BOOKS: MOLECULAR BIOLOGY

# Bird Watching with Honest Jim

Rachel A. Ankeny

Not all important biological objects come in pairs. Nor do great autobiographies of scientists. When Jim Watson's *The Double Helix* (*1*) was published in 1968, it met with a mixed reception. Perhaps one thing on which its critics and supporters could agree was that the book gave a human face to the public image of the scientist. Whether or not the face was an attractive one certainly has remained a matter for debate. Watson's narrative helped to establish an ambiguous and at times troubling genre of science writing. Despite the subtitle warning that it was a "personal account of the discovery of the structure of DNA," *Double Helix* read more like a novel or fairy tale than a scientist's chronicle of a crucial period in the development of modern biology and the research that had won the author, Francis Crick, and Maurice Wilkins a Nobel Prize in 1962. But the book undoubtedly made a major mark in the history of molecular biology and in popular science writing, as much for its quirkiness and self-disparaging forthrightness as for its actual contribution to the historical record. *Genes, Girls and Gamow* is the sequel.

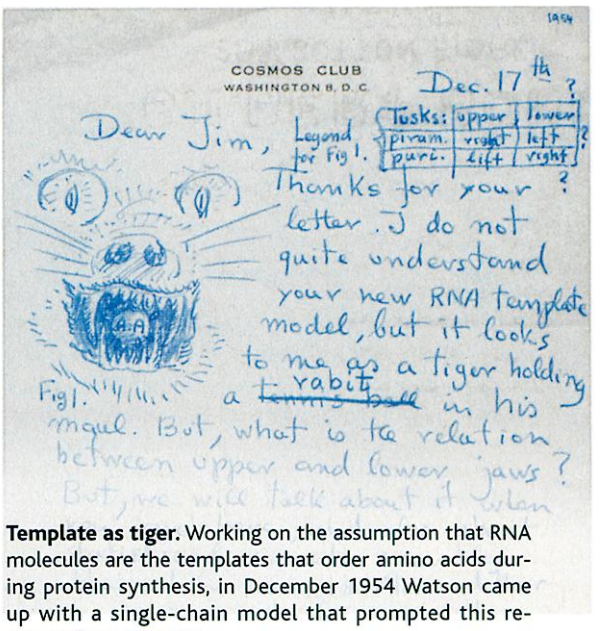
**Genes, Girls and Gamow**
*by James D. Watson*
Oxford University Press, Oxford, 2001. 303 pp. £18.99. ISBN 0-19-850976-6. Knopf, New York, 2002. 333 pp. $26. ISBN 0-375-41283-2.

When we last left our hero Jim in 1953, he was forlornly standing near St. Germain des Prés, watching girls who were uninterested in him despite his possession of the good fortune of having played a key role in a major biological discovery. When we reencounter him at the beginning of his new book, not much has changed. Watson briefly recapitulates the events leading up to 1953, with some deviations and additions that likely are of interest only to those who were personally involved or keep up with gossip in molecular biology. Then Jim resumes his romp through laboratories around the world, scientific high society, and anywhere else he might be able to meet a girl—though now his sights are set less on "popsies" and more on wife material.

His account focuses on the years 1953 through 1956, and a highly compressed epilogue sketches further developments up through early 1968. Admittedly, this time the reader has been forewarned about the distinctive, if not bizarre, genre about to be encountered. One had only to read his first memoir to know that Watson has a rather clumsy prose style, sometimes effective but often distracting. In his forward to this book, Peter Pauling explicitly remarks that it is unreliable if taken as a work describing what actually happened, but reminds us that reporting one's observations is the first step in the scientific method. Like Shakespeare's Puck at the end of *A Midsummer Night's Dream*, Pauling urges us to be lenient with Jim and with his "victims" whom we are about to meet. Even if the book is not a dream, it is certainly intended to be entertaining. Before providing his own preface, Watson offers a cast of characters, numbering over ninety, whose interrelations rival those found in Tolstoy's novels.

Unfortunately, such introductory material does not begin to allow the reader access to the twists and turns to come, most of which have little to do with molecular structure. Autobiographies by scientists have become extremely popular in recent years (undoubtedly in no small part due to *The Double Helix*), but the topic of *Genes, Girls and Gamow* has much more potential than the average contribution to the genre. After the discovery of the structure of DNA, the key question in the field that was to become molecular biology was how information is transferred from DNA to proteins. There is an exciting story to be told here—not only about the coding problem, but also about community and discipline formation in science, scientists' choice of problems, and collaboration across various fields of science. The materials are all available to Watson. He has a core cast of most of the important contributors to molecular biology and more Nobel Prize winners than one might have imagined Watson could have known. (To these, Watson adds every young woman he met who was in any way distantly related to these scientists or to anyone who was socially important, and he also mentions encounters with random cultural figures such as Salvador Dali.) Watson seems to rely on a fair amount of primary source material, including correspondence that he claims will allow him to resist rational reconstruction of the events. The supposed central character, or at least our guide to the drama, is the theoretical physicist George (known as Geo, pronounced "Joe") Gamow of Big Bang fame, who introduced himself to Crick and Watson by letter in 1953 following publication of their seminal DNA articles.

It was Gamow who proposed and, together with Watson, made many of the arrangements for the formation of the infamous RNA Tie Club. This intriguing collection of personalities with diverse interests offers an opportunity for a fruitful study of the sociology of scientific communities and the influence of informal scientific communication. The Club has been discussed briefly in several books on the history of molecular biology, notably Lily Kay's *Who Wrote the Book of Life?* (*2*), but has not been explored in much detail. A persistent reader of Watson's account and the original materials he reproduces (primarily letters from Gamow and contributions to the Club) might be able to piece together some details and new insights. However, most people not involved in the Club or research in this area, and undoubtedly even many who were, will be disappointed. Gamow is not portrayed as a persuasive community builder. He seems to be blissfully unaware of much of the relevant biological or chemical information. Watson presents Gamow's biological naïveté, expertise in number and information theory, and infectious personality as providing much of the impetus for investigation of the coding problem. But we are told far too little about the Club's actual scientific impact, even though historians have repeatedly noted that unpublished papers circulated among its members played an important role. The Club's stationery carried the motto "Do or die, or




**Template as tiger.** Working on the assumption that RNA molecules are the templates that order amino acids during protein synthesis, in December 1954 Watson came up with a single-chain model that prompted this response from Gamow.

CREDIT: FROM *GENES, GIRLS AND GAMOW*/COURTESY KNOPF

The author is in the Unit for History and Philosophy of Science, University of Sydney, Sydney 2006 NSW, Australia. E-mail: r.ankeny@scifac.usyd.edu.au

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

CREDIT: CHESLEY BONESTELL/COURTESY F. I. ORDWAY