

Disneyland

Now, when we opened Disneyland, outer space was Buck Rogers. I did put in a trip to the moon, and I got Wernher von Braun to help me plan the thing. And of course we were going to the moon long before Sputnik. And since then has come Sputnik and then has come our great program in outer space.

Walt Disney¹

In the early 1950s, Walt Disney, who made his name and fortune by elevating animated movie cartoons to a feature length art form, turned his attention in the direction of what he called a leisure park. He wanted to create a clean, wholesome place where both children and their parents could have fun, a place with much of the character of Tivoli Gardens in Copenhagen, which greatly impressed him.

Walt's brother and partner Roy, who ran the business affairs of the Walt Disney Company, thought the leisure park idea would lead to disaster and refused to let the company get financially involved. Walt, confident of his concept, set up W.E.D. Enterprises (for Walter Elias Disney) to create his park. He put most of his own savings into the initial planning but failed to interest the investors he needed to bring Disneyland into being.²

Disney then came up with the idea of working with the new and growing

television networks to finance Disneyland. At the time, by tacit agreement, no studio would license its movies for broadcast on television. Disney proposed to create a series of programs made specifically for television, and not theater release, in return for financial backing for his leisure park. Walt's brother Roy liked the idea and the brothers finally began working together on the project. In the spring of 1953, Disney reached an agreement with the American Broadcasting Company, then the smallest of the three television networks, in which ABC would put up \$250,000 in cash and guarantee loans up to \$4,500,000. Construction of Disneyland began in the summer of 1954 when bulldozers began tearing out orange trees from a 160 acre parcel of land in Anaheim, California.³

In wanting a partnership with a television network, Disney had no thoughts of bringing art to the new media, but he was aware of television's great advertising power. One of Disney's first projects for ABC, therefore, was an hour-long program broadcast on Sunday evenings called *Disneyland*. It was a one-hour, prime-time advertisement for the park of the same name and for other Disney projects, and since the television network was an investor in the park, it was thrilled to have the program. The premiere showing of *Disneyland* on October 27, 1954, described coming attractions at the park in Anaheim and on the television program itself.⁴ The second *Disneyland* program was about the making of 20,000 *Leagues Under the Sea*, a Disney film that was about to appear in theaters.⁵

Walt Disney created areas in his leisure park called Fantasyland, Frontierland, Adventureland, and Tomorrowland. The first three leaned heavily on characters and themes from Disney movie productions. Tomorrowland, however, was unexplored territory, not based on anything the Disney studio worked on before. Walt and W.E.D. Enterprises started with a clean sheet of paper. Disney asked one of his top animators and producers, Ward Kimball, to develop a television program that covered Tomorrowland and, not incidentally, to come up with ideas for the park. Kimball had worked for Disney since 1934 on the now classic animated movies, *Snow White and the Seven Dwarfs*, *Pinocchio*, and *Fantasia*.⁶ Kimball was no futurist, but he had been following the *Collier's* series on space, and he thought that rockets and the exploration of space would probably deliver a vision of tomorrow that might capture Disney's imagination. On April 17, 1954, Kimball showed Disney his sketches and screen treatment for a television film with the theme of space exploration. Disney was ecstatic. The characteristically tight-fisted Disney, symbolically handed Kimball a blank sheet of paper and said, "Write your own ticket!"⁷ Before it was over, Kimball produced three one-hour programs at a total cost of one million dollars, an unprecedented sum of money to spend on television programs in the 1950s.⁶

Disney demanded that his Tomorrowland program be based on scientific fact, not science fiction. Extrapolation of technical fact was fine, but fantasy

had already been given a land of its own. Kimball, with copies of *Collier's* in hand, knew where he could get the technic needed. First he called in Willy Ley. With his encyclopedic knowledge and entertaining style, Ley made a strong impression on Kimball and Kimball then invited Heinz Haber, the physiologist, and Wernher von Braun, the rocket designer, to be consultants. Both accepted and had assembled his well-rounded team.

Geography was no problem for von Braun because he commuted from his home in Huntsville, Alabama, to Los Angeles to consult with the contractors on the Redstone and Jupiter rockets. He conducted his business during the day, then went to the Disney studio when he worked the night shift.⁷ According to one account, Disney assigned to him a top-salaried, very attractive woman artist on his staff to make coffee, serve pastries, and keep the tape machine playing classical music. It seems to have been an idyllic work environment except, possibly, for the woman artist who was assigned to domestic chores.⁸

Von Braun took both a creative and quantitative approach to the scientific facts that Disney demanded. He sketched out designs for rockets, ships and satellites. He calculated the dimensions of vehicles and the parameters of space flight. Disney wanted accurate models of spacecraft and the satellites, and von Braun kept Disney's models in touch with reality by providing technical information that related to in-orbit fueling operations to the preparation of meals under conditions.⁷

Working sessions often went late into the night. At the end of each day of work at the Disney studio, one of the writers assigned to the tomorrowland project, Charles Shows, offered to drop von Braun on his way home. Von Braun accepted, and they were off, tall tales were told. As usual, von Braun did most of the talking: about his space travel, his work for the Nazis during the war, and his life in the United States. Shows asked von Braun if there was anything about that he did not like.

"Yes," von Braun said bluntly. "I don't like being treated like a spy. Everywhere I go, the FBI has me followed. I can't even go to the bathroom without an FBI man tailing me."

Shows sat in silent surprise.

Von Braun said, "Look behind us."

Shows did as he was told.

"That third car behind us has been tailing us since we left the studio. It's FBI men—they're always around. My telephone is bugged, they read more of my mail than I do! I hope some day they'll let me leave me alone."

Von Braun may have been wrong about who was tailing him, but his memory may have been wrong about von Braun indicting the

Braun was under regular surveillance. While the FBI compiled a large file on von Braun, it focused on matters relating to security clearances and von Braun's personal security; it contained no mention of surveillance on von Braun, tapping his phone, or reading his mail. Army Intelligence files, on the other hand, have numerous references to surveillance on von Braun and checks of his mail. It appears that von Braun's employer, the Army, did not trust him. Still, von Braun had ways of finding privacy.

Charles Shows was as impressed by Wernher von Braun's physical energy as he was by the man's technical genius. He wrote:

On several occasions he worked nonstop for 12 hours at the studio, then took a taxi from Hollywood to Long Beach, about 50 miles away. There he rented a speedboat and piloted it 22 miles across the water to Catalina Island. Once there, von Braun skin-dived all night, then piloted his speedboat back to Long Beach at dawn. He rode a taxi to his hotel for a quick shower, then reported back to Disney Studio for another long day's demanding work on space travel.⁸

One can imagine von Braun's sense of satisfaction as he got into the speedboat and disappeared into the darkness of the Pacific, leaving the surveillance team standing on the dock at Long Beach. One can sense von Braun's delight at going somewhere no one could find him or watch him, deep into the kelp forests in the clear waters surrounding Santa Catalina Island.

As the wealth of ideas turned into program material, the original concept for one show, "Rockets and Space" turned into two shows, called "Man in Space" and "Man and the Moon." Then the Disney team added a third film, "Mars and Beyond."⁶

"Man in Space" and "Man and the Moon." Let's be honest about the terminology. When Disney and von Braun said "Man," they meant *Man*. A woman's job in the early 1950s, if she worked, was to make coffee, serve cakes, and keep the classical music playing to make a comfortable environment for the men who were doing the real work. A woman's place was in the home, where Lillian Disney and Maria von Braun spent their time taking care of the kids. A woman's place in the years to come was to sit at home in stoic bravery as their husbands embarked on the greatest adventure of the century.

Within months of its first appearance on ABC, *Disneyland* became the most popular hour on television. So, on March 9, 1955, when the "Man in Space" segment appeared, tens of millions of Americans were hunkered down in front of their twelve-inch, black-and-white consoles for their weekly ration of movie-quality entertainment.

Walt Disney appears on the screen to introduce the program. The title of this evening's show, he says, is "to combine the tools of science with the knowledge of scientists to give a factual picture of the late stage of man's newest adventure." As the show moves on, Disney introduces Ward Kimball, the producer of the show, who in turn introduces technical wizards, Willy Ley, Heinz Haber, and Wernher von Braun. The remainder of the program takes on a clear German accent as they discuss, with the occasional aid of animated cartoons, how man will reach space.^{7,10}

Willy Ley leads off with a history of rocketry. Heinz Haber then discusses the physical problems man has to deal with in space, such as weightlessness. When his turn comes, Wernher von Braun seizes command.⁷ He speaks in an assured, though high-pitched voice. His English is precise, and his German accent surprisingly melodic to American ears. He describes his plans for sending man into space. "If we were to start today on an organized, well supported space program, . . . I believe a practical payload rocket could be built and tested within ten years." Then, letting everyone know that he is the world's leading authority on rockets and space exploration, von Braun gets to the specifics: "Now here is my design for a stage orbital rocket ship."

The Disney-von Braun rocket is similar in design to the *Collier's* rocket, although it has a few significant differences. The *Collier's* articles present a three-stage rocket, but to avoid a potential problem of copyright infringement, von Braun and Disney add an unnecessary fourth stage. The main booster stage has broad stabilizing fins, and the fourth stage will return its passengers to earth, has a broad delta wing.

"First," von Braun says, "we would design and build the four [the orbiting vehicle that would carry passengers] and then tow it into the air to test it as a glider. . . . This is the section that must ultimately deliver the men to the earth safely."

Disney's animators then take over for the conclusion of "Man in Space." The narrator describes the scene as a "small atoll of coral island in the Pacific where man is dedicated to just one cause—the conquest of space." Von Braun's four-stage rocket is seen against the predawn sky illuminated by floodlights, prepared for launch. Sirens sound a warning. Technicians monitor their consoles prepared for the imminent firing, (a scene a time in the 1960s and 1970s became commonplace.) The narrator continues, "Now man will bet his life against the unknown dangers of space travel."¹⁰

It was reported that nearly 100 million people watched "Man in Space" when it was first broadcast on March 9, 1955,⁶ though a more conservative estimate was 42 million. Those who missed it or wanted to see it a second chance when it was rerun on June 15, 1955.⁷

An often-told story illustrates the impact of the first showing of "Man in Space." According to the story, the morning after "Man in Space" was seen on national television, President Eisenhower called Walt Disney to compliment him on the show, and to ask for a print of it "to show all those stuffy generals in the Pentagon" what kind of planning they should be doing regarding outer space.¹¹ Whether or not Eisenhower actually made this request, he did show some interest in space exploration, although clearly defined and limited. On July 29, 1955, he announced that the United States would launch an artificial earth satellite during the International Geophysical Year (IGY), which was to begin in July 1957 (see Chapter 8).

Not long after Eisenhower announced his intention to launch a satellite, Ward Kimball wrote to Wernher von Braun stating that Disney intended to publicize its second *Disneyland* television show on space by claiming that the first show of the series prompted Eisenhower's decision. Von Braun was aghast. "For God's sake don't put it that this show triggered the presidential announcement."¹⁰ Von Braun could imagine Eisenhower's unhappy reaction being passed down the chain of command until it landed heavily on his shoulders.

News of the "Man in Space" program traveled as far as the Soviet Union, where it was not televised. Professor Leonid I. Sedov, who emerged in later years as chairman of the commission for space flight programs in the USSR, wrote to Frederick C. Durant III, president of the International Astronautical Federation, asking for his help in obtaining a print of the film. He wrote, "If the Disney Studios supplies us with one copy of this film on whatever terms it may put, it will make considerably for the cause of promoting our contact."¹⁰ It is unlikely that Sedov got his wish since the Disney Company was always intensely protective of its creations and since Walt Disney himself was fiercely anti-Communist.

The second *Disneyland* program on space, "Man and the Moon," reached television screens on December 28, 1955. Von Braun made an appearance on the show to present his plan for reaching the moon in two steps: first, by building an orbiting space station that would be a staging area for the lunar trip, and second, by the trip from the space station to the moon and back.

The crew in space (the term astronaut has not yet been coined) work in "bottle suits" of von Braun's design: tiny, one-man spacecraft with seven control arms, to assemble the station. The Disney-von Braun space station is a derivative of the one that appeared in *Collier's* three years earlier; it has the same shape and size and it orbits at the same altitude, 1,075 miles.¹²

"Our space station," von Braun instructed his millions of viewers, "will have the shape of a wheel measuring 250 feet across. The outside rim will contain living and working quarters for a crew of 50 men. Just below the radio and radar antenna is an atomic reactor. Its heat will be used to drive a turbo generator which supplies the station with electricity."¹⁰

After the space station has been built and served its function as a staging point, attention shifts to the moon. The flight to the moon is simulated live actors using props based on von Braun's designs. During the voyage a meteor dramatically strikes the moon ship, and a crew member enters a bottle suit to make emergency repairs.¹⁰ The Disney-von Braun moon ship circles around the moon's unseen side but does not land. No one knows a suitable landing site can be found, if the moon's surface is craggy peaks and boulder fields, or if the moon is blanketed with fields of light-colored dust that will, like quicksand, swallow the spaceship. The spaceship is turned by the moon's gravity and makes its return trip to earth.⁷

The third of the *Disneyland* space exploration series titled "Mars and Beyond" was broadcast on December 4, 1957. Its technical advisors were Wernher von Braun, E. C. Slipher, an astronomer from the Lowell Observatory in Arizona, and Ernst Stuhlinger, a member of von Braun's Huntsville-Army team. With Walt Disney's approval and encouragement, von Braun envisioned a journey to the red planet in spaceships driven by a radically new, but enormously efficient atomic-powered engine. Stuhlinger was an authority on the yet to be built engine.¹⁰

"Mars and Beyond," in standard Disney style, features animation as the use of model spacecraft. With explanations by von Braun and Stuhlinger, the program shows six umbrella-shaped spaceships being assembled in earth orbit, some equipped with landing craft for the exploration of the Martian surface. The round-trip to Mars and back takes thirteen months and six days, a significant improvement over the sixteen months needed for the expedition von Braun proposed in *Collier's* four years earlier.^{12,13}

Disneyland opened its doors on Sunday, July 17, 1955, a year and a day after construction began. Disney invited 11,000 people to the opening, and 28,154 showed up—the overflow the result of forged passes. Many attractions were not yet ready. The ABC television network brought *Disneyland* to those without tickets in a ninety-minute broadcast. Television personalities Art Linkletter, Bob Cummings, and Ronald Reagan guided viewers through an unrehearsed tour of the park that some have characterized as an embarrassing disaster, but that others saw as a window into something exciting and prophetic.¹⁴

Wernher von Braun and Ward Kimball were the main creative contributors to what existed of Tomorrowland.¹⁵ Its centerpiece was a rocket that stood seventy-six feet high on three shock-absorbing legs. It had the smooth sweeping lines of von Braun's V-2. It was gleaming white with red trim and had, in slanting script near the top, TWA. Trans World Airways paid part of the cost of the attraction for the privilege of advertising itself as the most forward-looking airline on earth. The "Rocket to the Moon" attraction occupied a building behind TWA's rocket. It was all rounded shapes and sweeping curves: the 1950s version of the architecture of tomorrow.

The passengers on the "Rocket to the Moon" enter a circular theater that appears to be the interior of a large rocket ship. Three tiers of seats rise in concentric rings facing the center of the passenger compartment. On the floor at the center is a projection screen showing where the space ship has been. Above the seats, on the ceiling, a second projection screen shows where the space ship is going.

As the rocket engines fire, flame fills the screen on the floor projection screen. The air cushions of the theater seats deflate, and the passengers sink into them as if pushed there by the force of the rocket's acceleration. Then the floor screen shows an aerial view of Tomorrowland, Anaheim, and the rest of California, the earth shrinking as time and distance increase. On the projection screen above, the bright blue California sky dims to the blackness of space, punctuated only by the occasional star. The moon appears and grows larger as the spaceship approaches it. While journeying to the moon, the passengers are instructed about the moon and the planets by a voice on the public address system.

The rocket ship will not land on the moon for the same reason the moon ship in "Man and the Moon" did not land; it is not known if a landing can be made safely. The spaceship circles around the unseen side of the moon and returns to earth. The trip back is fast, and the launching-landing pad appears on the floor projection screen.

A recorded announcement thanks the passengers for taking the trip to the earth's nearest neighbor, and reminds them not to forget to take their belongings when they exit the space ship.^{16,17,18}

Tomorrowland with its ersatz spaceship and "Rocket to the Moon" attraction was the nation's only space port for about five years, until the Mercury astronauts blasted off from Cape Canaveral on Redstone rockets. It was also a great promotion for those who wanted to explore space or go to the moon. Thousands took the "Rocket to the Moon" daily; before long the passengers numbered in the millions. With their interest made tangible by the combined genius of Wernher von Braun and Walt Disney, people were ready for the real thing.

While von Braun consulted for Disney and made many creative contributions to the Tomorrowland projects, he was still a civilian employee of the United States Army and not yet a citizen. He was responsible for directing development of the Redstone and other Army rockets. The Army reminded him of his position by occasionally tugging on his leash. He continued to be under surveillance. While von Braun may have viewed this as a matter of trust,⁹ the Army also had an underlying concern that he might be kidnapped and reappear on the wrong side of the Iron Curtain. In early 1954, just before he became involved with Disneyland, von Braun requested permission to attend the Fifth Congress of the International Astronautical Federation at Innsbruck, Austria, as the official representative of

the Army Ordnance Corps. His request, including a commitment to pay his expenses was approved at a lower level, but Brig. Gen. Holger Toftoy, commanding officer of the Redstone Arsenal, turned it down because of the risk to von Braun's personal security during the trip, which included stops in England and Germany as well as Austria.¹⁹

Security clearances were also an issue. As an alien working for the Army on weapons-related projects, Wernher von Braun had been the subject of security investigations since 1947, when he worked for the Army under Project Paperclip. On October 15, 1954, he applied to the Army for renewal of his security clearance at the level of "secret"²⁰; six weeks later he was in a chair with sensors strapped to his body for a polygraph test. The report of the test, dated December 3, 1954, stated that it measured reactions indicative of deception. However, it also noted that von Braun's father-in-law, Alexander von Quistorp, was "still in a prison camp in the hands of the Communists," a suggestion that von Braun might be susceptible to blackmail.²¹

On April 14, 1955, soon after the first showing of the "Man in Space" episode on the *Disneyland* television show, Wernher von Braun became a citizen of the United States. Forty German rocket experts including von Braun, their wives and children, a total of 103 people, took the oath of citizenship at the Huntsville High School auditorium.²² Twelve hundred people were present for the ceremony, and the mayor of Huntsville declared it New Citizens Day. To Huntsville's new citizens he said, "I am glad you have chosen us. I know of no group we have enjoyed joining our community more." The chairman of the Madison County Board of Commissioners said, "this occasion adds new vitality and strength to our community."²³

As Huntsville celebrated, Wernher von Braun was reflective. "This is the happiest and most significant day of my life," he said. "I must say we became citizens in our hearts long ago. I have never regretted the decision to come to this country. As time goes by, I can see even more clearly that it was a moral decision we made that day at Peenemuende."²²

travelers to the Moon. In 1954, *Collier's* ended its eight-part series by publishing von Braun's plans for an expedition to Mars.

Writing for the *Collier's* publications on space was a most enjoyable pastime for von Braun. *"After a day of excruciating meetings for the Redstone Project with all these contractors, laboratory and shop workers, Army officers, designers, budget people, and test engineers, hammering out performance data, safety rules, flight test programs, production quotas, contractor bonuses, acceptance criteria, and what-have-you, it is such an enjoyable relaxation to transpose yourself to the lunar surface and simply charge ahead with a colorful description of all the exciting adventures that expect you there . . . I mix me some martinis, put a Brandenburg concerto on the record player, and just write and write . . . until Maria gets out of bed and reminds me that I must be in the office two hours from now . . ."*

6 WALT DISNEY TAKES TO OUTER SPACE

Unexpected support for the spaceflight idea came from a man for whom von Braun always had highest admiration: Walt Disney.

When Disney conceived the idea of the famous Disneyland park at Anaheim, California, he envisioned four areas: Adventureland, Fantasyland, Frontierland, and Tomorrowland. To help finance it, he developed a TV series dealing with aspects of each. He had material for the first three segments; but what about Tomorrowland? Disney looked to Ward Kimball who had been on his staff since the mid-1930s; Kimball was one of the animation supervisors on *Snow White* and other Disney classics. He remembered [5-24] that in the early 1950s, *"Walt came to me and said: 'You guys are the modern thinkers around here . . . , can you think of anything we can do on Tomorrowland?' And that's when I said I had been following some very interesting articles about space in Collier's magazine. It was fascinating for me to realize that there were these reputable scientists who actually believed that we were going out into space."*

Kimball studied the *Collier's* articles and, assisted by layout man Ken O'Connor and sketch artist Bill Bosché, prepared tentative screen treatments. They were shown to Disney on 17 April 1954. *"We want to do something new this time . . . ,"* Kimball said. *"We are trying to show man's dreams of the future, and what he has learned from the past . . . He has wanted to fly all through history . . . Now he wants to get out on Mars . . . We should be careful and keep our serious stuff separate . . . We are known for fantasy, but the same tools we use there we should apply here to the facts, and give a scientifically factual presentation . . . men dealing with fantasy and men dealing with facts coming together . . . we open up this world to the people . . ."*

Disney was impressed by what his associates had prepared. *"When we had finished,"* Bosché recalled, *"Walt was enthusiastic about it. He walked out of the story room, stopped at the desk, and ripped off a blank sheet of notepaper. Handing it to Kimball, he said something nobody had ever heard him say before: 'Write your own ticket!'"*

With this backing, Kimball went to work. A three-part show was envisioned: *"Man in Space"*, *"Man and the Moon"*; and *"Mars and Beyond"*. First, he needed some rocket and space experts. Remembering the *Collier's* series, he contacted Willy Ley, who responded eagerly. *"Willy turned out to be a real encyclopedia,"* Bosché recalled. *"He had information on just about everything you wanted . . . He was a very amusing fellow, we all got a big kick out of him!"*

Then, von Braun and Haber were contacted. Both immediately agreed to join the project. With his frequent visits to contractors in the southern California area in connection with the Redstone and the Jupiter projects, von Braun could spend evenings at the Disney studios. He often would arrive at six o'clock in the evening and work until well after midnight, sometimes until three or four o'clock in the morning.

Of greatest interest to the Disney crew were accurate models of the launch rocket, the spacecraft, the space station, the Moon ships, and the Mars vehicles. Here, von Braun really was on home ground; he quickly embraced the opportunity to reach an audience far greater than he could by attending the Hayden Planetarium symposia, or through the pages of *Collier's*. Besides models for the rockets and space vehicles, he provided a wealth of information on technical details, from in-orbit fueling operations down to problems of cooking and eating under weightlessness.

The first show, "*Man in Space*," was aired on 9 March, and again on 15 June 1955. Ley started out with a brief history of rocketry; Haber discussed the medical aspects and potential problems of spaceflight; and von Braun described the launching of the huge Earth-to-orbit rocket with its winged upper stage.

Shortly after this first Disney space show had been aired on TV, President Dwight D. Eisenhower, according to David R. Smith, director of Walt Disney Productions archives, "*borrowed the show to run it for the brass in the Pentagon*." Six weeks later, he announced American plans for orbiting a small artificial unmanned satellite as part of the nation's contribution to the International Geophysical Year.

For the second show, "*Man and the Moon*," full-scale portions of the space station and of the Moon ship were constructed at Disney Studios, including many of the details that convey the impression of a true-to-life adventure. Assembly work in orbit made it necessary that space engineers left the pressurized interior of the space station in "*bottle suits*," miniature space vehicles with their own atmosphere and rocket propulsion system, and with manipulator arms to accomplish the assembly work.

The script called only for a circumlunar reconnaissance flight, without a landing. The omission of a landing on the Moon may have disappointed many viewers; however, this was one of Disney's ground rules for this series: "*A factual science presentation . . .*" At that time, almost nothing was known about the Moon's surface. Is it reasonably firm? Is it a sea of loose dust? Is it strewn with boulders? Can a space vehicle find a smooth and level spot to land? Will it sink into dust and fine debris? Divergent theories were abundant, but nobody really knew. Disney did not want to speculate in any direction, and von Braun was fully supportive of this cautious attitude.

The third show in this series, "*Mars and Beyond*," was the most ambitious of the three, as far as reaching out into new territories was concerned. Long-time exposure to the emptiness of space, recycling of waste products to produce drinking water and breathable air, artificial gravity for the spacefarers, even the growth of vegetables onboard the spaceship, are among the problems that confront the planners and designers of a Mars expedition. Again, the knowledge and the conceptual ideas of von Braun and his colleagues were in high demand at the Disney Studios.

What should the Mars ships look like? What kind of propulsion systems should they use? In his Mars project studies carried out in 1948 and 1949, von Braun had suggested a flotilla of chemically propelled vehicles, designed on the basis of 1948 technology, which was, after all, not very different from the 1942 technology of Peenemünde's V-2 rocket. "*Can't you think of something more modern, but still technically feasible?*" Disney asked. Von Braun brought his associate Stuhlinger aboard, who for several years had been studying electric space propulsion systems. He proposed a spaceship for a manned round trip to Mars that would produce electric power with a nuclear-electric

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generator; thrust would be generated by a flow of ions, accelerated to a high exhaust velocity by an electric field. A space propulsion system of that kind had never been built, but in the judgment of the experts its principle was technically sound. Von Braun had no qualms seeing it incorporated in Disney's Mars expedition, even more so because the electric system, as compared to chemical rocket motors, would allow a considerably greater payload fraction, and also a shorter travel time.

Disney Studios built models of six electric Mars ships, some of them equipped with landing craft, that were shown traveling to Mars, and entering into a circular orbit around Mars.

Again, Disney was anxious to keep his show within the boundaries of "*a factual science presentation*," leaving speculations about the nature of the Martian surface, and about any kind of live organisms that may be found there, to the fantasy of the viewers.

Von Braun thoroughly enjoyed working with the Disney people. He often told his co-workers in Huntsville about the good times he had there in the evening after a day's hard work with contractors; at that time, both the Redstone and the Jupiter projects were going full blast.

Kimball had a full-size steam locomotive—bought from a scrap yard—and several hundred feet of standard railroad track, on his property. Sometimes after a spaceflight design session, the locomotive was fired up, and each of the men was allowed to drive the locomotive back and forth on the rails—bell ringing, whistle blowing, and steam puffing out everywhere!

"During one of his visits to Disney," Kimball recalled [5-24], "*I invited him and Willy Ley to a barbecue dinner on our patio. At that time, Wernher was planning to visit his friend Arthur C. Clarke and to go scuba diving with him off the Great Barrier Reef near Australia. He had bought diving equipment, and it just so happened that he had face mask, breathing tube, and swim fins in his traveling bag. While we were waiting for the steaks to cook, Wernher made endless underwater practice runs back and forth in the Kimball swimming pool! I remember the final night he spent with us, working with Stuhlinger on nailing down the nuclear-electric rocket hardware . . . It was a tough night, we were sitting there in our shirtsleeves, sweating it out . . . When he was through, he threw down his pencil and turned around to a piano, and for ten minutes played Bach, without notes. I didn't even know he played the piano. He just played—flawlessly. He was such a genius. He just could do anything. Then he stopped, clapped his hands, and said: 'Well, Wabd (that's the way he pronounced my name), how about taking us back to the hotel?'*"

When Explorer 1 was put in orbit, the Disney people sent a congratulatory note "*To Wernher and Ernst from your friends at Disney*," together with a typical Disney cartoon. It showed the launching of a big rocket, with a water hydrant on top! At the time of the Explorer launch, the dog Laika was in orbit onboard the second Russian Sputnik; the Americans are sending a complimentary water hydrant to the lonely dog in orbit.

7 BACK TO THE GRASS ROOTS

Von Braun spent twenty years in Huntsville, from 1950 to 1970. While the second of these two decades belonged almost entirely to the Saturn-Apollo program, the first ten years were filled with a variety of projects and activities. Some of them ran in parallel, others overlapped for a shorter or longer time. A situation like this cannot be portrayed chronologically, because events that actually occurred simultaneously can be described only in sequence, requiring a frequent stepping back and forth in time.

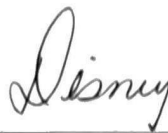
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- 5-23. Manning, Gordon, Interview by Frederick I. Ordway III, New York, New York, December 12, 1986.
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Chapter 6

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Chapter 3

Routes to Space Flight

[61] By the mid-1950s, the idea of manned space flight emerged from the realm of fantasy to become a topic of serious technical discussion. Frederick C. Durant III, President of the International Astronautical Federation (IAF), told the delegates gathered in 1954 at Innsbruck, Austria, that "the feasibility of space flight is no longer a topic for academic debate, but a matter of time, money and a program."¹ To illustrate his point, Durant showed the Walt Disney Productions motion picture *Man in Space* during the August 1955 Sixth Congress of the IAF in Copenhagen.

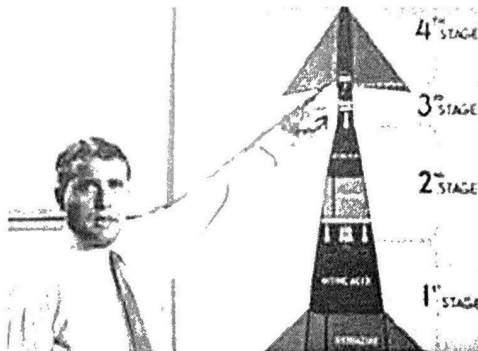
After an introductory discussion on the evolution of rockets, three American proponents of "man in space" addressed different aspects of manned space flight. Willy Ley described the prospects for utilizing rockets in space travel and the steps required to build a space station that could orbit 1,730 kilometers above the earth. Through the medium of an animated cartoon character, "Homo Sapiens Extra-Terrestrials," Heinz Haber explained some of the questions raised by "space medicine," illustrating the physiological hazards - acceleration loads, weightlessness, cosmic radiation, meteorites - that the first space travelers would encounter. Finally, Wernher von Braun closed the film with a discussion of his conceptual design for a 55-meter tall, 1,280-metric ton, four-stage interplanetary rocket that could carry a crew of six into the cosmos.*² The IAF delegates were enthusiastic about this 33-minute movie, especially in the light of President Eisenhower's earlier announcement that the United States would launch artificial satellites during the International Geophysical Year.

Among the viewers of *Man in Space* were Leonid Ivanovich Sedov and Kyril Feodorovich Ogorodnikov, the first Soviets to attend an IAF Congress. They spoke with Durant about borrowing the film for use in the Soviet Union, saying it would be "very good to have here a copy of Walt Disney's [62] excellent film for private demonstration."³ It is likely that the Soviets viewed *Man in Space* as proof of growing American interest in solving the basic problems associated with manned space flight. Sedov and Ogorodnikov wanted to use the Disney picture to promote their own nation's efforts in rocketry and space research. To Soviet space enthusiasts, the movie was at once an encouragement and a warning. Seven years after that Copenhagen meeting, both the U.S.S.R. and the U.S. orbited and returned their first space pilots. Vostok and Mercury were possible within such a short span of time because

engineers and scientists had amassed a wealth of basic engineering and scientific data directly applicable to the questions posed by manned space flight. In those early years, much of the work was duplicative, as security restrictions forced Soviet and American researchers to repeat the same fundamental investigations; but if the competitive environment was wasteful, it also spurred the development of space flight technology. Seemingly, man would have crossed the barriers of the space frontier without the element of international competition, but it was precisely that element that did give rise to the space program - and made...



*Heinz Haber, Wernher von Braun, and Willy Ley examine a prop from the **Disney** movie **Man in Space** (©Walt **Disney** Productions).*



*Wernher von Braun points to the final stage of the manned spacecraft he described in the movie **Man in Space** (©Walt **Disney** Productions).*

[63] ...funds available. Fantasy yielded to reality; and that reality was the orbiting hardware.

* In 1955, Ley was a writer of factual science publications centering on rocketry and space exploration; Haber was a member of the physics department at UCLA, after having worked five years as a research scientist with the Air Force School of Aviation Medicine; and von Braun was Chief of the Guided Missile Development Division at the Army's Redstone Arsenal.

1. Frederick C. Durant, III, "Space Flight Needs Only Money, Time," *Aviation Week*, 27 Sept. 1954, p. 46. On 14 July 1952, the executive committee of the National Advisory Committee for Aeronautics passed a resolution that "NACA devote modest efforts to problems of unmanned and manned flights at altitudes from 50 miles to infinity and at speeds from Mach 10 to escape from the earth's gravity." NACA to High Speed Flight Research Station, "Discussion of Report on Problems of High Speed, High Altitude Flight, and Consideration of Possible Changes to the X-2 Airplane to Extend Its Speed and Altitude Range," 30 July 1953, which contains the NACA directive.

2. Joe Reddy, memos for record, "**Man in Space**: Production Story," and "#20 Disneyland-TV **Man in Space**," Walt Disney Productions synopsis and background, 1955. Von Braun, Haber, and Ley had long been advocates of space flight, and as early as 1952 they had contributed articles to a *Collier's* symposium entitled "Man will conquer space soon." The articles included Wernher von Braun, "Crossing the Last Frontier," pp. 24-29 and 72-74; Willy Ley, "A Station in Space," pp. 30-31; Fred L. Whipple, "The Heavens Open," pp. 32-33; Joseph Kaplan, "This Side of Infinity," p. 34; Heinz Haber, "Can We Survive in Space," pp. 35 and 65-67; and Oscar Schachter, "Who Owns the Universe?" pp. 36 and 70-71, *Collier's*, 22 Mar. 1952.

3. Kyril Feodorovich Ogorodnikov to Durant, 23 Sept. 1955; Leonid Ivanovich Sedov to Durant, 24 Sept. 1955; Durant, "Impressions of the Sixth Astronautical Congress," *Jet Propulsion* 25 (Dec. 1955): 738; and interview (via telephone), Durant-Ezell, 13 Dec. 1974. Based upon his conversations with the two Soviet scientists, Durant conjectured that the then anonymous Soviet "Chief Designer of Spacecraft," S. P. Korolev, was to be the intermediary who would present **Man in Space** to the Soviet political and technical leadership.

