

Biographical Essays in Honor of the Centennial of Flight, 1903–2003

*Realizing
the Dream
of Flight*

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Willy Ley

Chronicler of the Early Space Age

TOM D. CROUCH

WILLY LEY DIED OF A SUDDEN HEART ATTACK AT HIS HOME ON 77TH STREET IN THE JACKSON HEIGHTS SECTION OF QUEENS, NEW YORK CITY, ON 24 JUNE 1969. It didn't seem fair. Only 62 years old, Ley had been in the best of spirits, preparing to fly to Houston, where he would be NASA's honored guest when human beings first walked on the Moon. One of a handful of enthusiasts who had given birth to this dream 40 years before, he had made it his life's work to infect others with his enthusiasm for spaceflight. "For Willy Ley," the editor of *Popular Mechanics* noted, "man's greatest triumph came a month too late." It would be fitting and proper, he continued, for the astronauts of Apollo 12 to scatter Willy's ashes on the Moon.¹

Willy Ley was a native Berliner, born on 2 October 1906.² His father, Julius Otto Ley, was a wine merchant from Königsberg, East Prussia. His mother, Frida May, was the

¹ Robert Crowley, "Send Willy Ley's Ashes to the Moon!" *Popular Mechanics* (September 1969): 10.

² Elements of this essay were drawn from Tom D. Crouch, "Willy Ley," in *American National Biography* (New York: Oxford University Press, 1999). The principal source was the Willy Ley Papers, National Air and Space

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daughter of a Lutheran Church sexton. Leaving his wife and son with her parents, Julius Ley traveled to New York City in 1910, then to London, where he established a German delicatessen in 1913. Frida left her son with her three sisters and joined her husband in England. She returned to Germany at the outbreak of war in 1914, when the British interned Julius as an enemy alien on the Isle of Man.

Unable to find employment in Berlin, Frida deposited her eight-month-old daughter Hildegard with the sisters who were already caring for Willy and found work as a milliner outside the city. For the next four years, the children would see their mother only once or twice a month. Released from internment at the end of the war, Julius Ley returned to Germany, reunited his family, and reestablished himself as a wine merchant in Königsberg.

The Ley youngsters thrived in spite of their family upheavals. Berlin public schools provided Willy with an extraordinarily sound education. He earned consistently high marks and excelled at soccer and tennis. He had a talent for languages—studying Latin, French, and English—and was fascinated by science. He also took full advantage of the rich opportunities that Berlin offered for informal education. “I grew up,” he recalled many years later, “in the shadow of the Museum of Natural History in Berlin” and spent “most of my youthful Sundays there.”³ He discovered science fiction, as well, devouring stories by Jules Verne, Edgar Allen Poe, and the German master of the genre, Kurd Lasswitz.

Willy’s desire to attend university came as a surprise to his parents. Times were hard, and it was an unusual course for the son of a tradesman. He would pay for much of his own education, working 8 hours a day as a bank clerk and attending evening classes. He entered the University of Berlin in 1924, where he studied paleontology, zoology, botany, anatomy, mathematics, physics, and astronomy. When family fortunes took a turn for the worse, he shifted to the University of Königsberg, where his father was working. With both the family and national economies in collapse, Willy was finally forced to leave the university for good in 1927.

In fact, the course of his career had been established in 1925 when he discovered a copy of the second edition of *Die Rakete zu den Planetenräumen* (*The Rocket Into Plane-*

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Museum (NASM), Smithsonian Institution Archives. The Special Collections Department of the library at the University of Alabama, Huntsville, preserved the 5,000 books and journals that made up Ley’s private library. Both institutions maintain extensive biographical and bibliographic files on Ley. Additional files of Ley correspondence are in the papers of G. Edward Pendray at Princeton University and of Wernher von Braun at the University of Alabama, Huntsville. Biographical material appears in “Willy Ley,” *Die Rakete* (15 August 1928): 128; Steve Bland, “Sky Guy,” *Philadelphia Inquirer Magazine* (9 September 1951): 12; P. E. Cleator, “A Tribute to Willy Ley,” *Spaceflight* 11 (November 1969): 408–409; and Lester del Rey, “The First Citizen of the Moon,” *Galaxy Magazine* (September 1969): 151–157. The standard obituary can be found in *New York Times* (25 June 1969).

³ Willy Ley, *Exotic Zoology* (New York: The Viking Press, 1959), p. xi.

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tary Space) in a Berlin bookstore. In 92 short pages, densely packed with mathematical proofs, Rumanian physicist Hermann Julius Oberth demonstrated that the rocket was capable of traveling into space. Originally published in 1923, the book sold well and ignited a flurry of interest in spaceflight. Max Valier, a journalist and veteran of the Austro-Hungarian Air Force, published a popular account of Oberth's ideas in 1924 entitled *Der Vorstoss in den Weltenraum (The Dash Into Space)*.

Dissatisfied with Valier's effort, Willy Ley wrote his own account of spaceflight for laymen in 1926 entitled *Fahrt ins Weltall (A Trip Into Space)*. The 20-year-old university student received a hefty advance for his first book, a 64-page paperback issued by a Leipzig publisher. The volume sold well and established its author as one of the most knowledgeable men in the field.

Not satisfied with publicizing their dream, the young space enthusiasts of Weimar Germany took practical steps toward its realization. In the spring of 1927, Max Valier enlisted Ley in the effort to establish a rocket society. The Verein für Raumshiffahrt (VfR) (Society for Space Travel) was founded in the Golden Scepter, a Breslau beer hall, on 5 June 1927. Within a year, the organization boasted a membership of 500.

Ley, who was elected vice president of the organization in 1929, explained to an American correspondent that the members of the VfR were determined "to spread the thought that the planets were within reach of humanity, if humanity was only willing to struggle a bit for that goal." In order to support and publicize the new organization, he convinced the biggest names in the spaceflight movement to prepare a series of essays, which he edited and published in 1929 as *Die Möglichkeit der Weltraumfahrt (The Possibility of Space Travel)*.⁴

The wave of popular enthusiasm for spaceflight peaked on the evening of 15 October 1929, when Fritz Lang, Germany's best-known motion picture director, premiered his latest film, *Frau im Mond (The Woman in the Moon)*. A complex melodrama, and the last major silent film produced in Germany, it told the story of the first trip to the Moon. Determined to make his film believable, Lang hired Oberth as a technical consultant. Willy Ley was hired to write 12 articles explaining the scientific principles of the production. Lang also provided financial support for a rocket that Oberth was to launch as part of the premiere activities.⁵

Oberth's rocket was not a success, but Ley and his fellow enthusiasts were determined to continue experimenting with liquid-propellant reaction motors. They acquired permission to transform an abandoned military storage depot in the Berlin suburb of

⁴ Willy Ley, *Die Möglichkeit der Weltraumfahrt: Allgemeinverständliche Beiträge zum Raumschiffahrtsproblem* (Berlin: Hachmeister and Thal, 1928).

⁵ Willy Ley, "Review in Retrospect," in the Willy Ley Papers, NASM Archives.

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Reinickendorf into a raketengußplatz—a rocket-testing field. Between March 1931 and April 1932, the members of the VfR completed 270 static liquid-propellant rocket engine tests; 87 flights; 23 demonstrations for other organizations; and 9 presentations for the press. Their rockets reached altitudes of up to 4,922 feet.

Ley, the single-most visible member of the VfR, communicated news of the organization's research program to other rocket enthusiasts around the world. He wrote articles, lectured, corresponded widely, and hosted young rocketeers from other nations, including both G. Edward Pendray of the American Rocket Society, who visited the VfR in the spring of 1931, and Englishman Phil Cleator, who arrived in 1934, not long after the organization of the British Interplanetary Society.⁶

By 1933, a series of problems brought an end to the golden age of VfR rocketry. The deaths of several rocket experimenters, including Valier and Reinhard Tilling, underscored the dangers inherent in liquid-propellant rockets. Moreover, Rudolph Nebel, the man in charge of VfR rocket experiments, was creating problems for the organization. In the spring of 1933, Ley and VfR president Major Hans-Wolf von Dickhuth-Harrach discovered that Nebel had signed a contract with the city fathers of Magdeburg, promising to launch a man-carrying rocket to high altitude. Fearing that the VfR might be charged with fraud, Ley and Dickhuth-Harrach attempted to force Nebel out of the organization. Failing that, the two men announced their own resignations and attempted, unsuccessfully, to establish a new society.

Split by internal dissension, the VfR finally succumbed to government pressure. German army interest in rocket weapons had resulted in the creation of a small military rocket research team headed by the young Wernher von Braun, whom Ley had drawn into VfR membership. A curtain of military secrecy was drawn across all rocket experiments. Private individuals were forbidden to build or launch rockets, or to write articles on the subject. By the end of 1934, Ley was barred from lecturing or publishing on his favorite subject. The future looked dim for science journalists in the Third Reich, and there were other things to consider. "How I look like, you know," the dark, wavy-haired Ley had remarked to Pendray the previous May, "[I] could be blonder for the time being (don't mention the last!)." ⁷

⁶ Cleator, "A Tribute to Willy Ley," p. 408.

⁷ Willy Ley to G. E. Pendray (15 May 1934), G. Edward Pendray Papers, Princeton University. The comment raises a question regarding Ley's heritage. On his mother's side, the family had a long tradition of service to the Lutheran Church, and Willy was certainly raised as a Lutheran. When he announced that he wanted to attend university, the first member of his family to do so, it caused such a furor that the Leys presented the matter to a Lutheran clergyman, presumably the family priest, for a decision. He laughed and advised the family to do what they could to support their ambitious son. At the same time, it is possible, even likely, that there was a Jewish connection on Julius Ley's side of the family. Willy might have been alluding to this possibility in his comment to Pendray, or he might simply have been calling attention to the fact that, with his dark, wavy hair and broad features, he did not look particularly "Aryan."

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Willy Ley, a prolific and visionary author captivated by the dream of spaceflight, published more than 30 popular books and articles on rocketry between the end of WWII and his death in 1969, shortly before the first human beings walked on the Moon. (Photo from the NASA Headquarters Historical Reference Collection)

The time had come to leave Germany. Ley made use of his broad contacts in the international astronomical community, traveling first to England in January 1935, where he stayed at the Liverpool home of Phillip Cleator, a member of the British Interplanetary Society, while waiting for passage to the United States. He arrived in America on 21 February and lived for a time with the Pendrays, whose letters of support had convinced U.S. officials to provide Ley, who was almost blind in one eye, with a tourist visa. The couple found him an entertaining house guest, given to singing Wagnerian arias while accompanying himself on the piano. With his wide range of interests, Ley was an engaging conversationalist, if sometimes inclined to pontification. “If you asked him a question,” one friend recalled, “you got a lecture.”⁸

With the assistance of Pendray and other American friends, Ley made the acquaintance of a number of important engineers interested in rocket propulsion, including Alexander Klemin of New York University. As a result of these contacts, Ley was hired to serve as flight operations supervisor for an experimental winged rocket designed to carry small packets of mail across frozen Greenwood Lake in upstate New York. Two of the rockets were launched on 23 February 1936. The first rocket climbed to an altitude of 1,000 feet, then spun to the ground when the combustion chamber burned through. The wings of the second rocket ripped off only 15 seconds into the flight.⁹

Forbidden by immigration regulations from accepting full-time employment, Ley made his living as a freelance writer and lecturer. He spent the years 1936 to 1940, as he later explained to a *New York Times* reporter, “writing day and night, turning out articles for scores of publications both here and in Europe.”¹⁰ A friend estimated that he contributed at least 90 articles to science-fiction magazines alone between 1935 and 1950. Most of these

⁸ Walter Sullivan, “Willie Ley, Prolific Science Writer, Is Dead at 62,” *New York Times* (25 June 1969): 47.

⁹ Wernher von Braun and Frederick I. Ordway, *History of Rocketry and Space Flight* (New York: Thomas Y. Crowell Co., 1975), p. 75.

¹⁰ Sullivan, “Willie Ley.”

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treated aspects of science, although he did write a few science fiction stories under the pseudonym Robert Wiley.

Ley joined the staff of the liberal tabloid newspaper *PM* as science editor in 1940. The following year he married ballet dancer Olga Feldman, a Russian immigrant who wrote a physical fitness column for *PM*. The pair would have two daughters, Sandra and Xenia. The Ley apartment, one visitor reported, was “just as out of the ordinary as one might have expected for two such outstanding personalities—full of a prodigious number of books on every subject under the Sun and tanks containing small fish and reptiles, which testified to the owner’s other interests.”¹¹

The year 1941 also marked Ley’s emergence as an author of popular books on science. His first English language book, *The Lungfish & the Unicorn*, a volume of essays on natural history, was followed by *Bombs and Bombing*, *Shells and Shooting*, and *The Days of Creation*. He was launched on a career as one of the most prolific and successful writers of the era on aspects of science.¹²

In 1944, Ley became a naturalized U.S. citizen and published the first edition of his best-known and most influential book, *Rockets*.¹³ Based on the author’s 20-year search for material on the subject, his own experience in Germany, and his correspondence with virtually all of the pioneering figures in the field, the book traced the history of rocketry from the black powder era through the 1930s and explained the basic physical principles that would govern spaceflight. Over the next 28 years, Ley would produce three major new editions of the book: *Rockets and Space Travel* (1947); *Rockets, Missiles and Space Travel* (1951); and *Rockets, Missiles and Men in Space* (1968).¹⁴ In all, the book went through 20 printings during Ley’s lifetime.

For all of his expertise, the advent of the space age took Ley by surprise. A. V. Cleaver, a British weapons expert visiting the United States in the fall of 1944, remembered that Ley refused to believe reports that long-range German rockets were falling in London. His old colleagues, Ley argued, “were most unlikely to have developed such a weapon, which would be inaccurate and uneconomical, and probably impossible to achieve at that date, in any case.”¹⁵

11 A. V. Cleaver, “Tribute to Willy Ley,” *Spaceflight* 11 (November 1969): 408.

12 Willy Ley, *The Lungfish & the Unicorn: An Excursion into Romantic Zoology* (NY: Modern Age Books, 1941); *Shells and Shooting* (NY: Modern Age Books, 1942); and *The Days of Creation* (NY: Modern Age Books, 1941).

13 Willy Ley, *Rockets: The Future of Travel Beyond the Stratosphere* (NY: Viking Press, 1944).

14 Willy Ley, *Rockets and Space Travel* (NY: Viking Press, 1947); *Rockets, Missiles, and Space Travel: The Future of Flight Beyond the Stratosphere* (NY: Viking Press, 1951); *Rockets, Missiles and Men in Space* (NY: Viking Press, 1968).

15 Cleaver, “Tribute to Willy Ley,” p. 408.

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Ley had underestimated the German rocketeers. During the nine years since his departure from Germany, the Nazi government had established a great research center at Peenemünde on the Baltic Coast. There the rocket team headed by Wernher von Braun, whom Ley had known as one of the brightest and youngest members of the VfR, had succeeded in developing the A-4, or V-2, the world's first large ballistic missile capable of carrying one metric ton of high explosives for a distance of 330 kilometers. At the peak of its ballistic path, the rocket was coasting along the roof of the atmosphere, 60 miles high.

The wartime record of the A-4, and well-publicized postwar rocket tests at White Sands, New Mexico, fueled public interest in spaceflight. Ley remained a leading commentator on the subject for the rest of his life. He held a variety of positions during the early postwar years, serving for a time as a research engineer with the Washington Institute of Technology in College Park, Maryland; a lecturer on scientific topics at Farleigh Dickinson University; an information specialist with the Office of Technical Services, U.S. Department of Commerce; a technical consultant to the producers of the pioneering science-fiction television series *Tom Corbett, Space Cadet*; and, from 1950 to the end of his life, as science editor of the science-fiction magazine *Galaxy*.

In 1951, Ley and Hayden Planetarium Director Robert Coles organized the First Annual Symposium on Space Travel. Held in New York on 12 October 1951, the symposium featured papers on spaceflight by leading American scientists and engineers. Intrigued by the gathering, Cornelius Ryan, a writer for *Collier's* magazine, began work on what would become a series of eight feature articles on spaceflight. Ryan drew on the expertise of a large number of leaders in the field, but Ley and von Braun were the central figures in the project. With illustrations by artists Chesley Bonestell, Fred Freeman, and Rolf Klep, the articles, which appeared between March 1952 and April 1954, were an enormous success.

Viking Press, which had published Ley's *The Conquest of Space* (1949), transformed the *Collier's* articles into three bestselling books—*Across the Space Frontier*, *The Conquest of the Moon*, and *The Exploration of Mars*.¹⁶ Ley was also an important contributor to three Walt Disney television programs on spaceflight that were inspired by the *Collier's* article. "Man in Space," "Man and the Moon," and "Mars and Beyond" aired on the *Disneyland* television program beginning in September 1955.

Ley continued to produce popular books on science and aspects of spaceflight, including *Dragons in Amber*, *Lands Beyond*, *Salamanders and Other Wonders*, *Exotic Zoology*, *Harnessing Space*, *Beyond the Solar System*, *Watchers of the Skies*, *Ranger to the Moon*,

16 Cornelius Ryan, ed., *Across the Space Frontier* (New York: Viking Press, 1952); Wernher von Braun, Fred Whipple, and Willy Ley, *The Conquest of the Moon* (New York: Viking Press, 1953); and Willy Ley and Wernher von Braun, *The Exploration of Mars* (New York: Viking Press, 1956).

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and *Mariner IV to Mars*.¹⁷ At the time of his death, Ley had a total of six new books under contract. He served as an adviser to the National Aeronautics and Space Administration and was preparing to leave for the launch of Apollo 11 at Cape Kennedy, Florida, when he died of a heart attack at his home in Jackson Heights, Queens, New York.

Reporting his death, the *New York Times* remarked that Ley had “helped usher in the age of rocketry and then became perhaps its chief popularizer.”¹⁸ Captivated as a youth by the dream of spaceflight, he communicated that dream to others in the more than 30 books and countless articles that he produced during his 40-year career as a writer. He was the first important historian of the space age and one of its most eloquent advocates. Through his books, articles, and television appearances, he was one of the most familiar spokesmen for spaceflight. The crew of Apollo 12 did not carry Willy’s ashes to the Moon, as the editor of *Popular Mechanics* had suggested. The year after his death, however, the International Astronomical Union named a lunar crater in his honor. With a detailed map of the Moon and a good telescope, you can find it at 42.2° north latitude and 154.9° east longitude. That is the sort of scientific immortality that would surely have pleased him.

17 Willy Ley, *Dragons in Amber: Further Adventures of a Romantic Naturalist* (New York: Viking Press, 1951); Willy Ley and L. Sprague De Camp, *Lands Beyond* (New York: Rinehart and Company, 1952); Willy Ley, *Salamanders and Other Wonders: Still More Adventures of a Romantic Naturalist* (New York: Viking Press, 1955); Willy Ley, *Exotic Zoology* (New York: Viking Press, 1959); Willy Ley, ed., *Harnessing Space* (New York: Macmillan, 1963); Willy Ley, *Beyond the Solar System* (New York: Viking Press, 1964); Willy Ley, *Watchers of the Skies: An Informal History of Astronomy from Babylon to the Space Age* (New York: Viking Press, 1963); Willy Ley, *Ranger to the Moon* (New York: New American Library, 1965); and Willy Ley, *Mariner IV to Mars* (New York: New American Library, 1966).

18 Sullivan, “Willy Ley.”