

These have found application in magnetic resonance experiments, in liquid-state studies, and will undoubtedly play a part in other fields. Though the dust jacket speaks of the application of far-infrared spectroscopy to "certain areas of molecular biology," this enticing topic does not appear to be given much space in the volume.

From what has been said, it is evident that I do not recommend this volume. My view is that matter in a text-book form should either have careful systematic presentation if it is directed at students, or critical scholarship if it is directed at experts. For both classes, the addition of matter giving a physical and historical perspective would be valuable, but the book does little to set the scene for this branch of physics in showing where its unique contributions have already been made, or are likely to be made in the future.

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Rydberg Series in Atoms and Molecules

By A. B. F. Duncan

119 pp. Academic, New York, 1971. \$7.50

This monograph appears at a time when the subject of Rydberg series, especially in molecules, is in the midst of a new period of activity. The author's experience and contributions to the field extend from the 1930's to the present, and include both theoretical and experimental work, largely dealing with the spectroscopic aspects of the topic.

In essence, the book deals with the energy levels of Rydberg series: how they are calculated; the relation of the constants of the generalized Rydberg formula

$$E = A - R/(n - \delta)^2$$

to the electronic structure of the ion core to which the electron is bound; what series are known experimentally and how they are identified. The text puts one into contact with the literature, particularly the spectroscopic literature, in a fairly thorough and effective way. It is a terse and extensive summary of what has been observed.

As a reflection of the difference between the orientations of the author (or the constraints placed by the publisher) and this reviewer, I should point out what appears to be a major shortcoming of the book. This is a shortcoming that could easily be remedied when a second edition is being prepared. The book is simply too narrow. What it does, it does well. However, it omits several of the more timely and

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interesting aspects of Rydberg states.

On the experimental side, several unincorporated aspects of the subject are worthy of inclusion. Nothing is said about electron-impact spectroscopy and its special capabilities, for example, for generating "forbidden" transitions. Intensities and line shapes are mentioned only in passing, with no discussions of the relation between oscillator strengths in Rydberg series and in the corresponding continuum. Penning ionization and electron transfer by species in Rydberg states have become powerful and interesting as probes for the Rydberg states and as tools to study other species. Some of the theoretical facets of Rydberg states that I would have liked to see in the book are the theory of oscillator strength distribution, including the minimum associated with radial nodes in the electronic wave function, the details of *l*-uncoupling (here treated only briefly and qualitatively, in connection with observed spectra) and the dynamical process by which Rydberg states with sufficient energy are coupled to continuum states.

A few passages seemed unclear or misleading to me, such as the discussion of the theoretical treatment of acetylene, and two or three other points that will not trouble the educated reader.

Basically, the text is clear and reads easily. For a person interested in getting into the subject of Rydberg spectra and most of the ways they have been calculated, the book is clearly a good guide. I personally already find it useful. Hopefully, a revision to enlarge the text will appear in time; the circle of readers for the book will then surely increase far more than in proportion to the enlargement.

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Physics for Society

By W. B. Phillips
232 pp. Addison-Wesley, Reading, Mass.,
1971. \$7.95

Physics For Society is an introductory text designed for nonscience majors who would not normally take a college physics course. Rather than survey all of physics, the author, who is at the University of West Florida, emphasizes those parts he feels to be most interesting, important, and useful. The text is basic physics, and the emphasis is on the frontier aspects of physics and the application of physics to our everyday lives.

The text is divided into ten chapters which deal with the following areas: space travel, relativity, the atom bomb, nuclear effects, quantum mechanics, elementary particles, properties of