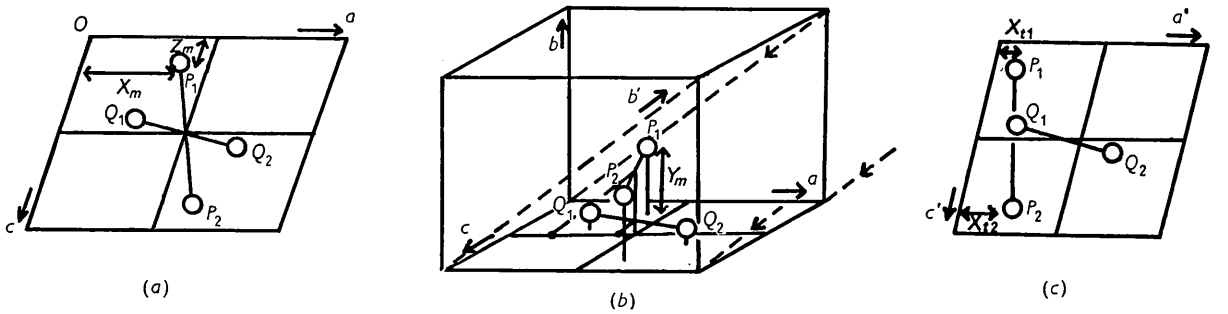


Fig. 1. (*a*) Projection down unique axis for space group *P*2. (*b*) Monoclinic cell (*a*, *b*, *c*) and new projection axis (*b'*). (*c*) Appearance on new projection plane of atoms of (*a*) and (*b*).

If X_m, Y_m, Z_m, X_{t_1}, X_{t_2} are fractional parameters, then

$$X_m = \tfrac{1}{2}\{1+X_{t_1}-X_{t_2}\},\quad Y_m = \tfrac{1}{2}\{1-(X_{t_1}+X_{t_2})\},\quad Z_m = Z_t.$$

jection to improve resolution or to give all the atomic parameters.

An oblique projection has been used in the refinement of the $FeAl_3$ structure (Black, 1955). In a cell containing 100 atoms with space group *C*2/*m*, all three axial projections involved serious overlap. In a single oblique projection, all the peaks were fairly well resolved, and this projection served to determine all of the 40 independent parameters. This may be a particularly favourable case; it is obvious that where the change of cell involves reversion to a primitive cell there is a better chance of obtaining good resolution in projection.

Oblique projections can also be used for Patterson syntheses. Their properties can be derived by considering the relationship between the oblique projection, direct projection and three-dimensional Pattersons. One special property may be noted. Atoms related by a tetrad axis give Patterson peaks for vectors between themselves which have fourfold symmetry; in projection oblique to the tetrad they retain this symmetry, whereas peaks due to vectors between independent atoms do not, and the two types may thus be distinguished. In general, coincidence tests between direct and oblique Patterson projections may give sufficient information about the three-dimensional Patterson without involving the labour of its calculation.

I am grateful to Prof. N. F. Mott and Dr W. H. Taylor for provision of facilities and for their interest in the progress of this work, and to Dr M. M. Woolfson and other colleagues for helpful discussions. I wish to thank the Council of the Royal Society for financial support.

References

Black, P. J. (1955). *Acta Cryst.* **8**, 43.
Cochran, W. & Dyer, H. B. (1952). *Acta Cryst.* **5**, 634.

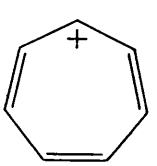
Acta Cryst. (1955). **8**, 657

Crystal data for tropylium chloride, C_7H_7Cl.

By Edwin S. Gould, *Polytechnic Institute of Brooklyn, Brooklyn* 1, *N. Y., U.S.A.*

(*Received* 22 *July* 1955)

Tropylium chloride, tropylium bromide and tropylium iodide have been described by Doering & Knox (1954). The properties of alcoholic solutions of the chloride and bromide and the spectrum of the bromide in aqueous HBr (Fately & Lippincott, 1955) suggest that these halides are dissociated in polar solvents to the halide ions and the tropylium ion. The solubility of the chloride and bromide in polar solvents, as contrasted with their insolubility in non-polar solvents, suggests that these ions might persist in the solid halides, although solids consisting of ionic networks and having at the same time melting points below 200° C. are very rare. The tropylium ion is a seven-membered carbocyclic cation of classical formula (I), for which delocalization of the six π electrons about the ring should be possible if the ring were to assume a planar configuration. The two main points of interest in connection with the tropylium halides would then seem to be (1) the planarity of the ring, and (2) whether the halogen atoms are bonded to the rings or exist as discrete anions in the solids. We are reporting here the cell dimensions of tropylium chloride, the only one of the halides for which we were able to obtain single crystals. In view of the large number of molecules per unit cell and the low symmetry of the compound, complete structure determination will not be attempted.



(I)

Colorless, needle-like crystals of tropylium chloride, elongated in the [110] direction, were obtained from anhydrous acetonitrile. Since the chloride is very deliquescent and somewhat sensitive to air oxidation, the

crystals were sealed in individual thin-walled glass capillaries and kept at −10° C. when not being examined. Transfers of the crystals from the mother liquor to the capillaries were carried out in a 'dry box' over anhydrous calcium chloride.

Precession photographs, taken with the horizontal axis corresponding to the a^* direction, gave the triclinic cell dimensions (Mo $K\alpha$ taken as 0·708 Å):

$a = 7{\cdot}65$, $b = 8{\cdot}26$, $c = 14{\cdot}18$ Å (each ±1%);
$\alpha = 93{\cdot}0°$, $\beta = 111{\cdot}7°$, $\gamma = 104{\cdot}0°$ (each ±0·5°).
Space group: $P1$ or $P\bar{1}$.
$V = 810$ Å^3; $Z = 4$; $\varrho_c = 1{\cdot}05$ g.cm.$^{-3}$.

It is a pleasure to thank Dr Lawrence Knox, of Hickrill Chemical Research Laboratories, for providing samples of this compound and to acknowledge the guidance of Prof. Benjamin Post and Mr Boris Paretzkin.

References

Doering, W. & Knox, L. (1954). *J. Amer. Chem. Soc.* **76**, 3203.
Fately, W. & Lippincott, E. (1955). *J. Amer. Chem. Soc.* **77**, 249.

Notes and News

Announcements and other items of crystallographic interest will be published under this heading at the discretion of the Editorial Board. Copy should be sent direct to the British Co-editor (R. C. Evans, Crystallographic Laboratory, Cavendish Laboratory, Cambridge, England).

International Union of Crystallography

Symposium, and Open Meeting of the Commission on Crystallographic Apparatus

By kind invitation of the Consejo Superior de Investigaciones Cientificas the Union will hold a Symposium in Madrid, Spain, during the period 2–7 April 1956. The Symposium will be devoted to 'Structure on a scale between the atomic and the microscopic dimensions' and it is intended to bring together results obtained by such diverse methods as X-ray and electron diffraction and electron microscopy. In addition, open meetings of the Commission on Crystallographic Teaching (see below) and of the Commission on Crystallographic Apparatus will be held, and new developments in diffraction techniques related to the subject of the Symposium will be presented at the meetings of the latter Commission.

All crystallographers and microscopists are cordially invited to attend the Symposium but contributions should lie strictly within the specified field; in particular, effort will be made to ensure that these contributions and the ensuing discussions will be of interest to non-specialists.

Prospective contributors should communicate the title of their contribution, together with a brief summary (ten lines), to the Chairman of the Programme Committee (A. Guinier, Conservatoire National des Arts et Métiers, 292 rue Saint-Martin, Paris 3e, France) *not later than* 31 *December* 1955.

All those interested in the Symposium and wishing to receive further communications should register their names and addresses with the Secretary of the Symposium Committee (Serrano 118, Madrid, Spain).

Open Meeting of the Commission on Crystallographic Teaching

Concurrently with the symposium announced above a series of open meetings on crystallographic teaching will be organized by the Commission on that subject. It is proposed to hold five sessions of three hours, each session being divided into two parts, and every effort will be made to avoid clashing with the meetings of the Symposium.

The sessions will consist of opening papers by invited speakers, followed by general discussion, and there will be a main topic for each half-session. In order to make the discussions coherent and effective, documents will be circulated in advance to those attending the meetings.

Since this is the first international discussion of teaching in crystallography, every effort is being made to ensure that it is widely representative of the member countries of the Union. Details of the programme and arrangements will be published in a forthcoming number of *Acta Crystallographica*, but the main topics will be as follows:

1. Analysis of material from the world-wide survey of the Commission.
2. Apparatus and books for teaching crystallography.
3. The teaching of crystal physics, crystal geometry, structure analysis, mathematical techniques and machines.

The Commission intends subsequently to publish material from the meetings. All members of Adhering Bodies of the Union, whether likely to be present at Madrid or not, are invited to submit short written contributions on any topic concerned with the teaching of crystallography. These will be circulated before the meeting in order to enrich the discussions, and as many as possible will subsequently be published. In addition, the Commission will welcome any suggestions for matters to be raised at the meetings.

Short papers for circulation must be submitted *by* 1 *February* 1956, and all communications should be sent to the Secretary of the Commission (Dr H. Judith Grenville-Wells, Department of Chemistry, University College, Gower Street, London W. C. 1, England).