don't try." Even after Watson's account, it remains unclear whether as a group they have tried or died, though we are led to suspect the latter, especially because a full meeting of the Club never actually occurred.

The presence of other characters and episodes in the book is similarly incomplete and unsatisfying. We are told repeatedly that Crick is central to Watson's scientific explorations and a key to his self-judgment and decision-making, but Watson never portrays the advertised close relationship in a compelling manner. Crick's role in the solution to the coding problem also is downplayed. At odd moments, Watson makes attempts to rehabilitate the x-ray crystallographer and biochemist Rosalind Franklin. He distances himself from his infamous descriptions of "Rosy" in his first book and from hints of scientific impropriety by himself, Crick, and others with regard to the race for DNA. But on these points Watson remains inconsistent, and all is not mended. His efforts to balance his treatment of Franklin seem half-hearted, particularly when they are juxtaposed with asides such as the comment that the experimental evidence from King's College (where Franklin worked) "almost seemed an unnecessary accompaniment to a graceful composition put together in heaven." (And this comment appears in a passage that credits Crick and Watson "alone" for having found the answer to the structure of DNA.) The author gives rather short shrift to the determination of the structure and role of RNA, particularly transfer and messenger RNA. He also neglects the background of such research, including any consideration of who should be given credit for "discovering" RNA and in what sense it was discovered, a hotly contested point in the history of molecular biology. Most would argue that Watson's contributions were not important to the solution of the coding problem or to determining the function of RNA, and Watson provides little documentary evidence that would convince history-savvy readers otherwise. He may indeed have played a very important role as a community builder through the RNA Tie Club, but he also fails to convey this.

It turns out the unfortunate title of the book must be taken at face value: its central theme is girls. (No clever rationalizations are possible even for those who are code-conversant: in the RNA Tie Club, it was the physicist Richard Feynman, not Gamow, who chose the amino acid glycine, for which the triplet GGG codes.) Jim never gets the girl, or at least not the girl on whom he has been fixated for most of the book, the elder daughter of evolutionary biologist Ernst Mayr. If the reader is led to agree with Watson on anything, it may be the conclusion that he reached at the end of *The Double Helix*: one eventually does become too old to be unusual.

References

1. J. D. Watson, *The Double Helix* (Atheneum, New York, 1968).
2. L. E. Kay, *Who Wrote the Book of Life?* (Stanford Univ. Press, Stanford, CA, 2000).

NOTA BENE: SPACE

Depictions of Travels Imagined

Ever since he was a boy, Frederick I. Ordway has been fascinated by space exploration. In the heady days of the 1950s, it was possible for an enthusiast like Ordway to join the fledgling rocketry business. A chance job at Reaction Motors was the start of a long career working to develop and promote space travel. His friends and colleagues came to include such visionaries of space exploration as German rocket pioneer Wernher von Braun, author and inventor Arthur C. Clarke, and film director Stanley Kubrick (whom he assisted as technical advisor on *2001: A Space Odyssey*). Over the years, Ordway has written numerous articles and books on the history of space exploration while amassing an extensive collection of drawings, diagrams, and paintings of travel in space.

In *Visions of Spaceflight*, Ordway presents some of the finest examples from his collection. These images provide an intriguing glimpse into the human imagination through the ages. They reveal that space flight has fascinated humans for many centuries and that the attraction of space travel has been documented since the invention of printing.

Visions of Spaceflight
Images from the Ordway Collection
by Frederick I. Ordway III
Four Walls Eight Windows, New York, 2001. 176 pp. $50. ISBN 1-56858-181-5.

The images include a wide variety of fictional devices for carrying people to the Moon and beyond, selected from works from the 15th century through the 1950s. The modes of transportation become more sophisticated as time progresses and the difficulties of reaching other celestial objects are appreciated. Early stories relied on a strong wind to carry a sailing vessel to the Moon or a group of geese to take a bishop there. In the 1800s, Jules Verne invoked giant cannons; others resorted to antigravity as a propellant. The space capsules in many of these pictures are endearingly homely, complete with lace curtains, library, and chandelier. Only at the turn of the 20th century was rocketry, the key element through which space flight became a reality, added.

One element common to most of the imagined voyages is a the belief (or desire) that travelers' destinations—the Moon and, later, Mars and Venus—are populated with beings not so dissimilar from ourselves. Support for this idea came in the late 1800s from observations of canals on Mars, believed by some to have been built by intelligent beings to transport meltwater from

Mars' polar regions to its equator. H. G. Wells captured the implications brilliantly in his *War of the Worlds*, in which Martians invade Earth and terrorize London but eventually die of bacterial infections against which they are defenseless.

The early 1950s saw the start of the United States' love affair with space travel. The public imagination was set alight by *Collier's* magazine, which ran a series of eight issues devoted to space flight. The stories included descriptions of a space station, a six-week stay on the Moon, and a ten-spaceship expedition to Mars. Working from sketches by von Braun, Chesley Bonestell, Fred Freeman, and others illustrated the issues brilliantly. Ordway offers a selection of the striking original paintings for the *Collier's* series (including Bonestell's rendering of the space station, a nearby space telescope, and a "space shuttle") in the concluding section of this fabulously quirky book.

—CAROLINE ASH AND JULIA UPPENBRINK

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