

## A CHESLEY BONESTELL SPACE ART CHRONOLOGY



A

Chesley Bonestell

Space Art Chronology

Melvin H. Schuetz

Universal Publishers/uPUBLISH.com

Parkland, Florida

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The author welcomes comments about this work and can be contacted via his website at <http://www.bonestell.com>.

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For Carol, the brightest star in my universe



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## PREFACE

The world-lines of Chesley Bonestell and myself intersected for the first time in 1960, after I had just completed the third grade. As an avid participant in the summer reading program at my elementary school, I was quite fond of science fiction and space travel books.

I am a child of the space age and have witnessed man's initial exploration of this vast, new frontier in real time. As of 1960, however, a human had not yet ventured out into that unknown realm, and thus I relied upon such authors as Robert Heinlein to show me what our future in space could be like.

Then I came upon a most wonderful and magical book. Among the many volumes laid out on tables in my school's cafeteria was *The Conquest of Space*. The marvelous paintings of Chesley Bonestell immediately captured my imagination and filled me with awe. Leafing through them was the equivalent of boarding a passenger spaceship bound for the Moon, the solar system, and worlds beyond. The images were enthralling; they did not just portray outer space to me—they carried me there.

That was possible because Bonestell had traveled out into space ahead of everyone else—and he took his paintbrush with him. He orbited the Earth before Gagarin and Glenn, left his footprints on the dusty lunar surface before Neil Armstrong, viewed a Martian sunset before the Viking probes landed there, and explored Jupiter, Saturn, Uranus, and Neptune before the Voyagers ever visited those giant, gaseous planets.

Every new frontier has its own visionary explorers; this present book is an attempt to chronicle, as completely as possible, all the cosmic journeys of Chesley Bonestell—the premier space explorer.

I offer this book as a lasting tribute to his vision, in thanks for his inspiration to me and so many others.

I am indebted to a number of individuals, without whose help this book would be incomplete, at best:

To Dennis Bauder, Paul Crawford, and Ronald Gallant, who unselfishly shared with me the results of their own extensive Bonestell research.

To the late Mrs. Chesley Bonestell, for her wonderful letters and phone conversations over the years, for kindly supplying a chronology of her husband's life to be included herewith, for providing copies of articles from her scrapbooks, and for her gracious words in support of my research and this book.

To Fred Durant, for supplying much information about Bonestell space art appearing in print, for his many generous gifts of contemporary publications containing such art, and for his continual encouragement of my Bonestell studies.

To Ron Miller, of Bonestell Space Art, for providing an excellent history of Chesley Bonestell's life, for supplying the cover art, and for sharing his vast knowledge of the history of space art.

To Shantha Uddin at *Encyclopaedia Britannica*, for verifying pagination of illustrations in the *Britannica Junior*.

## PREFACE

To Dave Christensen, Ed Fortier, and Fred Ordway, for furnishing Bonestell-related articles which they had written, edited, or made contributions to.

To Greg Kennedy, for making possible my original introductions to Mrs. Bonestell and Fred Durant, and for many interesting conversations.

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To my parents, brothers, and sisters, for their interest in and continued encouragement of this endeavor.

And lastly, to my wife, Carol, for her love, support, and patient understanding of my obsession with this project for almost five years.

## INTRODUCTION

The main body of this work is an annotated collection of references to publications (books and periodicals) that contain illustrations by Chesley Bonestell. (As such, it could be called an iconographic bibliography.) In particular, it documents the reproduction of that Bonestell art based on astronomical, space travel, scientific, or futuristic themes—including paintings prepared for science fiction films. Not included are references to his architectural and other non-space works of art. It is limited (with very few exceptions) to publications in the United States, printed in English. I have included all known advertisements that featured illustrations which were specially commissioned of Bonestell; however, in the interest of conserving space, some others have been omitted. Examples of these are the various book club ads in the 1950s which showed Bonestell cover art.

Entries are arranged chronologically, by year of copyright, and alphabetically within the years themselves. There are at least two parts to each entry, and usually three. The first part is the citation for the book, or periodical article. This gives the author or editor, the title of the book or article (and if the latter, then the name of the periodical), information on the publisher—if a book—or exact publication date and pages if a periodical. This citation provides the bibliographic data for the entry and is written, generally, according to the rules set forward in the *MLA Handbook*.

If a section of a book is referenced (such as an article in an encyclopedia) then the article title is given as well as the book title. Volume and page numbers are omitted when citing encyclopedia articles that are arranged alphabetically; however, they are provided for works in anthologies and articles in reference books that are not placed in alphabetic order.

Additionally, I have provided the ISBN (International Standard Book Number) for books having them, the LCCN (Library of Congress Control Number) for older books with no ISBN, and the ISSN (International Standard Serial Number) for each periodical which has one. This will be of very great help to those researching any of the entries in a library.

The citation is normally followed by a textual annotation; this is usually a pertinent quotation taken from the publication being cited (and if so, will always be enclosed in quotation marks). Other text in an entry (which is provided by this author) may be a comment, a cross-reference, a correction, an amplification, or explanation of some kind. Material such as this, if occurring within quoted passages, will be enclosed in brackets.

While most entries have textual annotations, they are usually omitted from duplicitous references (such as later editions of a book containing identical Bonestell art). Multiple editions of books are listed separately in the chronology, whereas multiple printings are not.

After the textual annotation (or after the initial citation, if there is no textual annotation) is a location annotation. This gives information on the Bonestell art itself, i.e., the number of illustrations that appear and where they are located in any specific book or article.

## INTRODUCTION

Here is a sample location annotation and its interpretation:

10: 3B (pp. 5 [mp], 6 [dupl. p. 15], 7 [illustration is reversed, left-to-right]) + 4C (pp. 8 [plate 1], 9 [fig. 32], 10, 11 [bot.] + 3V (dj; eps; 3rd cover). /U/F/

This indicates that there are 10 Bonestell illustrations in this publication, which are broken down into form of reproduction and the pages they appear on. Three are in black-and-white (B); they are on pages 5, 6, and 7. The illustration on page 5 (labeled "mp") is a motion picture matte painting. The art found on page 6 is duplicated on page 15. (On some occasions a painting will be reproduced more than once in the same book or article and thus complicating the total count. In such cases the following guidelines have been applied. 1) Every painting will be mentioned. 2) If a painting is reproduced in two different fashions [say, color and black-and-white], then both are added into the total initial count; however, if the illustration is reproduced more than once in the same fashion [say, twice in color], then it only gets counted once in the total.) Lastly, the art on page 7 was incorrectly printed as a mirror image of the original.

There are four color reproductions (C), located on pages 8, 9, 10, and 11. The first is on page 8 and has been given the label "plate 1." The next is on page 9, where it is "figure 32" (seen commonly in textbooks). There is also an illustration on page 10 and on the bottom of page 11.

An illustration may be reproduced in another fashion than black-and-white or full color. It may be two-color only, or tinted, for example. In a case like this the details will not be specified, but the code will indicate that the art is a variant (V) of some kind. In the sample above, there are three of these, located on a book's dust jacket and endpapers, and (to use a magazine example) on the 3rd cover.

Following the above information in some entries will be one or two letters. They are U and F, and are enclosed in parallel slash marks so that they are more noticeable. A /U/ indicates that the publication contains at least one painting that is unique to it, that is, it was never reprinted anywhere else. An /F/ indicates that the publication contains at least one painting which had its first appearance in print there. This information should be of particular interest to collectors.

# CHESLEY BONESTELL: THE FINE ART OF SPACE TRAVEL

by Ron Miller

Astronautics is unique among all the sciences, with its roots buried firmly in a particular literary genre—in this case, science fiction. Indeed, it owes its very existence to a 19th century French science fiction writer, Jules Verne, without whom the great triumvirate of space travel's founding fathers might have become high school teachers or shoe salesmen. Had it not been for the inspiration supplied by Verne, Robert Goddard, Konstantin Tsiolkovsky and Hermann Oberth might never have become interested in the possibilities of spaceflight. And if a science fiction *writer* can become the grandfather of astronautics, then it is equally possible for a science fiction *illustrator* to become the godfather. This man's name is Chesley Bonestell—the Grand Master of astronomical artists.

Bonestell's paintings electrified a generation of teenage baby-boomer space enthusiasts: aspiring writers, astronomers, physicists, artists and engineers. G. Harry Stine—engineer, author and creator of the hobby of model rocketry—switched his major from psychology to physics after seeing Bonestell's book, *The Conquest of Space*. "Chesley Bonestell not only changed my life," Stine said, "but motivated two generations of people to start the human race on its way to ultimate freedom among the stars."

The late Carl Sagan said that he didn't know what other worlds looked like until he saw Bonestell's paintings of the solar system. Joseph Chamberlain, director of the Adler Planetarium, maintained that "It might even be suggested that without Bonestell and his early space age artistry, the NASA era might have been delayed for many years, or it might not even have happened at all."

Born Chesley Knight Bonestell, Jr. on New Year's Day, 1888 in San Francisco, California, he was already 12 years old when the 20th century began. His father was a lawyer; his mother, the daughter of a prominent Spanish-American musician, died in an accident when he was a one-year-old. Chesley, his father and two older sisters relocated to the Nob Hill district where they remained until their house was destroyed in the earthquake and fire of 1906, which also destroyed all of Chesley's earliest drawings and paintings.

By 1904 Chesley had attended Clement Grammar School, Dickensen's Academy, St. Ignatius College and George Bates University School, from which he finally graduated. In spite of the heavy Catholic influence of these schools, religion made little impact on him. "In accordance with my mother's wishes," he later wrote, "I was sent to St. Ignatius College, a Jesuit school in San Francisco; however, I became what most astronomers are—an agnostic." Attempts to teach him Spanish also failed, though he did learn to swear fluently in that language from the Mexican cowboys he met during summer vacations spent at his cousin's ranch in the Ojai Valley. It is also rumored that he was once expelled for putting ink in the holy water.

Chesley began drawing and painting at the precocious age of five. By his twelfth birthday he had won so many school prizes for his work that he was

given permission to start serious art instruction. Although not otherwise a very attentive student, when his interest and curiosity were stimulated, he would apply himself with single-minded energy. When he was ten years old, he became fascinated with the sight of Venus in the evening and morning skies. This led him into the study of astronomy.

Graduating from high school at 16, Chesley went to work at his grandfather's wholesale paper business, sweeping out offices and unpacking cartons. Although his grandfather had visions of Chesley someday becoming president of the company, the world of business had little appeal to the boy—nor did it "take kindly" to him, either. He was set on becoming an artist and every evening he would hurry to the nearby Hopkins Art Institute, located in the stables of Mark Hopkins's home. Soon, the walls of Chesley's room became covered (to the horror of his grandfather) with sketches of nude models.

"When I was 17, an important event occurred in determining my future career, although I little suspected it then. I had been illustrating tailpieces in *Sunset* magazine, which was then owned by the Southern Pacific Railroad. They paid me in railroad passes, and one day a friend and I caught an early train to San Jose and hiked the 26 miles to the summit of Mt. Hamilton and Lick Observatory. That night I saw for the first time the Moon through the 36-inch refractor, but most impressive and beautiful was Saturn through the 12-inch refractor. As soon as I got home I painted a picture of Saturn." That was in 1905, the year before the Great Earthquake, and this, the first of all of Chesley's space paintings, was lost forever in the fires that swept the city for three days, destroying 500 blocks of buildings and homes. "We'd been out drinking," Chesley recalled, "on the Barbary Coast and I got home about two in the morning. At 5:13, I was thrown out of bed. I started to climb out a window, but the brick chimney crashed past my face so I ran out the door to watch the excitement." He discovered that the fire was only a few blocks away. He and his family were safe, but there was nothing that could be done about the house or any of their belongings.

"The wine shops had all fallen down," Bonestell remembered, "and in one place, I saw three drunken sailors who had been chained to a tree by their officers." A few days later, he watched as Navy demolition teams dynamited block after block of homes to create a firebreak.

It was time to make some decisions concerning Chesley's future. It was more than obvious that he was not cut out for the world of business. On the other hand, his grandfather was leery of the unsavory reputation attributed to the "Bohemian" world of art. An uneasy compromise was reached: young Chesley would be sent to New York—as far away from the temptations of the Barbary Coast as possible—to study architecture at Columbia University. If the boy wanted to be an artist, he could at least have a respectable career. Little did Chesley's grandfather know.

The budding architect immediately joined the Delta Kappa Epsilon Fraternity—the "Dekes"—class of 1911. According to Bonestell, he found the

Bohemian lifestyle of New York to be not substantially different than that of San Francisco. "I remember crawling up the stairs on hands and knees after one weekend party," he once recalled, and another time when he was carried back to his room on his drawing board, like a corpse on a gurney.

Yet, in spite of his heavy partying, he enjoyed architecture and threw himself into his studies with enthusiasm. He mastered the art of perspective, which was later to prove invaluable in his career as a Hollywood matte painter. One examination required him to draw a mirror tipped at an angle of ten degrees from a wall, a chair tipped ten degrees from the mirror—"It was an interesting problem!"

After three years at Columbia, he abandoned college rather than face the mandatory mathematics classes. Besides, he was anxious to get some practical experience. He returned to San Francisco, intending to finish his degree later. He never did. He did find, however, that he would qualify for membership in the American Institute of Architects by merely passing the State Board of Architects' examination. The upshot of all this was that by the time 1911 rolled around—the year he would have graduated from Columbia—he was working for Willis Polk as a designer. Within one year, at the age of 24, Bonestell was made Chief Designer. He did not abandon his lifestyle, however: "It was five cocktails at the Bohemian Club before lunch and another five before dinner. Then we'd go out drinking."

Nevertheless, he was now making enough money to marry his childhood sweetheart, Mary Hilton. While with Polk, Bonestell designed a number of office buildings and homes, many of which are still standing. Polk's working method was unorthodox. He would provide his designers with little more than a charcoal thumbnail and a verbal description ("I never saw him with a drawing pencil in his hand," Bonestell asserted), from this a detailed rendering would be made, under Polk's strict direction, and finally, once this was approved, the draftsmen would work up the plans. This discipline suited Bonestell's personality perfectly, resulting in a demand for precision and exactitude that he maintained throughout his long career.

Nevertheless, Polk and Bonestell did not always see eye-to-eye. During the design of the Hobart Building, Polk vetoed Bonestell's curved details for the tower, saying that they were inconsistent with the straight lines of the penthouse. When the building was completed, however, Polk complained about how bad the roof lines contrasted with the rest of the building. "I protested at the time we were building it," Bonestell reminded him. "I told you it should be curved." "Well," replied Polk, who would never admit he was wrong, "you didn't protest hard enough!"

In 1913, Polk asked Bonestell to review sites proposed for the 1915 Panama-Pacific International Exposition. Although one of the prime contenders was Golden Gate Park, inside the city, Bonestell selected a location at Harbor View, a resort on a small promontory just inside the narrows. Polk persuaded the San Francisco city fathers to adopt this site and fill in the marshland for the Exposition (this, of course, was long before the

EPA had been established!). Needless to say, the Golden Gate Park officials were immeasurably relieved. In appreciation, a plaque was placed in the park, reading: "To Willis Polk, lover of trees."

In the spring of 1916 Bonestell joined with the landscape architect-engineer Mark Daniels in designing one of the most famous scenic highways in the United States, the famous Seventeen Mile Drive at Pebble Beach on the Monterey Peninsula.

By now the 100-inch reflector on Mt. Wilson was in operation. Bonestell discovered his interest in astronomy reviving—though it was still little more than a diverting hobby. He studied the subject and "occasionally drew pictures of Mars or lunar landscapes for my own amusement and then gave them away." (Unfortunately, not one of these early examples of Bonestell's space art seen to have survived.) "I was an astronomer to my architect friends," Bonestell reported, "and an architect to my astronomer friends."

Bonestell grew restless and after another two years he divorced Mary and left California to return to New York, where he worked for several architectural firms between 1920-1921. In 1922 he married Ruby Helder, a British concert singer (whose highly unusual voice caused her to be dubbed "the girl tenor"—a new CD of selections of recordings made between 1908-1921 was recently released by Pearl). Bonestell moved to London with her, where he worked for the *Illustrated London News* as a special architectural artist and in creating advertising layouts. He admits that the mundaneness of this work shocked some of his British artist friends, who thought it demeaning, but he shrugged off their criticisms. "I preferred to remain solvent."

It was during his time with the *Illustrated London News* that Bonestell was first exposed to two extraordinary illustrators. One was the British artist, Scriven Bolton, whose work had appeared in *News*. Bolton did scientific illustrations, particularly specializing in astronomical subjects. To increase the realism of his work, Bolton had developed a special technique: he would build plaster models of extraterrestrial landscapes, photograph them and then add stars, planets or whatever else might be necessary by retouching the print. This was a technique that Bonestell would later perfect. The second artist specialized in astronomical art exclusively—the first illustrator ever to do so—and of the two was by far the most important. This was the French astronomer-artist Lucien Rudeaux. Originally a commercial illustrator, Rudeaux's passion for astronomy led him to build his own observatory. From there he indulged in both serious astronomical research (a crater on Mars is named for him in appreciation of his contributions to the science) and in writing a series of books popularizing astronomy. One of these, *Sur les Autres Mondes (On Other Worlds)*, is, along with Bonestell's own *Conquest of Space*, one of the two most influential collections of space art ever published. Many of Rudeaux's paintings of the surface of the Moon and Mars could have been rendered today, rather than 60 years ago. What is ironic is



that it is Rudeaux's scientific realism that probably worked against him being as well known as Bonestell is today. Rudeaux knew full well that the Moon did not have the jagged, craggy, Alpine mountains that were the stereotype of almost all pre-Apollo space art—including Chesley Bonestell's. He carefully explained, as far back as the 1920s, his reasons for thinking that the lunar landscape was dominated by rolling, eroded mountains—and of course he was perfectly correct. The problem was that the spectacularly Doresque mountains in Bonestell's paintings were simply more impressive—they were the mountains that the Moon *ought* to have. Rudeaux's lunar landscapes might have been more correct scientifically, but they were also, unfortunately, as boring-looking as the Moon itself turned out to be.

The Bonestells took an extensive tour of Italy in 1925. Although he "found great inspiration from the paintings and music" his main interest was in the classic architecture. Bonestell returned to England to find letters urging him to return to New York to take advantage of the building boom going on. This he did, and subsequently worked for a number of prominent architectural firms. One of these was that of William van Alen, with whom he worked on the Chrysler Building, one of the most beautiful art deco skyscrapers ever erected. "To my mind," said Bonestell, "van Alen was the best of the modern architects of the period, and the Chrysler Building expresses New York of the time better than any other building."

Following the collapse of the stock market in October 1929, construction of new buildings slowed to a standstill. Bonestell returned to San Francisco, where he went to work on the Golden Gate Bridge. He helped Joseph Strauss, the chief engineer, explain "to the directors [who were businessmen and could not read plans] how the money allocated each month was to be spent. . . . I was hired to draw cutaway sections showing in great detail how various parts were to be constructed."

It was in 1938 that an entirely new phase of Bonestell's career began. By now 50 years old and armed with a letter of introduction from van Alen, Bonestell approached RKO Pictures as a matte artist. Shortly after he was hired, Ruby Helder died. In 1940 he remarried his first wife, Mary.

Over the next ten years, Bonestell was associated with RKO, Fox, MGM ("That was the only place where I ever had to punch a time clock. I worked a week, hated it, and quit."), Warner Brothers, Columbia and Paramount. His matte paintings contributed to the realism of such classic films as *The Hunchback of Notre Dame*, *Only Angels Have Wings*, *Citizen Kane* (all of the shots of turn-of-the-century New York and of Kane's Xanadu are Bonestell paintings), *The Magnificent Ambersons* and many others. His combination of finely-honed rendering skills with his knowledge of architecture and perspective resulted in his becoming the most highly-paid matte painter in Hollywood, earning \$1500 a month—a small fortune in those days. Much of this he turned over to a broker friend who assembled a blue chip portfolio that made Chesley reasonably financially independent for the rest of his life. Bonestell's friend, astronomer Robert Richardson recalled that

he "would accept assignments from educational institutions at a moderate price. But when it came to commercial outfits, such as movie studios, he stuck them for all he could get."

Bonestell never lost his interest in astronomy. "As my knowledge of the technical side of the motion picture industry broadened I realized that I could apply camera angles as used in the motion picture studio to illustrate 'travel' from satellite to satellite, showing Saturn exactly as it would look, and at the same time I could add interest by showing the inner satellites or the outer ones on the far side of Saturn, as well as the planet itself in different phases." He applied these techniques to a series of paintings showing Saturn from five of its moons, as well as the rings as seen from the cloud tops of the planet. He submitted them to *Life* magazine as an "unsolicited offering." The magazine bought them at once, publishing them in its May 29, 1944 issue. Their appearance hit the world of astronomy and science fiction like an atomic bomb. No one had ever before seen such paintings—they looked exactly like snapshots taken by a space-travelling *National Geographic* photographer. For the first time, renderings of the planets made them look like real places and not mere "artist's impressions."

The *Life* magazine appearance led to an introduction to space travel authority Willy Ley, who had fled the Hitler regime to the United States in 1937. He had already published the definitive history of rocketry, *Rockets: The Future of Travel Beyond the Stratosphere*, which was to remain in Print—though repeatedly revised and expanded—until the late 1960s. Under Ley's advice, spacecraft and astronauts began to appear in Bonestell's paintings. They collaborated on a number of magazine articles, such as the one describing a manned flight to the Moon that was published in the March 1946 *Life*. This article was one of the direct inspirations for the aborted Irving Block-Jack Rabin *Destination Moon* as well as the later George Pal movie of the same title. Bonestell space art began appearing in almost every major magazine: *Scientific American*, *Coronet*, *Mechanix Illustrated*, and *Pic*. He became so busy in this new career that he once absent-mindedly sent a science fiction magazine cover illustration to the wrong magazine—and the editor of the lucky magazine promptly published it! Bonestell had to do a new cover for the original magazine.

In order to make his paintings seem as photographically realistic as possible, Bonestell developed his own technique of spherical perspective "to show the surface of the Earth, Mars or the Moon," he said, "from various high altitudes. . . . Considering the planets as globes, covered with a series of flat planes one to 10 miles square, depending on the elevation, the centers of such squares being tangent to the globe, it is easy to find the horizon and the vanishing points of the sides of each square. The rest is just a matter of plotting the physical features on the squares."

By 1949 he had accumulated enough paintings to publish a book. This was the classic and now highly-collectable *Conquest of Space*. It included

58 paintings along with a text by Willy Ley. The realism of the artwork in conjunction with Ley's confident expertise convinced an entire generation of post-World War II readers that spaceflight was possible in their lifetime. There are professional aerospace engineers and scientists working today who decided their careers when they saw *The Conquest of Space* when they were only eight or ten years old. Arthur C. Clarke, who was then working on his first book, wrote for the January 6, 1950 issue of *The Aeroplane*: "This beautiful book, which has become something of a best-seller in the United States, is an outstanding example of co-operation between art and technology. . . ."

"The result of this collaboration is a large, sumptuously-produced volume whose 16 colour plates are at once a delight to the eye and a stimulous to the imagination. It has aroused more covetous greed in one heart than any other book this reviewer has ever handled. . . ."

"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 had no idea how right he was. . . .

It was only natural that producer George Pal should make Chesley Bonestell part of the creative team behind his now-classic motion picture, *Destination Moon* (1950). Bonestell worked as a science adviser and special effects artist (although, contrary to most expectations, he did not design the movie's spaceship, the Luna—that was the work of the film's art director, Ernst Fegté). Bonestell went to work with his usual, rather pedantic enthusiasm. Robert A. Heinlein, the author of *Rocketship Galileo*, the ostensible source novel of the movie, recalled that: "I had selected the crater Aristarchus [for the landing site]. Chesley Bonestell did not like Aristarchus; it did not have the shape he wanted, nor the height he wanted, nor the distance to an 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 latitude, facing the Earth. High latitude was necessary so that the Earth would appear near the horizon where the camera could see it and still pick up some lunar landscape. Northern latitude was preferred so that the Earth would appear conventional and recognizable."

Bonestell created a 14-foot-long painting of the interior of Harpalus (that was also turned into an enormous cyclorama by studio scenic artists for the stage backdrop). The black sky was offset to the rear slightly so that the stars would shift in parallax slightly as the camera panned across the painting, while the Earth was a painted ping pong ball! (The original painting, beautifully and meticulously restored, now hangs in the collection of Bob Burns.)

Bonestell worked on three other films for George Pal. For *The War of the Worlds* (1953) he created a series of extraterrestrial scenes for the film's prologue, showing views on the other planets of our solar system (as well as some of the matte work in the remainder of the movie). *When Worlds Collide* (1951) was a less successful undertaking. One of the best designs that Chesley produced for this film was not realized as a painting at all: the design of the space ark that carried the survivors of the doomed Earth to the invading world. Otherwise, the art in the film does not reflect well on him. The final, saccharine, amateurish-looking and oft-criticized matte painting—purportedly showing the landscape of the new world—was intended by Bonestell to be only a sketch. Time and budget constraints forced the director (Rudolph Maté) to use the study instead of a finished matte painting. Worse, the single poorest matte painting in the entire film—showing a drowned New York City—is invariably attributed to Bonestell, although it was done by a different artist altogether.

Much more successful from an astronomical artist's point of view—whatever its faults may be as a science fiction film—was *Conquest of Space* (1955). Based loosely on the Bonestell/Ley/von Braun book, *The Exploration of Mars*, the film tells the story of the first manned trip to the red planet—unfortunately framed in a highly-unlikely plot filled with unscientific dialog that must have brought tears to Chesley's eyes. Still, many of the film's qualities are overlooked—some were even overlooked by Bonestell himself. For example, he criticized the Martian landscape set ("piles of red sawdust and black coal and hunks of glass" as he recalled). "But this isn't what Mars looks like!" he protested, as dead-certain as always that he was right. As it turned out, the Mars depicted in *Conquest of Space* is remarkably accurate—perhaps one of the best of all pre-Viking depictions of the planet. Orbital views of the planet even show the surface covered with shallow craters and volcanoes!

In 1956, Bonestell accepted a commission from the director of the new Boston Museum of Science, Bradford Washburn. This called for the creation of an enormous, 10' x 40' mural of the lunar surface. It took Chesley a year to complete the canvas, which was then shipped in three sections to Boston where it was mounted directly onto a wall. The artist followed later to touch up the joints between the separate canvasses. The mural remained at the museum for more than a decade but was—by an unfortunate decision—removed shortly after the Apollo 11 landing, supposedly because it was no longer "accurate" (rather than as an historic record of a romantic, pre-spaceflight concept of the Moon). Sadly, the painting was almost literally ripped from the wall and was badly damaged. It now rests in the collection of the National Air & Space Museum where it has been patiently waiting over 20 years for restoration and remounting.

In 1951, Bonestell was invited by *Collier's* magazine to attend a symposium at the U.S. Air Force School of Aviation Medicine in San Antonio, Texas. Also present was Wernher von Braun, along with key

members of his famed German rocket team, who had followed him to the United States after the end of the war. Von Braun had just been moved from White Sands, New Mexico to the Army's Redstone Arsenal in Huntsville, Alabama where he and his colleagues were designing military rockets. All this time, von Braun had never abandoned his dreams of spaceflight—having even recently written a novel about a manned expedition to Mars. *Collier's* hoped that the experience would provide Bonestell with the research material he needed to illustrate a piece on man's survival in space. Chesley had immediately contacted his friend, astronomer Robert S. Richardson (who also wrote science fiction in his spare time). But Richardson's colleagues, ultra-conservative professors at the California Institute of Technology, were unwilling to commit themselves to saying much more than that there was a bare outside chance that a three-stage rocket might be able to carry a few pounds of flash powder to the Moon, the resulting explosion then being detected by powerful Earth-bound telescopes. But a *human being* going into space? Hardly! This was obviously not what *Collier's* was after, which is why Bonestell suddenly found himself at a technical conference in Texas, sitting next to his *Collier's* editor, Cornelius Ryan (later to author the classic World War II history, *The Longest Day*), and surrounded by U.S. military and civilian rocket engineers, aviation doctors, astronomers and physicists. Although the subject of the conference was ostensibly on "The Physics and Medicine of the Upper Atmosphere," what it was really about was *manned space* travel. After hearing von Braun speak, Bonestell turned to Ryan and said, "There is the man to send our rocket to the Moon." Ryan agreed and arranged a luncheon with the scientist, where he signed him to a series of articles for the magazine.

Not everyone was happy with that decision. "Why did you pick that Prussian Nazi instead of an American engineer?" asked one disgruntled astronomer. "Because," replied Bonestell, "he had more successful experience building rockets, and more faith in going into space than anyone else I could find. Besides," he added later, "he was the only one who had ever sent up rockets. What did I care that they came down on London?" Bonestell hardly needed add that he greatly admired von Braun, particularly for "his intellect, romanticism and modesty." It was the beginning of a life-long friendship for both men.

A week after the San Antonio conference, *Collier's* held its own symposium, a week-long conference in New York to plan the outline of the series. Present were Wernher von Braun, Willy Ley (an expatriate who had fled Nazi Germany before the war broke out, Ley had been a member of the historic German Rocket Society and was a renowned science writer and authority on the history of rockets and spaceflight); physicist Dr. Joseph Kaplan; Dr. Heinz Haber, an authority on space medicine; Oscar Schachter, an attorney who specialized in international law; astronomer Dr. Fred Whipple and, as illustrators, Bonestell, Fred Freeman and Rolf Klep.

Bonestell was the liaison between the scientists and the other two artists. It was he who first saw the sketches, diagrams and descriptions of spacecraft provided by von Braun. After consultation with the scientist, Bonestell would then provide finished drawings for the other illustrators to work from—even going so far as to work out the perspectives in detail. These were no longer the classic spacecraft of science fiction—these were the results of rigorous mathematical studies done by members of von Braun's Huntsville team. This group had more man-years of experience designing, building and launching rockets than any other in the world at that time. No one was more capable of designing the first spaceships than these people.

Bonestell recalled, "Von Braun would send me sketches drawn on engineer's graph paper, which I converted into working drawings and then into perspective. The courses I had had at Columbia University in descriptive geometry, shades and shadows and perspective, enabled me to handle some very complicated problems, and my courses in structural engineering helped me to understand the mechanics of space machinery."

Von Braun later recalled what it was like to work with Bonestell: "In my many years of association with Chesley I have learned to respect, nay, *fear*, this wonderful artist's obsession with perfection. My file cabinet 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 first issue of the *Collier's* spaceflight series appeared on March 22, 1952. The cover was a Bonestell painting of a winged space shuttle jettisoning its lower stage as it heads for Earth orbit (29 years before the United States launched a similar spacecraft). Inside, Fred Freeman and Rolf Klep produced stunning illustrations and cutaway drawings. Over the next two years there appeared more installments in what has come to be known as "the *Collier's* space program." Virtually every aspect of spaceflight was covered: astronaut training, unmanned satellites, space stations, lunar landings, and a mission to Mars. Even the international legal questions involved in spaceflight were considered. Highly prized collector's items today, these magazines hit the American public of 40-odd years ago like a bombshell. Until their appearance, the whole concept of spaceflight had been something relegated to the far future, if not strictly the stuff of science fiction. What von Braun and his team had done was show that, given enough manpower and money, spaceflight could be accomplished with the science and technology available in the early 1950s. At no time did the *Collier's* series assume the need for any sort of future technologies or materials; it was a nuts and bolts scheme that anyone could understand.

Not only did the *Collier's* series educate the public about spaceflight; perhaps even more importantly, it encouraged discussion and debate among professional engineers and scientists. Was spaceflight really feasible in the near future? Would it be worth the investment?

The *Collier's* series was the beginning of the Golden Age of spaceflight—that period during which the American public showed a fascination, enthusiasm, and support for spaceflight it had never shown before or since—the aeronautical equivalent of the aviation craze of the 1920s and '30s. A browse through the books and magazines of that era reveals a preoccupation with space travel that almost amounted to an obsession: toys, advertisements, movies, television—everything seemed to have a rocket or space theme, no matter how unlikely the connection. The *Collier's* spacecraft, and even the artwork itself, was copied and plagiarized endlessly. If anyone had to illustrate a rocketship it had to look like a *Collier's* rocket or it just wasn't right. They were the standard.

The series also came at a time when Congress was trying to convince itself to invest several billion dollars of taxpayers' money in a space program. That the taxpayers themselves had become so space-happy and so convinced by the *Collier's* articles that spaceflight was more than a loopy dream went a long way toward making an American space program possible.

Paintings from Chesley Bonestell's now-classic *Collier's* articles were all eventually assembled in book form—although the artwork was not well-represented, with many of the Klep and Freeman pieces missing. The first two books, *Across the Space Frontier* and *Conquest of the Moon*, covered the series up to the lunar landing. For the Mars book, Wernher von Braun and Willy Ley wrote an entirely new text and Bonestell prepared nearly 20 new paintings, 13 of which (for a total of 16) were reproduced in color. It was this book that inspired the George Pal film *Conquest of Space*.

Bonestell's now-famous name and his ability to create hyper-realistic images of space subjects made him an eagerly-sought-after illustrator. His work was featured regularly on the covers of John Campbell's *Astounding* as well as those of *Galaxy* and *The Magazine of Fantasy and Science Fiction*. Bonestell's appearance in these magazines drew a little criticism from the snobbier supporters of spaceflight, who wanted to sever the links between astronautics and science fiction. Bonestell, however, always the pragmatist, happily worked for whomever was willing to pay him. He once sold one of his paintings to be used in an advertising calendar for a whisky firm. The distiller had another artist add a series of whisky bottles to Bonestell's painting, spiralling up into the heavens. Bonestell's wife thought this was disgraceful, that he'd prostitute his art this way. But, so long as his checks arrived on time, Bonestell was little concerned about the issue of art vs. prostitution.

In the early 1950s, Bonestell received a plum commission from *Life* magazine, which was publishing its classic series of articles, "The World We Live In." Bonestell's two dozen paintings were featured in the first and last installments: the origins of the Earth and the universe that surrounds it. The articles were later collected in book form (*The World We Live In*, 1955).

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Bonestell contributed a spectacular group of paintings showing the birth and death of the Earth (one of the latter of which was omitted from the book because the editors thought it too grim!), the formation of the Earth's crust, the ice ages, as well as a tour of the other planets of our solar system.

On October 4, 1957 the news of Sputnik 1, and the resultant political shockwaves, reverberated around the world. Four years later, the first cosmonaut (Yuri Gagarin) and the first astronaut (Alan Shepard) had flown in space. President John F. Kennedy called for a program to land a man on the Moon and return him safely to Earth "before this decade is out."

*Man and the Moon* was released that same year. Edited by Robert Richardson, it discussed what was then known—and not known—about the Earth's natural satellite, and outlined a plan for a manned landing and exploration. The articles' authors included Richardson, Wernher von Braun, Arthur C. Clarke and Gerard P. Kuiper, and were accompanied by 11 paintings (plus the book's wraparound dust jacket illustration) by Bonestell. Richardson and Bonestell, who had long been friends, enjoyed working together. The former was a planetary astronomer and solar specialist who had served on the staffs of both the Mt. Wilson and Griffith Observatories. It was a happy symbiotic relationship. Bonestell obtained answers to his astronomical questions and Richardson received inspiration and stimulation from the artist. "I was always amazed," said Richardson, "at [Bonestell's] ability to visualize the heavens and the landscape of a planet, whether seen in a familiar form, or standing upside down at the South Pole. In my opinion, Bonestell's masterpiece is his painting of Saturn as seen from Titan. Saturn is a narrow crescent in the 'new' phase with the rings very thin. Many times, when I have shown a lantern slide of this painting, it has brought an audible gasp from the audience." Richardson wrote several science fiction stories and novels under the name of Philip Latham and was the channel that brought Bonestell's art to the attention of the science fiction editors. Richardson died in 1981, leaving an unfinished project with Bonestell.

The Columbia Record Club (of all things) brought out two books in 1961, both of them written and illustrated by Bonestell. *The Solar System* and *Rocket to the Moon* featured flyleaf pockets each containing 32 color transparencies along with a 45-rpm record narrated by Walter Cronkite. Unfortunately, Columbia Records' Panorama series did not survive and these two books are now extremely rare.

That same year, Mary Hilton Bonestell died and Chesley moved into the Clift Hotel in San Francisco. He later bought a house in Berkeley. While in San Francisco he went to Sacramento to visit his long-time friend, Hulda von Neumayer Ray. In September 1962 they were married. Hulda had known Chesley since they had been children, both families having lived on Garber Street in Berkeley. At that time (1915), Chesley had painted a portrait of Hulda's father, Charles D. von Neumayer. Professor von Neumayer came to the Bonestell house "for about three sittings" and was presented with the



finished portrait. The house at 2915 Garber Street had been built by Bonestell himself; Willis Polk notwithstanding.

In 1968 the couple moved from Berkeley to a Carmel, California house where Bonestell lived until his death. Hulda Bonestell—an accomplished scenic photographer—maintained Chesley's research files, records and scrapbooks meticulously, until her own passing in late 1998.

By the mid-1960s, the American Surveyor and Lunar Orbiter spacecraft had provided close-up views of the lunar surface. The photographs revealed a landscape that was far removed from the craggy, Alpine scenes that Bonestell had been painting for decades. The Moon was *softer*, with rolling hills and mountains that looked more Appalachian than Rocky. "[The Moon] looks for all the world like the Berkeley hills," Bonestell grumbled.

This matter of the Bonestellian depiction of the Moon raises an interesting issue: why did Bonestell paint the Moon the way he did? So utterly convincing were his paintings that few if any people—scientists and astronomers included—ever questioned their accuracy, no more than one would question the reality of a photograph. Indeed, so compelling are Bonestell's lunar landscapes that one feels that it is somehow the *Moon's* fault that it doesn't look the way he painted it. Bonestell showed the Moon as it *should* have looked. There is considerable argument in favor of the idea that we would not have been half so anxious to land on the Moon if we had known it looked as boring as it does—that Bonestell's romanticized landscapes helped encourage the development of a lunar landing program. Still, considering how greatly Bonestell prided himself on the scientific accuracy of his painting, how could he have been so wrong? He owned Lucien Rudaux's books, so he certainly knew that there was strong evidence that the lunar mountains were smooth-sloped and rolling (as Rudaux pointed out, all one has to do is take a telescope and look at the edge of the Moon against the black background of space and one can see the profiles of the lunar mountains). Perhaps Bonestell was influenced by the era from which he came, when most of the astronomy books he studied as a child and teenager had been produced in the 19th century. The best times for viewing and photographing the Moon is when the Sun is at a low angle. This brings out details, but the long, jagged shadows that even the slightest irregularity cast are misleading. It is easy to assume that long, jagged shadows are cast by tall, jagged features and dozens of illustrators before Bonestell depicted the Moon as having towering, precipitous peaks.

It was at this time that Bradford Washburn decided to remove the mural at the Boston Museum of Science, commissioning Bonestell to paint a replacement: a 10' x 20' mural of the Milky Way Galaxy. It proved to be a special challenge. "I had only a superficial knowledge of our galaxy," he complained, "based on material 10 or 15 years old. I appealed to Dr. Harold Weaver, director of the Radio Astronomy Laboratory of the University of California, Berkeley, for the most recent findings. On the basis of current information, I constructed a model at a scale of seven inches to 100,000 light

years—the diameter of our galaxy. At the exact angles from the galactic plane I fixed pointers which would locate M31, M33 and [the] Magellanic Clouds at the correct positions and the same scale as our galaxy and 11-2/3 feet from our Sun, or the equivalent of 2,000,000 light years. Dr. Weaver put the same viewpoint through the computer at the University, which confirmed my calculations as well as locating the correct positions of the star clusters and a number of galaxies about 75,000,000 light years distant in Pisces."

This business of building models in addition to sketches was a life-long habit of Bonestell's. He constructed cardboard models of spacecraft, for example, in order to work out problems of perspective. These were simple: usually little more than three-view schematics mounted on board, cut out and slotted together. Other models were more elaborate. In order to make a painting as photographically realistic as possible, Bonestell adapted a technique first employed by Scriven Bolton. He would craft a meticulously-sculpted plasticene model of a landscape and photograph it with a pinhole camera (to maintain the maximum depth of field). An enlargement of the photo was then mounted on board after which Bonestell could paint in color and detail using his laborious but effective technique of oil glazes (the same technique that gives Maxfield Parrish's paintings their distinctive glow—Parrish, by the way, also worked from photographs of model setups). This was a time-consuming technique that Bonestell eventually abandoned.

The galaxy mural was installed in 1968. Bonestell enjoyed the challenge that it had presented and continued to produce paintings of the Milky Way, seen from various angles and distances. In 1975 he created a 4' x 8' galaxy mural for the Grace H. Flandrau Planetarium in Tucson.

Bonestell co-created three more space-themed books, one of which was a collaboration with his old friend Willy Ley in 1964. This was *Beyond the Solar System*. A natural sequel to the old *Collier's* books, it took its readers on an interstellar spaceflight. While Ley discussed the technical problems inherent in travelling from star to star, Bonestell provided 14 spectacular color paintings not only of the spacecraft themselves but of the strange planets that might orbit some of the Sun's even stranger stellar neighbors. The book *Mars* appeared that same year, with a text by Robert Richardson and illustrated with 16 Bonestell paintings (including the endpaper art), 11 of them in color. Since many of them reiterate scenes from *The Exploration of Mars*, it's interesting to compare the two books to see how much the technology of spaceflight had changed in less than 10 years.

A collaboration with Arthur C. Clarke was published in 1972. *Beyond Jupiter* took its readers on a "grand tour" of the outer solar system, as a spacecraft might visit those planets during the unique alignment that would occur in the middle of that decade, allowing a spacecraft to "slingshot" itself from world to world, getting a boost from each planet's gravity. Such an alignment would not again occur for 171 years but NASA, due to budget cuts

and lack of interest, missed the opportunity. The closest it was able to come to duplicating Clarke's grand tour was the launch of Voyagers 1 and 2 in 1977, which flew by Jupiter, Saturn, Uranus and Neptune. Bonestell created 25 new paintings for *Beyond Jupiter*, 15 of which were reproduced in color. It's gratifying to see how closely he hit the mark when comparing them to the later Voyager photos.

The book is dedicated to Clarke's and Bonestell's old friend, Willy Ley, who died in 1969 only three weeks before the Apollo 11 landing. In 1971, a lunar crater was named in his honor. To commemorate this, the dedication reads: "To Willy, who is now on the Moon."

The book was well received. The *Christian Science Monitor's* review was typical: "[I]f Clarke's prose is characteristically vivid, it is Mr. Bonestell's art that gives life to their vision. For decades he has stood as far above the general line of space illustrators as Constable stands above a scenic calendar artist. Not only are his pictures technically accurate, but they evoke an impressionistic feeling for scenes men generally have yet to behold."

During the final decade of his life, Bonestell devoted himself to numerous private projects, taking on fewer and fewer commissions—mainly from individual collectors or because an idea tickled his fancy (such as a NASA commission for a painting illustrating asteroid mining). One of his ambitions was the artistic reconstruction of the great Spanish missions that dotted the California coast from San Diego to Sonoma. During the ensuing centuries they had been modified, moved, rebuilt and, in many cases, destroyed. This project was perhaps inspired by a combination of things: obviously Bonestell's interest in architecture (he had once redesigned St. Peter's Basilica at the Vatican as he thought it should have been; the Pope wasn't interested), and, undoubtedly, his own Spanish heritage. The result of this enormous project—finished when Bonestell was 85 years old—was 22 large paintings meticulously recreating all 21 California missions (and one "assistencia") as they had appeared in their heyday. They were published as a book—the artist's last—with a text by historian Paul C. Johnson.

Bonestell's last years were spent painting, which he worked at every day "for my own amusement." He painted a myriad of subjects: sea shells, dinosaurs, Chinese landscapes—and always a space painting now and then. "To become a space painter," he once advised, "you must have a restless drive for drawing and painting. A few lessons on drawing and the handling of paints will suffice; a knowledge of astronomy and descriptive geometry can be acquired by study. But you should then develop your *own* style and technique. One has to sit in the studio and work out the problems—alone."

He always considered himself an illustrator, since his paintings always "tell a story. . . . The term 'artist' has too many connotations." But he bristled at being called a "science fiction artist," always maintaining that he disliked science fiction (he kept his special Hugo, awarded at the 1974 World Science Fiction Convention for his lifetime achievement, in his bathroom). He garnered even more awards during the last three decades of his life; the

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International Fantasy Award in 1951, a Special Citation from the Midwest Research Institute in 1968, a Special Award and medallion from the British Interplanetary Society in 1976, the Dorothea Klumpke-Roberts Award from the Astronomical Society of the Pacific in 1976 and a Special Award from the San Francisco Exploratorium in 1979. His original paintings are not only in hundreds of private collections all over the world, they can be found in such prestigious public collections as the National Air & Space Museum, and the Adler Planetarium—which owns the most famous Bonestell painting of all, his serene view of Saturn, as seen from its giant moon, Titan. Perhaps the honor that pleased him most was that of having an asteroid named after him; the former (3129)1979 MK2 is now officially known as "Bonestell." Carl Sagan commented that "[I]t is only fitting that we give back a world to Bonestell, who has given us so many." When asked if he'd preferred to have a crater on the Moon named for him, Bonestell shook his head. "An asteroid is a flying mountain. I go around the Sun. Willy doesn't move."

Although Chesley Bonestell once remarked that he intended to live to be a hundred "even if it kills me," he died at the age of 98, as he would have liked, at work on a new painting, which will have to remain forever unfinished.

## CHESLEY BONESTELL: A CHRONOLOGICAL BIOGRAPHY

by Mrs. Chesley Bonestell and Melvin H. Schuetz

January 1, 1888 Born in San Francisco, son of Chesley Knight Bonestell and Jovita Ferrer Bonestell, one of 15 children of Manuel Y. Ferrer, prominent Spanish-American musician. Attended Clement Grammar School, Dickensens's Academy, St. Ignatius College and George Bates University School, all in San Francisco. Graduated from the latter in 1904, accredited to Stanford.

1904-07 Worked for his grandfather, Louis H. Bonestell, in his wholesale paper house, Bonestell Paper Company, San Francisco; was resident during the 1906 earthquake/fire; through the period attended Hopkins Art Institute on Nob Hill in the evenings.

1907-10 Took necessary written examinations and entered Columbia University, Class of '11; majored in architecture. Left after three years (June 1910), intending to work for practical experience and then return to graduate (but never did).

1910-18 During the summer he started to work for Smith O'Brien, San Francisco architect, but resigned after a few weeks to go into the offices of Willis Polk, prominent San Francisco architect. Became Polk's chief designer after two years and remained with the firm until early 1918. While there he designed the following:

Hobart Building and Insurance Exchange Building in San Francisco. Tobin residence on California Street, Ehrman residence on Broadway, the Welch house (later Archbishop's residence) on Broadway, Sam Naphthal residence on Broadway, San Francisco. Templeton Crocker residence, Hillsborough, and the William B. Bourne residence "Filoli," Woodside (later Roth property). D. O. Mills Bank Building, Sacramento.

Married Mary Hilton, childhood sweetheart, Nov. 11, 1911, at home of his sister Lura in Berkeley. Resided in Berkeley, first on Derby Street near College Avenue, later moved into a home that he built on Garber Street, in 1914. Daughter Jane was born Dec. 19, 1912; an only child, she died in 1989.

1916 In the spring of this year he worked for six weeks with Mark Daniels. He designed and laid out the roads for Pebble Beach (which became the base plan for the famous 17 Mile Drive) for Pacific Improvement Company (Samuel F. B. Morse, manager).

1918-21 Early in 1918 he separated from his wife Mary, left Polk's architectural firm and went to New York, where he worked for several architects, as follows:

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Bertram Goodhue—worked on California Institute of Technology buildings to be erected in Pasadena. Ewing and Allen—collaborated with Rockwell Kent (who made the drawings) in painting an 80-foot mural of the early history of the State of Maine installed in Kennebunkport, commissioned by Ewing's brother-in-law; produced 10 lithographs for exhibition by the U.S. Army of a munitions plant in Alabama. Thomas Hastings—Cunard (steamship lines) Building.

1922-24 Married Ruby Helder, English concert singer, and went with her to London to live. Worked for the *Illustrated London News*, producing some outstanding graphic work on famous English buildings.

1925 The Bonestells went to Italy for a year. They lived mostly in Florence, toured extensively while he produced a number of etchings and lithographs of architectural splendors in Italy.

1926 Returned to England to live and do commissioned artwork.

1927-30 Returned to New York and worked for various architects, more or less as follows:

Thomas Hastings—again. Cass Gilbert—worked on Supreme Court Building and another Federal Building in Washington, DC, and the state capitol building for West Virginia. William van Alen—Chrysler Building, New York. Warren and Wetmore—New York Central Building tower and several large apartment buildings of midtown Manhattan. Shultz and Weaver—the Sherry Netherlands Hotel, New York; the Biltmore Hotel, Los Angeles; the Park Lane Apartments, New York. McKim, Mead and White—Plymouth Rock Memorial, Plymouth Rock, Massachusetts.

1931-32 Returned to Berkeley and took a job with architect Arthur Brown to design color schemes for both the San Francisco Opera and Veterans Buildings. Bonestell rehung the eight Frank Brangwyn murals saved from the 1915 Exposition.

1932-37 Went to work for Joseph Strauss, chief engineer of the Golden Gate Bridge. He made perspective drawings of the inner-workings of the bridge and made a number of contributions to the final appearance of the structure. After completion of plans for the Golden Gate Bridge, Bonestell worked for the Golden Gate Fair and Exposition held during 1939-40, doing many drawings and paintings showing how the Fair would look (including a cover design for the official program). Worked as artist for the East Bay Regional Parks District, preparing visualizations of proposed parks, road systems and other public developments.

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1938           Went to Hollywood and started working in the motion picture industry as a matte artist to produce backgrounds and special effects. Following are the motion pictures he worked on, along with the corresponding studios:

*Mr. Smith Goes to Washington* (Columbia, 1939)  
*Only Angels Have Wings* (Columbia, 1939)  
*The Hunchback of Notre Dame* (RKO, 1939)  
*Swiss Family Robinson* (RKO, 1940)  
*Tom Brown's School Days* (RKO, 1940)  
*Citizen Kane* (RKO, 1941)  
*Charley's Aunt* (Fox, 1941)  
*How Green Was My Valley* (Fox, 1941)  
*The Magnificent Ambersons* (RKO, 1942)  
*The Adventures of Mark Twain* (Warner, 1944)  
*The Horn Blows at Midnight* (Warner, 1945)  
*Rhapsody in Blue* (Warner, 1945)  
*The Fountainhead* (Warner, 1949)  
*Destination Moon* (Eagle-Lion, 1950)  
*When Worlds Collide* (Paramount, 1951)  
*War of the Worlds* (Paramount, 1953)  
*Conquest of Space* (Paramount, 1955)

1939-40       In 1939 Ruby Helder Bonestell died and in the spring of 1940 he remarried Mary Hilton Bonestell.

1940s-60s    The Great Space Age of Bonestell

In the early 1940s the first of his scientifically realistic space paintings appeared in print. He painted a series showing the possibilities of travel from satellite-to-satellite of Saturn, which were published in *Life*. Encouraged by Cornelius Ryan of *Collier's*, he began devoting full time to space art, illustrating magazine articles, advertisements, and books.

(For a comprehensive listing of the major books containing Bonestell space art, see the appendixes of this volume.)

1956-57       Bonestell created a 10' x 40' mural, showing a lunar landscape, for the Boston Museum of Science. This large mural is now in storage in the National Air and Space Museum in Washington.

1959-60       For Ziv studios, provided production design of the CBS television series, *Men into Space*.

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1961-62 Mary Hilton Bonestell died in 1961; in the fall of 1962 Bonestell married Hulda von Neumayer Ray. Soon after his remarriage, Bonestell and his wife bought a home in Berkeley.

1967-68 Bonestell painted another large mural (10' x 20') for the Boston Museum of Science. It showed how "The Milky Way Galaxy" might appear from a hypothetical planet 400,000 light years from Earth.

1968 Mr. and Mrs. Bonestell moved to Carmel.

1972-73 Culminating a lifelong interest in the California Missions, Bonestell produced a set of 22 paintings (21 missions and one asistencia), showing them as they are thought to have appeared in the days of their greatest glory. Each of the paintings is 20" x 30" and faithful in detail to their times.

1974 The mission paintings were published in a book, with text by Paul Johnson, by Chronicle Books of San Francisco. The book was entitled *The Golden Era of the Missions, 1769-1834*.

1974-1986 Mr. Bonestell continued space painting and fine art painting at his Carmel studio, as commissioned or for his own enjoyment. Mrs. Bonestell provided considerable assistance in research and documentation, while pursuing her own interest in scenic photography.

June 11, 1986 Bonestell died at his home in Carmel.

November 1, 1998 Mrs. Bonestell followed Chesley in death.



## AWARDS AND HONORS TO CHESLEY BONESTELL

International Fantasy Award for *The Conquest of Space* in 1951.

Special Citation for 1968 by Midwest Research Institute, Kansas City, Missouri.

Science Fiction Achievement Special Award, 32nd World Science Fiction Convention, Washington, DC, September 1974.

British Interplanetary Society, London, special award and medallion for lifetime accomplishments in space exploration, March 1976.

Dorothea Klumpke-Roberts Award, Astronomical Society of the Pacific, San Francisco, May 20, 1976.

Exploratorium, San Francisco, Special Award in 1979.

G. Bruce Blair Medal, awarded by the Western Amateur Astronomers at a joint conference with the Astronomical Association of Northern California, held July 7-13, 1984, at the University of California, Santa Cruz.

Asteroid 3129 was named "Bonestell" by the International Astronomical Union (under the auspices of The Planetary Society, Pasadena, California) in early 1986.

Inducted into the International Space Hall of Fame, Alamogordo, New Mexico, September 30, 1989.

Elected to the Society of Illustrators Hall of Fame in 1997. Inducted June 26, 1997, at the Society's Headquarters at 128 East 63rd Street, New York, New York.



## SPACE ART CHRONOLOGY



1944

- 1 "Solar System: It Is Modeled in Miniature by Saturn, Its Rings and Nine Moons." Life 29 May: 78-80, 83-84, 86. ISSN 0024-3019.

Chesley Bonestell is known to have painted astronomical subjects for his own amusement as early as 1905, but these are the first of his space paintings to appear in print. As reported in Worlds Beyond: The Art of Chesley Bonestell: "He took them to Life magazine as an 'unsolicited offering.' Life bought them at once and . . . it was the beginning of an era of Bonestell planetary art. . . ." Life said: "These astronomically accurate pictures are enlivened by no more than reasonable fancy in the detail of satellite landscapes which show in their foregrounds."

6: C (pp. 79 [3], 80 [3]). /F/

1945

- 2 Ley, Willy. "Rocket to the Moon?" Mechanix Illustrated Sep.: 67-80, 82, 148. ISSN 0025-6587.

An actual lunar photograph was incorporated into the upper illustration on page 79. The cylindrical spaceship was deleted when the painting appeared four years later in The Conquest of Space. This article was the first of many collaborations between Bonestell and Ley spanning a period of nearly twenty years.

11: C (front cover; pp. 67, 70, 71 [2], 74, 75, 78, 79 [2], 82). /F/

1946

- 3 "By Rocket to Mars in 18 Days." Coronet Aug.: 59-67.

The framing illustration of a spaceship's porthole was painted by another artist, William Fleming. A partially frozen Martian lake in the illustration on page 67 appears totally covered in ice when the painting is presented in The Conquest of Space. The clouds are also modified.

9: C (pp. 59, 60, 61, 62, 63, 64, 65, 66, 67). /U/F/

- 4 Pendray, G. Edward. "The Coming Age of Rocket Power." Coronet Mar.: 146-62.

The caption reads, in part: "Bonestell does not think it at all inconceivable that man will some day fly to the moon and return safely to earth."

1: C (p. 146).

- 5 "Trip to the Moon: Artist Paints Journey by Rocket." Life 4 Mar.: 73-76. ISSN 0024-3019.

The winged rockets in the large illustrations on pages 73 and 76 were deleted when the paintings were reprinted in The Conquest of Space.

"The idea of a trip to the moon, an irresistible combination of high adventure and escape . . . has always fascinated the people of the earth. . . . In this century . . . men have seriously thought of getting to the moon by rocket. Shown here is the scientifically realistic rocket journey conceived by Chesley Bonestell, a Hollywood special-effects artist and amateur astronomer whose paintings of Saturn's moons have been published in Life [before]."

11: C (pp. 73 [2], 74 [3], 75 [3], 76 [3]). /U/F/

1947

- 6 Bonestell, Chesley. "Coast to Coast in 40 Minutes." Pic Oct.: 50-52.

"Bonestell . . . sat himself . . . over maps for months to produce this remarkably accurate series of paintings."

8: C (pp. 50, 51 [3], 52 [4]). /U/F/

- 7 Campbell, John W., Jr. "Base on the Moon." Pic June: 48, 49, 108-10.

"Chesley Bonestell's painting . . . shows good reason for his success as an artist."

1: V (p. 48). /F/

- 8 "The End of the World." Coronet July: 27-34.

"[E]ven before physicists developed the atom bomb, astronomers knew of greater, if less immediate, threats to world safety. To bring you some of the results of their research, Coronet commissioned Chesley Bonestell, an artist and astronomer, to make the paintings on the following pages. In the opinion of experts, these are some of the catastrophes which may someday plunge the earth into chaos."

8: C (pp. 27, 28, 29, 30, 31, 32, 33, 34). /F/

- 9 Eris, Alfred. "Britain's Challenge." Mechanix Illustrated July: 107-12, 162. ISSN 0025-6587.

"Whatever happens, man is certainly no longer Earthbound. How far in the universe he will eventually travel, no one living today can guess."

3: C (pp. 108, 108-09, 112). /F/

- 10 Ley, Willy. "Race to the Planets." Mechanix Illustrated July: 97-107. ISSN 0025-6587.

"Earthmen have set their thoughts on the conquest of space. More than that, they have set their hands to it. In dead earnest they are committed, in both the Old World and the New. It now can definitely be said, the race to the planets is on!"

5: C (pp. 97, 100, 101, 104, 105). /F/

- 11 Northorp [sic], Capt. B. A. "Fortress in the Sky." Air Trails and Science Frontiers May: 22-27, 70, 72, 74.

"Northorp" is a misspelling of Northrop, a pseudonym of L. Ron Hubbard.

1: C (front cover). /F/

- 12 Richardson, R[obert] S. "New Paths to New Planets." Air Trails and Science Frontiers Sep.: 32-39, 72-74, 76, 78.

"These uniquely beautiful paintings of the planets, by Chesley Bonestelle [sic], were prepared in collaboration with R. S. Richardson, of the Mt. Wilson Observatory staff, and represent the present latest knowledge and belief concerning the surface character of the planets."

3: C (front cover; pp. 35, 38). /F/

- 13 "Rocket." Britannica Junior.

The first known examples of Bonestell astronomical art to appear in a *book*, these paintings were originally published in magazines in 1945 and 1946. They are reprinted in each succeeding edition of the encyclopedia until 1969.

2: C (p. 121).



- 14 "Sun . . . Mercury in Transit." Astounding Science Fiction Oct.: front cover.

This is the first of many illustrations done by Bonestell for science fiction magazine covers. Somewhat surprisingly, he himself spurned the genre and has been quoted elsewhere as saying that he "never read the stuff."

1: C. /U/

- 15 "When the Big Eye Opens." Science Illustrated June: 13-17.

"Chesley Bonestell, who did the original painting from which this month's cover was adapted, was trained to be an architect. But he'd rather paint a telescope or the moon than design a cathedral."

2: 1B (p. 111 [dupl. cover]) + 1C (front cover). /F/

1948

- 16 "Astronomy: Rings of Saturn Explored from Her Satellites." American Peoples Encyclopedia.

Accompanying the article on "Astronomy," this color insert bears the subtitle given above. It features the same six illustrations as the 1944 Life magazine article.

6: C (4 pp. plates; n. pag.).

- 17 Bonestell, Chesley. "When We Reach the Moon." Pic Sep.: 44-47, 94-95.

The rocket, shown departing the Moon's Theophilus crater on page 47, was omitted from the illustration when the latter was used in The Conquest of Space.

7: 1B (p. 46) + 6V (pp. 44 [2], 45 [2], 47 [2]). /F/

- 18 Campbell, John, Jr. "We Are Not Alone." Pic Dec.: 40-42, 107.

"A strange race, living on a strange planet in dwellings strange to our eyes, is warmed by a sun similar to the sun which rises and sets across the Earth's horizon each day." This is a very rare instance of Bonestell including extraterrestrial lifeforms in an illustration. Along with indistinct humanoids, the image of a dinosaur-like creature appears at lower left.

1: V (pp. 40-41). /F/

- 19 Deutsch, Armin J. "The Sun." Scientific American Nov.: 26-39.  
ISSN 0036-8733.

"The painting on this month's cover . . . shows the sun as it might appear from a point above the baked surface of the planet Mercury."

2: 1B (p. 6 [dupl. cover]) + 1C (front cover). /F/

- 20 Neal, Harry. "Heavenly Cannon Balls." Pic Nov.: 38-39, 119.

"Streaking meteorite depicted falling 60 miles per second by Artist Chesley Bonestell, who illustrates what would happen should one of these heavenly cannon balls hit one of our major cities. Destruction comparable to that of the atom bomb is possible."

1: B (p. 39). /U/

- 21 Richardson, R[obert] S. "Man on Mira." Astounding Science Fiction Apr.: 88-100.

"[A] scene on a hypothetical planet of the binary star Mira—a system of a blue white star and a red super-giant."

1: C (front cover). /F/

- 22 ---. "Paper Planets." Astounding Science Fiction Sep.: 100-18.

"The artist, Chesley Bonestell, instead of depicting wild scenes of panic has chosen to portray a solitary expanse of desert with the ghostly image of the infrason hanging overhead in the late evening twilight. The only living things are the rows of cactus plants standing motionless under its pale radiance. Yet do not these lowly plants remind us of people staring mutely at an object whose presence they are utterly incapable of comprehending among the once familiar stars?"

1: C (front cover). /U/

- 23 ---. "Rocket Blitz from the Moon." Collier's 23 Oct.: 24-25, 44-46.

From first caption: "The rocket base on the moon as it might appear at the time of the attack on New York City. The rocket in the foreground is just starting its leap through space."

From second caption: "The beginning of the end for New York. One rocket has exploded between the Empire State Building and the Battery, another in Queens."

2: C (pp. 24, 25). /F/

- 24 "Rocket." Britannica Junior.

2: C (p. 121).

- 25 Russell, Eric Frank. "Dreadful Sanctuary." Astounding Science Fiction July: 76-151.

Used by the editors as an illustrating cover, but was not specially commissioned for this story.

1: C (front cover). /F/

1949

- 26 Alter, Dinsmore. Rev. of The Conquest of Space, by Willy Ley. Griffith Observer Nov.: 135. ISSN 0195-3982.
- "Mr. Bonestell is known as the greatest painter of astronomical subjects."
- 1: B (front cover).
- 27 "Astronomy: Rings of Saturn Explored from Her Satellites." American Peoples Encyclopedia.
- 6: C (4 pp. plates; n. pag.).
- 28 "First Photos through Palomar's Giant Eye." Preface. Collier's 7 May: 19.
- Features two articles entitled, "Behold the Universe!" and "The Men of Palomar."
- "This week's cover: Mt. Palomar is from the easel of Chesley Bonestell. He paints for movies; typical chef-d'oeuvre was the trick glass shots for The Hunchback of Notre Dame. His interests include astronomy, painting rocket ships, Mars, and other planets both from the earth and vicariously from the outer atmosphere."
- 2: 1B (p. 10 [dupl. cover]) + 1C (front cover). /F/
- 29 Heinlein, Robert A. "Baedeker of the Solar System." Rev. of The Conquest of Space, by Willy Ley. Saturday Review of Literature 24 Dec.: 9-10. ISSN 0147-5932.
- "No other painter alive or dead could paint these pictures."
- 2: 1B (p. 9) + 1V (front cover).

- 30 Latham, Philip [Robert S. Richardson]. "The Aphrodite Project." Astounding Science Fiction June: 73-84.

A science fiction story—ending thusly: "For some inexplicable reason military authorities have refused permission to release enlargements of the original negatives showing the marking and rocket. . . . The authorities have, however, permitted Chesley Bonestell to paint Venus as Clifton saw it on the morning of January 14th, under a magnification of 770 with seeing 8 on a scale of 1 to 10. And judging from the present official attitude, this is the only picture of Venus on that historic occasion we are likely to get for a long time to come."

1: C (front cover). /U/

- 31 Ley, Willy. The Conquest of Space. New York: Viking. LCCN 49-10790.

This was the first, and most celebrated, of all books illustrated by Bonestell. Due to its popularity, it would be reprinted nine more times in the following nine and one-half years.

"Chesley Bonestell's paintings are, writes Mr. Ley, 'the product of a poetical mathematician with a paintbrush.'"

58: 41B + 17C. /F/

- 32 "Out of This World." Sunday Mirror Magazine [New York] 19 June: 14-15.

"Dramatically portrayed for the Mirror Magazine is artist Chesley Bonestell's conception of the actual construction of an artificial satellite. Workmen spinning in space around the earth at five miles per second reach the site by rocket. Other ships house men and equipment. The eastern and central U.S. 500 miles below, would look as it is shown here astronomers say."

1: C. /F/

- 33 Pfeiffer, John E. "Round-Trip Ticket to the Moon." Rev. of The Conquest of Space, by Willy Ley. New York Times Book Review 25 Sep.: 29. ISSN 0028-7806.

"The descriptions are heightened and dramatized in a series of 58 excellently reproduced paintings by Chesley Bonestell, whose unique artistic talents are backed up with a thorough understanding of astronomy."

2: B.

- 34 "Rocket." Britannica Junior.

2: C (p. 121).

- 35 Schurmacher, Emile C. "Rockets in the News." This Week Magazine 6 Nov.: 24.

"[The cover painting by Bonestell] depicts a rocket ship that has landed on the moon and now stands in a lunar crater being readied for a return trip to earth."

2: 1B (p. 24) + 1C (front cover).

- 36 "Seven Future Wonders of the World." Coronet June: 61-68.

No credit is given to Bonestell for the illustrations.

7: C (pp. 62, 63, 64, 65, 66, 67, 68). /U/F/

1950

- 37 "Astronomy: Rings of Saturn Explored from Her Satellites." American Peoples Encyclopedia.

6: C (4 pp. plates; n. pag.).

- 38 Atwater, Gordon A. "Explosion in Science." This Week Magazine  
2 Apr.: 12-13, 15, 22.

The large inner illustration, across pages 12 and 13, was *not* painted by Bonestell.

4: 1C (front cover) + 3V (p. 13). /U/F/

- 39 "Cover Illustration by Chesley Bonestell." Fantasy and Science Fiction  
Dec.: 1. ISSN 0024-984X.

Bonestell art appeared on (or inside) forty issues of F&SF, the most of any periodical. This is his very first cover for them.

1: C (front cover). /F/

- 40 "Crashing the Unknown!" Advertisement for AiResearch  
Manufacturing Co. Aviation Week 21 Aug.: 5. ISSN  
0005-2175.

"Sunset on June 30th, 500 miles above a point 400 miles WNW of San Francisco."

1: B. /F/

- 41 "Crashing the Unknown!" Advertisement for AiResearch  
Manufacturing Co. Fortune Sep.: 162. ISSN 0015-8259.

1: B.

- 42 "Crashing the Unknown!" Advertisement for AiResearch  
Manufacturing Co. Scientific American Sep.: 3.  
ISSN 0036-8733.

1: B.

- 43 Gunther, John. "Outside Our World." McCall's Oct.: 40-41, 157-60. ISSN 0024-8908.

"Astronomer-artist Chesley Bonestell's conception of the surface of Mercury." From The Conquest of Space.

1: C (p. 41).

- 44 Heinlein, Robert A. "Satellite Scout." Boys' Life Aug.: 5-7, 30. Pt. 1 of a series. ISSN 0006-8608.

This spherical space station design is almost identical to that appearing in the Sunday Mirror Magazine (see entry 32). However, this craft is shown equipped with its own propulsion system, and is a much greater distance from the Earth.

2: 1B (p. 3 [dupl. cover]) + 1V (front cover). /U/

- 45 Kaempffert, Waldemar. "Miracles You'll See in the Next Fifty Years." Popular Mechanics Feb.: 112-18, 264, 266, 270, 272. ISSN 0032-4558.

"In 2000, rocket passengers may arch through space from New York to San Francisco in less than two hours."

1: B (p. 115).

- 46 Latham, Philip [Robert S. Richardson]. "The Xi Effect." Astounding Science Fiction Jan.: 6-23.

"'Well, according to these figures,' Arnold replied, speaking with elaborate casualness, 'the occultation occurred just thirty-five minutes and ten seconds ahead of time. . . . That puts Jupiter right in our backyard. It's so close the light gets here in nothing flat.'" Bonestell illustrates this scene by showing a human hand reaching out to touch the planet.

1: C (front cover). /F/



- 47 Lear, John. "Hiroshima, U.S.A.: Can Anything Be Done About It?" Collier's 5 Aug.: 11-15, 60-63.

"When Chesley Bonestell (pronounced *Bon-es-tell*) was commissioned, five years after Hiroshima was destroyed, to paint a conception of an A-bomb attack on Manhattan, he sought an aerial view of a scene he has often witnessed from a plane while coming in at New York's La Guardia Field. You're looking at the blast from a point approximately 1500 feet over the Statue of Liberty, with the Battery and financial district in the foreground and the Empire State Building (reflecting the orange blast) uptown at the left."

2: C (front cover; pp. 12-13). /U/F/

- 48 Ley, Willy. "Nonstop to the Moon." Harper's Bazaar June: 80-81, 111-12. ISSN 0017-7873.

"The ship settles down in a valley of the moon, balancing on its tail fins."

1: B (p. 81).

- 49 ---. "Your Trip to the Moon." Pageant Mar.: 58-66.

"Willy Ley . . . and Chesley Bonestell . . . take you on a very real trip to the moon."

6: B (pp. 58, 60, 62 [2], 64, 65).

- 50 "Mr. Smith Goes to Venus." Coronet Mar.: 59-83.

In terms of paintings, this is the longest single pictorial feature ever illustrated by Bonestell. None of the art shown here was ever published again.

22: 15B (pp. 60, 61, 62, 63, 64, 65, 66, 75, 76, 77, 78, 79, 80, 81, 82) + 7C (pp. 67, 68, 69, 70-71, 72, 73, 74). /U/