work for the serious reader for whom it was obviously written.

The book is the third volume to appear in *The International Astrophysics Series*. In format and typography it follows the style of its predecessors. Evidently great care was taken in composing and editing the book as only a few typographical errors were noted. It is to be regretted, however, that the author has followed the unrhetorical practice of casting nouns in the role of adjectives, a practice all too common now-a-days in scientific papers written in English. The frequent occurrence of such phrases as "the Wien approximation to the Planck law" and "space absorption correction factors" mars the diction of an otherwise excellent book.

Vistas in Astronomy. Vol. 1. Edited by Arthur Beer. 776 pp. Pergamon Press, London & New York, 1955. $28.00. *Reviewed by Cecilia Payne-Gaposchkin, Harvard College Observatory.*

The two volumes dedicated to Professor Stratton are perhaps the most impressive tribute in published form ever offered to an astronomer. They far transcend the limits of the ordinary *Festschrift*. In the volume reviewed and the one that is to follow, two hundred and fifteen men of science, colleagues, pupils, and friends of the genial Dean of British Astronomy, tell of subjects that are of interest to them. The result is a cross section of contemporary astronomy, often controversial, everywhere fascinating, because each writer has chosen a theme in which he is actively interested.

Volume I is rather loosely classified under seven heads: Cooperation and Organization; History and Philosophy; Dynamics; Theoretical Astrophysics; Instruments; Radio Astronomy; and Solar Physics. Detailed review is manifestly impossible, and to concentrate on any one contribution would be inappropriate.

The subject of Cooperation and Organization is a happy choice as the opening section, for no man has been more active in this field than Professor Stratton himself, officially as General Secretary of the International Astronomical Union for a decade, and unofficially as one of the most internationally-minded of astronomers. Astronomy is perhaps more highly organized than any other science, and it is of great value to have the history of the International Astronomical Union and its associated services set down. In a very different vein, and veritable footnotes to history, are the recollections by Evershed of seventy years of astronomical history (which he helped to make) in England and India, and by Max Born of the astronomy of Franz and Schwarzschild in Germany.

History and Philosophy ranges from the Egyptian "Decans" (Neugebauer), Ptolemy's work on precession (Pannekoek), Renaissance astrology and astronomy (Hartner), and eighteenth century instruments (Dewhirst) to the contemporary history of the Radcliffe Observatory (Knox-Shaw). The contributions grouped under Philosophy contain rich food for thought. Sarton writes on the Astral religion of antiquity and the

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"thinking machines" of today: "There will always be a need for 'thinking machines' . . . but the greatest need is for thinking men"; his is an article to be read and pondered. Bondi breaks a new lance in the age old joust between Fact and Theory. We read a philosopher's criticism of modern cosmology (Dingle), and a theologian's analysis of the impact of cosmology on theology (Davidson). But for the articles on Cosmogony and Cosmology themselves we must wait until the appearance of the second volume.

The section on Dynamics contains some general surveys, such as those of Sadler on Celestial Mechanics, of Atkinson on the Eclipse Moon, of Camm on stellar dynamics and of Bourgeois on stellar motions. It also introduces some highly technical discussions, such as those of the principal librations of the Moon (Jeffreys), the Lagrangian bracket (Smart), the Cracovian (Banachiewitz), and the Three-Body Problem (Lemaître). Freundlich discusses critically the observational basis of the Theory of Relativity. Here, finally, we find Weaver's valuable study of the K effect.

Theoretical Astrophysics brings together a variety of contributions. Most of them are brief, but all are full of interest, ranging over the theory of stellar atmospheres (Unsöld and Weidmann, Wellmann), of nebular condensations (Zanstra), of turbulence (Bhatnagar, Krook, Menzel and Thomas; Batchelor), of stellar magnetic fields (Runcorn, Ferraro), of cosmic magnetic fields (Cowling), and of interstellar polarization (Leverett Davis). Massey writes on atomic collision processes, and Garstang on the important subject of atomic transition probabilities, with a valuable bibliography. The vital subject of energy production in stars is discussed by Salpeter. Chandrasekhar contributes on gravitational instability when a Coriolis force is acting.

Instruments cover a variety of topics. There are, of course, articles on modern telescopic design (Linfoot, Couder, Steavenson), on spectroscopic instrumentation and technique (Bowen, Harrison, Fehrenbach), on solar instruments (Wayman, H. A. and M. T. Brück), and on interferometry (Danjon, Fürth and Freundlich). Photoelectric methods are discussed by Fellgett, Huffer, and Hardie; and the electron telescope by Lallemand. It is surprising that the only article on the use of electronic calculating machines in astronomy is the one by Naur. Strassl contributes a useful discussion of nomograms. Quartz crystal clocks (the only article devoted to timekeepers, which would once have bulked large in such a collection) are treated by Smith and Wellgate. The determination of positions from wide-angle plates is described by van Biesbroeck, and Butler discusses the counting of stars by indirect methods.

Radio Astronomy is so important a new field that it is natural to find a whole section devoted to it. Here we find papers on instrumentation and technique (Ryle, Hanbury Brown, and Lovell), on the solar radio observations (Hey, Wild), and on radio study of meteors (Davies and Lovell). The study of radio stars is described for the northern (Smith) and southern hemispheres (Bolton). The section terminates with Oort's

important paper on the 21-cm line of interstellar hydrogen and the structure of our galaxy. This section of the book perhaps suffers the most from slowness of publication, for the subject is among the most active in astronomy, and much of the work described has already been superseded.

The section on Solar Physics is one of the longest. Some articles (Adams, Abetti) are historical notes. Conditions in the photosphere are discussed by Plaskett and by Pagel. Von Klüber examines the sun's magnetic field. Studies of the chromosphere are reported by Redman and by Blackwell, and of the corona by Righini and by Öhman. Sunspots are discussed in a number of papers, by Newton, Sweet, Bullard, and Tuominen, and prominences and flares by d'Ajambuza and Severny. Carroll contributes an important survey of eclipse observing, and the recent active eclipse work in Japan is described by Hagihara.

Vistas in Astronomy is not a work of reference in the ordinary sense. It is, nonetheless, indispensable in the astronomical library, for it contains much that is not to be found elsewhere. The size of the book makes its riches difficult of access, but the promised index in the second volume is designed to minimize the difficulty. Format and typography are excellent. The only feature to be regretted is the high price of the volume, but one cannot regret the enthusiasm with which the many contributors responded. The result is a unique work, international in authorship, and of truly astronomical scope.

The Atomic Nucleus. By Robley D. Evans. 972 pp. McGraw-Hill Book Company, Inc., New York, 1955, $14.50. *Reviewed by Arthur Beiser, New York University.*

This massive ($M = 8.91 \times 10^{26}$ amu) book represents "an experimentalist's approach to the understanding of nuclear phenomena", which is a pretty good description of the way in which Evans has attacked the exposition of his vast and convoluted subject. He begins with the static properties of nuclei, proceeds to systematics of stable nuclei, binding energies, nuclear forces, models, and reactions, various aspects of radioactive decay, and the interactions of charged particles and photons when travelling through matter, terminating in a discussion of relevant statistical topics and their applications.

In writing *The Atomic Nucleus* Evans found it impossible to avoid such traditional sins as citing methods and results prior to their formal introduction and the "varied reiteration" of material. In fact, he ended up by abandoning all moral scruples and gave each item as self-contained a treatment as seemed desirable; a procedure that resulted in one of the best introductions to nuclear physics (as distinct from nuclear theory) I have been able to find. The book assumes prior courses in calculus and atomic physics, and goes on from there. The stress is on the physics of what is happening, and Evans tries to communicate the elusive "feel" for the less obvious aspects of his subject, such as center-of-