Laboratory Notes

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Manipulator for Gandolfi-attachment X-ray spindles

An inexpensive, easily obtained tissue forcep simplifies the handling of single crystals mounted on glass capillaries and held on a brass pin. Use is made of a mouse-tooth, 1×2 tooth forcep that is available through most apparatus supply companies. The two teeth can be spread to provide a larger opening.

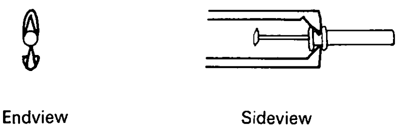

Fig. 1. The tissue forcep in use.

This forcep allows a straight-in push to seat the brass pin easily. The capillary and crystal are always protected within the limbs of the forcep. It is especially appropriate for the very small diameter pins for the Gandolfi-attachment to powder cameras. Since this method has been in use, no capillaries have been broken, nor have crystals been lost.

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A stereographic net for measuring direction cosines

A net or graticule for measuring direction cosines, $\lambda\mu\nu$, from a stereographic projection was constructed combining two orthogonal sets of latitude lines in a meridional stereographic projection, so as to record the angular distance from both *NS* and *EW* pairs of poles, and hence both $\cos^{-1}\mu$ and $\cos^{-1}\nu$, with a polar stereographic projection of latitude circles to record $\cos^{-1}\lambda$. Besides plotting direction cosines (which in the cubic system are of course equivalent to poles, *hkl*, with the indices normalized to $h^2+k^2+l^2=1$) directly onto a stereogram, this net can be used with published standard stereograms, *e.g.* Clarke (1976) or Smaill (1972), to convert poles or axes of non-cubic materials to direction cosines quickly and easily.

In practice it was found better to combine such a net at equal angular intervals with a table of cosines at similar intervals, rather than to construct a net which used equal intervals of the cosine, since such cosine interval nets have very large spacings between adjacent lines in some regions because of the large variation of angle with cosine near 0°. Strictly speaking, therefore, the practical version of this net records direction angles. Intervals of 2° were found most practical for nets of 200 mm or 300 mm diameter, smaller intervals were found to be unpleasantly confusing to use and only marginally more accurate. Fig. 1 shows a net at 10° intervals.

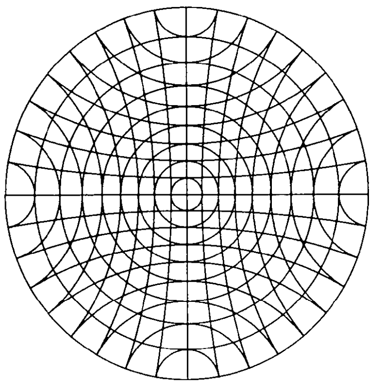

Fig. 1. Direction angles net at 10° intervals.

The mathematics of this net is readily available in standard textbooks, *e.g.* Azaroff (1968), as part of that for the Wulff net and the polar net. A computer programme (in Algol) was written to draw charts which combine nets at any angular interval with the corresponding table of cosines; copies are available from the author.

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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, 13 White Friars, Chester CH1 1NZ, England).

Dr **Isabella Karle,** President of the American Crystallographic Association, has been awarded the Garvan Medal for 1976 by the American Chemical Society.

Professor **H. Lipson,** Professor of Physics, University of Manchester Institute of Science and Technology, and joint British Co-editor of *Acta Crystallographica*, has been made a Companion of the Order of the British Empire.

Sir **George Paget Thomson** dies on 10 September 1975. He was five when his father, Sir J. J. Thomson, discovered the electron in 1897. He grew up and studied at Cambridge; he was elected a Fellow of Corpus Christi College and appointed as a lecturer in mathematics in 1914. After some years with the Royal Flying Corps, spent in aeronautical research, he was appointed Professor of Natural Philosophy at the University of Aberdeen where, in 1927, he conducted his famous experiments which demonstrated that a beam of electrons passing through a thin metal foil was diffracted, in very much the same way as X-rays. He was elected a Fellow of the Royal Society in 1930 and awarded the Nobel Price in 1937, together with C. J. Davisson who had performed similar experiments in the U.S.A. at about the same time. Between 1930 and 1952 he was Professor of Physics at Imperial College of Science and Technology, London and from 1952 to 1962 Master of Corpus Christi College. He was one of the first people to appreciate the practical possibilities of nuclear physics, and was Chairman of the first British Committee on Atomic Energy in 1940 and 1941. Later he was President of the Institute of Physics and of the British Association for the Advancement of Science. His many publications included *Applied Thermodynamics*, *The Atom*, *Wave Mechanics of the Free Electron*, *Conduction of Electricity through Gases* (written with his father), and *Theory and Practice of Electron Diffraction* (written with W. Cochrane).