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J. Appl. Cryst. (1979). **12**, 137

A low-cost Richards box for superimposing molecular models on three-dimensional electron density maps

Richards (1968) developed a method for optically superimposing a skeletal molecular model over three-dimensional electron maps. Although Rudko & Low (1970) report a simpler, more compact device, we have developed one that not only is simple, cheap, and compact but works in direct and not reflected space.

The apparatus (Fig. 1) consists of a metal box producing light which passes through a series of electron density maps. The image of the maps is seen at right angles to the maps by using a mirror set at 45°. The electron density maps were drawn from output listings and copied by a xerographic process onto clear transparencies, mounted between clear plastic sheets of suitable thickness and clamped into a holding frame. Light was passed through these, and the reflected image compared directly with a skeletal model. The compound selected was *aaaeee*-hexachlorocyclohexane, or lindane (Smith, Kennard & White, 1976).

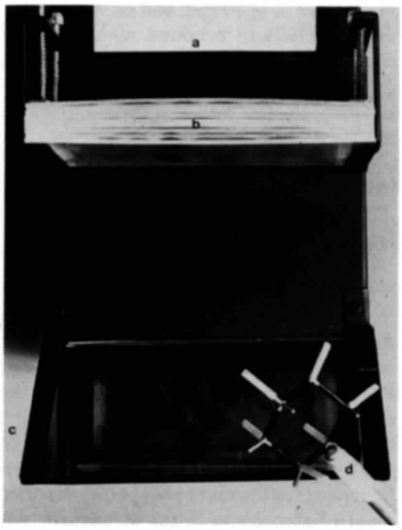

Fig. 1. A modified Richards Box. (*a*) light, (*b*) three dimensional electron density maps, (*c*) mirror set at 45°, (*d*) skeletal molecular model.

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Meeting Reports

J. Appl. Cryst. (1979). **12**, 137–138

Synchrotron Radiation Symposium, European Physical Society Fourth General Conference, York, England, 25–29 September 1978

One of the symposia of the Fourth General Conference of the European Physical Society 'Trends in Physics' held at York (England) from 25–29 September 1978 was devoted to synchrotron radiation and its application.

More than half of the contributions – papers and posters – belonged to the category of X-ray work and two thirds of this dealt with X-ray structure research. These numbers reflect a development which was reviewed in a very impressive way by S. Kapitza.

The highly directional properties of synchrotron radiation have led to small-angle diffraction work especially at Hamburg, Novosibirsk and Paris. The investigation of biological specimens, mostly muscle connective tissue, which has already been started as one of the earliest X-ray synchrotron radiation projects is far from losing its fascination for scientists. Time-resolved X-ray diffraction patterns of contracting muscle of various origins have been studied recently and one may expect that the new experimental results will contribute considerably to the understanding of the molecular mechanism of mechanical force generation. First results from diffuse small-angle scattering of solutions were reported. Small-angle scattering instruments are now routinely used at several synchrotron radiation facilities. The performance of the small-angle instruments can still be increased considerably and a lot of hope is based on faster position-sensitive area detectors. A detailed account was given on the use of anomalous dispersion for metal protein structure investigation. The continuous spectrum of synchrotron radiation makes this technique very promising.

The same property of synchrotron radiation has very much facilitated the use of energy-dispersive counters for the measurement of isotropic scattering patterns from solutions or powders. As the path of both incoming and outgoing X-rays does not change in such a set up it offers advantages which might be essential in high-pressure investigations.

Several papers and posters reported on results from topography. The usefulness of this technique has been clearly demonstrated in the investigation of magnetic materials (movement of magnetic-domain walls under external fields, *e.g.* stress or magnetic field). The use of synchrotron radiation has very much reduced the periods of topographic measurements and therefore time-resolved studies of wall motions have become feasible (*e.g.* by stand-still stroboscopy).

The investigation of the fine structure of X-ray absorption edges has become a routine method, at least as far as the investigation of inorganic matter (*e.g.* glasses) is concerned. With biological samples (metal proteins) the concentration of metal atoms is fairly low and the instrumental development for an accurate measurement of the absorption fine structure or the fluorescence is not yet at a satisfactory stage.

Very promising results have also been obtained from lithography and microscopy with soft X-rays.

The general impression from all work with X-ray synchrotron radiation is that most instruments are at a test stage or near to completion and that more interesting results will certainly be obtained in the near future.

Great hope is attached to the development of more powerful synchrotron radiation sources. First results on the experimental study of the spectral, angular and polarization properties of undulator radiation were reported in the poster session by two Russian groups from Tomsk and Moscow.

The Symposium on Synchrotron Radiation was organized by Dr S. Leach (Paris).

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From the response which the lectures, the poster sessions and the exhibitions on the European Synchrotron Radiation Facilities received, it can be concluded that this symposium was most useful to all attendants.

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Teaching Crystallography for Today's Sciences, Summer School, Erice, Sicily, Italy, 6–16 September 1977

The first Summer School on the Teaching of Crystallography was held in Erice (Sicily, Italy) in September 1977. It was organized by the IUCr Commission on Crystallographic Teaching and sponsored by IUCr, Unesco and various official and private organizations. It was attended by 90 participants of 36 different nationalities, a number of them from developing countries. The aim of the School was not to teach sophisticated methods to professional crystallographers, but to give simple and precise ideas on how to teach basic crystallography to non-crystallographers, and on how to convey to them the great power of crystallography, keeping in mind the need to teach crystallography at many levels through school and university and to students of many different sciences.

The School did not attempt to be comprehensive. The main topics covered were: point group symmetry, space group symmetry, experimental techniques of X-ray diffraction, bases of the dynamical theory, structural types, principles of structure determination and real crystals. For each topic the main difficulties encountered in teaching were developed in full lectures followed by tutorial classes and discussions. Various teaching aids were presented and discussed in special sessions: films, programmed texts, optical analogues and models. Laboratory experiments were also discussed and participants were encouraged to present posters and exhibits on teaching material. Finally, applications of crystallography to metallurgy, earth sciences, industry and engineering, chemistry and biology were presented. Informal discussions took place on many subjects, such as comparisons of curriculae in various countries. These discusssions and contacts between participants from different countries and different specialities were found by all present to be extremely profitable.

The School was the occasion for testing the first pamphlets prepared for the IUCr Commission on Crystallographic Teaching. They are short texts by different authors, on different topics pertaining to the teaching of crystallography at various levels and are the early steps of a major project by the Commission. Information concerning this project can be obtained from Professor C. A. Taylor, University College, PO Box 78, Cardiff CF1 1XL, England and from Professor A. Authier at the address below.

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Crystallographers

This section is intended to be a series of short paragraphs dealing with the activities of crystallographers, such as their changes of position, promotions, assumption of significant new duties, honours, etc. Items for inclusion, subject to the approval of the Editorial Board, should be sent to the Executive Secretary of the International Union of Crystallography (J. N. King, International Union of Crystallography, 5 Abbey Square, Chester CH1 2HU, England).

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Professor **W. Cochran,** Professor of Natural Philosophy at the University of Edinburgh, has been awarded the Hughes Medal of the Royal Society for his work on electron density distributions and lattice dynamics.

International Union of Crystallography

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Union Office, Change of Address

The Union Office, incorporating the Union secretariat and the technical editing office, has now moved to 5 Abbey Square, Chester CH1 2HU, England. All correspondence for the Executive Secretary and the Technical Editor should be sent to this address. The telephone number (Chester 42878), the cable address (Unicrystal) and the telex address (667325 COMCAB G, attention Unicrystal) remain unchanged.

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