of life than on prokaryotic organisms. The meaning of such terms as "barophilic" appears to shift from the organismic to the biochemical level. Some authors stress the point that, independently of deep-sea-related problems, hydrostatic pressure can be employed as an experimental tool like any other physical parameter.

As a state-of-the-art document this book is an extremely useful complement to the two others, especially if one takes the pains to read the "small print." It reveals the obvious divergence of viewpoints and the urgent need for common strategy which are still characteristic of "barobiology" and make another get-together in the near future likely.

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De Broglie's Discovery

Function of Naturally Occurring Polyamines. URIEL BACHRACH. Academic Press, New York, 1973. xii, 212 pp., illus. $12.50.

Bachrach's book presents a concise, thorough, and well-organized summary of polyamine distribution and function. It appears relatively soon after a very similar book by Cohen (*Introduction to the Polyamines*, Prentice-Hall, 1971) as well as several very recent symposia and review articles (which Bachrach cites) covering the major developments in the field in the last 4 or 5 years. The reworking of somewhat familiar data and already well-documented historical landmarks does not detract from the usefulness of this book. Bachrach has succeeded in bringing together the older information and the significant new developments.

This small volume is very complete in the citations of polyamine studies (1099 references). It contains new information on polyamine-containing alkaloids (the inandenines) and a very thorough treatment of the induction and turnover of the now well-characterized enzymes of polyamine biosynthesis. The recent data on the elevation of urinary polyamines in cancer patients and the possible use of polyamine analysis of blood and urine as a diagnostic test to establish malignancy and to facilitate the evaluation of cancer therapy are only briefly considered.

The book should serve as a valuable source of literature citations of clinically oriented investigations of the polyamines. Studies on the concentrations of polyamines and polyamine-synthesizing enzymes in animal tissues and fluids in a variety of disease processes are well covered, and possible regulatory functions of polyamines in the synthesis of nucleic acids and the extensive literature on the hormonal elevation of polyamines and polyamine-synthesizing enzymes are extremely well reviewed. The book should be a valuable record of past, present, and future directions of polyamine investigations.

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Polyamines

Wave Mechanics. The First Fifty Years. WILLIAM C. PRICE, SEYMOUR S. CHISSICK, and TOM RAVENSDALE, Eds. Halsted (Wiley), New York, 1973. xiv, 436 pp., illus. $37.50.

The preface of this interesting volume begins with the sentence, "It is only rarely that the 50th anniversary of a great and fundamental scientific discovery occurs during the lifetime of its discoverer." Furthermore, in this case the honoree contributed the first chapter, entitled "The beginnings of wave mechanics." Louis de Broglie's discovery certainly merits this recognition.

Many of the chapters have a clear chemical emphasis which the editors evidently adopted. Others present important historical accounts by individuals who participated personally. But much of the text is directed to reviewing recent progress in the quantum mechanics of molecules.

De Broglie points out the importance of relativity in his thinking at the time of his historic proposal. He also reminds us that, although the application of the Schrödinger equation to nonrelativistic problems is now unambiguous, there remain debatable aspects in the ultimate interpretation. J. C. Slater and J. H. Van Vleck present interesting historical essays. Coulson's account of the contributions of wave mechanics to organic chemistry is lucid and balanced and should appeal to a wide circle of readers.

In recent years the use of *d* orbitals in hybrid orbital formation has come under attack by Jorgensen, among others, because the radial function for *d* orbitals in most atoms differs so much from that for *s* and *p* orbitals. Pauling and Keaveny in their chapter offer refutation of this argument by showing that a *d* shell may be subdivided into contracted and expanded orbitals. For typical transition element complexes the expanded *d* orbitals have radii comparable to the valence shell *s* and *p* orbitals.

Bagus *et al.* present a high-level discussion of the use of configuration interaction methods to investigate the correlation problem in atoms and molecules. The procedure adopted involves the use of large basis sets and extensive configuration interaction to yield predictions of an accuracy comparable to experiment for systems such as the CH radical where experimental investigations would be difficult or not currently feasible. Particular emphasis is placed on the form of the expansion and the use of methods such as the multiconfiguration self-consistent-field method and the iterative natural orbital method to attain nearly optimum convergence of this expansion.

Kaufman presents some very interesting but detailed and complex results that show how spin and symmetry restrictions yield anomalous behavior for $O^+ + N_2$ collisions at low energy. This chapter shows how reliable predictions can now be made in problems of this type.

The chapters by Dewar and Johnson concentrate almost exclusively on the approximate methods these authors advocate and use. Presumably Johnson's chapter was written before the recent paper of Clementi (*J. Chem. Phys.* **58**, 4699 [1973]), which disputes many of the statements about relative speeds of computation.

The senior editor, W. C. Price, contributes an exceptionally good review of photoelectron spectroscopy and its interpretation in the electronic structure of matter. This chapter will interest experimentalists as well as theorists and provides a generally informed reader an excellent introduction to this relatively new technique.

This volume with 22 chapters contains much valuable material and should be in any quantum mechanics library. Because of the great variation in level of presentation, however, only a few chapters will be of interest to a particular reader at one time. But after further study in general texts, a given reader will find other chapters valuable.

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