

Book Review

Works intended for notice in this column should be sent direct to the Editor (A.J.C. Wilson, Department of Physics, The University of Birmingham, Birmingham 15, England). As far as practicable books will be reviewed in a country different from that of publication.

Operations research for public systems. Edited by PHILIP M. MORSE and LAURA W. BACON. Pp. [x] + 212. Cambridge, Massachusetts: M.I.T. Press, 1967. Price \$ 5.00 or 40 s.

A summer programme on *Operations Research in Public Affairs* was held at the Massachusetts Institute of Technology in September 1966, with some 40 participants equally divided between experts in operations research and experts in public systems. This book contains an introduction by the senior editor and eight of the papers presented. The applications range from planning the purchase of solder to the analysis of the criminal-justice system of California, and there is (as could well be predicted) no direct application to crystallography. Nevertheless, the two chapters on mathematical techniques, Probabilistic models, by G.P. Wadsworth, and Mathematical programming, by J.D.C. Little, are of interest in themselves.

The excuse for noticing the book in *Acta Crystallographica* arises from the interest at present being shown in minimization techniques in crystallography. At the time of writing there are four unpublished papers known to the editor dealing with economy of effort in the achievement of some particular crystallographic end. The approach differs from the classical 'combination of observations' in that the aim is not the best possible use of measurements already

made, but the best utilization of time or money in future measurements. The papers in this book contain one or two cautionary examples. Human beings are not perfect servo mechanisms, so that the empirical capacity of a traffic lane in a tunnel is only about half that to be expected from the speed limit and the safe spacing of vehicles. Might there be similar human factors with a great influence on the relative costs of photographic and diffractometric collection of data? And what is meant by 'best'? The number of telegrams awaiting delivery could be reduced either by employing more delivery boys or by providing the existing boys with faster means of transportation. The former minimizes the number of telegrams actually in the telegraph office, but increases the number in the boys' pockets, so that in certain circumstances the latter may minimize the total number awaiting delivery. A technique that minimizes the error in the determination of the position of an X-ray reflexion probably does not minimize the error in the determination of its intensity. Both may be required, and a subjective compromise between their conflicting claims made.

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