances on these accounts at 31 December 1976.

The *Acta Crystallographica* account for 1976 shows a profit of \$29 362 as compared with a profit of \$4629 for 1975. The increase of 20% in the subscription rates for 1976 was sufficient to cover the increases in publishing costs during the year. The number of subscribers to both sections of the journal dropped from 1730 in 1975 to 1643 in 1976. These figures included 197 personal subscriptions in 1975 and 178 in 1976. There were also 205 subscribers to Section A and 116 subscribers to Section B in 1976. As in previous years, the total cost of the technical editing office has been divided between the *Acta Crystallographica* and the *Journal of Applied Crystallography* accounts in percentages based on the number of text pages published during the year; 89% and 11% respectively for 1976. The technical editing costs are lower than in 1975 mainly because these costs are incurred in sterling, a currency which dropped significantly in value with respect to the US dollar in 1976. These costs still form only a small part of the overall production costs. The journals accounts have also been charged with administrative expenses as shown in the General Fund.

The *Journal of Applied Crystallography* account shows a profit of \$10 645 as compared with a deficit of \$5442 in 1975. This profit is the result of increasing the subscription



rates for 1976 by 5½% and of not publishing so many pages. The size of the 1975 volume was larger because it contained many papers presented at the International Discussion Meeting on Studies of Lattice Distortions and Local Atomic Arrangements by X-ray, Neutron and Electron Diffraction, held in Jülich, 29 April – 3 May 1974. The number of subscribers dropped slightly, from 1205 in 1975 to 1185 in 1976. These figures included 116 personal subscriptions in 1975 and 110 in 1976.

The index for 1976 was bound in with Part 6 of Volume 9. Hence the cost of printing this index is included in the total printing costs for 1976 and is not shown as a separate line entry in the accounts.

The *Structure Reports* account shows a profit of \$60 634 as compared with a profit of \$16 564 in 1975. This is the result of the publication of five annual volumes, cumulative indexes for structure determinations published during the period 1913–1973 and cumulative indexes for *Strukturbericht* (1913–1939). Most of the editorial honoraria for the volumes published in 1976 had been paid in previous years. Nevertheless the editorial expenses totalled \$34 032 in 1976, and a further \$4 625 was spent on typing manuscripts for the photo-offset printing.

The *International Tables* account shows a deficit of \$8117 as compared with a deficit of \$2008 in 1975. The sales of Volume IV, which was published in November 1974, dropped to 463 copies as compared with 920 in 1975. 532 copies of the other volumes were sold in 1976 as compared with 824 in 1975. This reduction is mainly the result of Volume I going out of print in mid 1976. Although it had earlier been decided not to reprint Volume I, delays in finalization of the data for the new volume in direct space convinced the Executive Committee that Volume I should be reprinted. The reprint was completed early in 1977. The expenses for the volume on direct space included \$17 711 for salary and other expenses directly related to the computer preparation of the volume.

\$85 was received from the sale of 8 copies of *Fifty Years of X-ray Diffraction. Symmetry Aspects of M. C. Escher's Periodic Drawings* was reprinted at a cost of \$4432 and \$1981 was received from the sale of 186 copies. The sale of 11 copies of Volume I and 10 copies of Volume II of *Early Papers on Diffraction of X-rays by Crystals* yielded \$226, reducing the deficit on the fund account to \$8127.

The *Molecular Structures and Dimensions* account shows a profit of \$540. Volume 7 was published in 1976 and the earlier volumes continued to sell steadily. The excess of income over expenditure, \$10 798, was shared between the University of Cambridge and the Union in the ratio 19:1.

The General Fund account shows a profit of \$19914 as compared with a deficit of \$2001 in 1975. The administrative expenses were \$31 447 in 1976 as compared with \$30 147 in 1975. These figures include the expenses of the Executive Secretary's office, which remained almost unchanged from 1975 when expressed in US dollars. These expenses are incurred in sterling, a currency which dropped significantly in value with respect to the dollar in 1976.

Although \$1750 was spent on supporting scientific meetings, some of the money allocated to the 1975 Summer School on Crystallographic Computing was not utilised, reducing the net support in 1976 to \$834. A further \$1000 was allocated to assist a Commission Meeting. A charge of \$4423 was made to the General Fund for the publication of the Report of the Tenth General Assembly and Congress. The income from subscriptions increased to \$29 040, with the increase of the unit contribution to \$220, and the grant from the Unesco subvention was increased from \$4000 to \$5000. Sales of the Proceedings of the Madrid Conference in Anomalous Scattering yielded \$2457, reducing the net deficit on this publication to \$3139.

With the continued redemption of the investments held by the Union, the income from investments dropped to \$16 254 from \$17 752 in 1975. In 1976 a profit of \$718 was made on the redemption of Dfl 35 000 and \$5000 of investments. However, interest from banking accounts increased to \$5323 from \$2738 and, for the first time since 1972, the Union was able to purchase some new investments to compensate for the investments redeemed since then. The new investments have a maturity value of DM 150 000.

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 \$13 900, 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. At the end of 1976 the Union held investments in government bonds with a total maturity value of Dfl 204 000, plus \$77 000, plus £30 000, plus Swiss F 18 000, plus DM 150 000.

The total of \$161 147 with the Banks at the end of the year was represented by Dfl 289 322 and \$289 with the Amsterdam-Rotterdam Bank, \$24 188 with the First National City Bank, £11 695 with the National Westminster Bank, Swiss F4475 with the Union Bank of Switzerland and Dkr 1576 with the Handelsbanken i Aarhus. The amounts shown in the Balance Sheet for debtors and creditors relate to sums, principally on the publishing accounts, due at 31 December 1976. Where appropriate, these amounts have now been settled.

The Balance Sheet shows that the assets of the Union, expressed in US dollars, have increased during the year, from \$369 982 to \$468 189, after including the deficit of \$12 631 resulting from fluctuations in rates of exchange but excluding stocks of unsold publications. Although this is a healthy increase it only brings the Union's assets back to a level slightly higher than in 1971, since when the Union's turnover has increased dramatically with the increasing costs of publication. In particular 1975 and 1976 have seen the publication of the large back-log of *Structure Reports* volumes, for which most of the editorial expenses had been incurred in previous years. Hence for *Structure Reports* in particular it has been an exceptional year and there is no likelihood of a similar excess of income over expenditure occurring in the future.

## International Union of Crystallography

## Balance Sheet as at 31 December 1976

	US Dollars		US Dollars	
	1976	1975	1976	1975
<b>FUND ACCOUNTS</b>			<b>CURRENT ASSETS</b>	
General Fund	As at 31 December 1975	Balance at 31 December 1976	Cash at Banks	29,962
Acta Crystallographica	79,520	97,050	Current Accounts	131,185
Journal of Applied Crystallography	195,757	219,724	Deposit and Savings Accounts	161,147
Crystallography	36,497	10,645	Cash with Union Officials	2,621
Structure Reports	33,515	60,634	Debtors	129,934
International Tables	(29,976)	(8,117)	Subscriptions from Adhering Bodies, due from 1973 to 1976	1,420
General Publications	52,294	51,041	Less Paid in Advance	(1,420)
Fifty Years of X-ray Diffraction	2,013	2,048	Debit Creditors	295,122
Escher Drawings	5,603	3,076	Net Current Assets	94,800
Early Papers	(8,353)	(8,127)		200,322
Molecular Structures and Dimensions	3,112	3,565		
	<u>\$369,982</u>	<u>\$110,838</u>	<b>FIXED ASSETS</b>	
			Investments at market value on 31 December 1976	209,681
			Add Depreciation in value of Investments entered as an asset	21,852
				<u>231,533</u>
			Office Equipment at cost, less depreciation	1,092
			Total Fixed Assets	267,867
				<u>\$468,189</u>
				<u>\$369,982</u>

The attached notes form an integral part of these accounts.

## Report of the Auditors to the International Union of Crystallography

We have examined the above Balance Sheet and the annexed Income and Expenditure Accounts which have been prepared under the historical cost convention.

In our opinion these accounts give, under the accounting convention stated above, a true and fair view of the state of the Union's affairs at 31 December 1976 and of the results for the year ended on that date.

Manchester, England  
1 July 1977

Signed: MANN JUDD

Chartered Accountants

## INTERNATIONAL UNION OF CRYSTALLOGRAPHY

## General Fund Account for the year ended 31 December 1976

	US Dollars			US Dollars	
	1976	1975		1976	1975
Subscription to ICSU (2½% of subscriptions received from Adhering Bodies in 1975)	525	534	Grant received from UNESCO	5,000	4,000
Subscription to ICSU Abstracting Board	300	300	Subvention to ICSU	29,040	21,120
Subscription to ICSU Committee on the Teaching of Science	300	200	Subscriptions from Adhering Bodies	16,254	17,752
Administration Expenses:			Interest on Banking Accounts	5,323	2,738
Honoraria: General Secretary, Treasurer and Secretarial Assistance	1,377	1,352	Profit on Redemption of Investments	718	333
Audit and Accountancy Charges	1,650	1,717	Net Sale of copies of <i>World Directory of Crystallography</i> ; 4th Edition	17	57
Taxation Services	265	-	Sales of the Proceedings of the Madrid Conference on Anomalous Scattering	2,457	2,565
Legal Fees	1,195	391	Net Sale of Sundry Publications (Bibliographies, <i>Book List</i> , <i>List of Computer Programs and Index of Crystallographic Supplies</i> )	61	192
Postages, Stationery, Printing and Sundries	178	509	Donation	-	77
Travelling Expenses	786	226	Grant from UNESCO for Summer School on Crystallographic Computing	-	2,000
Bank Charges and Differences on Exchange	363	472	Less Payment to Summer School	-	2,000
Executive Secretary's Office: Salary and Expenses	25,456	25,302	Amount charged to Journals and Publications:		
Depreciation of Office Equipment	177	178	<i>Acta Crystallographica</i>	7,168	6,825
Tenth General Assembly and Congress: Publication of Report	4,423	-	<i>Journal of Applied Crystallography</i>	2,389	2,275
Executive Committee	-	7,926	<i>Molecular Structures and Dimensions</i>	240	240
Travel Grants	-	6,604		9,797	9,340
General Assembly	-	971			
Expenses of Commissions	-	590			
Meeting of the Executive Committee	-	7,220			
Travel Expenses of IUCr	-	-			
Representatives on Other Bodies	2,704	1,068			
Expenses of Commissions	1,000	174			
Sponsorship of Meetings	834	3,500			
Publication of the Proceedings of the Madrid Conference on Anomalous Scattering	-	8,161			
Excess of Income over Expenditure carried to Balance Sheet	19,914	(2,001)			
	<u>\$68,667</u>	<u>\$58,174</u>		<u>\$68,667</u>	<u>\$58,174</u>

The attached notes form an integral part of these accounts.

**Acta Crystallographica Account for the year ended 31 December 1976**

US Dollars 1976

1976

US Dollars

Subscriptions to Volume 32	436,372	376,079		
(1975 Volume 31)				
Sale of Back Numbers and Single Copies	9,978	67,079		
Sale of Index to Volumes 11-23	14,282	2,922		
Airfreight Charges to Subscribers	7,898	1,547		
Subscribers	8,080	5		
Royalties	24			
Less Publishers' Commission on Sales	468,554	71,553		
Income from Advertisements	1,379	311		
Less Advertising Agents' Commission and Expenses	207	47		
207				
422,491	62,803			
39,363	8,411			
401,554	68,944			
326,872	48,072			
3,697	1,769			
3,530	2,545			
867	1,769			
39,069	48,072			
169	48,072			
56,564	48,072			
7,168	1,274			
64,886	1,573			
6,825	2,479			
4,629	1,573			
29,362	44,020			
\$423,663	37,159			
\$362,696	37,159			

**Journal of Applied Crystallography Account for the year ended 31 December 1976**

The attached notes form an integral part of these

Subscriptions to Volume 9	67,079	67,079		
(1975 Volume 8)				
Sale of Back Numbers and Single Copies	2,922	67,079		
Airfreight Charges to Subscribers	1,547	2,922		
Royalties	5	1,547		
Less Publishers' Commission on Sales	71,553	67,079		
Income from Advertisements	311	311		
Less Advertising Agents' Commission and Expenses	47	47		
47				
62,803	8,750			
8,411	8,750			
68,944	71,553			
48,072	48,072			
1,769	1,274			
2,545	1,573			
1,769	2,479			
41,473	44,020			
41,473	44,020			
-	37,159			
41,473	37,159			
48,072	37,159			
1,274	37,159			
50,827	37,159			
1,481	37,159			
2,508	37,159			
960	37,159			
94	37,159			
477	37,159			
9,319	37,159			
50	37,159			
13,408	37,159			
2,275	37,159			
(5,442)	37,159			
\$61,068	37,159			
\$63,067	37,159			

**Structure Reports Account for the year ended 31 December 1976**

	US Dollars	
	1976	1975
Publication Expenses:		
Printing and Binding Volumes 34B, 37B-39B, 40A and Cumulative Indexes (1975 Volumes 28, 30A-35A and 37A, 30A)	85,283	100,124
Typing of Manuscripts	4,625	5,622
Editorial Expenses:		
Salary and Honoraria: Editors, Abstractors and Assistants	33,794	43,868
Office and Travelling Expenses	61	257
Depreciation of Office Equipment	177	177
<i>Excess of Income over Expenditure carried to Balance Sheet</i>	60,634	16,564
	<u>\$184,574</u>	<u>\$166,612</u>
Sales of Copies of Volumes 8-33, 34A, 35A, 35B and 37A-39A	17,848	198,341
Volumes 34B, 37B-39B and 40A	155,839	-
Cumulative Indexes	46,969	-
Ten-Year Sets	3,151	3,690
	<u>223,807</u>	<u>202,031</u>
Less Publisher's Commission on Sales	39,233	35,419
	<u>184,574</u>	<u>166,612</u>

**International Tables Account for the year ended 31 December 1976**

	US Dollars	
	1976	1975
Publication Expenses:		
Printing and Binding Volume IV	-	2,357
Printing Prospectus for Volume IV	-	411
Binding Additional Copies of earlier volumes	-	1,043
Editorial Expenses:		
Secretarial Assistance and Postages	480	170
Travelling	-	1,142
Computer Trial Project:		
Salary	17,174	15,497
Travelling and Miscellaneous Expenses	537	1,005
	<u>\$18,191</u>	<u>\$21,625</u>
Sales of Copies of Volume I, II, III and IV	15,176	26,838
Less Publisher's Commission on Sales	5,107	7,226
Sales of Copies of N.B.S. Monograph	-	5
<i>Excess of Expenditure over Income carried to Balance Sheet</i>	8,117	2,008
	<u>\$18,191</u>	<u>\$21,625</u>

The attached notes form an integral part of these accounts.



**Notes on the Accounts  
for the year ended 31 December 1976**

**1. Accounting Policies**

*(a) Rates of Exchange*

UNESCO rates of exchange as issued by the ICSU Secretariat have been used in the preparation of these accounts.

Assets and liabilities in currencies other than US Dollars at 31 December 1976 have been translated into US Dollars in the Balance Sheet at the rates operative on that date. These are as follows compared with the US Dollar:

	1976	1975
Netherlands Guilders	2.51	2.67
Danish Crowns	5.87	6.06
Pounds Sterling	0.606	0.495
Swiss Francs	2.44	2.66
German Marks	2.39	2.60

In each of the Income and Expenditure Accounts, transactions in currencies other than US Dollars have been translated into US Dollars by applying the standard rates of exchange appropriate to the individual dates of these transactions.

Profits and losses arising from the fluctuations in rates of exchange during the year have been divided between the eight Fund Accounts with credit balances in direct proportion to those balances at 31 December 1976.

*(b) Stocks of Unsold Copies of Union Publications*

The value of these stocks has not been taken into account for Balance Sheet purposes. Publication, editorial and administrative expenses of the publications have been charged in the accounts as revenue expenditure as and when incurred.

*(c) Depreciation*

(i) Investments have been included in the Balance Sheet at market value. To this has been added depreciation calculated as the difference between cost and market value. This brings the Investments back to cost and prevents the fluctuation in values from influencing the General Fund Account.

(ii) Office Equipment is depreciated by applying the straight line method of depreciation over a five-year period.

Depreciation for the year has been charged to the various Fund Accounts as follows:

General Fund	\$ 177
<i>Acta Crystallographica</i>	169
<i>Journal of Applied Crystallography</i>	21
<i>Structure Reports</i>	177
	<u>\$ 544</u>

These policies are consistent with those adopted in previous years.

**2. Taxation**

As an association incorporated in Switzerland, the Union is exempt from Swiss Federal and Geneva Cantonal Tax. Under the terms of the United Kingdom/Switzerland Double Taxation Agreement of 30 September 1954, as supplemented by amending protocols of 14 June 1966 and 2 August 1974 (whilst present circumstances obtain) all income arising within the United Kingdom will not be subject to United Kingdom Tax.

**3. Subscriptions**

Subscriptions from Adhering Bodies as shown by the General Fund Account represent total subscriptions due for the year 1976.