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).

Advertisements in *Acta Crystallographica*

The Executive Commitee has decided to include advertisements in *Acta Crystallographica* as from January 1955. Manufacturers, publishers and others interested should address all enquiries to the advertising agent for the Union, Henry E. Salloch, Advertising Service, 470 Fourth Avenue, New York 16, N. Y., U. S. A.

Soviet Publications

Messrs Lange, Maxwell & Springer (Maxwell House, 242 Marylebone Road, London N.W. 1) announce the forthcoming publication of English translations of a number of Soviet scientific books. The only work of crystallographic interest of which the translation is in hand is *Optical Crystallography* by A. V. Shubnikov.

The publishers would welcome suggestions concerning any other Soviet works of which the translation might be usefully undertaken.

International Union of Crystallography

The Third General Assembly and International Congress of the Union was held in Paris from 21 to 28 July 1954 and was followed by Symposia on The Location and Function of Hydrogen and on The Mechanism of Phase Transitions in Crystals held on 29 and 30 July 1954. A brief account of the proceedings at these meetings will be published later.

The following items may be obtained at the prices indicated post free from the Secretary of the Organizing Committee (A. J. Rose, Laboratoire de Minéralogie, 1 rue Victor Cousin, Paris 5, France):

Abstracts of papers	1,000 francs
Programme	300 francs
Catalogue of apparatus exhibition	300 francs
List of names and addresses of members	200 francs
Commemorative bronze medal	1,000 francs

All orders must be accompanied by a remittance payable to M. le Trésorier de la Société française de Minéralogie et de Cristallographie.

At the General Assembly new officers were elected as follows:

President:	R. W. G. Wyckoff (U.S.A.)
Vice-Presidents:	P. P. Ewald (U.S.A.)
	G. Hägg (Sweden)
General Secretary:	D. W. Smits (Netherlands)
Other members:	A. Guinier (France)
	C. H. MacGillavry (Holland)
	A. J. C. Wilson (U.K.)
	J. D. Bernal (U.K.)
	A. Tovborg Jensen (Denmark)
	N. V. Bjelov (U.S.S.R.)

All correspondence should in future be addressed to the new General Secretary of the Union at Laboratorium voor Anorganische en Physische Chemie, Bloemsingel 10, Groningen, The Netherlands.

International Union of Crystallography

De Forenede Papirfabrikker of Copenhagen, Denmark, have offered to the Union a generous donation of 5000 Danish crowns (approximately £260) as a contribution towards the expenses of *Acta Crystallographica*.

Book Reviews

Works intended for notice in this column should be sent direct to the Editor (P. P. Ewald, Polytechnic Institute of Brooklyn, 99 Livingston Street, Brooklyn 2, N.Y., U.S.A.). As far as practicable books will be reviewed in a country different from that of publication.

Les Constantes Physiques des Composés Organiques Cristallisés. By J. Timmermans. Pp. 556 with 80 figs. and many tables. Paris: Masson. 1953. Price frs. 5200.

I found this an infuriating though fascinating book. It is one which certainly should be in the library of every physical chemist and everyone who is interested in organic compounds, although the price may prevent many from buying it for themselves.

Prof. J. Timmermans in his capacity as Director of the International Bureau of Physico-Chemical Standards (as well as being Professor of Physical Chemistry at the Université Libre, Brussels) has had an unrivalled opportunity of collecting together data on the properties of compounds generally, but he is really only interested in some of these properties. In an earlier work he has given the physico-chemical constants of pure organic compounds, not necessarily solid and with the emphasis on the word 'pure', which limited him to determinations on substances having a freezing range of less than 0·1° C.

That limitation is not imposed in the present work.

Many of the crystals for which structure analyses are available are not in fact of such a high degree of purity, and from the structural point of view this is generally not important. But when one is considering some physical properties, a trace of impurity may change not merely the scale, but the very nature of the phenomenon observed. Throughout this book, therefore, the author very properly deals critically at every stage with the experimental methods used in the determination of the constants referred to, and with the sources from which data are obtained, and also draws attention to such difficulties as, for example, the tendency of some physical 'constants' to change gradually for some time after recrystallization and only to settle down to their final value after several hours, or to depend upon compactness or preferred orientation, in the case of polycrystalline specimens.

In the first section of the book, the author considers what is known about molecular size, shape and weight of organic compounds in the crystalline state, attempting, as is his aim throughout, to derive general relationships between compounds in homologous series or having common features, physical or chemical. In a succeeding chapter, which crystallographers will certainly find very unsatisfactory, he offers a résumé of what is known from X-ray and crystallographic studies of organic compounds. The criticism that may be made here is not merely that the resumé is inadequate, but that it is not always accurate, either because the author has not used the latest data available at the time of writing, or because he has not realized that some of the theory to which he gives prominence is itself based on wholly inaccurate data. This is most obvious in the table illustrating Weissenberg's symmetry theory of 1928, to which he devotes three pages, by comparison with half a page given to discussion of the hydrogen bond. Nevertheless, even here, in spite of one's irritation at the opportunities lost, one is caught up, every now and then, by an interesting new facet of some well known facts or by some hitherto unknown fact or relationship. The author is particularly in his element in discussing polymorphism and reversible and irreversible transformations, isomorphism, mixed crystallization and the relationships in and between homologous series.

The chapter discussing physical constants of organic compounds in the crystalline state, which might have been expected to occupy most of the book, is in fact limited to sixty pages. Specific heat and dielectric constant account for about forty of these; density, specific volume, coefficient of expansion and compressibility for another eight; mechanical properties for two-and-a-half; while rotatory power, piezo- and pyro-electric effects, magnetochemistry, refractive indices, dispersion, Raman and infra-red spectra are given the remaining nine pages and are then never mentioned again.

The whole of the remaining 350 pages of the book is really devoted to the phenomena of transformation, solidification and melting. Seventy-two pages are given up to a list, with references, of organic substances having melting points below −20° C. One wonders why. Very little is said about the actual process of crystallization and nothing about modern theories of crystal growth. But the author enjoys himself tremendously in pointing out all sorts of relationships, many of them previously unknown to at least one X-ray crystallographer, between melting points of different substances and different groups of substances under different conditions; and there is a riot of curves and tables showing critical points, phase diagrams, latent heats, entropies and the connection of these with molecular constitution and shape, crystal lattice and so on. One could not help feeling that there is an absolute mine of information only a little way outside the field in which crystallographers usually wander.

Did you know that *cis*-isomers are usually yellowish and have low m.p.'s relative to *trans*-isomers, which are colourless? Did you know that the high members of normal long-chain homologous series all converge towards a m.p. of about 110° C.? Did you know that the speed of crystallization of methyl alcohol is sensitive to the presence of even 1 part in 20,000 of water? Or that CCl_4 and CBr_4, which have two isomorphous forms at lower pressures, are apparently not isomorphous at high pressures, and why? Or that the entropy of melting is apparently directly related to the molecular 'surface area'? Well, perhaps you did; but even so, you will almost certainly find here some other interesting and suggestive data.

As in most French books there is a table of contents but no subject index. The long bibliographic index does not mention W. H. Bragg, although he is mentioned in the text. The index of compounds occupies twenty-four pages.

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Crystal Data. Classification of Substances by Space Groups and their Identification from Cell Dimensions.

By J. D. H. DONNAY and WERNER NOWACKI with the collaboration of GABRIELLE DONNAY. Pp. ix + 719. The Geological Society of America; Memoir 60. 1954. Price $5·00.

This volume undertakes to give crystallographic data, obtained by X-ray and electron diffraction, for some thousands of substances. The information concerns the symmetry and geometry of the cell.

The work consists of two parts. These were originally two separate compilations and joint publication was not considered until after Part I was finished and Part II near its completion. The intention is that this publication will be the prelude to a *Handbook of Crystallography*.

Part I (*Systematic Tables*) by Werner Nowacki (University of Berne), classifies crystalline substances by space groups. The important section of Part I, the Main Table *B* (following *A*, the Introduction) shows the distribution of 3800 different compounds among the space groups. These are arranged under the seven crystal systems and are subdivided according to their chemical composition into seven categories. The subdivision according to chemical composition is arbitrary but may have its uses.

Following the Main Table *B*, are six tables under *C* which give statistical information as follows: distribution of crystalline substances among the 219 distinguishable space groups; among the seven crystal systems (lattice symmetries); among the 32 crystal classes; among the translation groups; into symmorphic, hemisymmorphic and asymmorphic and among the most frequent space groups.

Under *D* we find abbreviations of the names of scien-