



# CRYSTALLOGRAPHY NEWS



PUBLISHED JOINTLY BY

THE INSTITUTE OF PHYSICS  
CRYSTALLOGRAPHY GROUP

AND

THE ROYAL SOCIETY OF CHEMISTRY  
CHEMICAL CRYSTALLOGRAPHY GROUP

No. 3

OCTOBER 1981

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## THE FIFTH BRAGG LECTURE

*The Bragg Lectures, founded in 1962, are given at intervals to commemorate the work of Sir William Bragg and his son, Sir Lawrence Bragg. Eminent crystallographers lecture on subjects of their own choice, in the places where the Braggs worked ~*

**Professor H. Lipson**, C.B.E., F.R.S.

will lecture on

## 'W.L. BRAGG- SCIENTIFIC REVOLUTIONARY'

at 5.30 p.m. on

**Wednesday, 28 October, 1981**

at the Royal Institution, 21 Albemarle St., London, W.1.

and at 5.30 p.m. on

**Thursday, 29 October, 1981**

in the Rupert Beckett Lecture Theatre, University of Leeds.

**ADMISSION FREE WITHOUT TICKET**

*Sixth Bragg Lecture: Professor M. M. Woolfon: "Structural Crystallography in the 1980's": 27 October 1982 in Manchester; and 28 October 1982 in Cambridge: both lectures at 5.30 p.m.*

*M. Moore, Royal Holloway College, Egham, Surrey*

## 2. I.O.P. Crystallography Group

The retiring Chairman, Professor C.A. Taylor

As readers will be aware, Charles Taylor retired from his term of office as Chairman of the Group on 30th September. During the first two of those three years, as secretary I was able to appreciate those qualities which have made Charles such a successful Chairman. He has every reason to feel satisfied (as we do) with his term of office which has seen a marked improvement in Conference attendances and has culminated in the promotion of the British Crystallographic Association which owes a great deal to his efforts. Our warm thanks go to Charles for sparing so much time from a busy life in the interest of the Group.

R.W.H. Small

## 3. WITHER CRYSTALLOGRAPHY? OR WHITHER CRYSTALLOGRAPHY?

Those who have been involved in the setting-up process for the new British Crystallographic Association have sensed the need to bring back together the two main strands of the crystallographic community, those based on chemistry and physics. The subject has changed greatly over the past thirty years or more. In the immediate post-war period the main problem, and the main activity, of the X-ray crystallographer was the solution of crystal structures, which went on equally in departments of chemistry and physics. The problem was a challenging one and while there were differences in emphasis, with the physicist concerned more with methods of solution and refinement and the chemist more with the interpretation of the final answer, to a casual observer watching months or years of data collection, tedious hand calculations, interpretation and refinement, the differences may not have been too evident.

All that has changed. To a large extent the solving of crystal structures is a routine matter; while some work still goes on in developing methods this is more a polishing and refining exercise than one urgently pursued to satisfy an urgent need. Chemists have available both the hardware and automated solution methods to tackle a wide range of chemical problems and they are equally available to the physicist in his studies of crystal or solid-state physics. Neither of these two groups is primarily interested in their common basic tools but only in the solution they give to problems, which are of basically different kinds.

This change of pattern is an evolutionary one, and should neither be resisted nor resented, but it does present us with a crystallographic community much less unified than hitherto. It will be a major function of the British Crystallographic Association to hold together the various strands of crystallography, to provide a forum in which crystallographers can discuss common interests while, at the same time, through its groups associated with the Royal Society of Chemistry, the Institute of Physics and possibly other bodies, special sectional interests can be catered for.

One current need requiring attention is that of training young crystallographers. The only large centre in the UK, where crystallography is practiced and taught over a wide range of topics, is Birkbeck College. For the most part young research students come into contact with very few senior crystallographers and these with a narrow range of interest and activity.

The case for educating young people in peripheral areas outside the immediate narrow confines of their research project should need no special pleading. One way for achieving this is to set up on a regular basis, perhaps under the auspices of the SERC, postgraduate summer schools of, say, two weeks' duration. Students could be given review-type presentations over a wide range of crystallographic topics. The aim would not, and could not, be to make them experts over a wide range of crystallography but rather to give them a context in which they can better understand their contribution to the total subject.

That is just one proposal. All those interested in the future of crystallography are invited to comment on it, or anything else written here, and to make their own suggestions. Either write to me or, if you feel that your views should have a wider audience, submit a letter to Crystallography News. The representative bodies of crystallography will be better able to serve the community if it knows what the community actually wants.

M M Woolfson

August 1981

4.

FORMATION OF THE BRITISH CRYSTALLOGRAPHIC ASSOCIATION

The previous issue of Crystallography News in June 1981 contained an important letter to all members of the IOP Crystallography Group and the Chemical Crystallography Group from the Chairmen of these two groups, outlining the proposals for the formation of a British Crystallographic Association and asking the members of the two groups whether or not they supported the proposals. Members were asked to indicate their views to either of the two Group Secretaries by 1st August, and Dr. S.C. Wallwork received 29 replies and Dr. R.H. Fenn received 46 replies. All the replies agreed with the proposals and even though the percentage of members replying is only about 10%, the lack of any member indicating disagreement means that the formalities required to bring the British Crystallographic Association into being can be continued with the full support of the members of the two Groups.

R.H. Fenn  
Secretary, IOP Crystallography Group

and S.C. Wallwork  
Secretary, Chemical Crystallography Group

Progress towards the formation of the British Crystallographic Association

The favourable result of the questionnaire to members of both crystallography groups has been reported above. The AGM of the Chemical Crystallography Group on 24th September also approved unanimously the formation of the BCA and the proposal that the Group should become a Joint Group of the BCA and the RSC. It is therefore now possible to proceed to the formation of the BCA and this will be done in time for the inauguration of the BCA to take place during the Durham Crystallography Meeting, 5-8 April 1982. This meeting will take the place of the spring meetings of both existing crystallography groups and will have sessions on chemical, physical, biological, materials science and applied crystallography. The conference will include the AGMs of both crystallography groups and the first AGM of the BCA. A provisional Council for the BCA, which will administer the association until that first AGM, has already been suggested and invited. The Charity Commissioners have been approached with a view to obtaining charitable status for the BCA but the only response of the Commissioners so far has been a request for a more detailed description of the proposed activities of the BCA. Further developments will be reported in the next issue of 'Crystallography News'.

S.C. Wallwork

5.

OTTAWA, 1981

The Twelfth Congress of the International Union of Crystallography was a marvellous occasion. It took place at the pleasant campus of Carleton University between the Rideau River and the Rideau Canal, Ottawa. The weather was excellent and the tunnels connecting the buildings were used mainly by those curious to see the graffiti.

The opening ceremony for the thirteen hundred participants, with some wives and families, took place in the magnificent National Arts Centre in town. Despite postal strikes and air disputes, most delegates had managed to get to Canada, although later on one did notice some blank boards in the poster sessions. After welcoming speeches from Dr Calvert and Professor Einstein; Dr Kerwin, in eloquent French and English, spoke of the post-war recognition of science and technology as driving forces in the economy, woven into public policy. Professor Kato, President of the International Union of Crystallography, read a letter of good wishes from Professor Ewald. He also thanked the organizing committee and the National Research Council of Canada for all their hard work and support for the Congress. He reminded us of the Fourth Congress of the I.U.Cr which had been held at Montreal and said that Canadian soil was good not only for maple trees but also for young scientists.

Professor Dorothy Hodgkin gave the Congress Discourse on "Insulin in Crystals" and referred to the pioneering Canadian work, particularly of Banting and Best sixty years ago. She traced the history of insulin in the treatment of diabetes and its structure determination. Unfortunately some of her beautiful slides were cooked in the high-power projector.

We were then entertained to a charming concert by the Cantata Singers of Ottawa and to two films: on Ottawa and on the National Parks of Canada. A splendid cheese and wine reception rounded off the opening ceremony: an excellent welcome for us and a good start to the congress.

MM

6.

Autumn Meeting of the Chemical Crystallography Group, 1981

As anticipated, in view of the recent International Union of Crystallography Congress at Ottawa, the Autumn Meeting on September 24th was only a small one this year. It was held as part of the Royal Society of Chemistry's Autumn Meeting at the University of Leeds and there were about 20 participants. Nevertheless, it was an interesting conference and the papers stimulated some lively discussion. It was entitled "What Crystallography can do for Organic Chemistry" and there were 3 invited papers and 6 contributed papers.

In the first invited paper, Professor T.J. King (Nottingham University) discussed the question of why crystallography is still used by many organic chemists as the last resort for structure determination whereas its advantages of cheapness, speed and completeness should make it the method of choice. He felt that it was probably because there is often too long a queue for the diffractometer, though this situation could be improved by resorting where appropriate to faster, marginally less accurate, data collection which would still be entirely adequate for the purpose of gross structure determination. This paper was followed by a description, with examples, of the crystallographic service for organic chemists at UMIST given by Dr. B. Beagley and by an example of the way in which crystallography has been used to supplement and explain spectroscopic results, described by Dr. C.H. Schwalbe of the University of Aston.

The second invited paper was by A.J. Kirby and P.G. Jones of the University of Cambridge and discussed some correlations between structure and reactivity. Such correlations were described mainly for ring closure in a series of substituted maleamic acids, in which the distance of the amido carbon atom from the OH group of the nearby COOH group was correlated with the logarithm of the rate constant for acid anhydride formation, and for cleavage of acetals where its dependence on the availability of a lone pair of electrons means that the reactivity is strongly dependent on the geometry at the carbon atom. Following this paper, Dr. J.R. Hanson of the University of Sussex described four recent problems in the study of gibberellins where X-ray crystallography had played a significant rôle in their solution. The final paper before lunch was given by Dr. G.V. Boyd of Chelsea College, London, again describing how crystallography had helped in the solution of problems in organic chemistry. He chose as examples the assignment of the correct structures to the stable and unstable isomers of amic acids and to two isomeric pyridazinones formed by the action of an ynamine on 1,3,4-thiadiazinone.

The invited paper in the afternoon was concerned with some applications of the Cambridge structural database and was given by Dr. R. Taylor of the Crystallographic Data Centre at Cambridge. He showed how relatively minor structural changes could be detected and shown to be significant by accumulating evidence from a large number of related compounds. Examples of both intramolecular and intermolecular effects were discussed. Dr. M.C. Grossel of Bedford College, London then discussed changes in conformation of a cyclohexadiene ring in relationship to the effect of intramolecular interactions on the corresponding n.m.r. spectra, caused by changes in the 1,4 substituents. Finally, a paper by R.O. Gould and M.D. Walkinshaw (University of Edinburgh) discussed how disaccharide and trisaccharide molecules had been found to have conformations mainly dependent upon differences in intramolecular hydrogen bonding, and how their structures could be used as models for non-crystalline carbohydrate polymers.

## 7.

### Annual General Meetings of the Chemical Crystallography Group

It has been the custom of the Chemical Crystallography Group to hold its AGM during its Autumn Meeting. The 1981 AGM was held on 24th September, during the Leeds conference (part of the RSC Autumn Meeting) and the more important business transacted is reported below. One essential item of business at any AGM is, of course, the presentation of accounts. However, the RSC's accounting year end has recently been changed to 31 December, so it will clearly be more helpful to the Group in future to have the annual accounts presented soon after the end of the accounting year, at the Spring Meeting. The 1982 AGM of the Chemical Crystallography Group will therefore be held during the Durham Crystallography Meeting, next April.

Because of this change of timing of the AGM, existing members of the Committee will have to serve half a year short or extra. A resolution passed at this year's AGM suspended, until the AGM of 1983, the rule of maximum service of 2 years, in order to allow temporarily for 2½ years of service in some cases. This is mainly to ensure that about half the Committee retires at each forthcoming AGM. The proposed modified retirement dates were circulated with the papers for the AGM and are repeated below.

Office	Member	Due to retire	Proposed retirement
Chairman	Prof. G.A. Sim	Sept. 1982	Spring 1983
Deputy Chairman	Prof. T.J. King	Sept. 1982	Spring 1983
Secretary/Treasurer	Dr. S.C. Wallwork	Sept. 1981	April 1982
Ordinary Members	Dr. C.D. Garner	Sept. 1982	April 1982
	Dr. A.J. Geddes	Sept. 1982	Spring 1983
	Dr. J.A.K. Howard	Sept. 1982	April 1982
	Dr. O. Kennard	Sept. 1981	April 1982
	Dr. P. Murray-Rust	Sept. 1982	Spring 1983
(co-opted, Sec. of IOP Group)	Dr. R.H. Fenn	(as determined by IOP Group)	

Nominations to fill the April 1982 vacancies will be requested formally at the time of the next issue of 'Crystallography News' but if any members of the Chemical Crystallography Group wish to make nominations before then, they will be gratefully received by the Secretary.

The other important item of business at this year's AGM was the adoption of changes to the rules of the Group to allow it to become a Joint Group of the RSC and the BCA. The wording of the changes is rather meaningless without reference to the existing rules, which most members do not possess. The current edition of rules for Subject Groups is in any case in need of revision, to take account of the change from The Chemical Society to The Royal Society for Chemistry, so it is likely that a new edition will be produced before long and will be generally available to members. Rather than circulating the existing rules to members, together with the detailed changes which have just been adopted, (subject to confirmation by the Divisional Affairs Board of the RSC) it is better to report here the effects of the changes. They are:

- (a) to allow the Group to have two sponsors or sponsoring bodies (the BCA and the RSC);
- (b) to allow non-members of the RSC to become members of the Group only by joining the BCA;
- (c) to allow the Group to receive funds in the form of a subvention from the BCA (for those members who have joined the Group via the BCA rather than via the RSC) as well as in the form of annual Group subscriptions via the RSC;
- (d) to allow any money owed by the Group (e.g. to the BCA) to be taken account of in the event of the suspension or dissolution of the Group.

If any member wishes to see the details, copies of the current rules and the changes may be obtained on application to the Secretary.

S.C. Wallwork  
Secretary, Chemical Crystallography Group.

8.

Chemical Crystallography Group Autumn Meeting, 1982

This will be held as a one-day meeting in association with the Autumn Meeting of the Royal Society of Chemistry at the Heriot-Watt University, Edinburgh, 21-23 September. The topic will be 'Neutron and Electron Diffraction, including Accurate Electron Densities'.

9.

Durham Crystallographic Meetingand Inaugural Meeting of theBRITISH CRYSTALLOGRAPHIC ASSOCIATION

5 - 8 April 1982

The annual spring meeting which now gathers together members of the Institute of Physics Crystallography Group and the Chemical Crystallography Group of the Royal Society of Chemistry will this year host a unique event in the history of crystallography in Britain. On the afternoon of Tuesday 6th April 1982 the first meeting of the new British Crystallographic Association will take place followed immediately by the inaugural lecture to be delivered by an eminent British crystallographer. Following a sherry reception the historic events will close with the inauguration dinner in Van Mildert College Hall.

At the launching of the B.C.A. it is vital to gather together crystallographers with interests across the whole range of the subject and so the programme of the four day meeting to be held in the Durham University Physics Department has been kept deliberately broad. In addition to sessions on the application of crystallography to the traditional areas of physics, chemistry, biology and materials science there will be a symposium on the application to industrial problems. It will particularly seek to review the current status of X-ray diffraction in the applied industrial area. Amongst the speakers will be Dr. I.F. Ferguson of UKAEA Springfields, Mr. G.W. Smith of B.P. Research Centre and Drs. Colin Dineen and Brian Isherwood of G.E.C. Hirst Research Centre, who are organizing the symposium.

Following the successful format adopted in Ottawa, most of the contributed papers will be presented in poster sessions, a medium of communication particularly suited to crystallography. The oral sessions will be dominated by 45 minute length review lectures by distinguished crystallographers who, in reviewing the current status of their field will provide a mental backcloth for the poster sessions.

The meeting will last from mid-day Monday April 5th to mid-day Thursday April 8th. Accommodation will be in single study bedrooms at Van Mildert College, only a few minutes walk from the Physics Department.

Offers of contributed papers on any branch of crystallography will be welcomed at any time. Abstracts should be typed on a single side of A4 bond paper with at least a 25mm margin on all sides. They should be camera-ready for direct photoreproduction for inclusion in the abstract booklet.

Registration forms will be sent automatically to all who complete and return the pre-registration slip enclosed, but further details can be obtained from the meeting convener :

Dr. B.K. Tanner,  
Department of Physics,  
Durham University,  
South Road,  
Durham DH1 3LE

Tel: 0385 - 64971

Thus far in addition to the speakers at the Symposium on Industrial Applications, the following invited speakers have agreed to participate:

Professor Sir David Philips (Oxford)

"Crystallographic Studies of the Dynamic Properties of Proteins"

Professor J. Dunitz (Zurich)

"Experimental Study of Electron Density in Chemical Bonds"

Professor A.R. Lang (Bristol)

"Applications of X-ray Diffraction Techniques to the Imaging of Lattice Defects"

Professor J. Zussman (Manchester)

"Rocks, Minerals and Crystals"

Professor A. Janner (Nijmegen)

"Superspace Groups"

Dr. J.A.K. Howard (Bristol)

"Applications of Crystallography to Chemical Problems"

10.



CENTENARY OPEN DAYS 18 and 19 November (10.30 - 4.30)  
BRITISH MUSEUM (NATURAL HISTORY), Cromwell Road, London SW7

Many aspects of the scientific work of one of the world's leading taxonomic institutions will be shown in over 100 exhibits, and staff will be on hand to talk about their research and services.

Departments open: Mineralogy, Botany, Zoology, Entomology, Palaeontology, Library Services.

Any one interested in the earth or life sciences is welcome to come behind the scenes at South Kensington: those who wish to attend should inform the Open Days Office, tel. 01-589-6323, ext. 667 or 206.

11.

INTERNATIONAL SCHOOL OF CRYSTALLOGRAPHY

8th Course: Crystallography of Molecular Biology

Erice - Trapani - Sicily: 7-16 June 1982

Persons wishing to attend the Course should write to the Director of the School: Prof. T. L. Blundell, Department of Crystallography, Birbeck College, Malet Street, University of London, WC1E 7HX, United Kingdom with a copy to: L. Riva Di Sanseverino, Executive Secretary, International School of Crystallography, Piazza San Donata, 1, 40127 Bologna, Italy.

They should specify: i) full name(s), address, age, nationality  
ii) present academic position and other qualifications  
iii) languages spoken  
iv) reference of up to five published papers

Young persons with only a few years' experience should enclose a letter of recommendation from their research group leader or from a senior person active in the field.

The closing date for application: December 31, 1981.

The number of places is limited so we cannot guarantee that all applications will be accepted. Acceptance will be based on qualifications, but in the selection the geographical distribution of the participants will be taken into account.

Admission to the Course will be decided by a committee consisting of T. L. Blundell and A. Zichichi.

Participants should aim to be in Erice on June 7, 1982 not later than 5 p.m. More detailed information including the timetable and travel facilities will be sent with the letter of acceptance.

Fees: The total fee including full board and lodging (arranged by the School) is 1000 Swiss Francs. Thanks to the generosity of the sponsoring institutions, partial support can be given to those students who need financial help.

The amount must be specified and justified in the application letter.

A. Zichichi  
Director of the Centre

12.

Postdoctoral Position Available

Positions are vacant for work on the structure determination of Clostridium pasteurianum nitrogenase, structural investigations on haem ligands of beef liver catalase, or various small virus structures. Salary range \$13,500 - \$17,500 depending on experience. Apply to Michael G. Rossmann, Department of Biological Sciences, Purdue University, W. Lafayette, Indiana 47907, U.S.A.

13.

BERNAL'S SPACE GROUPS

The manuscript of the celebrated paper on the derivation of the 230 space groups using quaternions which J. D. Bernal wrote as an undergraduate at Emmanuel College, Cambridge has been recovered and is now published by the Dept. of Crystallography, Birkbeck College, Malet Street, London WC1E 7HX as an occasional paper. It is available from Dr. A. L. Mackay at that address at £2.50 plus postage (30 p.) as a booklet of 120 pp.

14.

SALE OF JOURNALS

Professor P. P. Ewald will open offers for the following back issues of unbound journals on 1st November at 108, Sheldon Road, Ithaca, NY 14850.

Acta Crystallographica, vols. 1-32 (1948-1976).

Missing 7 (1954) nos. 1,2,3,4; 8 (1955) no 9;  
17 (1964) no. 11; 26B (1970) nos 1,3,4,5;  
29B (1973) no. 6.

Zeitschrift für Kristallographie, vols 56-101 (1922-1939)

and vols 106-143 (1954-1976). Missing vols 102-105 (World War II years).

Société Française de Mineralogie et de Cristallographie

vols 82-86 (1959-1960); 94-98 (1971-1975);  
93 (1970) nos 1, 2, 3; 99 (1976) nos 1,2,3,4,5.

Journal of Applied Crystallography, vols 1-9 (1968-1976).

He also has complete runs of Bulletin Signaletique (1952-1972), Proceedings of the Royal Society, 244-349, (1958-1976), Royal Society Notes and Records 13-29, (1958-1975), Scientific American (1951-1976), Science News, (1971-1976) and partial runs of Reviews of Modern Physics, Journal of the Physical Society of Japan, Japanese Journal of Applied Physics, Proceedings of the Physical Society, American Scientist (1951-1976 complete except 1973, no. 3), American Journal of Physics, IBM Journal (1958-1973 complete except 1968 no 8), Physics Today (1949-1973 complete except 1957, no. 7), Bulletin of the American Physical Society, Naturforschung, Endeavour (1956-1966 complete), Daedalus, American Scholar, Natural History, Science and Technology.

15. WORLD LIST OF CRYSTALLOGRAPHERS

Do you lose addresses? Do you feel the urge to check up on your colleague's credentials, or to discover what old acquaintances are doing now? Or would you like to know what is going on in other countries, perhaps with a view to arranging a visit? Then you need a copy of the World Directory of Crystallographers. Hundreds of satisfied users say they wouldn't be without it!

The Sixth Edition (1981) is now available, and at only £2.25 including p + p is excellent value. Order your copy now on the form below:

To: Dr L S Dent Glasser,  
Dept of Chemistry,  
University of Aberdeen  
Aberdeen, AB9 2UE, Scotland.

Cut

Please send me \_\_\_\_\_ copies of the Sixth Edition of the

World Directory of Crystallographers, at £2.25 a copy.

I enclose my cheque for \_\_\_\_\_, payable to the U.K. Crystallographic Council.

..... Name and address

..... typed in block letters please!

..... Cut

16. CRYSTALLOGRAPHY NEWS

Items for inclusion are welcome at any time, preferably "camera-ready", typed in single or 1½ spacing on A4 size paper. For inclusion in the December issue, please send contributions to Dr Moreton Moore, Department of Physics, Royal Holloway College, Egham Hill, Egham, Surrey, TW20 0EX by 20 November.

LIST OF FORTHCOMING MEETINGS

(M = meeting or conference)  
(C = course or summer school)

1981

- 4 - 6 November 39th Pittsburgh Diffraction Conference (M) Case Western Reserve Univ.,  
Cleveland, Ohio.  
Prof. J. Blackwell, Dept. of Macromolecular Science, Case Western Reserve Univ.,  
Cleveland, Ohio, 44106, USA.
- 16 - 19 Nov. Materials Research Soc. Annual Meeting (M) Boston, Mass., USA  
Materials Research Soc., 102c, Materials Research Lab., University Park,  
PA 16802, USA
- 18 November Neutron Scattering Group : Small angle scattering from heterophase systems,  
(M). University of Reading.  
Dr J F Gibson, Royal Society of Chemistry, Burlington House, London, W1V 0BN
- 16 - 17 Dec. RSC: Structure of the interfacial region. Oxford,  
Dr J F Gibson, RSC.
- 17 - 18 Dec Messenger RNA - ribosome interactions: structure, function and control.  
(M), King's College, London  
Dr J F Gibson, RSC

1982

- 5 - 9 Jan Imaging and Microanalysis with High Spatial Resolution.  
10 - 15 Jan (C) Phoenix and Tempe, Arizona.  
Dr O. L. Krivanek, Center for Solid State Science, Arizona State Univ.,  
Tempe, Arizona, 85287, USA
- 2 - 5 Feb 13th Meeting of Crystallographers in Australia (M), Brisbane.  
Colin Kennard, Dept. of Chemistry, Univ. of Queensland, St Lucia,  
Queensland, Australia 4067.
- 22 - 25 March Europ. Physical Soc. Condensed Matter Division General Conf. (M) Manchester, England  
The Meetings Officer, The Inst. of Physics, 47 Belgrave Square, London SW1X 8QX
- 29 Mar - ACA Meeting (M), Gaithersburg, Maryland, USA  
2 April Dr C R Hubbard, Crystallography Section, National Bureau of Standards,  
Washington DC 20234, USA

1982 cont'd

30 March -

1 April

- (i) Inorganic chain and layer compounds.
- (ii) Mineral chemistry: structure, bonding and spectroscopy.
- (iii) Molecular basis for biological activity, crystal structure of heterocycles of biological importance.
- (iv) Solids exhibiting large anisotropies.

(M) Univ. of Aston in Birmingham Dr J F Gibson, RSC.

5 - 8 April

Crystallographers' Spring Meeting (M) Inaugural meeting of the British  
Crystallographic Association (M) Durham  
Dr B K Tanner. See this issue.

16 April

Liquid crystals, materials and applications (M) Poole  
Dr John F Gibson, Roy Soc of Chemistry, Burlington House, London W1V 0BN

21 - 23 April

Int. Conf. on II - VI Compounds (M) Durham, England.  
Dr J Woods, Dept. of Applied Physics and Electronics, Univ. of Durham,  
South Road, Durham, DH1 3LE

June or July

School on Structure Analysis (C) Georgetown Univ., Washington, DC  
J. Karle, Code 6030, Lab. for the Structure of Matter, Naval Research Lab.,  
Washington DC 20375, USA (see last issue).

7 - 9 June

2nd Europ. Conf. on Solid State Chemistry. (M) DeKoningshof, Eindhoven,  
Netherlands.  
Ir. H.J.M. Heijligers, Eindhoven, Univ. of Technology, P O Box 513,  
5600 MB Eindhoven, Netherlands

7 - 16 June

Workshop on Crystallography of Molecular Biology (C) Erice, Sicily  
Prof. T L Blundell, Dept. Crystallography, Birkbeck College,  
Malet St., London WC1E 7HX (see this issue)

6 - 9 July

RSC symposium on inorganic stereochemistry (M) Univ of Reading  
Dr J F Gibson, RSC

1982 cont'd

- 12-16 July Gordon Research Conf on Crystal Growth (M) Holderness, New Hampshire, USA  
Dr E A Giess, IBM Thomas J Watson Research Center, P O Box 218, Yorktown  
Heights, New York 10598, USA
- 9 - 13 August Int. Conf. on X-ray and VUV Synchrotron Radiation Instrumentation  
(M) Hamburg, Fed. Rep. Germany  
Prof. B. Buras, Risø National Lab., DK-4000 Roskilde, Denmark.
- 10 - 14 August Intern. Sch. on Electron Microscopy of Magnetic Materials (C) Vienna,  
Dr J Fidler, Inst. f. Angewandte und Technische Physik, Technische Universität  
Wien, Karlsplatz 13, A-1040 Wien, Austria.
- 15 - 20 August ACA Meeting (M) San Diego, California  
Dr S T Freer, Dept. of Chemistry, B-017, Univ. of California, San Diego,  
La Jolla, CA92093, USA
- 17 - 24 August Intern. Congress on Electron Microscopy (M) Hamburg, Germany.  
Deutsches Reisebüro GmbH, Dammtorstrasse 12, 2000 Hamburg 36, FED. Rep. of Germany.
- 21 - 26 August 11th Hungarian Diffraction Conf. (M) Győr, Hungary  
Mrs E. Nagy, c/o Roland Eötvös Physical Society, H-1368 Budapest, P O Box 240, Hungary.
- 23 - 27 August Internat. Conf. on Coordination Chemistry (M) Budapest, Hungary  
Prof. M. T. Beck, Kossuth Lajos Univ., Dept. Phys. Chem., P O Box 7, Debrecen 10,  
Hungary 4010.
- 23 - 27 August X-ray and Atomic Inner Shell Physics (M) Eugene, Oregon  
Prof. B. Crasemann, Physics Dept., Univ. of Oregon, Eugene, Oregon 97403 USA
- 25 - 30 August Sagamore VII Conf. on Charge, Spin and Momentum Densities (X-ray, neutron  
and electron diffraction and scattering). (M) Nikko, Japan  
Prof. Y Saito, Chemistry Dept, Univ. of Keio, 14-1 Hiyoshi, 3 chome  
Kohokuku, Yokohama, Japan.
- 29 Aug - 3 Sept 7th Europ. Crystallographic Meeting ECM-7 (M) Jerusalem, Israel  
Prof. J. Bernstein, Dept. of Chemistry, Ben-Gurion University of the Negev,  
Beer Sheva 84120, Israel.

1982 cont.

- 30 Aug - 3 Sept 4th Europhysical Topical Conf. Lattice defects in ionic solids  
(M) Dublin, Republic of Ireland.  
Dr J Cornish, Dept of Chem. Univ. College, Belfield, Dublin 4, Rep. of Ireland.
- 31 Aug - 3 Sept 12th Intl. Conf. on Defects in semiconductors. (M) Amsterdam  
Municipal Congress Bureau, Oudezijds Achterburgwal 199, 1012 DK Amsterdam,  
The Netherlands.
- 1 - 3 Sept Yamada Conf. on Neutron scattering of condensed matter. (M) Tokyo, Japan.  
Prof I Itoh, Inst. for Solid State Physics, University of Tokyo, Toppongi,  
Minato-ku, Tokyo 106, Japan.
- 6 - 10 Sept 16th Intl. Conf. on Physics of semiconductors (plus 6 associated meetings).  
(M) Montpellier, France.  
Prof B Pistoulet, Centre d'Etudes d'Electronique des Solides, Universite  
des Sciences et Techniques du Languedoc, Place E Bataillon, 34060 Montpellier,  
Cedex, France.
- 13 - 17 Sept The Neutron and its Applications. (M) Cambridge, UK.  
The Meetings Officer, The Institute of Physics, 47 Belgrave Square,  
London SW1X 8QX
- 21 - 24 Sept 14th Europhysics Conf. on Macromolecular physics - Polymer Crystals: Structure  
and morphology. (M) Vilafranca del Penedes, Barcelona, Spain.  
Dr F J Balta Calleja, Inst. Estructura de la Materia (CSIC), Serrano 19,  
Madrid, Spain.

1983

- 14 - 18 March ACA Meeting. (M) University of Missouri at Columbia. D W Yellon.
- 28 - 31 March Crystallographers' Spring Meeting; British Crystallographic Association.  
(M) Royal Holloway College, Egham, Surrey.  
Dr M Moore, Dept of Physics, RHC, Egham, Surrey TW20 0EX.
- 1 - 5 August ACA Meeting. (M) Snowmass, Colorado, USA.  
R Witters, Chemistry Dept., Colorado School of Mines, Golden, Colorado, USA

1983 cont'd

- August 8th Europ. Crystallographic Mtg. (M) Liège, Belgium  
Prof. J Toussaint, Institut de Physique B5, Université de Liège au Sart-Tilman,  
B-4000 Liège, Belgium.
- 3 - 10 Sept 5th Internat. Summer School on Crystal Growth (C) Riederalp, Switzerland  
Dr H. Arend, Lab. für Festkörperphysik ETH, CH-8093 Zürich, Switzerland.
- 12 - 16 Sept 7th Internat. Conf. on Crystal Growth (M) Stuttgart, Fed. Rep. Germany  
Dr K W Benz, Kristallabor, Physikalisches Institut der Universität,  
Pfaffenwaldring 57, 7000-Stuttgart-80, Fed. Rep. Germany.
- 25 - 30 Sept 5th Europ Mtg. on Ferroelectricity. (M) Torremolinos, Spain  
Dr B. Jiménez, Centro de Física Aplicada "L. Torres Quevedo", Serrano 144,  
Madrid-6, Spain.

1984

- 9 - 18 August XIII I. U. Cr. Congress (M) Hamburg  
Prof. Dr. H. Saalfeld, Mineralog - Petrogr. Institut, Universität Hamburg,  
Grindelallee 48, D-2000 Hamburg 12, Fed. Rep. Germany.

