reviews

The Cambridge Star Atlas, Third Edition.
Wil Tirion. Cambridge University Press, Cambridge, 2001. 90 pages, numerous maps and diagrams. hardcover (ISBN 0-521 80084-6).

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For anyone wishing to learn about the wonders of the night sky, this atlas will be an excellent guide. In a slim, hardbound volume, it covers inhabitants of the night sky from our nearby moon to familiar constellations to far-off galaxies. It makes astronomy accessible to those who are new to the subject, but is packed with an array of detailed star data for the seasoned stargazer.

The book is divided into four sections. The first covers the moon, particularly the part that we can see from the Earth. The craters and "seas" are identified and discussed, as are the mechanics of how the moon travels around the Earth and why we see only one side.

The second section begins with the apparent movement of the sky above our heads and how the path of the stars differs according to where we're standing on the Earth's surface. The bulk of this section is taken up by 24 sequential monthly star maps. The stars on the maps appear much as they do in the sky. Views of the northern and southern sky are shown on facing pages for each month. These maps are meant for the casual stargazer as a guide to the main constellations and a way of better understanding how the star pattern changes throughout the year.

The third section of the atlas explains the different kinds of stars and the variety of non-stellar objects such as clusters and galaxies. In this section are twenty highly detailed star charts, overlapping maps that cover the entire sky. A variety of star types are classified and shown, along with clusters, nebulae, and galaxies. Accompanying each chart is a table detailing numerous attributes about the features depicted in the charts, such as magnitude, declination, and type. These charts and their accom-panying tables have been recreated and updated for this third edition.

The atlas is completed with a set of six all-sky maps that show the general distributions of the objects outlined in detail in the star charts and the tables. These maps allow for easy comparison and an overall understanding of the types of objects that make up the night sky.

Tirion states in the preface that he created this atlas to serve a wide audience of astronomic observers, from those relatively new to stargazing to advanced observers using a telescope. He has also set out to provide maximum versatility such that this atlas can be used as a star and sky guide anywhere on Earth. By creating unique, thorough maps of the sky, Tirion has made stargazing both appealing and accessible to a large audience.

The subject matter is concerned with magnitudes, distances, temperature, and other dimensions far beyond the scope of normal Earthly experience. Understanding the physics involved in the apparent movement of the sky above the Earth can be confusing or even intimidating to a novice observer. One of the strengths of this atlas is that the user is led gradually into understanding the sky by beginning with a comprehensive look of the most familiar object, the moon, then expanding the focus to the stars and eventually to a variety of unfamiliar non-stellar objects, most of which can be seen only by telescope. The array of information presented, from the diagrammatic explanations in the beginning of the atlas to the very detailed star charts in the third section of the book, ensures that any reader will find information in this atlas to supplement sky observations.

As in any good atlas, the maps take all the limelight, and the *Cambridge Star Atlas* is no exception. The star charts are clear, detailed, and include a wealth of information. The objects have been classified sensibly and effectively. Bright, fully saturated hues and simple shapes are used to distinguish the different types of celestial objects on the maps. The distinction between objects is especially important in maps that have few recognizable patterns, in comparison with standard Earthly maps, to aid the reader in spatial comprehension of a place. Particularly effective is the red ellipse symbol used for galaxies. They are drawn to scale where their size warrants and aligned to match their orientation when viewed from the Earth. The red color and organic shape distinguish them well from the smaller, less complex objects, such as clusters and nebulae.

The all-sky maps are plotted using galactic coordinates on Mollweide's Equal Area Projection. The first of the six maps plots the familiar constellations on this projection. Although they look a little distorted in shape from what we are used to seeing, they provide a helpful backdrop to the following five maps, plotted in faint blue. The equal-area property of this projection means that, although the shapes are somewhat distorted, the patterns of distribution and density of the stellar and non stellar objects are valid, as each section of the sky is rendered without distortion in size.

The strength of this section of the atlas is that it gives the reader a simple, categorized overview of

what can be observed in the night sky. The symbology is repeated from the star charts, offering continuity and easy interpretation.

These six maps arrange and locate the objects in the context of our own Milky Way galaxy, which is a unique perspective from the celestial sphere basis of the star charts. This allows for a rudimentary understanding of how our galaxy is arranged and, in the case of the final map, how the density of the galaxy along its widest axis affects our view of other galaxies. They allow such an effective overview, in fact, that it might have been more appropriate to place this set of maps before the star charts to continue the sequence of increasing complexity that the sections of the book provide.

While this atlas succeeds in reaching a wide audience with informative maps, charts and tables, it is clear that it could benefit from the addition of a few key elements and some minor adjustments to the design. And although this atlas effectively introduces and encourages observation of the night sky in a way that is neither overwhelming or condescending, certain design flaws make it difficult for the casual stargazer to learn the parts of the night sky not apparent to the naked eye.

The very first page of the atlas, for instance, shows an extremely simplified diagrammatic explanation of the moon's phases and its path around the Earth. Since almost half a page is devoted to this diagram, and it is our first graphic view of the material, it falls a little short of expectation. More realistic symbols for the sun, moon, and Earth, and explanation of the necessary distortion in scale, would make the diagram immediately more inviting and informative. An oblique view of the orbit would give a clearer perspective to the moon phase phenomenon as well.

The diagrams presented as a primer on the apparent movement of the celestial sphere around the Earth are clearly drawn, but lacking somewhat in explanation. Three views of the celestial sphere are drawn, showing the case of an observer located exactly at one of the Earth's poles, at the equator, and at an intermediate latitude. It is difficult to comprehend exactly where the Earth's surface fits in relation to the three celestial spheres, however.

While these diagrams occupy approximately half of a page, they do not take full advantage of the space. Much of the vital information is found in the caption accompanying the diagram, while there is ample space to annotate the diagrams themselves. These three spheres are rendered almost completely in black ink, missing an easy opportunity to simplify and classify the information with color. Although the book is printed throughout in four-color process, many parts of the atlas do not take advantage of the value of color as a design tool.

The monthly star maps use a deep violet-blue backdrop that blends to cyan near the periphery. Key elements on the maps are the stars and the constellation lines linking groups of stars. The stars are suitably rendered in white and the constellation lines in a light orange. A lighter, irregularly shaped cyan band runs through each map, showing the location of the Milky Way.

The complexity of rendering a thin line of a complex color on a background of a single, nearly full-value process color demands perfect color registration, which unfortunately was not achieved here. Furthermore, a slight vibration effect takes place when magenta ink is placed in such a vast field of cyan. While the effect of mimicking the deep violet of the night sky, with the white stars radiating from it, is effective and appealing, simple adjustments in the color choices would avoid many of the registration problems.

Finally, the format of the book itself does not lend itself to the field reference that it was probably intended to be. It is a medium-format, hardcover, cloth-bound book, measuring approximately 9"x12". While it is fairly light, it is large enough to be cumbersome in the field while working with binoculars or a telescope. The pages do not lay flat at the bind, and the cover warps easily in humidity. The semi-gloss paper stock has the potential to cause a distracting glare if viewed with a headlamp. It would be nice to see this atlas reformatted to a durable soft-cover book, half its size, displaying each of the star charts at the same scale and size, but across a two page spread, followed by a two-page spread of the accompanying star table.

Regardless of these concerns, this atlas is an informative resource for anyone interested in taking a closer look at the objects in the night sky. With its detailed listing of all the primary stars visible from Earth, this volume is a valuable