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# SPACE ART

Chesley Bonestell showed  
America new worlds—and helped  
inspire the space program

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**CHESLEY BONESTELL COMBINED SCIENTIFIC  
PRECISION WITH ARTISTIC BRILLIANCE TO CREATE  
PAINTINGS OF OTHER WORLDS THAT HELPED  
INSPIRE THE SPACE PROGRAM** BY RON MILLER

# To Boldly Paint What No Man Has Painted Before

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STRONAUTICS IS UNIQUE AMONG THE sciences in that it is the only study to have begun its existence as pure fantasy. For centuries it lived only in the works of fiction writers such as Edgar Allan Poe, Jules Verne, H. G. Wells, and of scientists, swayed by them, who believed in as patently unlikely a proposition as flying into space. Just as authors' descriptions of alien worlds and spacecraft had a very real influence on the history and development of astronautics—where would we be had the fathers of rocketry, Hermann Oberth and Konstantin Tsiolkovsky, not read science fiction?—so too did the work of a painter named Chesley Bonestell. At a time before the Mariner probe, the Explorer satellites, and the Mercury program, when the photographs of cosmic objects taken through land-based telescopes were blurry at best, Bonestell painted photorealistic scenes of planets and spacecraft that were more than skillful fantasies. They were scrupulously researched and scientifically accurate and, until we actually sent men into space, by far the best representations we had.

Bonestell (pronounced Bon-es-tell) grew up in San Francisco, where he was born on New Year's Day, 1888. As a youth, he read any astronomy book he could find. He also was an avid painter, and after graduating from high school at 16 and going to work in his family's paper business, he took art classes at night. His two passions merged in 1905, when, on a visit to San Jose's Lick Observatory, he looked at Saturn through the 12-inch refracting telescope and was so amazed by its beauty that he rushed home to paint what he had seen. That first space painting, along with everything he had painted since childhood, was destroyed in the fires that followed the great earthquake of 1906.

Bonestell hated the paper business and decided it was time to leave home. He headed for Columbia University in New York City to study architecture,



**Chesley Bonestell, the artist who  
launched a thousand spaceships.**

ALL: © BONESTELL SPACE ART

Chesley Bonestell



The artist's vision of a  
body shop for Mars-  
bound spacecraft 1,075  
miles above the earth.







The seminal *Saturn as Seen From Titan* was Bonestell's favorite of his own works.

a compromise between his love of painting and his father's desire for him to have a more respectable career. Though he never earned a degree—he dropped out rather than take the required math classes—he quickly found jobs in San Francisco as a designer and renderer with some of the top architects of the day. Over the next several decades he designed the facade of the Chrysler Building, including its famous eagle gargoyles, for William van Alen in New York, and while working for Joseph Strauss in San Francisco he contributed to the design of the Golden Gate Bridge. He also designed the Plymouth Rock Memorial and co-designed the famous 17-Mile Drive along the Monterey coast.

In 1920, having fallen in love with an English singer named Ruby Helder, Bonestell went to England, where they were married (Bonestell's first marriage had ended in divorce). During their six years there, he did commercial art and wrote and illustrated articles on architectural subjects for a number of publications, including *The Illustrated London News*. That magazine was also publishing astronomical illustrations painted by a Britisher named Scriven Bolton and a Frenchman, Lucien Rudaux, and Bonestell's interest in astronomy, which had fallen

dormant during his years as an architect, began to reawaken.

In the late 1930s Bonestell went to work in Hollywood as a special-effects matte painter. Matte paintings were used in motion pictures to fill in portions of a set or scene that couldn't be constructed or filmed economically. For example, rather than erect an entire house, a crew would build only those parts that the actors worked in front of, and a matte painter would take care of the rest, creating believable scenes that made the transition between reality and painting perfectly seamless. Bonestell contributed to such classic films as *Citizen Kane*, *The Magnificent Ambersons*, and the 1939 *Hunchback of Notre Dame*. ("I was the only painter at Warner Brothers who could paint Notre Dame," he later said.) He quickly realized that he could combine the knowledge of perspective and light and shade from his experience in architectural rendering with the techniques he was now learning about camera angles and oil painting and apply them to his fascination with outer space. He began researching the subject and filling sketchbooks with oil paintings of the planets.

He took his first set of these, an imaginary journey to the planet Saturn, to *Life* magazine, which promptly paid him a



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reported \$30,000 for the use of the artwork and published it in the May 29, 1944, issue. The paintings looked like snapshots taken by a space-traveling *National Geographic* photographer. For the first time, renderings of the planets made them look like real places, not mere artist's impressions. One of them, a view of Saturn seen from its giant moon Titan, became such a seminal influence on the development of space flight and astronomical art that the present-day space art entrepreneur Kim Poor has described it as "the painting that launched a thousand careers." It has been reprinted scores of times in the nearly 60 years since its first publication, and requests for it still arrive every month. In fact, Titan is covered in clouds of gas, so no such view would be possible, but this was not known when Bonestell made the painting.

Bonestell continued to publish his paintings in *Life* as well as in other magazines. In a 1947 issue of *Pic* he introduced America to the extraordinary invention of Tsien Hsue-Sen, the Goddard Professor at the California Institute of Technology, who had recently proposed a hypersonic rocket-powered aircraft—a "spaceplane"—that could make the 3,000-mile flight from New York to San Francisco in less than an hour. In eight full-color paintings, Bonestell showed what such a flight would look like from takeoff to landing. The images of land and lakes and the sweeping curve of the earth as seen from 150 miles above are uncannily like photos taken by orbiting astronauts.

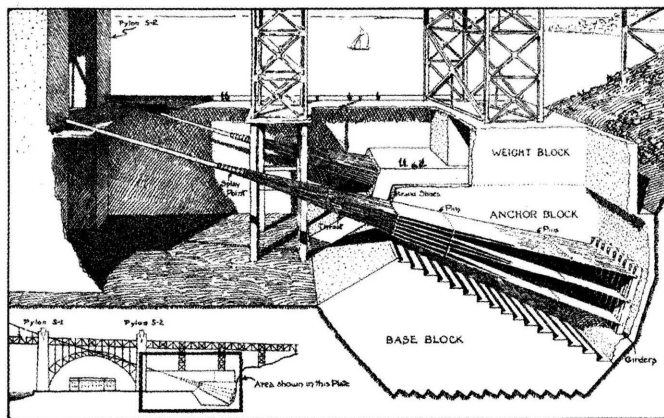
**I**N 1949 BONESTELL COLLECTED 58 OF HIS PAINTINGS INTO a book. *The Conquest of Space*, with a text by the rocket engineer turned science writer Willy Ley, became an immediate bestseller. The reviews were ecstatic. Robert Richardson, an astronomer with the Mount Wilson and Palomar Observatories who had checked the manuscript for accuracy before publication, found that "Bonestell's paintings far surpass any portrayals of astronomical scenes that I have ever seen. They are real contributions to descriptive astronomy quite aside from their intrinsic artistic merit. I only wish that a book containing such illustrations could have fallen into my hands when I was a youngster. What a prize it would have been." Arthur C. Clarke, who was then working on his first book, wrote for the January 6, 1950, issue of *The Aeroplane*: "Mr. Bonestell's remarkable technique produces an effect of realism so striking that his paintings have often been mistaken for actual colour photographs by those slightly unacquainted with the present status of interplanetary flight. . . . To many, this book will for the first time make the other planets real places, and not mere abstractions. In the years to come it is probably destined to fire many imaginations, and thereby to change many lives."

Clarke was right. The realism of the artwork convinced an entire generation that space flight was possible in their lifetime. Countless professional aerospace engineers and scientists working today fixed upon their careers when they first saw *The Conquest of Space* as children. Among them was Carl Sagan, who

said he didn't know what other worlds looked like until he saw Bonestell's paintings of the solar system. Bonestell even managed occasionally to transport himself. "Sometimes when I am painting," he said, "I . . . lose myself in the scene and feel for a little time that I am actually there."

Partly as a result of the publicity surrounding the release of his book, Bonestell was invited by the producer George Pal to participate in the production of several now-classic science-fiction films: *Destination Moon*, *War of the Worlds*, *Conquest of Space*, and *When Worlds Collide*. For the first of these, Bonestell worked closely with the film's technical adviser, Robert A. Heinlein, the science-fiction author whose 1947 novel *Rocket Ship Galileo* was the basis for the film, and both strove to make the movie as scientifically accurate as possible. The artist even went to the trouble to make certain that the phase of the earth was correct when it was seen in the lunar sky. Heinlein was impressed. "I had selected," he wrote later, "the crater Aristarchus [for the landing site]. Chesley Bonestell did not like Aristarchus; it did not have the shape he wanted, nor the height of crater wall he wanted, nor the distance to [the] apparent horizon. Mr. Bonestell knows more about the surface of the moon than any other living man; he searched around and found one he liked—the crater Harpalus, in high northern latitudes, facing the earth. High latitude was necessary so that the earth would appear down near the horizon where the camera could see it. . . ." *Destination Moon* proved sensationally successful, garnering Pal an Academy Award for special effects.

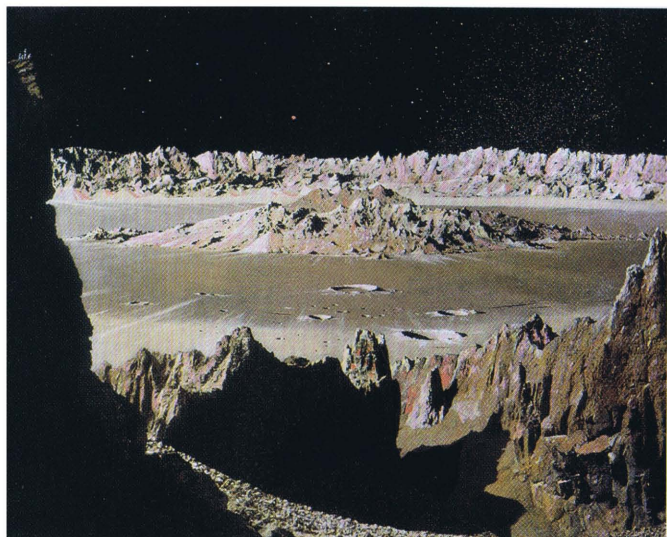
Meanwhile, Bonestell's space paintings were appearing in major magazines all over the United States. *Scientific American*, *Pic*, *Coronet*, and *Mechanix Illustrated* published covers and illustrations by Bonestell, as did many science-fiction pulps, such as *Astounding*, *Galaxy*, and the *Magazine of Fantasy & Science Fiction*, although Bonestell himself always expressed an aversion to the genre: "I simply have always felt that truth is stranger than fiction. It is an old saying, but that's really so. . . . The size of the galaxy to me was always more wonderful



In the 1930s he helped design the Golden Gate Bridge.



## BONESTELL'S ARTWORK CONVINCED AN ENTIRE GENERATION THAT SPACE FLIGHT WAS POSSIBLE IN THEIR LIFETIME.



A view of the moon from the rim of the crater Theophilus.

than the trash of science fiction. Now, I made a good deal of money doing science fiction covers, but I love money, too." Bonestell's artwork quickly began to define how the public perceived the future of space flight. Not only were his paintings believable, but there was a consistency in their vision that made it seem as though he had visited the future.

In 1951 he received a wire from the editor of *Collier's* magazine, Cornelius Ryan, who would later write *The Longest Day*, inviting him to attend a space-flight symposium at the U.S. Air Force School of Aviation Medicine, in San Antonio. Among the rocket engineers, doctors, astronomers, and physicists present would be Wernher von Braun, along with former key members of his famous German rocket team. The conference inspired Ryan and Bonestell to commission a series of articles, written by various experts under the advisement of von Braun, that outlined a complete space program. Bonestell's role was to head the team of three illustrators. He would receive sketches, diagrams, and descriptions of spacecraft from von Braun and, after consultation with the scientist, provide finished drawings for the other artists to work from. These were no longer the spacecraft of science fiction; they were the results of rigorous mathematical studies. The first issue of the *Collier's* space-flight series came out on March 22, 1952, and over the next two years seven more installments appeared in what was persuasive enough to have become known as "the *Collier's* space program." Virtually every aspect of space flight was considered: astronaut training, unmanned satellites, space stations, lunar landings, and even a mission to Mars.

It is difficult to overestimate the impact of the articles—and the books spun off from the series—on the burgeoning U.S. space program. Written with expertise and confidence and illustrated by Bonestell's extraordinary paintings, they demon-

strated that space flight was not a goal for the distant future but was almost here. Von Braun's mission was to demonstrate that it could be accomplished with present-day technology and materials—that given the will and the money, the United States could be in space in a few years. He accomplished his mission brilliantly. In addition to encouraging debate among engineers and scientists, the series so sold the public on the idea of space flight that Congress was emboldened to fund the multibillion-dollar space program it had been debating.

Yet even Wernher von Braun, like Heinlein before him, was not immune to Bonestell's criticism. "My file cabinet," von Braun said, "is filled with sketches of rocket ships I had prepared to help in his art work—only to have them returned to me with penetrating detailed questions or blistering criticism of some inconsistency or oversight." The two nonetheless remained close friends, and von Braun would later write that "Chesley Bonestell's pictures . . . present the most accurate portrayal of those faraway heavenly bodies that modern science can offer. I do not say this lightly. In my many years of association with Chesley I have learned to respect, nay fear, this wonderful artist's obsession with perfection."

AT THE ZENITH OF AMERICAN ENTHUSIASM FOR SPACE flight—the period between the end of World War II and the end of the 1960s—Bonestell's illustrations and spacecraft designs appeared not only in print but in games, motion pictures, television, jigsaw puzzles, and toys, bringing his vision to millions of people. Over the next few decades he created more than half a dozen other books. His masterwork was undoubtedly the 40-foot mural of the lunar surface commissioned in 1956 by the Museum of Science in Boston. The painting is now in the collection of the National Air and Space Museum, which plans to restore it for display in the museum's new annex near Dulles International Airport. But Bonestell's favorite space picture was not one he created himself—not with his own brush anyway. It was the televised image "showing a man first stepping out there, putting his foot on the Moon. I want to tell you, I wept; tears came down my face. I was so excited and emotional about it. . . . It was the realization of something I had been hoping for for a large part of my life."

His final years were rich with honors. Before his death in 1986 he received a special award and medallion, as well as a bronze medal, from the British Interplanetary Society; the Dorothea Klumpke-Roberts Award from the Astronomical Society of the Pacific; and even his own asteroid. At the renaming of the former (3129)1979MK2, Carl Sagan commented that "it is only fitting that we give back a world to Bonestell, who has given us so many." ★

RON MILLER is an illustrator and author specializing in science, astronomy, and science fiction and is the co-author, with Frederick C. Durant, of *The Art of Chesley Bonestell* (Paper Tiger, 2001).



One arm of the "Collier's  
space program": an  
unmanned satellite 200  
miles above Long Island.



Chester Bonestell