Galactic astronomy for beginners

Galaxies: Structure and Evolution

R. J. Tayler, A. S. Everest
203 pp. Wykeham (Taylor and Francis), London (US distributor: Crane, Russak, New York), 1978. $21.00

Reviewed by Mark R. Chartrand III

A cluster of galaxies in the constellation Coma Berenices. A detail from a photograph taken with the Hale Observatories Palomar telescope (reproduced in *Galaxies: Structure and Evolution*).

This compact volume is the third by R. J. Tayler in the Wykeham Science Series. The previous books *The Stars: Their Structure and Evolution* and *The Origin of the Chemical Elements* set the pattern of this series, which, in the words of the publishers, "is intended to provide up-to-date accounts of various scientific subjects at a level intelligible to the senior secondary student . . . Each book seeks to reinforce the link between school and higher education, and this aim is achieved by collaboration between a main author, who is a distinguished research worker, and a schoolteacher who has brought the experience of many years of successful senior school teaching."

Like the other books in this series, this one is a very good introduction to its subject. However, in the school system in the United States, the book is too advanced for most high school students. While the amount of math in the book is limited, familiarity with elementary partial differential equations is necessary for a complete understanding. Thus the book is more suitable for introductory university courses.

Tayler is at present Dean of the School of Mathematical and Physical Sciences at the University of Sussex. The schoolmaster with whom he collaborated in this volume and the previous two books of this series is A. S. Everest, a specialist in science curriculum development.

The book begins, properly enough, with a detailed look at the Milky Way as an example of the only galaxy that we can study close up. The authors compare the observational properties of our galaxy with those of external galaxies and then go on to consider the dynamics of stellar systems and the various components of galactic structure. The methods used to determine masses of galaxies and the contributions of the interstellar medium are treated at some length, and there is a separate chapter on the chemical evolution of galaxies. The book concludes by placing galaxies in a cosmological context and by setting out a number of the current areas of investigation on galactic masses, clustering, and origins.

In general, the material is well presented at an even level, and the book would serve as a very good introduction to the subject. There are a few shortcomings that could be overcome by an instructor. For instance, I found surprisingly little or no mention of BL Lacertae objects, spiral density wave theory, recent work on flat rotation curves of galaxies, and star formation in spiral arm patterns from chain reactions of supernovae.

I would recommend this book for use in an introductory course on the subject, or as part of a broader course. I would hope that a soft-cover edition might be released in this country to reduce the current, very high price for this volume.

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The large and small of liquids

Liquids and their Properties: A Molecular and Macroscopic Treatise with Applications

H. N. V. Temperley, D. H. Trevena
274 pp. Halsted (Wiley), New York, 1978. $37.50

The authors have written an introduction to the microscopic and macroscopic properties of liquids in an easy-reading, pedagogical style that reflects their experience in the subject. Harold N. V. Temperley, professor of applied mathematics at the University College of Swansea in Wales, is widely recognized for having made important contributions to statistical mechanics and for writing or co-editing several frequently referenced books on various aspects of the subject. David H. Trevena, senior lecturer in physics at the University College of Wales, Aberystwyth, has done both ex-