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computation, counting, and enumeration problems; Part 2 to control and extremization; and Part 3 to problems of constriction and existence; and as an appendix there are reprinted four interesting and thought-provoking lectures of H. Weyl.

Among the various papers there are several presentations of Pólya's theory of counting, the most complete in de Bruijn's paper specifically devoted to the subject. The note by Montroll on lattice statistics includes a lucid explanation of the Pfaffian method, one of those mathematical curiosities of an earlier age for which a use has now been found. Tompkins' paper on Sperner's lemma can serve as an excellent introduction for the student who wants to know a little of what combinatorial topology is about. Trueblood's paper on crystallography is a masterpiece of compression, though the reviewer does not understand how either the paper or the subject came to be classed under the general title of the book.

The whole is beautifully printed and illustrated and will be a valuable aid to those seeking a short introduction to any of the subjects covered.

The Theory and Practice of Scintillation Counting. By J. B. Birks. 662 pp. (Pergamon, Oxford) Macmillan, New York, 1964. \$17.50.

Reviewed by F. W. K. Firk, Nuclear Physics Division, Harwell.

Everyone concerned with the theory and application of scintillation counting will welcome the appearance of a second treatise on the subject by Birks. The book contains a great deal of information on work published in a wide range of scientific journals. Bearing in mind the primary interests of the author, it is not surprising that the book covers most thoroughly the theoretical aspects of the scintillation processes in organic materials. These chapters provide a definitive review of the theory suitable for both the research worker and the advanced student. The chapters devoted to applications of scintillators are naturally of a more transient nature. The author has almost succeeded in living up to the claim on the dust cover that "every known application of scintillation counting is considered in

detail and all advances in the field are covered." The presentation of so much in a single volume has its disadvantages; many important experimental topics are given little, if any, mention (e.g.: Haddad's impressive 4000-litre liquid scintillator used as a total γ -ray absorption detector in (n,γ) experiments). Other topics, of somewhat restricted application (e.g.: Hoogenboom's sum-coincidence NaI γ -ray spectrometer) are, however, given more than adequate treatment. These minor criticisms do not detract from the fact that this book is a valuable addition to the scientific library and will doubtless remain the standard work in the field for many years. How many readers will wonder what this book is doing in the same series as *Problems in the Design and Development of 750 MW Turbogenerators* or *Asynchronised Synchronous Machines*?

Fluctuation Phenomena in Solids. R. E. Burgess, ed. 389 pp. Academic, New York, 1965. \$14.00.

Reviewed by George Weiss, National Institutes of Health.

Noise and fluctuations have long been of interest in solid-state physics, particularly in semiconductor and ferromagnetic phenomena. To date there have been few books on noise in solids, and none that gives as comprehensive an account of the field as the present volume.

Of particular interest is an article by Favro in which the theory of rotational Brownian motion is discussed. Several cases are presented corresponding to the different constraints possible on the motion. The theory presented should find many applications, not only in the study of solid-state phenomena but also in physical chemistry. A long review article by Münster gives an account of the thermodynamic basis of the theory of fluctuations in solids. The theory is then applied to a variety of phenomena, such as the critical scattering of x rays by binary alloys, neutron scattering by ferromagnetic crystals, neutron scattering near the order-disorder transition point, and several others. The thorough treatment of the material will be a valuable guide for those interested in critical fluctuations. Another noteworthy article is that by