
 BOOK REVIEWS

Proceedings of the Rehovoth Conference on Nuclear Structure held at the Weizmann Institute of Science, Rehovoth. September 8-14, 1957. Under the Auspices of the International Union of Pure and Applied Physics (IUPAP). Edited by H. J. LIPKIN. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1958. xvi + 614 pp. 16 × 23 cm. Price, \$12.50.

This book contains an essentially complete account of the formal sessions of an international conference on nuclear structure held in Rehovoth, Israel. The main emphasis of the conference was on two fast-moving areas of low energy nuclear physics—nuclear models and parity. In addition to the coverage of these subjects, a fair amount of material concerned with experimental methods related to nuclear structure appears in the proceedings. The main part of the book consists of the texts of the lectures and short contributions presented by the various speakers. In addition, the recorded discussions which followed many of the papers are included; these lend an air of completeness to the book and give the reader an important means for placing many of the papers in their proper perspective.

The papers are arranged according to the nine conference sessions. Each session generally consisted of three or four long lectures of a general nature and several (sometimes ten or more) shorter papers on specific topics relating to the session theme. Since most of the short presentations have since appeared in various journals, the most important contribution of the book stems definitely from the texts of the longer talks, many of which were of a review nature. The outstanding features of the various sessions are as follows:

1. Shell Model Evidence in Nuclei. This session was mainly devoted to considerations of refinements to the simple shell model and the results of various calculations involving these refinements. Outstanding papers are on the foundations of the shell model (R. J. Eden), prediction of nuclear energies by the shell model (I. Talmi), intermediate coupling (D. Kurath), and γ -ray de-excitation in light nuclei (D. A. Bromley).

2. The Unified Model. Features and applications of the collective model are covered in this session. The papers on the description of nuclear spectra in terms of the collective model (B. Mottelson), nuclear spectroscopy in the heavy element region (I. Perlman and F. Asaro), collective effects in light nuclei (D. A. Bromley), unified model applied to fission (L. Wilets), and the foundations of the collective model (R. E. Peierls) are the highlights of this group.

3. Group-Theoretical Methods in Nuclear Spectroscopy. Two very good papers in this session are those by G. Racah and B. H. Flowers. Racah does a superb job of unveiling the meaning of the seniority quantum number and its application to nuclear structure. Flowers presents the results of some attempts to explain collective effects in terms of the shell model.

4. Electromagnetic Transitions and Heavy Nuclei. The important features of this group are papers surveying the data on electromagnetic transitions in light nuclei (D. H. Wilkinson), on the effects of configuration mixing on γ -ray transition probabilities (A. De-Shalit), and on nuclear energy level systematics in the lead region (I. Bergstrom).

5. Effects of the Finite Size of the Nucleus. This is mainly a session on the fine points of the internal-conversion process. There are good reviews of both the theoretical aspects (M. E. Rose) and the experimental problems (A. H. Wapstra).

6. Parity Non-Conservation and β -Decay. This is undoubtedly the most significant section of the book. The papers in this session review the recent parity experiments and reflect on their meaning. This is probably the first time that such a comprehensive survey of this area has appeared in print. The outstanding papers are on the theoretical implications of parity non-conservation (T. D. Lee), the experimental evidence for parity non-conservation (C. S. Wu), the effects of the recent developments on the interpretation of old β -decay data (E. J. Konopinski), the application of angular correlation measurements to this general area (R. M. Steffen), and the experimental problems

in measuring beta spectra (L. M. Langer). Of interest to experimenters in this area is the wealth of information on specific experiments contained in many of the shorter contributions. The editor has also added a timely supplement of post-conference developments in this field which puts the section almost up to date.

7. Extra-Nuclear Effects on Angular Correlation. Papers by A. Abragam and by H. Frauenfelder adequately review this field.

8. Instruments of Nuclear Spectroscopy. This session deals mostly with the latest developments in instrumentation. Outstanding are the reviews of developments in magnetic spectrometers and coincidence circuits (T. R. Gerholm) and the bent crystal spectrometer (J. DuMond).

9. The Measurement of Very Short Nuclear Life-Times. The emphasis here is on the newer non-conventional techniques. The highlights are a general review of these techniques (S. Devons), a review of recent developments in nuclear resonance fluorescence (F. R. Metzger), and a paper on the experimental application of recoil shifts to life-time measurements (S. G. Cohen).

There are several reasons why this book will be exceedingly valuable to people with active experimental or theoretical interests in nuclear structure. By eliminating the post-conference editing of the papers, the time-lag inherent in the publication of conference proceedings has been kept to a minimum. This has had the effect of keeping the book fairly well up to date. The papers are generally quite detailed, and they are presented at an advanced level. Although there has been no attempt to summarize the important results of the conference, this shortcoming will be important only to the casual reader of material on nuclear structure.

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Emulsions. Theory and Practice. ACS Monograph No. 135. By PAUL BECHER, Research Chemist, Atlas Powder Co. Reinhold Publishing Corporation, 430 Park Avenue, New York 22, N. Y. 1957. ix + 382 pp. 16 × 23.5 cm. Price, \$12.50.

In the 382 pages of this ACS Monograph, Becher has done an excellent job of extracting and concentrating the essence of both the theoretical and the technological aspects of the field of emulsions. Obviously the author has demonstrated a penetrating insight into the multiplicity of subjects treated, from the classical definition of emulsions and underlying theory to the chemistry of emulsifying agents and discussion of present day equipment for manufacturing commercial emulsions.

At the outset the author recognizes the difficulty of arriving at even a clear-cut definition of an emulsion as the term is used today, in contrast to the classical one of a dispersion of one immiscible liquid in another, *i.e.*, a disperse system in which both phases are liquid. A rigid adherence to this definition would rule out many commercial formulations such as a paraffin wax emulsion, which at the temperature of formation is a liquid-liquid dispersion but at lower temperatures is a dispersion of a solid in a liquid. In many instances he has suggested changes in definition and nomenclature to bring order to a subject that appears to defy an all-encompassing theory to explain the myriad of facts uncovered from antiquity to the flood of developments from intensive research in the last three decades.

While the author in his preface modestly states that the book is essentially a self-contained discussion of modern emulsion theory and practice and that older work has for the most part been only superficially mentioned, it appears that enough of the older art has been interestingly presented to form a background against which the tremendous developments of the past three decades have been skillfully portrayed. A perusal of the bibliographies following the