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Getting a Feel for the Firmament

TOUCH THE STARS, FIFTH EDITION

Written by Noreen Grice
Tactile Illustrations and Picture
Descriptions by Irma Goldberg and
Shirley Keller

National Braille Press
113 pages, ISBN 978-0-939173-84-6
US\$35.00, hardcover/large print/braille

TOUCH THE STARS describes this book perfectly. The title not only hints at the eloquent language used throughout but indicates that the reader can literally touch the illustrations, which are magnificently embossed in braille. The writers took great care in both the main body of the text and in the descriptions of how to use the illustrations.

I'm a good judge of that, as I've been blind all my life, and I'm a teacher of the visually impaired. When I was growing up and when my children were little, my visualization of the stars was abysmal. *The Big Dipper – what's that?* I wondered. My knowledge improved enormously after reading this book.

Kent Cullers, the world's first totally blind astronomer, says something similar in his foreword. Cullers, a NASA scientist who developed the signal-detection software that radio astronomers use in the SETI (Search for Extraterrestrial Intelligence) program, says, "The reason I intensely enjoyed [this book] is that I learned so much." While he could calculate the temperature of a star, he writes, "before reading this book I knew nothing about the appearance of the constellations."

I did not grow up being exposed to tactile braille drawings, nor did I have a comprehensive science background, so this book was a bit of a revelation to

me. Part of the reason for my dearth of knowledge was that the language of textbooks for the blind and visually impaired didn't bridge the gap between understanding and visualization. When I began teaching this population in public schools in 2004, I was amazed by what was available for students studying math and science compared to when I was in school.

To make sense of a tactile drawing, the blind or visually impaired reader has to learn the nuances of the various textures as well as comprehend the accompanying text, including keys and descriptions of the drawings. Additionally, as the principal author of *Touch the Stars* clearly realizes, certain concepts need explaining when a drawing and its descriptive text, however accurate and helpful, might still leave unanswered questions.



Take, for example, the waxing and waning of the Moon, a particularly challenging process for a blind person to envision. The figure below right illustrates this monthly metamorphosis with a pair of tactile drawings. The author explains that

the same side of the Moon always faces Earth. To grasp that aspect, she suggests having a parent or teacher demonstrate it using a beach ball for Earth and a baseball with a piece of heavy tape on it for the Moon. Helping the blind person move the baseball around the beach ball with the taped side always facing the "Earth" nicely illustrates the concept.

The book begins with "Some Things You Should Know About the Illustrations in This Book." The author describes the concept of imaginary lines that connect the stars; how the drawings represent brighter stars using larger and more prominent circular bumps, and fainter stars with smaller bumps exhibiting shallower relief; and the need to explore the entirety of a page, which is a good reminder for the blind or visually impaired reader who might be new to tactile drawings. She suggests viewing each page as a "new adventure."

► The braille labels for this drawing of Jupiter read "Great Red Spot" and "bands of gases," respectively. In the descriptive text below, note both convex and concave braille text. The concave text is printed in braille on the reverse side of the printed page partially shown here.

Jupiter

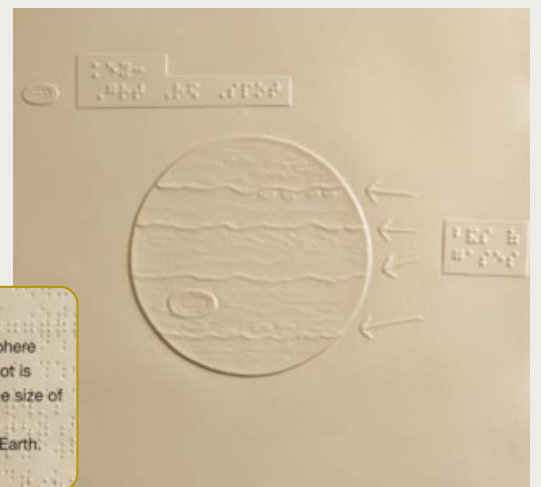


Figure 13: Jupiter

There is a large red area in Jupiter's atmosphere called the **Great Red Spot**. This Great Red Spot is actually a gigantic storm system three times the size of Earth!

Jupiter is gaseous, not solid like our planet Earth. With a telescope, you can see bands of gases.

I certainly felt that way as I turned the pages in this book.

Nineteen in all, the drawings include various shapes drawn to scale. Raised arrows point to specific parts of drawings, while an × might mark a spot to indicate the relative position of an object of interest, such as the location of our solar system in the Milky Way.

The reader moves on to “What Does the Sky Look Like?” with the mysterious sentences “The sky looks different every time you look up. Clouds move; the sun rises; rain falls.” Why mysterious? Because for a blind person, these are intangibles that can be hard to imagine. The book goes on to describe the constellations, legends about the stars, and some famous star patterns, or asterisms. The text is rich with the history and general aspects of astronomy. As readers explore the texture of drawings, they can refer to both the main and drawing-specific texts nearby. (An accompanying booklet features labeled facsimiles of the drawings, so sighted readers can see what the braille labels in the raised-relief drawings say.)

The full-page, roughly 11-by-11-inch tactile drawings are embossed on durable plastic and range from the “Big Dipper in Ursa Major” to “Lyra and the Summer Triangle,” from the “Motion of a Planet” to “The Major Planets with

Tiny Pluto.” Readers can get a literal feel for Jupiter and Saturn, for a comet and a meteor shower, and for a globular cluster and the Milky Way. Total solar and lunar eclipses each get a page. The final drawing depicts the Hubble Deep Field North.

This is the book’s fifth edition. Since new braille books are now written in Unified English Braille, which precipitated changes to the original English Braille American Edition, the National Braille Press felt it was important to transcribe the book using UEB. Since creating braille drawings is an expensive undertaking, the press simply had the existing drawings relabeled to expedite the publishing of this edition and obviate the need to make new plates.

I had a long conversation about the book with Kesel Wilson, the current editor and program manager at the National Braille Press. (Full disclosure: I serve on the NBP’s Board.) Kesel’s excitement was palpable. For my part, as a lifelong user of braille and a teacher, I’ve always been in awe of NBP’s commitment to publishing innovative materials, and this book exceeded my expectations.

The author Noreen Grice has extensive credentials, and her commitment to the book as a lifelong project is apparent. I encourage readers to explore

her webpage: youcandoastronomy.com. The two illustrators, Irma Goldberg and Shirley Keller, founded Creative Adaptations for Learning, cal-s.org/history.html. I had the honor of speaking with Keller. Drawings are a difficult concept for people who are congenitally blind, and the descriptive language she wrote to supplement the drawings is beyond measure. The book’s acknowledgments list the many other contributors who assisted in developing the final product.

It’s a short text, as books go, but so rich that it felt like a life-changing work, with more details than one can possibly absorb in a single reading. It has definitely changed my understanding of astronomy and expanded my awareness of the importance, for example, of the Moon’s phases. I recently read a book about World War II and was amazed to learn how the phases of the Moon contributed to decisions officers made about military missions, a reality I’d never considered.

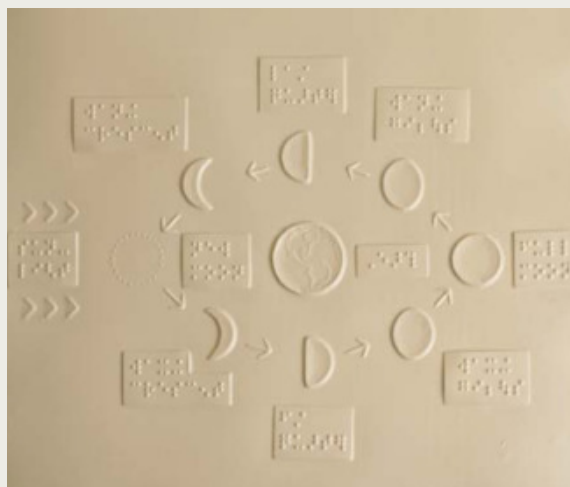
After reading *Touch the Stars*, no longer will I just hear the words “I see the Big Dipper” when I’m out with friends or family at night. I’ll be able to imagine the star pattern, too.

■ **KATE CROHAN**, who is blind, is a teacher at Perkins School for the Blind in Watertown, Massachusetts.

► For a blind person, the Moon’s phases can be a challenging concept. The labels on the drawing at near right include, for example, “sunlight” (at left between the two rows of arrows), “new moon” (faint circle made with dotted line), and “waxing crescent” (below new Moon).

►► As the braille label in the Milky Way drawing at far right indicates, the raised × marks the “approximate location of our solar system.”

Lunar Orbit



Milky Way

