

Wood, and how this far-visioned man helped to expand the horizons of Watson's thought and plans. Yet Watson must also have met innumerable fools, and his rivals have also met far-visioned men. Rodgers probably lacked the information, as an outsider, to distill the talents and policies which created this empire, but there is no evidence that he recognized the magnitude or nature of the puzzle to be solved. Not elementary, Watson.

Instead we get a potpourri of anecdotal biography, portraying a trigger-tempered, vain, paternalistic man in some of his business, philanthropic, and political activities. This is not rich fare: businessmen lead lives almost as placid as professors', devoid (for professors until recently!) of danger, immensely repetitive from year to year, remarkably empty of amorous exploits or titillating fraud. We might have profited if Rodgers had also looked more closely at Watson, the Chairman of the Board of Trustees of Columbia University. My impression is that Columbia would have been better served by someone interested in higher education even if he needed to be advanced his subway fare to attend trustee meetings. We might have profited too if Rodgers had sought to measure the impact of the government's policies (including antitrust policies) on IBM; on the whole I conjecture that they were highly beneficial. In short, we would have profited if Rodgers could have obeyed that absurd Watsonian admonition that forms the title of this book.

GEORGE J. STIGLER

Charles R. Walgreen Foundation for the Study of American Institutions, University of Chicago, Chicago, Illinois

Nuclear Physics

Third Symposium on the Structure of Low-Medium Mass Nuclei. Lawrence, Kans., 1968. J. P. DAVIDSON, Ed. University Press of Kansas, Lawrence, 1968. viii + 296 pp., illus. \$12.50.

This symposium was the third in a series that began in 1964. The smallness of these meetings (about 50 people) allows an informality and a depth of discussion not possible in a larger gathering. The success of the venture can be judged by the call, for the first time, for formal publication of the proceedings. One can only hope that the

publicity will not expand future gatherings to a size that makes them ineffective.

The volume consists of the text of all the papers and the discussions. Most of the manuscripts appear as presented by their authors, and no attempt has been made toward uniformity in style. Such a decision by the editor does not detract from the usefulness of the book and is justified in view of the rapid publication.

Over half of the 13 papers presented at the symposium are deep surveys of experimental data on selected nuclei in the $(2s, 1d)$ -shell and the problem involved in getting "simple" interpretations. Two of the papers present subject matter new to the series in that they concentrate on hardware—on the dynamitron accelerators (M. R. Cleland) and heavy ion accelerators (P. H. Rose and W. E. Stark).

Three experimental papers are of note. J. A. Becker gives a review of the use of triton beams on nuclei in the $(2s, 1d)$ -shell with a host of new spin assignments and mixing ratios. A. E. Litherland makes a detailed comparison of properties of the mirror nuclei ^{25}Mg and ^{25}Al —a pair which are unique in being both well studied and exhibiting rotational bands. It is pointed out that one can not only infer from information derived from one nucleus information concerning its mirror, when the information may be difficult to extract experimentally in the mirror, but also, in principle, test to a greater accuracy the nuclear wave functions. P. M. Endt gives what is essentially a continuation of his talk two years previously on the gamma decay of analogue states. It now seems that the earlier interpretation involving the antianalogue states was too naive, and, in the details of fitting, it has been found necessary to retreat to the unsatisfactory solution of invoking different criteria for each nucleus studied.

Those who study low- and medium-mass nuclei are at present making one of their periodic critical reviews of their subject. The physical interpretation of the shell model is now being probed more deeply and the consistent derivation of every operator (interaction, electromagnetic, and others) that should be used is being questioned. Thus it is no longer thought satisfactory simply to parameterize the nuclear residual interaction, and efforts are being made to derive this from the free nucleon-nucleon interaction. In the

symposium the direct derivation of the "bare" interaction from the known phase shifts is discussed in talks by J. P. Elliott and D. S. Koltun; it is of interest to see their different approaches side by side. Perhaps it is unfortunate that no talk was scheduled on the G -matrix evaluation from the Brueckner theory—the conflicting approaches would have made interesting reading. The use of the interaction as derived from the G -matrix in the shell model calculations, however, is discussed in a comprehensive paper by Edith Halbert. The problem of further renormalization of the residual interaction arises here again after the need is seen for further truncation of the shell model basis when the full calculation within a shell becomes intractable. The solution so far has been to return to the phenomenological parameterization of the interaction; although the question of the meaning of the phenomenological calculations was raised, no answers were given, in the presentation of the results, for such a hypothesis. One can look forward (possibly at the fourth symposium?) to the setting up of criteria by which one can judge the physical meaning of simple models in highly truncated spaces with phenomenological operators.

M. HARVEY

Atomic Energy of Canada Limited, Chalk River, Ontario

Solution Chemistry

Ion Exchange and Solvent Extraction of Metal Complexes. Y. MARCUS and A. S. KERTES. Interscience (Wiley), New York, 1969. xii + 1044 pp., illus. \$44.95.

The authors write that their aim was to prepare a monograph that would be useful to workers in solution chemistry, coordination chemistry, and the analytical and industrial aspects of separation chemistry. Their book, the product of much painstaking labor, fulfills the aim.

The authors treat the theory of electrolytes first, then ion exchange, and finally solvent extraction. They have appended an up-to-date and useful summary of distribution data for the extraction of almost all known metal complexes. A detailed treatment of the general theory of ion-exchange and solvent extraction is included in the chapters on these subjects. Many of the distribution data summarized are critically analyzed. Similar care has been taken in the pre-