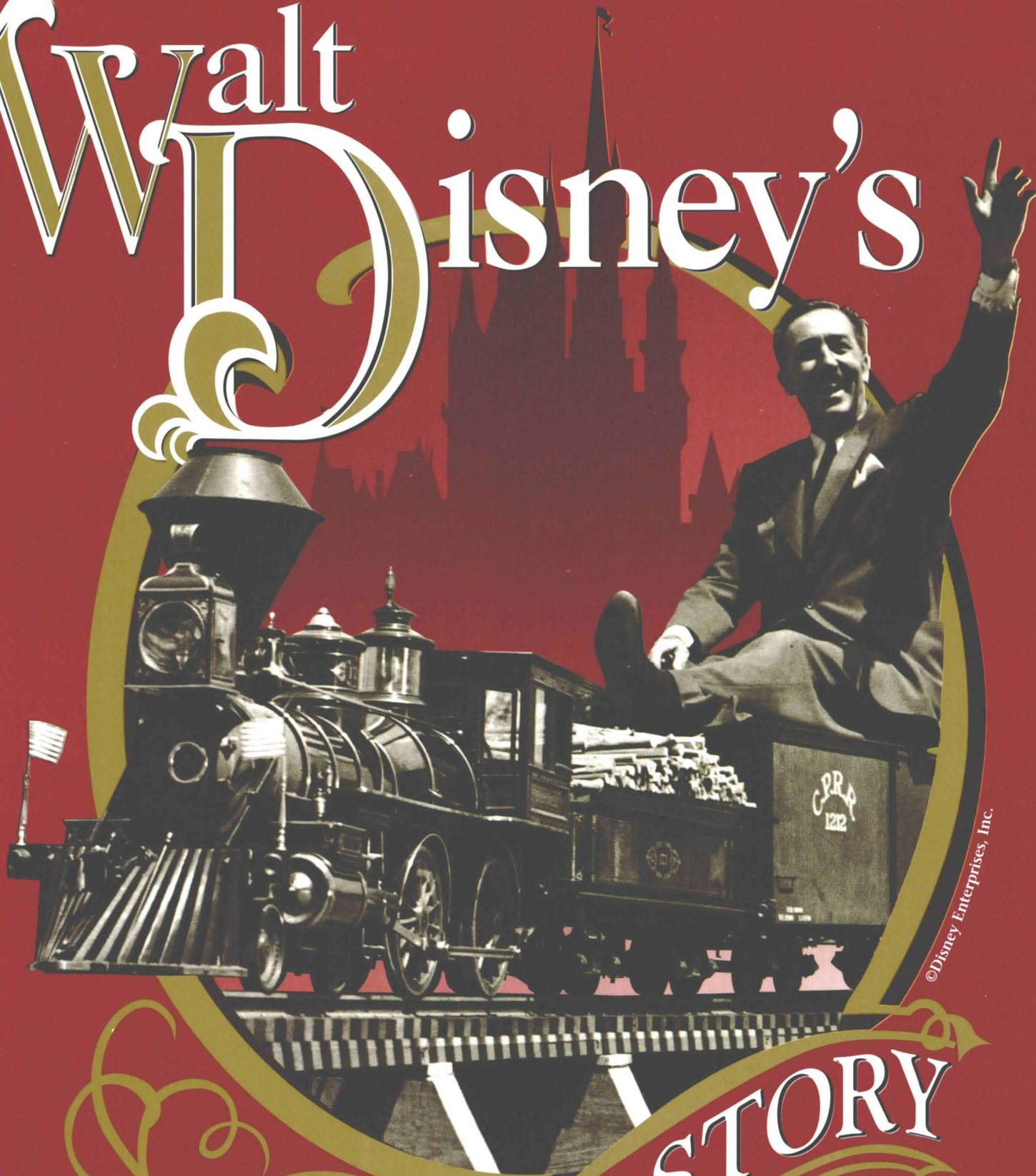
Walt Disney's



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RAILROAD STORY

The Small-Scale Fascination That Led to a Full-Scale Kingdom

By Michael Broggie



Allaaa 'board!

WELCOME TO THIS fascinating ride through WALT DISNEY'S RAILROAD STORY, written for anyone who has ever loved a train or a Magic Kingdom.

Few people are aware of the enormous part Walt Disney's love of railroading played in the development of the Disney empire. Yet, this passion followed the consummate showman from his humble beginnings in Illinois and Missouri through his enchantment with the small-scale live steam hobby, evolving into the full-scale Disney Parks and their authentic steam-powered trains. Indeed, Walt Disney's small-scale fascination led to a full-scale kingdom. Thus, it is through exploring the depth of Walt's regard for railroading that we can reach a better understanding of the complex man who began life as the fourth son of a midwestern carpenter and his wife and became one of the most popular and celebrated personalities in modern history.

Author Michael Broggie weaves in-depth interviews with Mrs. Walt Disney, animators Ward Kimball and Ollie Johnston, and a host of other Disney employees and acquaintances into a winning and informed narrative. This splendid chronicle contains hundreds of full-color and black-and-white illustrations, including dozens of never-before-published photographs of Walt's live steam railroad, Disneyland's construction, and building and refurbishment of the Disney Parks' locomotives.

According to Walt Disney's own account (as told by his wife, Lillian, and daughter Diane), it was the miniature live steam layout at his home and his long fascination with highly detailed miniatures and mechanical animation that inspired his revolutionary concept in family entertainment based on Disney characters and stories. A full-sized, steam-powered railroad completely surrounding the Magic Kingdom provided the boundary between reality and fantasy—and a convenient transportation system.

Walt Disney's dream of a Magic Kingdom and his passion for railroading were as one. This synergy is succinctly described in his own words: "I just want it to look like nothing else in the world. And it should be surrounded by a train."

Interest in Walt Disney's railroads remains clear: his 1/8th scale locomotive, *Lilly Belle*, was displayed at Tokyo Disneyland; and Walt Disney World in Orlando has unveiled a new exhibit about Walt's railroading interests.



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Walt Disney's Railroad Story





The Small-Scale Fascination That Led to a Full-Scale Kingdom

By Michael Broggie

Founder and Historian
Carolwood Pacific Historical Society

Second Edition

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Walt Disney's Railroad Story

Dust jacket: Executed by Katie Danneman, based on original design by Robert C. McDonnell with computer support from Sheldon Nemoy. (Cover Photograph: © Disney Enterprises, Inc.)

Frontispiece: One month prior to Disneyland's 1955 opening, a proud Walt Disney poses with Mickey Mouse on the pilot of Santa Fe and Disneyland Railroad locomotive No. 2 E. P. Ripley. *Things were getting a bit hectic by this time, as much remained to be done before the Park's July opening (note the locomotive's empty headlight housing, for instance). Yet Walt Disney appears relaxed; he enjoyed being around anything railroad-related.* Roger Broggie photo, © Disney Enterprises, Inc.

Opposite page (Dedication): © Disney Enterprises, Inc.

Contents: Walt smiles his approval at operating the Emma Nevada *on the steam-up and roll-out on October 20, 1945.* Kari Berggrav photo, Jim Jackson collection.

WALT DISNEY'S RAILROAD STORY

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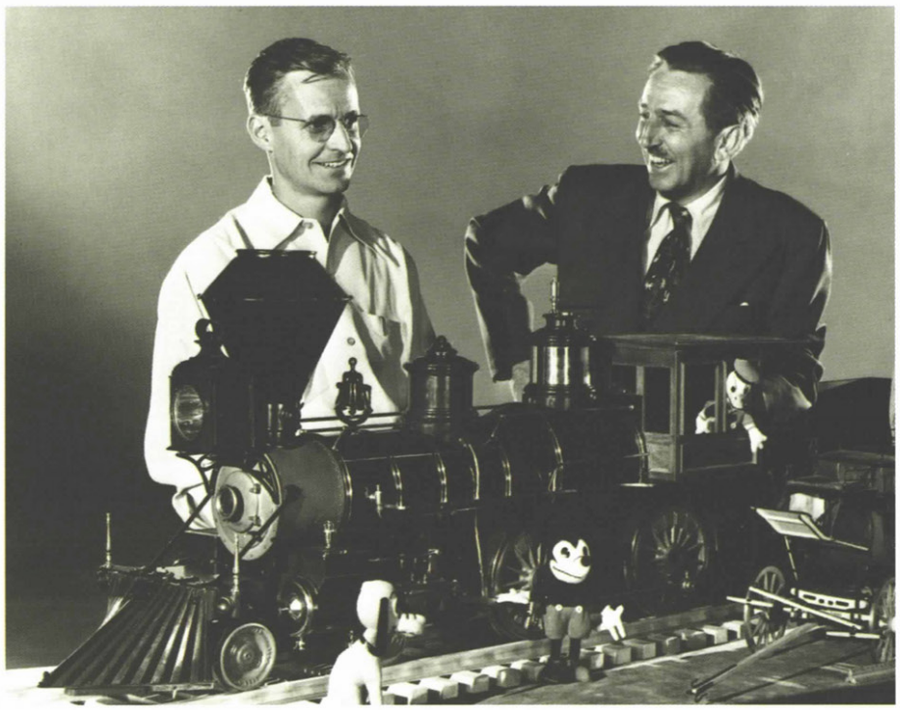
For Walt Disney, Roger Broggie,
and railfans everywhere.



My Heart is warm with the friends
I make,
And better friends I'll not be
knowing;
Yet there isn't a train I wouldn't
take,
No matter where it is going.

—Edna St. Vincent Millay
TRAVEL

Foreword

Nothing happens unless first a dream.

—Carl Sandburg
WASHINGTON MONUMENT BY NIGHT

My husband, Walt Disney, had many projects and interests that competed for his attention but none could supplant that special place in his heart reserved for trains. From his early childhood until the last years we shared together enjoying our grandchildren, Walt often set aside some of his private time to be with his beloved trains, either at our home or at Disneyland. They provided him with a peaceful source of pleasure and valuable relief from the demands of business and fame. Whenever he was around railroads, and in the company of his fellow railfans, he enjoyed being "just one of the boys."

During the time we lived in the Los Feliz area of Los Angeles, our home was only a few miles from the Southern Pacific station in Glendale. Walt got a singular pleasure by stepping on a railroad track to feel the vibration of an approaching or departing train. He always urged me to join him: "Just put your foot on the rail, Lilly," he would say. "You can *feel* the train." It was something he did as a small boy in Marceline, Missouri, and continued to do throughout his life whenever he was within walking distance of a rail line. (Of course, this was also dangerous, and every child should be taught to stay off railroad tracks.)

When we were building our home on Carolwood Drive in Holmby Hills, Walt informed me that he planned to build a miniature railroad which would run completely around the property. I made it clear that I wasn't thrilled because his train was going to run through the middle of an area where I had planned to grow a beautiful flower garden. However, Walt and I had our way of compromising and we settled the issue by digging a tunnel so the track ran under my garden.

As it turned out, the tunnel solution produced one of the most exciting experiences for passengers riding on the Carolwood Pacific Railroad. Passengers entered a totally dark cavern where they couldn't see any light at all until they were beyond the tunnel's midpoint curve.

It was really exciting, especially the first time for little riders. Walt believed kids enjoyed a little scare, but he taught that it should be accompanied by a "wink" so children wouldn't lose their trust. This delicate point was illustrated in many of his films.

Just to make everything official for his miniature railroad, Walt had a right-of-way agreement written by an attorney who worked at the studio. Walt and I signed it, and our daughters, Diane and Sharon, served as witnesses. Most likely, it is the only railroad right-of-way agreement ever signed between two people who were married to each other!

With the help of Roger Broggie and the talented members of his staff, Walt finally achieved his dream of owning a real steam railroad, even though it was only 1/8th of full size. He was very proud of it, and it pleased me that he named his locomotive *Lilly Belle* in my honor.

The Carolwood Pacific Railroad operated for three years before Walt began applying his energy and imagination to create a much larger project. I remember the many times he came in for dinner after running his train around our property and he would be filled with exciting thoughts about a magical place. He would describe informative exhibits, entertaining shows, and thrilling rides that families could enjoy together. His plans always included an old-fashioned steam train running around the site. Initially, he envisioned building a small theme park next to the studio on some vacant land, with the possibility of linking the railroad track with the one that ran in Griffith Park. As was the case with many of his ideas, this one grew as he shared it with his wonderfully talented staff, who worked closely with him for so many years.

One important quality that Walt had more than any other person I've ever known was confidence. Once he convinced himself that a concept was sound, or a risk was worth taking, he was willing to commit all of his energy and resources to see it through to completion. Sometimes he failed, but he never gave up.

Throughout our many years together, he frequently asked me for my opinion on important decisions. He respected the fact that I shared his risks. Our daughters, Diane and Sharon, and I provided the quiet, personal life he needed to balance the public image his career demanded. I treasure the memories of our life together, which was exciting, happy, and fulfilling.

I'm very pleased that the private episodes of Walt's life, and our time together, as told through Michael Broggie's railroad stories, will provide you with a uniquely personal impression of my husband: who he was, how he worked, and the way we lived. I believe that the more factual details you learn about the private side of Walt, the more you may understand why he will always have the admiration of his colleagues, the affection of his fans throughout the world, and my love and respect.



Lillian Bounds Disney.
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Lillian B. Disney

Holmby Hills, California

Acknowledgments

In undertaking the creation of this book, I anticipated a long journey, but I was pleased to discover that it would not be a lonely one. Along the railway leading to publication, I received aid and comfort, at a number of sidings, from an array of family members, friends, railfans, Disneyphiles, colleagues, Disney employees and retirees—and even strangers—all willing to share my endeavor.

Aided by computer technology, every conceivable effort was made to eliminate errors and misstatements. If Murphy's Law has prevailed, subsequent editions will be corrected. As the author, I assume full responsibility for any mistakes and welcome comments and suggestions.

With the encouragement of Mrs. Walter E. Disney, I was able to expand the scope of this book well beyond my initial goal of describing the various Disney trains. Her munificent sharing of personal photographs and files added immeasurably to the depth of information about her husband. In the same spirit of support, her daughter Diane Disney Miller provided valuable guidance and personal remembrances.

My thanks to Dave Smith, archivist of The Walt Disney Company, whose 25 years of researching and collecting Disneyana offered a unique perspective of Disney history.

I extend my special gratitude to the members of the Carolwood Pacific Historical Society—who share the desire to preserve Walt Disney's railroading legacy and encourage appreciation for the role of railroads in helping to build this country—and to those inside and outside the Disney and Retlaw organizations who unselfishly lent their assistance. Indebtedness is owed to those who plowed through numerous drafts or chapters, offering suggestions and corrections: Mary Broggie, Bill Cottrell, Jerry Fecht, Ollie Johnston, Ward Kimball, Diane Disney Miller, Linda Kay Moore, Al Roberson, Phyllis Schirmer, Eddie Sotto, and Robert Tieman. To my friend and ardent supporter Bob Wilson, a particular debt of respect and appreciation is owed. Thanks to publisher Mike Clayton, my fellow entrepreneur, for willingly taking the risk. As the final checkpoints prior to publication, Paul Hammond, my senior editor at Pentrex, deserves credit for his diligence and for the pure love of railroading evidenced by his attention to details, as does Katie Norton, editor, for her facility with

language. Katie Danneman, art director, has eloquently expressed my vision through her finely honed gifts of design and layout, ably assisted by graphic artists Dean Sauvola and Heather Bahr. Rounding out the Pentrex staff contributions is Trish Miller, production manager.

To those who worked so assiduously for so many years to create and enhance Disney's artistry, I add my admiration to that of millions throughout the world who have been entertained and enlightened by their talents. It has been a privilege to write about them.

Particularly, I thank my partner in life, Sharon, whose editing, patience, and support sustained me throughout this journey. All whom I have named above and below share the credit, and none of the criticism, for the results.

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How To Ride This Book

AS OUR STORY CHUFFS along through the life and times of Walt Disney and his railroading adventures, readers will discover occasional "sidetracks." These tidbits are scattered throughout WALT DISNEY'S RAILROAD STORY, illuminating or enhancing the subjects they accompany.

A graphic cue—a gloved hand on a railroad switchstand—will guide readers from the main text to these "sidetracks" and back again. It may be that some readers will choose to open the book at random points and begin reading. The sidetracks are designed to entice further reading. If enough sidetracks are followed, casual readers may become interested in the topic and read the entire book.

My primary goals are to acquaint readers with the person I knew as "Uncle Walt" and introduce them to the remarkable railroading hobby he enjoyed and shared with railfans throughout the world. To aid readers in their understanding, a glossary of terms is also included at the back of this book.

Travel any sidetrack or section of main line, and the complete railroad journey will begin to unfold. The only ticket you'll need is the desire to learn more about Walt Disney—the world's greatest showman—and the people who worked with him to create a magical entertainment kingdom.

Alllaaa 'board!

MICHAEL BROGGIE

Introduction
by Ward Kimball

(Railfan, Disney Legend, and one of the "Nine Old Men" of Disney Animation)

All my life, I have been interested in anything that ran on rails. I still have the very first toy train set that was given to me at the age of five. For the past 75 years my hobby has grown into one of the most elaborate private railroad collections in the world. To me, trains come natural, just like the decision my wife Betty and I made in 1938 to purchase an 1881 railroad car [from Southern Pacific's Owens Valley narrow-gauge line] and an 1881 Baldwin steam locomotive from the Nevada Central Railroad.

The first time I realized that Walt Disney was a genuine railroad fan was during a steam-up party at our home in 1945. My wife Betty and I were hosting a group from the local Live Steamers club and it occurred to me that Walt had never seen the restored narrow-gauge locomotive we ran on our backyard Grizzly Flats Railroad.

I invited Walt to be the guest engineer for the roll-out of our coal-burning 1881 Baldwin "Mogul." I'm sure that I never saw him smile any wider than that evening when he pulled the throttle on the *Emma Nevada* as she steamed out of the engine house with her bell ringing and whistle blowing.

By the time the party was over, Walt was hooked. He had a railroader's "high iron" in his blood; he just hadn't discovered it, yet!

I'm glad that a book has finally been written about his hobby and interest in railroading. It's been a missing chapter among the fascinating stories about Walt Disney.

Over the years, Walt and I shared many wonderful railfan times together, including our visit to the historic Chicago Railroad Fair in 1948; running the beautiful miniature Carolwood Pacific Railroad at Walt's home; and the time the two of us operated, for the first time, engines 1 and 2 at the studio's Penthouse [Club] party held at Disneyland two

weeks before its grand opening in 1955.

Since Walt was rather private about his personal life, he never made much information available about his home and his railroad. I know that it took years of effort by Michael Broggie to gather the story and all of the photographs contained in this book; in fact, some of them are from my personal collection.

Around the studio, everyone knew I loved trains. Whenever there was a railroad train to animate, I usually got the assignment, such as the quaint English train in WIND IN THE WILLOWS, or that delightful little puffer "Casey Jr." that hauled the circus train in DUMBO. True to Walt's interest, he always paid particular attention to the depiction of railroads in his films, either live action, like THE GREAT LOCOMOTIVE CHASE, or the animated productions.

The Carolwood Pacific Railroad project introduced Walt to the notion of outdoor entertainment. Disneyland made it possible for Walt to have a larger train than the miniature that ran at his estate. Most don't realize that those first two locomotives, the *C. K. Holliday* and *E. P. Ripley*, are not old relics from the golden age of railroading. In fact, they are 5/8ths scale models built in the machine shop at the studio and assembled in the roundhouse at Disneyland. Because everything around them is scaled down, they look like they're full-sized.

As long as there are Disney Parks, there will be steam trains for generations of railfans to enjoy. For the first time, the full story is told in these pages about Walt's trains and the pleasure he got from them—something that is shared by many of us.



Ward Kimball. CPHS collection.



Ward Kimball
San Gabriel, California

Introduction
by Ollie Johnston

(Railfan, Disney Legend, and one of the "Nine Old Men" of Disney Animation)

To my knowledge, the first pictures of Walt Disney's miniature railroad running in his backyard were the ones I photographed on a morning in May 1950. Roger Broggie was there giving Walt some pointers on how to fire up the *Lilly Belle* and operate her safely. A number of the shots I made of Walt and Roger appear in this book. As far as I know, this is the first time most of them have been published.

One day in early December 1948, Ward Kimball came into my office and said, "There's something up in Walt's office you've gotta see." We walked in and there was a complete Lionel layout he had built. Walt turned to me and said, "I didn't know you were interested in trains, too." I told him that I was building a 1/12th scale live steam locomotive that was going to run in my backyard. He was very interested and asked to see what I was doing. He visited the shop in Santa Monica where my engine was being built, and after it was finished, came to my house a number of times to run it. During this time, he made the decision to build a backyard railroad of his own.

Walt was very generous in allowing me to use the studio's machine shop in my off hours to build parts for my railroad. Sometimes he would be there too, working on his train. I think it was good for him to have a hobby because he was always under a lot of pressure running the company. He felt that he needed to be involved in every aspect of filmmaking, from the initial story to final editing and marketing.

When he focused his attention on railroading, it was with the same commitment to excellence, without the pressure. He could have let Roger Broggie and the boys in the machine shop build his train for him, but he wanted to be involved in each step of construction. Walt learned how to operate the machine tools and had a hand in much of

the work. Roger told me that, by the time they were done, they had made a pretty good machinist out of him. When they started building his backyard pike, he was right in there with the road crew, laying track and tamping ballast.

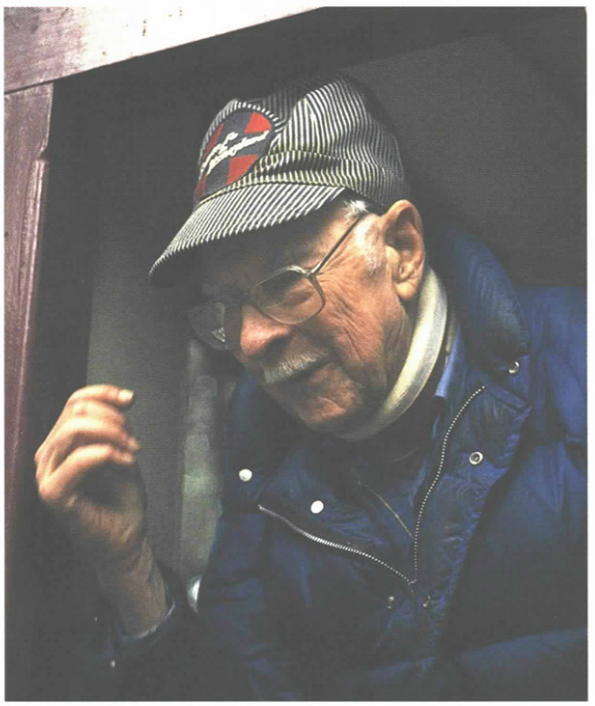
After Walt finished his miniature railroad, he kept trying to figure out how to put some kind of show into the visitors' tours around the studio. On the weekends, he wanted to operate his scale model train around the lot and have an area for the kids out on the backlot, maybe with some of the Disney characters and some kiddy rides.

As his ideas expanded, he talked about an area next to the studio as a location for his park, but there wasn't enough room. The next thing I knew, he was talking about something much bigger. His researchers told him that the center of Southern California's population was going to be in Orange County where Disneyland did end up. Walt told me he had hocked his life insurance, his real estate, and nearly everything he had to raise money for his Park. He had total belief and confidence in his idea.

While Disneyland was under construction, he directed each detail and maintained final approval for everything. He liked the fact that his Park would never be completed. He could change things that didn't work, or modify things to make them better. This was something that frustrated him about film: Once it was released to the theaters, there wasn't anything he could do to improve it.

For him, the main attraction at Disneyland was the steam trains. Walt needed them for transportation and wanted them for everyone to enjoy. He also got great pleasure out of being one of the operating engineers.

Through the following pages of Michael's book, we revisit those fond memories of Walt and his wonderful railroad hobby. We can also look back at the creative process that transformed a small idea into a universal form of entertainment that is now known as the Magic Kingdom. I'm glad to have been a witness to this amazing demonstration of American ingenuity.



Ollie Johnston. CPHS collection.



Ollie Johnston
Flintridge, California


MICKEY AVE
ANIMATION
MULTIPLANE
INK & PAINT
IN-BETWEEN
SPECIAL EFX
LAYOUT DEPT

Opening Comments

Yes, in one way or another I have always loved trains.

—Walt Disney

At various times since the 1930s, eight members of the Broggie family have been associated with Walt Disney: my father, Roger, and stepmother, Mary; my brothers, Brian and Roger Jr.; my nephews Garry and Rick; my niece Debi; and myself. We are proud that the Broggies are one of the few families to have had three of its generations work for the company. My father in particular was affiliated with the Disney organization for more than 50 years, and worked directly with Walt during the last two decades of the showman's life.

Through no more than a fortunate circumstance of birth, I was afforded the privilege of knowing the remarkable person who preferred to be called "Uncle Walt." As a young child, I visited the studio as often as my father would allow. My visits usually included an unscheduled stop at 3H-1, Walt's office suite on the third floor of the Animation Building.

Fortunately, I was too young to understand that standard office protocol required an appointment. Unencumbered, I enjoyed wandering through the five-room suite, looking at the many awards and citations Walt had received on behalf of the company, along with his mementos and collectibles from all over the world. In those halcyon, pre-Disneyland days, Walt wasn't a celebrity. I simply thought he had received many of those awards because he was my father's boss!

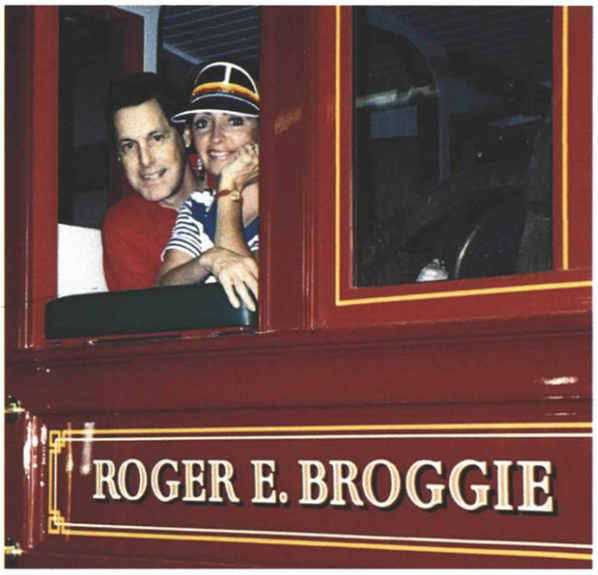
Whenever I entered the reception area, one of Walt's secretaries—Dolores Scott or Tommie Blount (Wilck)—would let me know if it was okay to say "hello." If Walt wasn't tied up in a meeting or on the telephone, he would take a few minutes to chat. We usually talked about what was going on at the studio, and I would describe what I had seen around the lot that day. Sometimes he would ask for an opinion: For instance, what did I think about the latest Disney movie?

Four generations of the Broggie family join Roger at the Disney studios in October 1990 when he is presented with the Disney Legends Award. CPHS collection, Disney character © Disney Enterprises, Inc. Used by permission of Disney Enterprises, Inc.



Walt shows his young companion, Michael Broggie, the construction progress at Disneyland on June 18, 1955. Roger Broggie photo, © Disney Enterprises, Inc.





Above left: Very early in life, two Broggies—Michael (age 3) and Roger Jr. (age 6)—explore a small, narrow-gauge 0-4-2T steam locomotive on the beach at Lake Arrowhead Village, high in the mountains of Southern California. For more than 50 years, the Broggies maintained a residence at Lake Arrowhead; the locomotive (which helped with construction of the lake's dam), however, is no longer there. Sold and placed on display in Palm Springs, it later wound up in a Southern California back yard, where it was restored to operating condition. Today, it can be seen at the Nevada State Railroad Museum in Carson City, exhibited in its original 1882 appearance as locomotive Joe. Douglass *of the Dayton, Sutro & Carson Valley Railroad.* Roger Broggie photo, CPHS collection.

Above: Sharon and Michael Broggie visit the Roger E. Broggie *at the Magic Kingdom in Walt Disney World.* Tom Garrison photo, © Disney Enterprises, Inc.

Honest Opinions

Looking back, it impresses me that Walt Disney was genuinely interested in hearing the opinions of a child. If he didn't agree with my views, he would let me know. Walt didn't patronize; instead, he had a marvelous way of making me feel that my ideas and opinions were important to him. This quality of Walt's was noted as well by many of the people I interviewed for this story: They recalled times when he was in Disneyland, and casually asked someone for a reaction to a passing thought. The person he was asking could have been a sweeper, a railroad conductor, or a vice president. It didn't matter, because Walt Disney valued honest opinion—regardless of its source.

The earliest manifestation of Walt's Imagineering activities was the construction and operation of a live steam miniature railroad at the Holmby Hills estate he shared with his wife, Lilly, and their daughters, Diane and Sharon. (The term "Imagineering" was first coined by Harrison "Buzz" Price, who conducted site selection research for Disneyland on behalf of Stanford Research Associates.) As part of regular weekend visits to the Disneys' home on Carolwood Drive, my older brother Roger and I would be pressed into service to help our dad and Walt get ready for a day of railroad operations. At that time, no one suspected that the elaborate miniature railroad would serve as Disneyland's herald.

A few years later—while Disneyland was under construction—I often accompanied Walt as he ran a steam locomotive around the Park, surveying its progress. Back at the studio, as pint-sized test drivers of the prototypes for the Autopia attraction in Tomorrowland, my brother Roger and I helped make the little gas-powered cars "kid-proof."

More years passed, and I became a Disneyland "cast member" (Park employees are called cast members because they help present the "show"). In that position, I saw Walt as the top company executive who might show up anywhere at any time. (Employees would exchange radio messages to track Walt's movement in the Park.)

There were some uncomfortable times when he would recognize me

working on an attraction, and come over to talk. After Walt moved on, the foreman or supervisor usually asked why I had been singled out. I always answered that it was just a coincidence. I didn't want the other cast members to know that I was what they derogatorily referred to as a "political hire"—someone with family ties to company management.

After college, I joined the studio as a writer in the marketing department under Card Walker and Bob King. My activities included writing publicity stories for feature motion picture and television productions, and developing promotions, merchandising, and creative conceptualizations such as the title THE LOVE BUG and "Love Bug Day at Disneyland."

Eventually, the tug of being an entrepreneur led to other endeavors in entertainment, theme park development, and marketing. Currently, I operate a public relations firm in Thousand Oaks, California, and serve as a consulting historian to Retlaw Enterprises (Walt Disney's family) and a visiting lecturer at the Disney Institute in Walt Disney World.

A Passion for Railroading

To learn the essence of a person, perhaps it is best to observe him or her during unguarded moments of relaxation, far from the glare of the public's spotlight. For Walt Disney, relaxation had a certain flavor: Much of his recreational time was spent with a hand on the throttle of a steam locomotive, and in the company of railfans—people from all walks of life whose common bond is the love of railroading. To Walt, these were simply "the boys," and he was proud to be among those who had "iron in their blood."

Walt Disney liked to remind his staff: "I only hope that we never lose sight of one thing—that it was all started by a mouse." This being true, it can also be said that Disneyland—and the resulting themed amusement park industry—started with a miniature railroad in Walt's backyard.

A passion for railroading followed Walt throughout his life, from his humble beginnings in Illinois and Missouri to his success as the world's premier theme park creator. Thus it is through exploring the depth of Walt's regard for railroading that we can reach a better understanding of the complex person who began life as the fourth son of a midwestern carpenter and his wife and became one of the most popular and celebrated personalities in modern history.

Regardless of what may be written about Walt Disney, there is one thing everyone can agree upon: He can't be ignored—even three decades after his passing. Our story paints a portrait of an aggressive entrepreneur whose unwavering and sometimes stubborn commitment to his ideas and ideals brought his visions from imaginings to reality. To create Disneyland, he formed a private company—with his own money—and willingly gambled his personal fortune and professional reputation that his concept would work.

To be sure, it wasn't just Walt's work alone that opened the gates to the Magic Kingdom. It was a grand culmination of multiple forces, acumen, and stubborn will that achieved the ultimate results. Disneyland and all Disney Parks today stand as entrepreneurial monuments to how far a person can advance an idea if he or she has enough talent, energy, and fortitude to never give up.



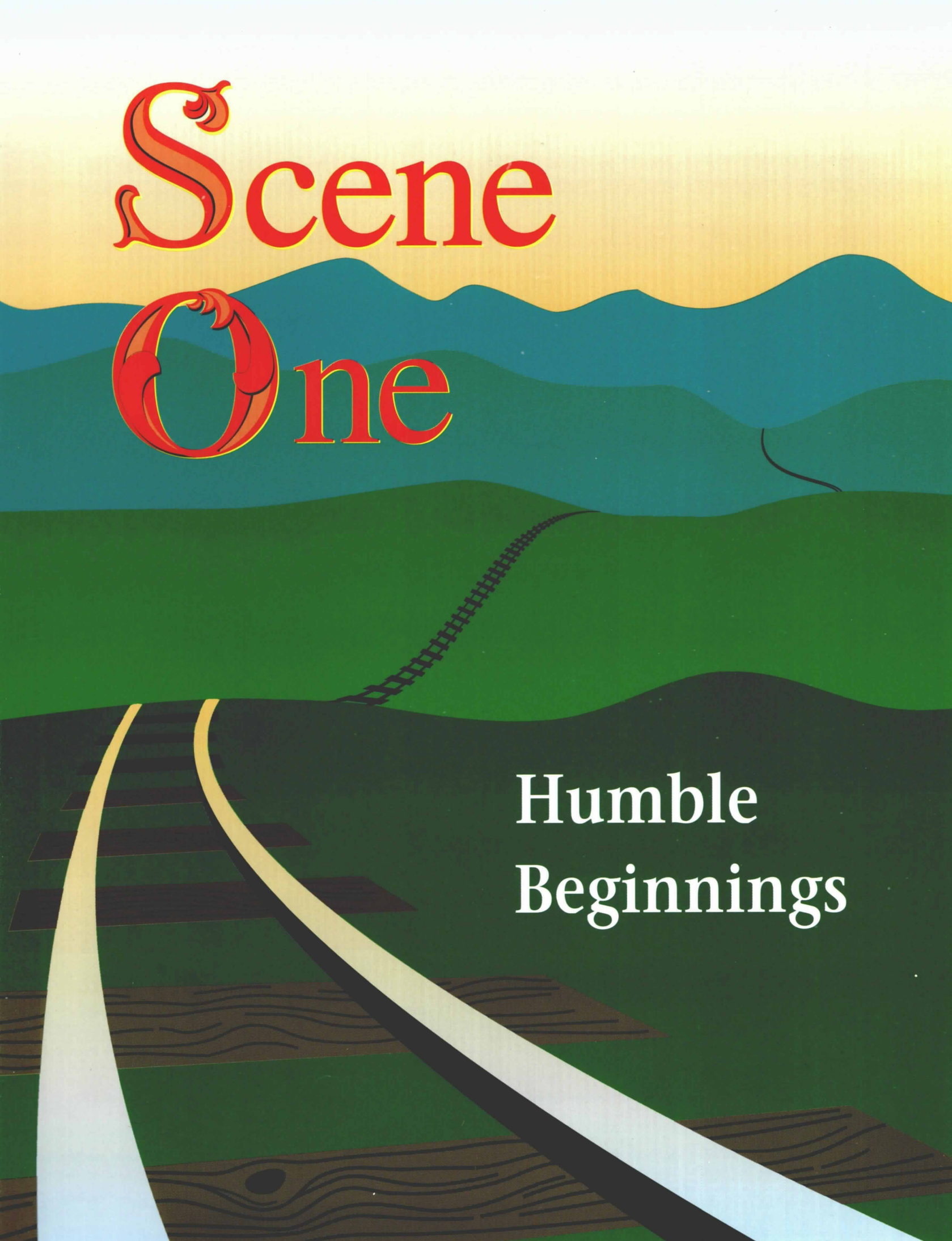
Engineer Walt Disney reverses the direction of travel on Santa Fe and Disneyland Railroad engine No. 2 E. P. Ripley *as Michael Broggie (age 12) looks on from the gangway.* Roger Broggie photo, © Disney Enterprises, Inc.

Motivation and Mission

This book deals primarily with Walt's personal interest in railroading—a topic that has not received much attention. I was encouraged by the reception my idea drew from Walt's family, and from railfans inside and outside the Disney organization. I was also intrigued by the challenge of presenting some of the fascinating early history and technology of American railroading—along with an introduction to an enjoyable hobby—to readers *not* holding degrees in mechanical engineering.

In addition to the foregoing, I was motivated to tell this story because of the concern expressed by many Disney fans about several recent biographies that depict Walt very negatively. The person described in those works, and many of the events and conversations they allege, does not harmonize with the facts as I know them from my 28 years of research and study, and a lifetime of knowing the principal subject—and many of those who worked closely with this greatest of showmen.

Today, Walt Disney is gone. His legacy lives on, however, in the talents and dedication of the many people he carefully selected and nurtured throughout the Disney organization. Three decades after his passing, Walt's visionary concepts are still being fulfilled—mostly by individuals who never knew him but understand the special mission they have been so fortunate to inherit.


Scene One
Humble Beginnings


Disneyland
RAILROAD
DISNEYLAND



Celebrating America

I just want it to look like nothing else in the world.
And it should be surrounded by a train.

—Walt Disney

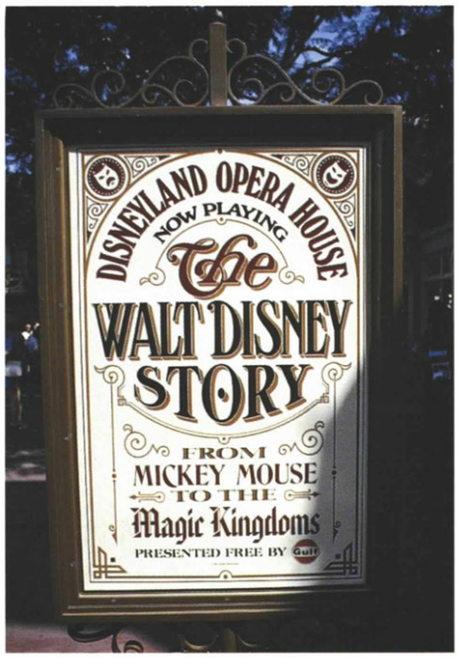
During Walt Disney's lifetime, which coincided with the first half of the 20th century, several unrelated developments occurred that ultimately shaped his career and allowed him to capitalize on his natural abilities. Among the milestones Walt observed was the evolution of motion pictures and television into major entertainment media. He learned to use their unparalleled reach and influence to effectively cross-promote his multiple enterprises.

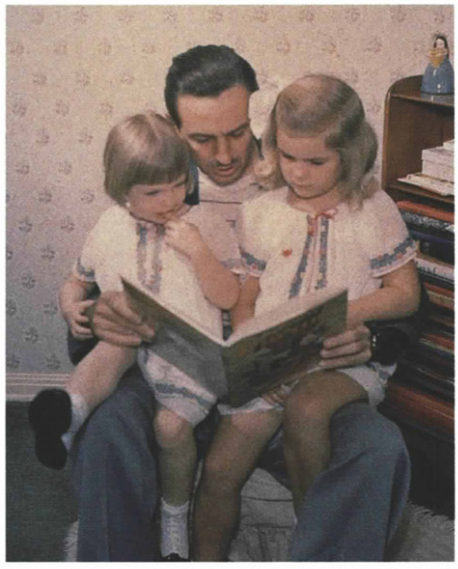
In the early 1900s, Walt witnessed the introduction and growth of regional amusement parks featuring colorful carousels, lively midways, and giant Ferris wheels. During the Great Depression, many of these once-proud attractions closed or deteriorated into tawdry operations with littered grounds and poorly maintained equipment. The Depression also spawned a generation of hard-working and self-reliant people who fought their way through a terrible world war and back to prosperity. Walt was able to fill the void of outdoor family entertainment by combining a new idea and precise timing with the booming postwar economy and exploding population.

Unrelated to these occurrences, but no less influential on Walt Disney's life, was the twilight of steam-powered railroading's golden age. Through the grueling labor of thousands of immigrants, these railroads led the expansion of America's frontiers on ribbons of steel, originating on the eastern seaboard and stretching west to the Pacific Ocean, north into Canada, and south along the Mexican border. Aggregating 254,000 miles of track, there was hardly a town in the entire country located more than 25 miles from the nearest rail line.

Between 1830 and 1950, more than 160,000 steam locomotives

Opposite: Disneyland Railroad engine No. 3 Fred Gurley *rests at Disneyland's Main Street Station on August 15, 1994. That day, invited guests were celebrating No. 3's 100th anniversary as an operating steam locomotive.* CPHS collection, © Disney Enterprises, Inc.





Top left: Walt Disney's lifetime of achievement has long interested countless admirers. Park visitors are treated to a full-scale re-creation of Walt's studio office suite before viewing "The Walt Disney Story." CPHS collection, © Disney Enterprises, Inc.

Top right: Walt was one of the first film producers to embrace television, and he soon became a national celebrity. In fall 1954, the hour-long "Disneyland" television show aired on ABC. Continuing for nearly 30 years under various titles, Disney's weekly show became one of television's longest-running series. Mrs. Walt Disney collection, © Disney Enterprises, Inc.

Above: Walt Disney reads to his daughters Sharon (left) and Diane in 1940. Mrs. Walt Disney collection, © Disney Enterprises, Inc.



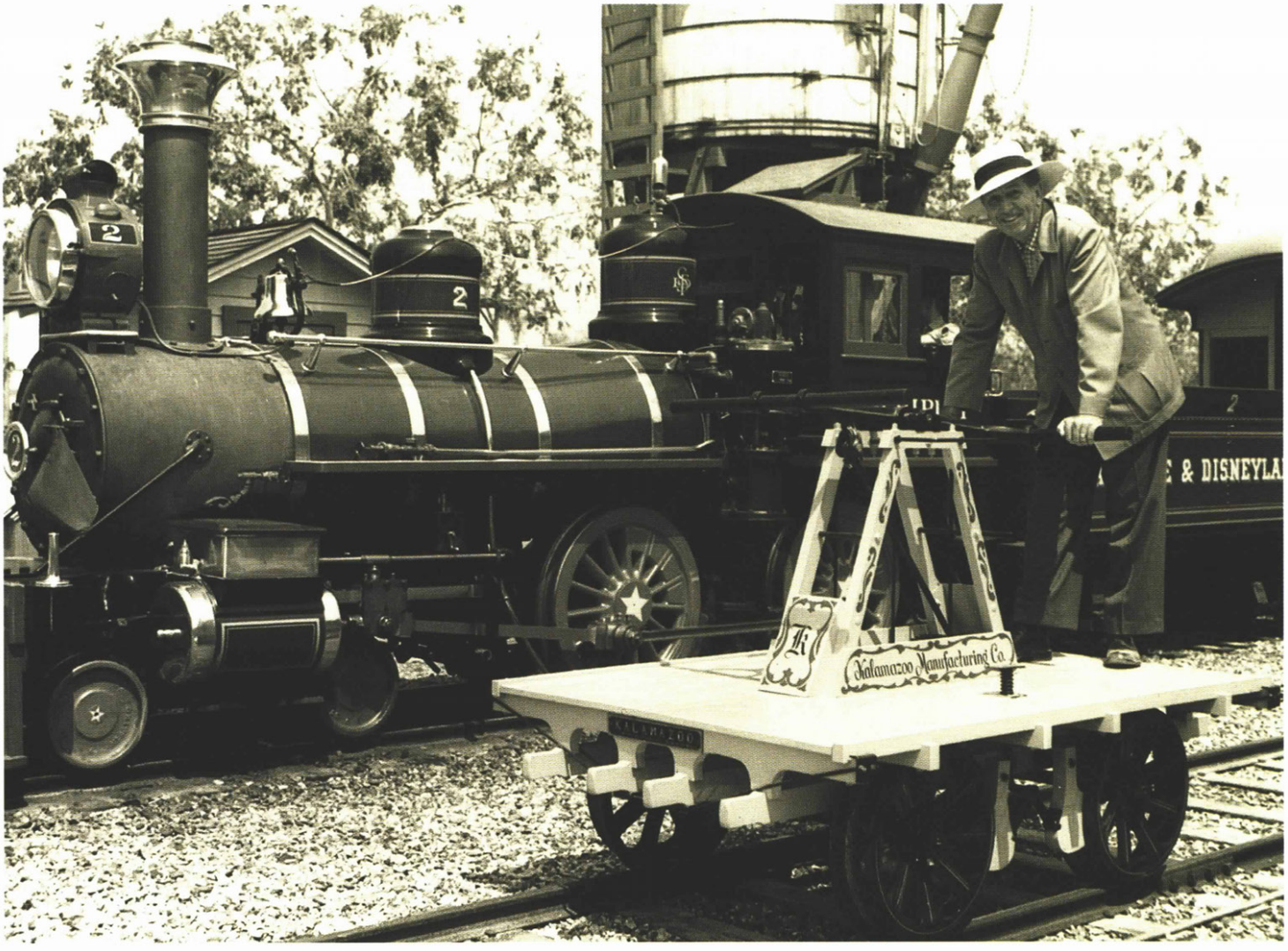
were built in America. (Only a few were imported from England in the beginning.) Nearly all ended up as scrap metal, except for the 1,800 or so that were saved from the cutter's torch by railway historical groups, private collectors, museums, and public parks departments. Many of these survivors weren't maintained in operating condition, and languished in outdoor storage or were allowed to gather dust in old warehouses. Because these once-glorious machines had played a significant role early in his life and that of his family, Walt Disney was loath to see them simply fade into history.

Reality and Fantasy

There was a point when railroading evolved from a backyard hobby to become Walt Disney's passion to create the most elaborate steam railroad preservation project in American history. In the process, he created a new industry: family-oriented themed amusement parks.

There were several reasons why Walt wanted to establish a new standard for outdoor entertainment. He liked carousels, but didn't care for the tawdry surroundings of most amusement parks. When his daughters were young, Walt treated Diane and Sharon to rides on the carousel in Griffith Park near downtown Los Angeles. Diane remembers that her dad would let them ride as long as they wanted. "He would just sit on a nearby bench eating peanuts and watch us for hours," she recalled. "He never made us stop." She discovered later, after the other kids had gone home, her dad paid the operator to allow the girls to grab the brass ring that earned them free rides.

Walt also spent time studying the activities of children at the Bradley and Kay amusement center at La Cienega and Beverly boulevards, where mechanical rides and a pony ring attracted families from throughout the Los Angeles area. More than a casual visitor, Walt studied every detail of the operation from the queue lines to the food and ride operations. He frequently talked to the owners, Dave and Bernice Bradley, listening to their problems and opinions—a trait he continued during his strolls through Disneyland talking to "cast mem-



Walt tries out a Kalamazoo Manufacturing Company handcar on the Santa Fe and Disneyland Railroad. These "pump"-style, human-powered handcars, which translate the up-and-down motion of the pump into forward (or reverse) motion through gears, were once used by roving track inspectors and track laborers "commuting" to their work sites. © Disney Enterprises, Inc.



Walt and Lillian Disney, circa 1930. "She's been a good sport about this whole railroading project," Walt remarked in late 1949; he named his first locomotive Lilly Belle *in Lillian's honor.* Mrs. Walt Disney collection.

bers" (Park employees). He believed that the lowest-paid employee, whose role involved direct contact with the customer, was the most important part of the organization. Later, he taught that the entire system pivoted on that critical moment of performance and interaction. "You can dream, create, design and build the most wonderful place in the world . . . but it requires people to make the dream a reality."

A Proud Engineer

According to Walt's own account, as told by his wife, Lillian, and daughter Diane, it was the miniature live steam railroad layout at his home and his long fascination with highly detailed miniatures and mechanical animation that inspired Walt's revolutionary concept of family entertainment based on Disney characters and stories. A full-sized, steam-powered railroad completely surrounding the attraction provided the boundary between reality and fantasy—and a convenient transportation system.

Ultimately, Walt Disney accumulated enough success and recognition for a dozen lifetimes. Even so, he recognized it was the *company* (that he and his older brother Roy founded) that was being honored by governments, organizations, and individuals—rather than he. He strongly believed that his name identified the company above and beyond the man. However, there is little doubt among those who knew Walt Disney that he had a healthy self-image reinforced by strong self-confidence.

His personal sense of pride and accomplishment was most evident when he climbed into the cab of a Disneyland locomotive. On board the *C. K. Holliday, E. P. Ripley, Fred Gurley*, or *Ernest S. Marsh*, he was "Chief Engineer" and sole owner of the Santa Fe and Disneyland Railroad, appropriately outfitted in Hercules bib overalls and jacket; a red bandanna; and—of course—an engineer's cap with its jauntily upturned bill.

With two sharp yanks on the four-chime steam whistle to signal departure, Walt squeezed the release lever on the throttle and pulled it open, causing pressurized steam to fill the piston chambers that, in turn, powered two sets of rods connected to the four drive wheels. Slowly, the 23,000-pound *C. K. Holliday*—with bright red trim, dark green boiler jacket, and gleaming brass—established steel-on-steel traction. Accompanied by the clear clanging of the bell, the powerful locomotive increased its rhythmic "chuff-chuff" as it pulled its cargo of



A Special Honor

WALT HAD A PENCHANT for naming things. "Retlaw" is Walter spelled backward. When he wrote a plot for the film Lt. Robinson Crusoe, U.S.N., he chose to have his name disguised in the credits: "Based on a story by Retlaw Yensid." Few in the audience ever noticed.

Several years after Walt died, and during the time that Walt Disney World was under construction, the Imagineers in charge of planning and development recommended naming locomotive No. 1 (which was to operate on the line around Florida's Magic Kingdom) the *Walter E. Disney*. All who had known him agreed: Walt would have been pleased with this special honor.



Walt waves from the fireman's position in the cab of Santa Fe and Disneyland Railroad No. 3 Fred Gurley. *Although this view was posed for publicity purposes, Walt could more often be found on the right-hand side of Disneyland locomotive cabs—the engineer's side—serving as the attraction's "Chief Engineer."* © Disney Enterprises, Inc.

Disneyland guests out of the Victorian-era Main Street Station, headed toward the curve of track running next to Adventureland's lush jungle, chugged past Frontierland's "Old West," and continued through a kaleidoscope of colorful sights and sounds.

One can only speculate about the playful imaginings Walt might have indulged during his carefree time in the cab, with a sure hand on the throttle and his attention focused on a clear track, far away from the unrelenting demands of a burgeoning entertainment empire. However, that special gleam in his eye and that familiar wide smile of satisfaction silently communicated his feelings: Walt wholeheartedly loved his trains, and for those few hours there was nowhere else he would rather have been.

First Attraction

Of all the attractions in Disneyland, only the steam railroad, the Viewliner, and the Monorail belonged to Walt as his private property. In addition to the horse-drawn streetcars on Main Street, he paid for their design and construction out of his own pocket. Even the train crews, from the engineers and firemen in the cabs to the maintenance workers in the roundhouse, were on the payroll of Walt's personal company, Retlaw Enterprises.

Engine No. 1 at Disneyland is named *C. K. Holliday* after the founder of the Atchison, Topeka & Santa Fe Railway, Cyrus Kurtz Holliday, whom Walt admired as an outstanding entrepreneurial pioneer. Walt believed that the great railroads were largely responsible for the United States' incomparable economic and industrial strength. Led by men of vision and cunning, railroads had provided the means to


2


1

economically move people, raw materials, manufactured goods, produce, and livestock to every corner of North America.

The development of a national railway system spurred America's Industrial Revolution. As a young, rapidly emerging nation, the United States had the unprecedented opportunity to build its transportation systems unencumbered by old technology. It was different for much older European and Asian countries, where transport systems evolved from ancient methods relying on waterways and cart-hauling animals moving slowly on narrow roads.

Walt celebrated his country because he respected the hard work and monumental risks its people were willing to invest to build America. "I get red, white, and blue at times," he was quoted as saying.

He also respected the contribution of railroads. This fact is reflected in his direction to his conceptual designers to prominently position a steam-powered railway to run around his new park. Since opening day—July 17, 1955—the Disneyland Railroad has been the first attraction at the Park's main gate, and the primary transportation system connecting the various themed areas of Disneyland.

Running around the Park's perimeter on an elevated earthen berm, the railway system (which has carried over 300 million passengers far enough to circle the earth 25 times) provides a boundary between the outside world and the carefully crafted ambiance of the Magic Kingdom. The Disney locomotives—with brass gleaming, steam billowing, bells clanging, and whistles blowing—represent a bygone era when brightly painted "iron horses" chuffed back and forth across wide expanses of unsettled territory, connecting emerging towns and growing territories.

Opposite above and below: Today, the steam locomotives and their trainsets at all four Disney Parks benefit from a thorough maintenance program. Brass shines, paint gleams brightly, and mechanical failures are rare. Walt would be proud. Both views, CPHS collection, © Disney Enterprises, Inc.

Fascination's Reward

There were several motivating factors that drove Walt to build Disneyland, including his desire to develop additional sources of income beyond film production. However, what remains clear is that Walt's interest in trains resulted in exacting research, faithfully executed original construction, meticulous renovation, and one of the most thorough maintenance programs in all of railroading.

To say that Walt Disney was merely a train enthusiast, however, understates the extent to which his life was intertwined with railroading. In Walt's case, his small-scale fascination led to a full-scale kingdom.


A.T.&S.F.



Origins

To tell the truth, more things of importance happened to me in Marceline than have happened since—or are likely to in the future.

—Walt Disney (THE MARCELINE NEWS, September 2, 1938)

(A portion of the following chapter includes a fanciful depiction of what may have happened over 80 years ago, and is based upon material written by Walt Disney.)

In 1910, nature's palette of fall colors was beginning to appear in the stand of walnut and hickory trees along Yellow Creek. A portion of the river running outside Marceline, Missouri, was wide with abundant sand flats, stretching beneath wooden trestles that carried the Atchison, Topeka & Santa Fe Railway line south from Chicago and west to California.

A faint, distant thumping was felt more than it was heard. Soon, the rhythmic beat grew to become the euphonious chuff-chuff of a steam locomotive, hauling the Santa Fe's "accommodation" run (a slow-paced train that stopped everywhere) out of Fort Madison, Iowa. Two boys, playing on the sand bars along the water, ran quickly to a clearing of high ground to have a better chance of being seen by the train's engineer. Waving their hats, they hoped to be recognized.

When the powerful steam engine was nearly midway on the high wooden trestle, the engineer spotted the youngsters. Reaching for a looped-rope handle hanging from the cab's ceiling, he leaned from the window and waved. With a solid yank on the cord, the steam-powered brass whistle momentarily drowned out the pistons' rhythmic beat with a strong, clear four-chime blast, followed by two short "toots."

Walt waves to bystanders from the cab of Atchison, Topeka & Santa Fe Railway 2-8-0 locomotive No. 2546 on July 4, 1956, with his brother Roy looking on from the gangway. Displayed since 1955 in Walt's hometown of Marceline, Missouri, the locomotive has just been lettered for the "Santa Fe & Disneyland R.R."; the park it sits in is named Ripley Square. Constructed in 1911 by the American Locomotive Company's Pittsburgh works, No. 2546 originally served a Santa Fe affiliate, the Kansas City, Mexico & Orient Railroad. Rush Johnson collection.



Walt's early memories of Marceline provided the inspiration for Disneyland's Main Street U.S.A. © Disney Enterprises, Inc.

The boys cheered as they recognized the distinctive signal of their uncle, Mike Martin.

They watched as the passenger train faded into the horizon, leaving a plume of smoke hanging in the calm morning air. Roy, who was 17, began telling his younger brother about working on the railroad the summer before—as a "news butcher" on the Santa Fe.

Later that night, Walt Disney lay awake listening for the sound of trains in the distance. Hearing one, he pretended to be on board as it chugged through the night toward Kansas City and beyond. But even this eight year old, with his fertile imagination, would have had difficulty envisioning the incomparable journey that was to be his destiny.

Lure of the Rails

The Disney boys had received their introduction to railroad lore several years before from Uncle Mike when he visited their family farm outside Marceline. As a Santa Fe operating engineer, Mike Martin's route took him from Fort Madison, through Marceline and on to Kansas City.

Uncle Mike enjoyed sitting on the front porch swing with the two wide-eyed boys, regaling them with tales of the "high iron" (mainline railroading). He told them about the legendary Casey Jones and exciting Civil War adventures, when Union and Confederate armies battled for control of strategic rail lines.

Sometimes, the boys' father, Elias, joined in and shared stories about the rigors of constructing railways across the Great Plains and through the Rocky Mountains. Before settling down and marrying Flora Call, the boys' mother, Elias worked as a machinist in a railroad shop and as a carpenter on a Union Pacific railroad crew installing track from Ellis, Kansas, to Denver, Colorado. It was a rugged life filled with danger and excitement; the men endured bitter winters and hot summers on the Great Plains, blasting and bridging their way through to the Rocky Mountains. One of Elias's favorite stories was about meeting William Cody, who earned his nickname "Buffalo Bill" by providing meat for the hungry crews.

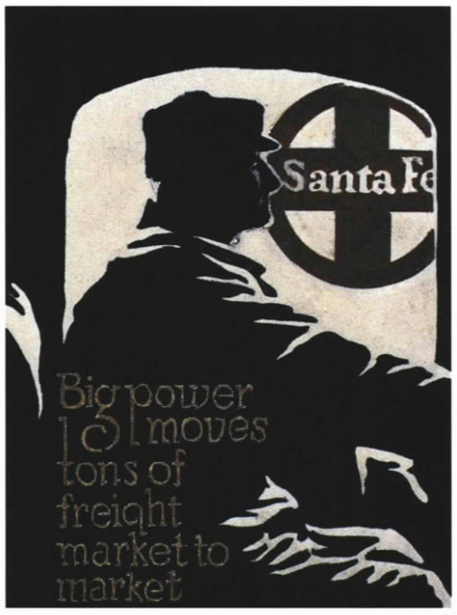
"We fellows would marvel at the tall-stacked engines that pulled into and out of the depot opposite the park where we played," Walt recalled years later. "One day when I was eight years old and full of nerve, my buddies dared me to climb into the cab of one of them that stood there, temporarily deserted, and pull the whistle cord. I did so, but as soon as the whistle shrieked I quickly climbed down in a panic and ran like the dickens." Railway security probably could have caught them but, knowing they were harmless kids, didn't try.

It didn't take much to lure the young Disneys to jobs on the rails. In spring 1917, when Walt was 15, his father sold the family's newspaper routes. As a result, Walt needed to find a way to earn money before school resumed. Several years before, Roy had worked for the Fred Harvey Company through two summer seasons as a "news butcher" on the Santa Fe Route. His job consisted of walking through passenger cars with a box strapped around his neck, offering travelers fresh fruit, candy, bottled soft drinks, newspapers, and tobacco products.

Roy told Walt that the job offered an exciting opportunity to see



This circa-1910 postcard of "Main Street, Marceline, Mo.," shows a typical small-town Midwest business district as it would have appeared during Walt's boyhood. The town is celebrating the 100th birthday of Walt Disney with a series of events including the rededication of "Main Street U.S.A." An information web site is http://www.disneyhometown.com.
Dan Viets collection.



This 1920s poster celebrates the Santa Fe's role in moving America's freight to market. In 1995, the Atchison, Topeka & Santa Fe Railway merged with Burlington Northern, another large western rail carrier. The resulting company—today known as the Burlington Northern & Santa Fe—operates 31,000 miles of trackage throughout the West and Midwest.
Robert McDonnell collection.





Above: Walt Disney at about age 14. © Disney Enterprises, Inc.

Above right: A young news butcher models the Baltimore & Ohio Railroad uniform. CPHS collection.

Opposite: The 40-acre Crane farm on the outskirts of Marceline was Walt's happy boyhood home. Dan Viets photo.

some of the country while earning wages. The next day, Walt applied for a news butcher position with the Van Noyes Interstate News Company, which had a service contract with the Missouri Pacific line running between Denver and Kansas City. He was tall and strong for his age and was immediately hired for two months. He needed $30 to post a bond, which he borrowed from Roy.

Walt felt very important wearing the blue serge uniform with two rows of brass buttons, conductor-style cap, and shiny lapel badge. As the train rolled into one station after another, he stood beside the conductor on the car steps, enjoying the envious stares of youngsters waiting on the platform.

His first day on the Missouri Pacific, however, was a financial disaster. The train was on a run from Kansas City to Jefferson City, and had pulled out at 4 a.m. with two commuter coaches added to its usual "consist." Because the weather was so hot, Walt soon sold his supply of cold soda pop. He didn't know until it was too late that the two commuter cars would be detached at Lee's Summit. The cars were gone before he could collect the empty bottles. Inasmuch as his margin of profit lay in bottle refunds, Walt realized with dismay that he was wiped out.

Profits Lost

Undaunted, he continued plying his trade on passenger trains, not only those of the Missouri Pacific but also the Kansas City Southern and the Missouri, Kansas & Texas (commonly known as the "Katy"). It was a great adventure for a kid who had never been away from home and family.

Walt especially liked the MP's run between Kansas City and Downs, Kansas. It took six hours because the train would stop at every station en route, occasionally performing boxcar-switching duties as well. During the journey he sometimes went to the baggage car, supplying its attendant with cigars or chewing tobacco, then climbed over the tender into the engine cab to do the same for the engineer and fireman. They'd



let him ride in the cab for a while—and what a thrill that was!

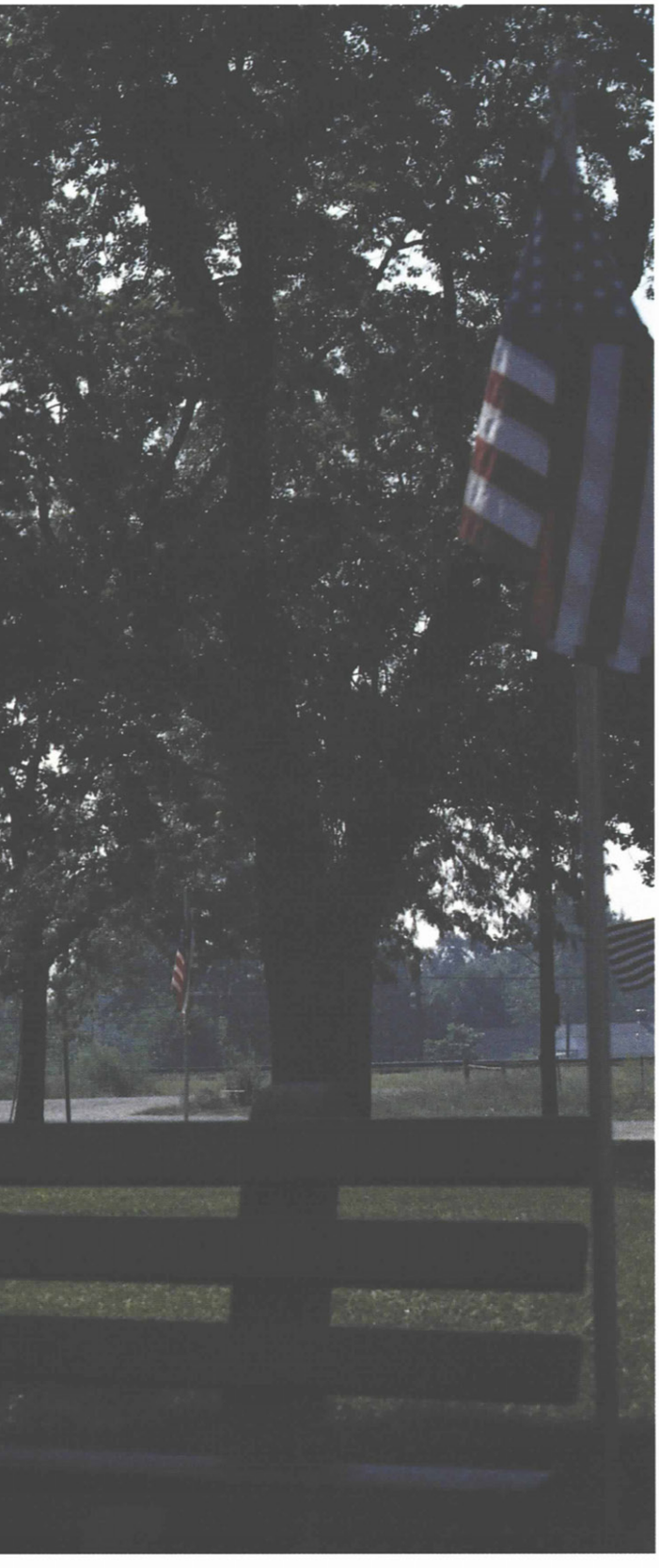
Walt's enthusiasm convinced the crew of his desire to become an engineer, like his Uncle Mike, and to learn everything he could about operating a steam locomotive. To encourage him, the crew taught him all the procedures, including how to operate the many valves and levers. He particularly enjoyed ringing the bell and sounding the whistle at road crossings.

The train would stop overnight at Downs before taking on coal and water for the return trip. One night, Walt decided to walk around town. After changing into his own clothes, he wandered down the main street leading from the depot. A policeman saw him looking in the windows of the stores, and asked the young stranger what he was doing there and where he was from. Walt nervously explained he was the news butcher on the train, but he failed to convince the officer. Walt had to accompany him back to the train and unlock his merchandise hamper to prove he wasn't "casing" the town for a burglary.

In Pueblo, Colorado, Walt had another experience he enjoyed sharing many years later. Operating on a tip from a traveling salesman, he went looking for a hotel that was supposed to be something special. He spotted the fancy Victorian store front decorated with dark red curtains trimmed in gold fringe. Walt went up the stairs and pushed open the large oak and leaded-glass door. The interior was furnished with plush red velvet couches, overstuffed chairs, and thick rugs. A huge crystal chandelier hung in the center of the spacious room over a gold piano.

Sitting in the lobby, young women in brightly colored dresses were chatting with each other. Walt began to wonder if the hotel's rates might be beyond his meager means. A large, motherly woman with bright red hair and a beaming smile approached, and asked if she could serve him a beer. At that moment, he heard laughter and spotted a young woman, with her arm around a cowboy, coming down the stairs. Suddenly realizing that he had been tricked by the salesman—this wasn't a hotel at all—


SANTA FE
2546
DISNEYLAND R.R.





Above: The "Santa Fe & Disneyland R.R." lettering remains well-maintained on Marceline's favorite locomotive. Dan Viets photo.

Left: A crew-change point on the Atchison, Topeka & Santa Fe Railway until recently, the city of Marceline still has strong ties to the railroad that put it on the map. Locomotive No. 2546 remains a proud part of Marceline's Ripley Square. Dan Viets photo.

Below: In addition to its "Santa Fe & Disneyland" locomotive, the town of Marceline celebrates its most famous resident with this trackside sign. Dan Viets photo.



Walt quickly retreated through the door and ran back to the depot. He figured he had a lot to learn about the real world outside the farm.

Walt's early railroad career was brief, exciting, and unprofitable. "Too many people were eager to take advantage of a young businessman like myself," Walt later commented. The suppliers would fill his hamper with rotten fruit that drew so many flies the conductor would make him dump it out. Walt was stuck with the cost. "Besides, I was only 15 and I ate up most of my profits. So I quit at the end of that summer with losses that absorbed the $30 bond I had posted when I took the job."

His experience wasn't a complete loss, though—he had been introduced to every procedure in the cab from firing the boiler to handling the operating controls. Walt had also learned some hard and valuable lessons in free enterprise.



Westward Bound, 1917-1930

WALT RETURNED TO school in fall 1917, as a freshman at McKinley High School in Chicago, where his parents had moved during the summer while he was working on the railroad. The following spring, with World War I in full force, he and a friend tried to enlist in the Canadian Army (which accepted younger recruits than the U.S. military). His older brothers had volunteered to serve in the army and navy, and Walt wanted to join them in the war effort. After being turned away because of his age, he and a buddy answered an ad for American Red Cross ambulance drivers in France. With a faked birthdate, he got the assignment. After nine months with the American Ambulance Corps in Europe—where Walt marveled at the strange sights, including quaint French steam locomotives—he returned home.

Upon repatriation, Walt had no interest in finishing high school. Instead, he decided to pursue his interest in cartooning. He took a train to Kansas City, where his brothers had settled; after several rejections from the Kansas City daily newspapers, Walt landed an apprentice position with the Pesmen-Rubin Commercial Art Studio through a referral from his brother Roy, who was working at the First National Bank as a teller.

At Pesmen-Rubin, Walt met another young apprentice named Ubbe Iwwerks (who later shortened his Dutch name to Ub Iwerks). Together, they started a part-time commercial art company, Iwerks-Disney. (They decided on this order for the name since the other sounded as if they made eyeglasses.)

The two had struggled for a month to make a go of the business when Ub spotted an ad for a full-time artist at the Kansas City Slide Company, which made advertising slides for local movie theaters. They decided Walt should apply for the position to give them at least one source of steady income.

Without their salesman to hustle up new accounts, the commercial art business soon faded; Ub joined Walt at the slide company, which had changed its name to Kansas City Film Ad Company. Over the next year, Walt and Ub learned as much as possible about this new entertainment medium called animation. They studied cartoons produced in New York and began developing their own style and production system. Walt talked Roy into helping them set up a makeshift studio in the family garage, where they worked past midnight every evening, honing their animation skills with a stop-motion camera loaned to Walt by Film Ad. With a sample reel, Walt sold the Newman Theaters a contract to produce weekly one-minute cartoons, called Newman Laugh-O-Grams, for the three-theater chain at 30 cents per foot. To his dismay, Walt realized that the





Young Walt Disney and his bride-to-be, Lillian Bounds. Two photos, Mrs. Walt Disney collection.

price he'd committed to didn't provide for a profit margin.

Next, Walt began producing his own cartoon shorts, raised enough capital to start a company, quit his job at Film Ad, and talked Ub into joining him. Among the shorts they produced was ALICE'S WONDERLAND, featuring live action combined with animation. Unfortunately, when the distribution firm handling his cartoons went broke, it spelled doom for the young cartoon company. In spite of $15,000 in financing from a group of local investors and a few small assignments, Laugh-O-Gram Films was forced to declare bankruptcy.

During this period, Walt's brother Roy was diagnosed with tuberculosis. He was treated at a series of veterans' hospitals, finally ending up in Los Angeles at the veterans' hospital at Sawtelle. While he was there, Walt wrote to him, asking for advice. Roy responded by telling him that he should "get out of there." Walt sold a camera, raising enough money to buy a one-way train ticket to Los Angeles.

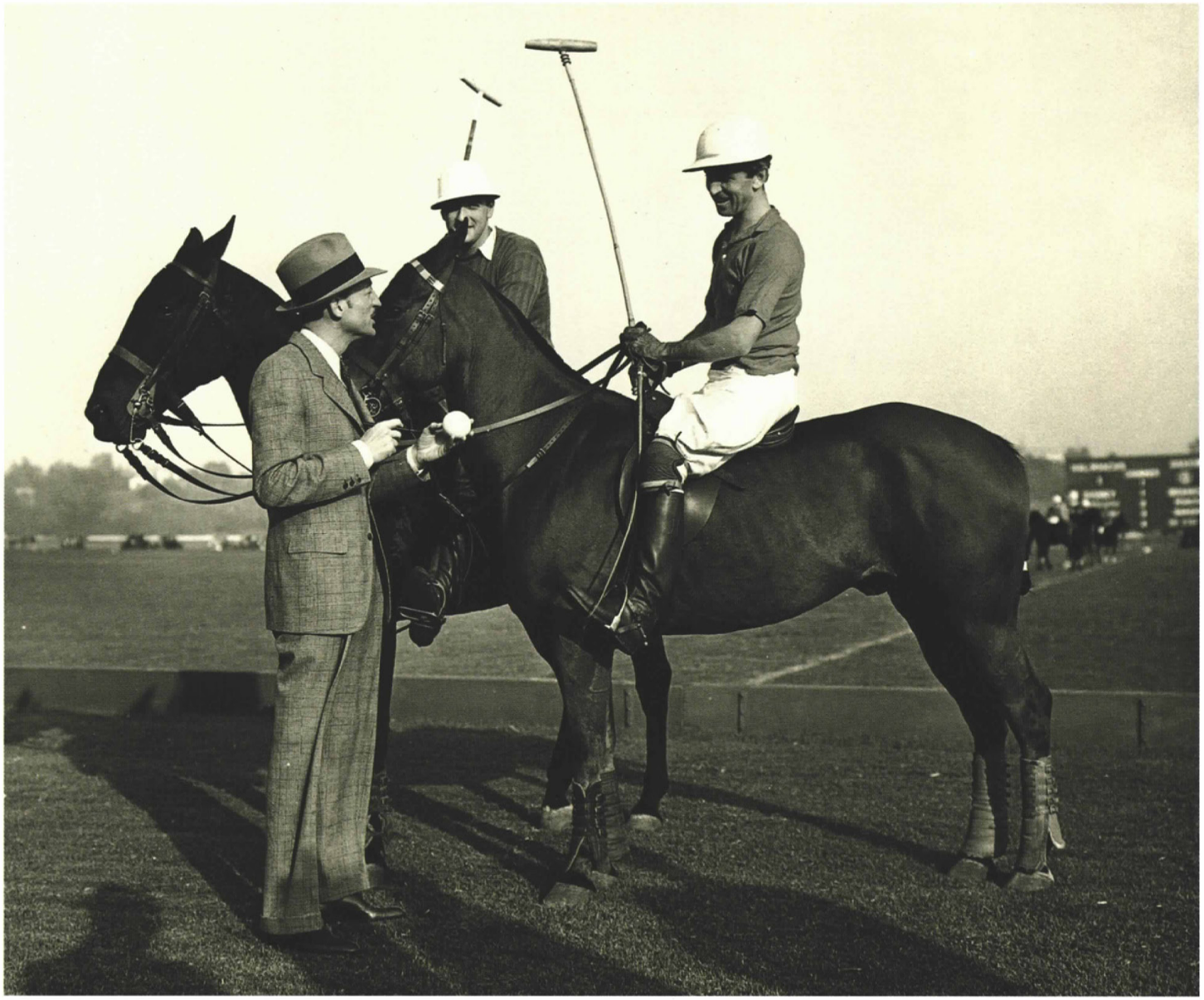
He rented a room in his Uncle Robert's house and, after trying to break into the Hollywood motion picture industry as a director, resigned himself to trying cartoons again. With money he borrowed from his uncle and Roy, Walt set up a small animation operation in his uncle's garage and started producing a series of shorts for Alexander Pantages.

When Walt got an order from a New York cartoon distributor for a series based on the ALICE shorts, the brothers started a small film company (on October 16, 1923). The company grew to a point where the Disneys could rent some space in a Hollywood real estate office for $5 a month, send for Ub Iwerks, and hire others to work for the Disney Brothers Cartoon Studio. Over the next four years, the studio produced over 50 ALICE comedies and 26 OSWALD THE LUCKY RABBIT cartoons.

One of the women hired to do inking and painting, Lillian Bounds, was an attractive Idaho native; she had come to Los Angeles to visit her sister Hazel, and decided to stay. Shortly, a romance bloomed between her and the boss. On July 13, 1925, Walt and Lilly were married at her brother Sid's home in Lewiston, Idaho, where he served as the town's fire chief.

In the same month, Walt and Roy put a down payment on a lot at 2719 Hyperion Avenue in the Los Feliz area of Los Angeles. Within a year, they moved into the new studio and renamed the company Walt Disney Productions.

During these early years in California, Walt didn't have much time for railroading or any other hobby. He and Roy—both newly married—were dedicated to making a success out of the cartoon company.





Hobby Hunting

As far as I can remember, being a celebrity has never helped me make a good picture or a good shot in a polo game, or command the obedience of my daughter, or impress my wife.

—Walt Disney

In the 1930s, to work off the pressures of business, Walt pursued several recreational sports. Skiing was an interest he and Lilly shared, and they took lessons together at Yosemite from champion Austrian skier Hannes Schroll, who had settled in California. When Schroll decided to build his own Sierra ski resort near Donner Pass, the Disneys became owners of the first stock issued in the Sugar Bowl Corporation. Other investors quickly bought up the rest of the stock after Walt publicly and privately made supportive comments about the project. In appreciation, Schroll named an anonymous peak in the area "Mt. Disney."

Another sport that caught Walt's fancy was polo; it became a popular activity for a number of Disney staffers. For a time, Walt and Roy each had teams of employees who competed against each other for bragging rights. An average player, Walt made up in aggressiveness what he lacked in style. He became a member of the exclusive Riviera Club, where he matched mallets nearly every weekend with the likes of Will Rogers, Leslie Howard, and Spencer Tracy. At the peak of his involvement, Walt owned 19 polo ponies.

Walt takes a break from polo playing at Will Rogers' ranch to speak with actor David Niven. Mrs. Walt Disney collection.

Roy's son, Roy E. Disney, recalled going to matches nearly every Sunday when he was a small boy. "I was watching a match between my dad's team and Walt's team when someone asked me to point out my father. 'He's the one who just fell off his horse,' I remember answering."

Unlike most of the studio players, Walt became fairly competent under the tutelage of Spencer Tracy, who was considered among the best of Hollywood's expert horsemen. Lilly Disney remembered,

"Spencer and Walt liked one another. All they talked about were horses and polo, never anything about the motion picture business, which may have been their unspoken agreement."

Polo playing continued until Walt's personal physician—while conducting a routine medical check-up—noticed several severe bruises on Walt's legs, received during a rigorous polo match. In another game, a ball hit Walt on the back of his neck, prompting his doctor to strongly recommend that his patient find a less dangerous recreational activity. The injury, which fractured several vertebrae, would haunt Walt the rest of his life. He reluctantly hung up his mallet, sold his ponies, and began looking for another sport.

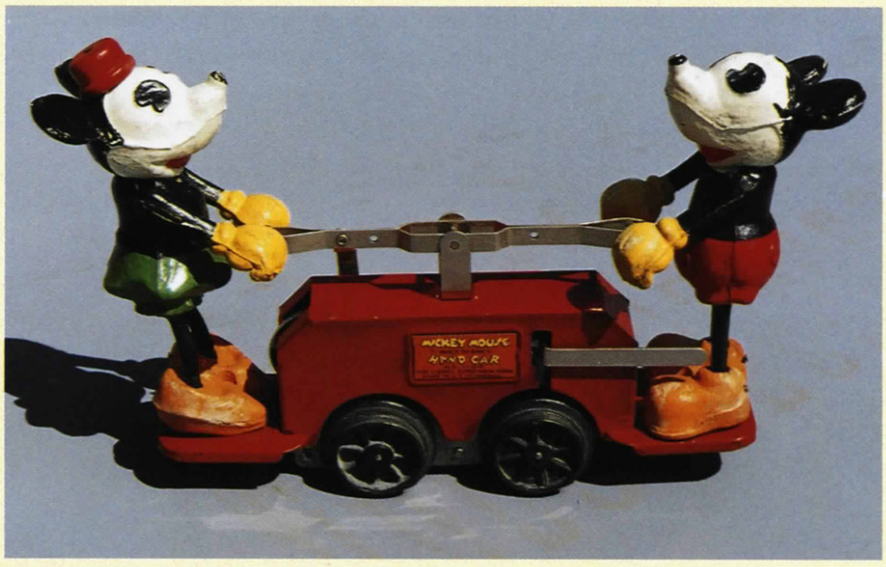
Walt had tried golf several years before, often getting up at 4:30 in the morning to get in a quick nine holes at Griffith Park or Lakeside before heading to the studio at 7:30. However, the game proved too



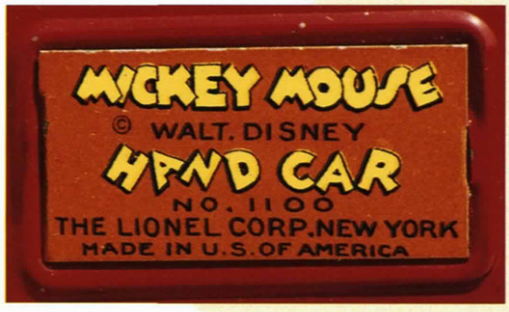
Mickey's Handcar

DURING THE EARLY YEARS of the Depression, the Lionel company entered bankruptcy as its owners struggled to keep the financially beleaguered concern afloat. Luckily, Herman "Kay" Kamen, Disney's merchandise licensing wizard, negotiated a contract with Lionel, signed on July 19, 1934, to produce The Mickey Mouse Handcar (which also featured Minnie, but without screen credit). The agreement established Lionel as the first company to acquire a license for producing a railway toy featuring Disney characters. Once Lionel had obtained this license, it was able to secure a short-term loan.

Introduced in 1935, the familiar pump-style handcar—available in red or green—came with a circle of track and was priced at 90 cents. It was an immediate success; 254,000 units were sold in less than four months. During the following three years, a million more handcars were purchased, enabling Lionel to pay its loan back early and petition the bankruptcy judge to dismiss the case. In appreciation, Lionel's owners offered to provide Walt with all the model railroad equipment he wanted.



This original Mickey Mouse Handcar is part of Ward Kimball's extensive toy train collection. The handcar was also available painted green. CPHS collection. Disney character © Disney Enterprises, Inc. Used by permission.



frustrating to offer any relaxation. He then became active in the Beverly Hills Lawn Bowling Club, and pursued this sport for the rest of his life.

After Walt quit polo (except for his occasional participation in the annual ride with the Rancheros Visitadores in Santa Ynez Valley), the Disneys limited their involvement with horses to frequent visits to their season boxes at Hollywood Park and Santa Anita to watch thoroughbred racing. Years later, daughter Diane said she wished that the family had owned horses while she was growing up because she shared her father's love of riding. (Walt's love of polo is illustrated in his live-action film STORMY—THE THOROUGHBRED WITH AN INFERIORITY COMPLEX, featuring a misfit horse that becomes a top polo pony.)

Beyond Polo

Economic pressures were mounting as the studio and the nation struggled to recover from the effects of World War II. During the war years, Disney's income had been greatly affected by the elimination of European film distribution, formerly responsible for large box office returns. Great Britain had frozen the revenue of foreign companies, and the situation was further complicated since—for nearly five years—much of the studio's production was focused on the war effort via training and propaganda films.

In late fall 1947, with the holidays approaching, Walt wrote to his younger sister, Ruth Beecher, as he always did at that time of year. He asked if her son Teddy would like to have a train set for Christmas. He made the same offer to his niece Marjorie Davis, for her son Geoffrey, and his brother Herbert's grandson, David Puder. Underscoring this gift suggestion was Walt's desire to create a railroad hobby for himself. If the hobby also provided an opportunity to share trains with kids in the family, so much the better.

For his first venture into model railroading, Walt selected Lionel trains. Because of his long business relationship with the company, he was quite familiar with its products. Soon, Lionel arranged delivery of three complete railroad sets with track, cars, engines, buildings, and landscaping. Walt had the layouts assembled before Christmas, and the boys were thrilled with their new railroads.

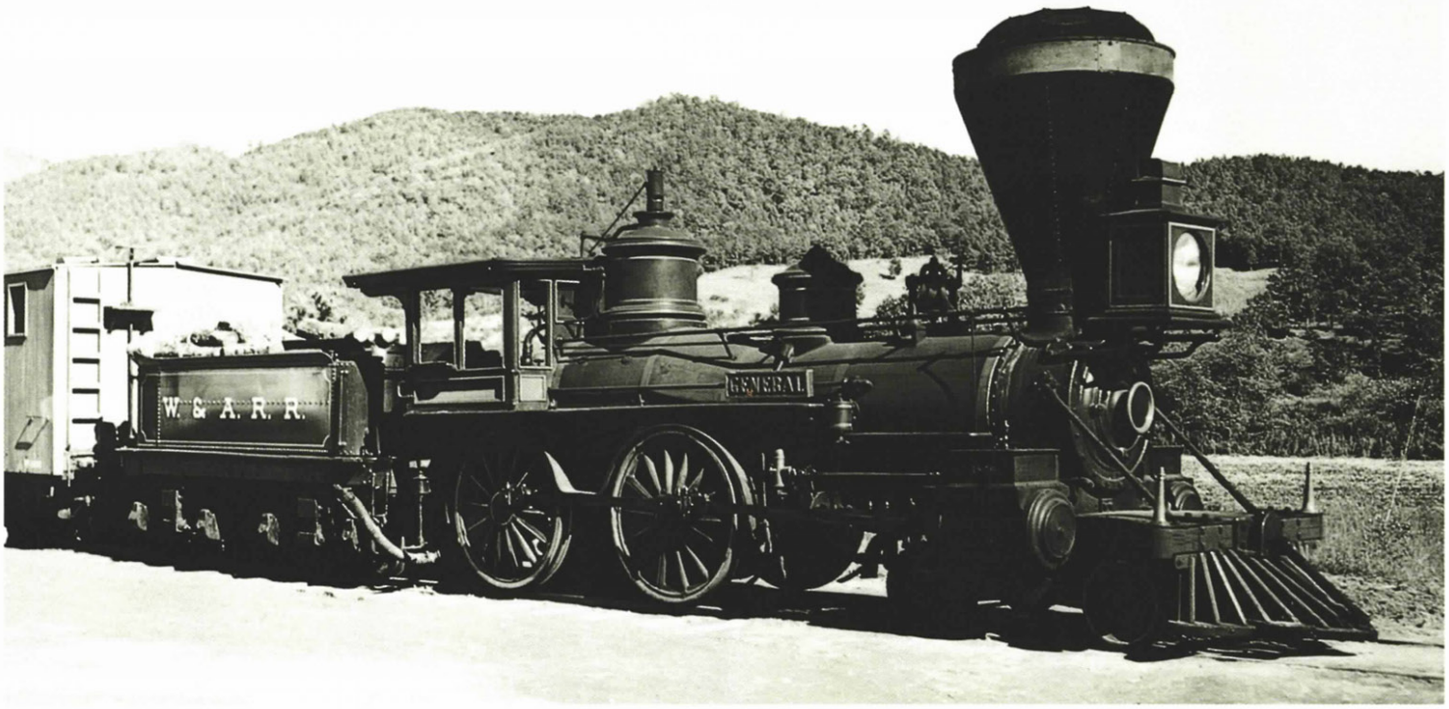
After thoroughly enjoying his first Lionel train set, Walt ordered another. This he installed in his office, inviting visitors and colleagues to take turns running it. He found that the appeal of railroading was universal, transcending all segments of the population. There was something about trains that defied philosophical or scientific definition. Walt knew intuitively that people simply liked trains, and tapped into railroading's general appeal through his movies: the Casey Jr. circus train in DUMBO; the English train in the Mr. Toad segment of THE ADVENTURES OF ICHABOD AND MR. TOAD; the live action-animation feature SO DEAR TO MY HEART; and the Civil War adventure THE GREAT LOCOMOTIVE CHASE, to name a few.

After running the Lionel layout, Walt wanted to operate a more realistic-looking model railroad. As his interest grew, he began purchasing HO gauge equipment.

Walt thoroughly enjoyed building and painting brass locomotives, freight and passenger cars, and buildings that came in kits requiring



"Casey Jr.," the personable circus train locomotive in DUMBO, *was designed and animated by Ward Kimball. The little locomotive takes on a life of its own in the film; its characterizations range from happy and fast-paced to slow, sad, and droopy.* © Disney Enterprises, Inc.







Top: Western & Atlantic's venerable Civil War hero the General *was played by an old Baltimore & Ohio locomotive,* William Mason, *loaned for use in Walt Disney's production* THE GREAT LOCOMOTIVE CHASE.
© Disney Enterprises, Inc.

Left: This sequence, with an English steam train, was created by Ward Kimball for use in the Mr. Toad segment of THE ADVENTURES OF ICHABOD AND MR. TOAD.
© Disney Enterprises, Inc.

Above: The cartoon train from Disney's production of THE THREE CABALLEROS.
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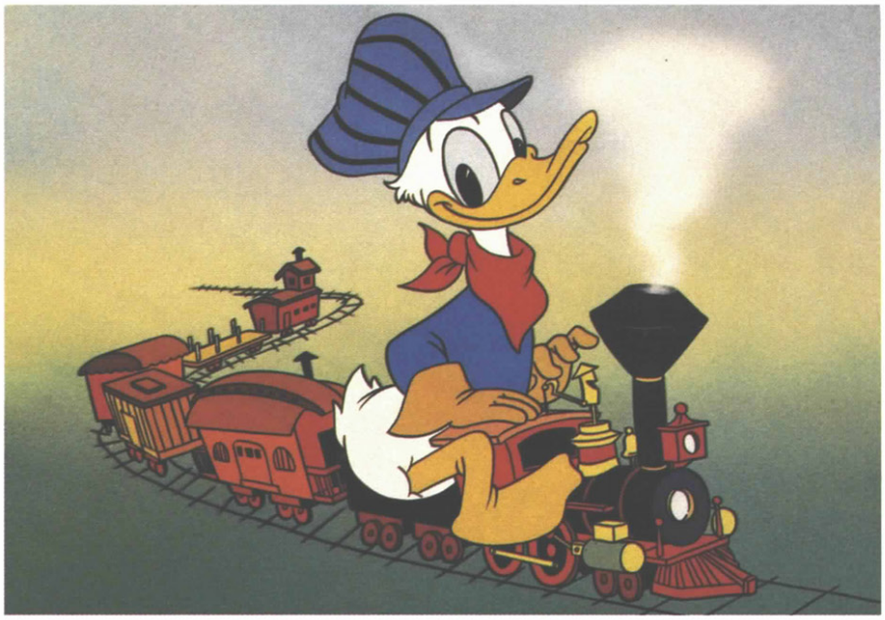


Donald Duck enjoys his miniature live steam railroad hobby in the cartoon short OUT OF SCALE *filmed in 1951.* © Disney Enterprises, Inc. Disney character © Disney Enterprises, Inc. Used by permission.

hours of intricate and painstaking assembly. He derived more pleasure from the creative and construction process than from displaying the completed models.

During one of his visits to a local train store, he was asked about the size of his layout since he was frequently ordering additional equipment. Walt told the clerk it would never be finished. (How prophetic, and indeed, how fortunate for all of us that Walt's "layout" grew into an ever-evolving Magic Kingdom.) However, as his ideas continued to develop, Walt knew that he would have to eventually give up building the diminutive HO scale layout. Bigger things were in his future.



Detailed Fascination

WALT'S NEPHEW ROY EDWARD DISNEY, son of the company's co-founder, Roy O. Disney, began building HO scale trains in the late 1930s. Years later, Roy remembered how his Uncle Walt admired the pike he'd built in the basement of his family's home on Forman Avenue in Toluca Lake, a short distance from Disney Studios.

"Whenever Walt was visiting, he always spent time with me running my trains while Aunt Lilly visited with my folks," Roy said. "So, it is quite possible that I helped my uncle get interested in model railroading. I still have all the trains we used to play with. For a time a few of my boys shared my interest, but as soon as school and girls came into the picture, their interest in model railroading seemed to fade. Someday, I will unpack the trains for my grandkids."

Always fascinated with various types of scale models, Walt was attracted to HO scale railroading and its highly detailed miniature size.


BALDWIN LOCOMOTIVE WORKS
PHILADELPHIA



Two Railfans

We're just getting started, so if any of you start to rest on your laurels, just forget it.

—Walt Disney

Even for the arid San Fernando Valley, it was unseasonably hot in July 1948. The business climate at Walt Disney Productions in Burbank, however, was uncomfortably cold. In addition to the mounting emotional pressure of running film production at the studio, Walt Disney constantly suffered from arthritic pain in his neck and shoulders. He attributed this condition, aggravated by stress, to injuries sustained 15 years earlier while playing polo.

Every afternoon at 5 o'clock, the studio's staff nurse came to Walt's suite of offices, on the northeast corner of the third floor in the Animation Building, to give him treatments for pain. Nurse Hazel George would apply heat, ice, and deep massage while the two engaged in a running dialogue about news of the day and happenings around the studio. Since the sessions began after normal working hours, Walt usually sipped a Scotch Mist to help him relax.

Lately, Walt's conversation had focused on his worry over the company's economic stability; Hazel, realizing that his stress was building almost daily, encouraged Walt to take a much-needed break. Six years had elapsed since the company had produced BAMBI, its last successful animation feature, and production was going slowly on CINDERELLA, which was to be released in about two years. Growth in earnings was flat, and the postwar economy was in the doldrums.

Walt was beginning to concede that his company was inexorably strapped to a financial roller coaster. It careened from economic highs, when a film was a hit, to lows during which his brother Roy was forced to go to the bank and borrow money to meet payroll. The company didn't

Railroad historian Gerald M. Best created this study of Ward and Betty Kimball circa 1944, as their backyard Grizzly Flats Railroad was coming to life. Jim Jackson collection.

have an alternative, major source of income to help it through lean periods of motion picture production and distribution. Walt felt it was his responsibility to discover that source, or face the possibility of having the bank for a partner the remainder of his working life—with the resulting stress.

Hazel often heard him talk about his love for trains, particularly the vintage steam engines Walt remembered from his childhood. She offered a suggestion for a "perfect" vacation: visit the Chicago Railroad Fair, a non-profit corporation sponsored by the nation's railroads, produced by the city's renowned Museum of Science and Industry. An avid reader, the nurse had learned that, after years of planning, the fair was going to be a one-time grand event honoring railroading's 100 years of contributions to the country's development. It would celebrate two subjects close to Walt's heart: American history and trains. In only six months in advance of the fair's opening, work was begun on famous locomotives that were faithfully restored to working order and early appearance in the shops of major railroad companies. Legendary locomotives—such as the *Tom Thumb*, *DeWitt Clinton*, and New York Central's No. 999—would be operating under their own power for the first time in a decade.

Walt didn't want to make the trip alone, and he knew Lilly didn't share his passion for trains—nor would she be very keen for a trip to Chicago in the middle of summer. Hazel had another suggestion, though: she remembered Walt describing an enjoyable visit to the San Gabriel home of one of his top animators, Ward Kimball. Ward was one of the "Nine Old Men," Walt's fond nickname for his group of supervising Disney animators.



Ward Kimball

NOW A VERY ACTIVE Disney retiree, Ward Kimball has long been regarded by his studio colleagues as a highly creative artist blessed with an irrepressible sense of humor and a reputation for outrageous apparel and clever practical jokes. The two-time Academy Award-winning animator cultivated an eclectic range of interests beyond his art: playing trombone in his Dixieland jazz band, "The Firehouse Five Plus Two"; collecting antique metal toys, model trains, and Disney memorabilia; and assembling one of the largest private collections of Mickey Mouse watches.

Like Walt, Ward's interest in railroading evolved from his early childhood experiences. From Minneapolis, his family traveled by train on the Rock Island Line to Kansas to visit relatives. Ward's father would make a point of arranging for his impressionable son to meet the engineer and fireman. On occasion, the introduction included a tour of the locomotive's cab and a chance to ring the bell.

This early experience probably contributed to Ward's backyard Grizzly Flats Railroad, featuring two vintage steam locomotives. One was a 22-ton, 1881 Baldwin "Mogul" (2-6-0) coal-burner that Ward, his wife, and their friends refurbished and named *Emma Nevada*, after a famous singer who entertained prospectors in Nevada's rich mining district theaters. The other, a 1907 Baldwin 0-4-2T, came from the Wiamanalo Sugar Plantation on the Hawaiian island of Oahu, and was named *Chloe* after one of Ward's daughters. Supporting the Kimballs' railroad operations were an enginehouse, a fully-detailed Victorian-era depot, a windmill, and a water tower. Other Grizzly Flats rolling stock included an 1881 Barney & Smith passenger coach that had been part of Southern Pacific Railroad's rolling stock headed for scrap in California's Owens



Left: For more than two decades, the Firehouse Five Plus Two (Ward Kimball and his studio colleagues) played rousing Dixieland music for its own pleasure—and for appreciative audiences across the country. Many of the original recordings are available today on compact discs. Kimball collection.

Below left: During a June 1946 Horseless Carriage Club meet at the Grizzly Flats Railroad, Betty Kimball poses with Disney director Ben Sharpsteen in a vintage Locomobile. Richard Jackson photo, Jim Jackson collection.

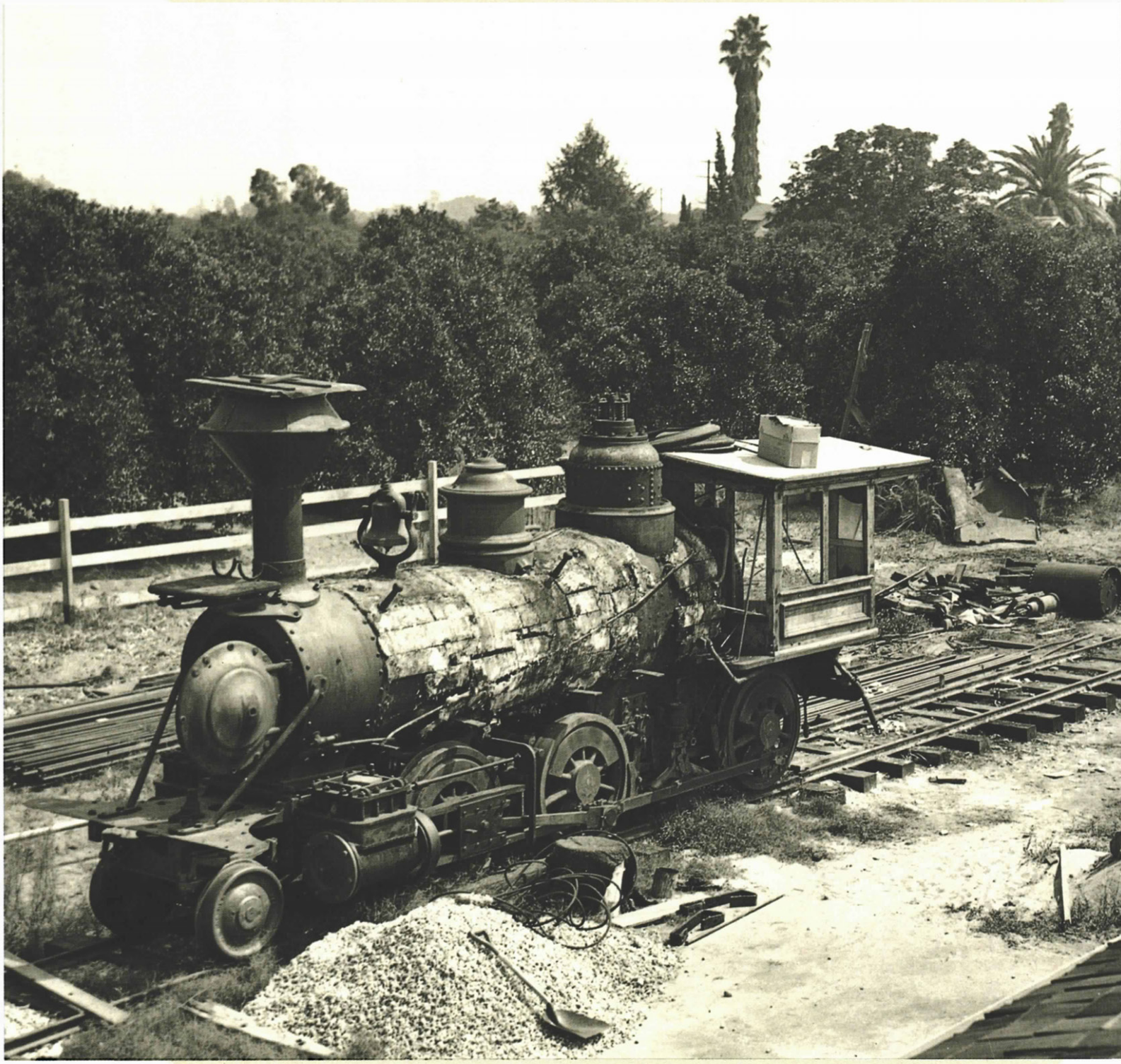






Above right: Ward liked to dress outrageously, and occasionally he talked his family into doing the same—especially for photo opportunities. Kimball collection.

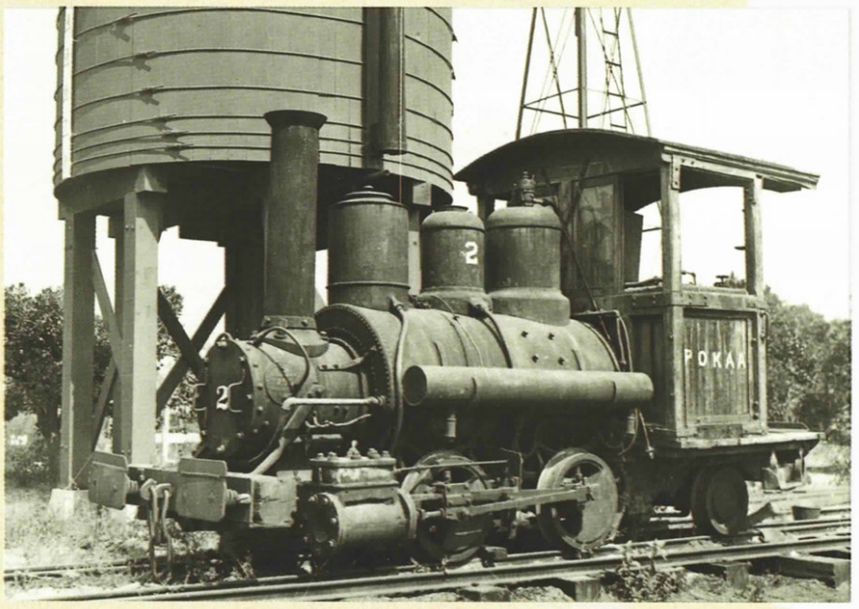
Left: America's first full-sized, privately owned, backyard steam railroad—the Grizzly Flats Railroad—is seen here circa 1947. Windmill "Daisy" towers above former Nevada Central Railroad No. 2, an 1881 Baldwin Locomotive Works 2-6-0 refurbished as Grizzly Flats Railroad No. 2 Emma Nevada. *At right is a former Pacific Coast Railway caboose, recently brought in from San Luis Obispo, California.* Kimball collection.





Work progresses on refurbishing Grizzly Flats Railroad engine No. 2 Emma Nevada *in this September 1940 view, taken at the Kimball property. The locomotive's tender, at right, is also undergoing major work; the water tank sits on blocks atop the frame. At far right, former Carson & Colorado Railroad coach No. 5—an 1881 product of Ohio car builder Barney & Smith—has been given a coat of primer. Erection of an enginehouse is still in the future.* Richard Jackson photo, Jim Jackson collection.





Valley; a 1906 boxcar built by the Seattle Car Works; and a 29-foot side-door caboose that had run on the Nevada-California-Oregon Railroad. The Grizzly Flats Railroad operated on 900 feet of narrow-gauge 35-pound rail, laid on six-foot ties bedded in crushed granite ballast.

Betty and Ward Kimballs' idea for a honeymoon was to load up their Ford with camera gear and artist's materials and explore remote logging towns in California's Sierra Nevada. South of Placerville, they happened upon an abandoned settlement with a single building. (It was common to cannibalize lumber from the buildings of one town to build another.) This one remaining structure was the post office, and it had the town's name across its front: Grizzly Flats. Ward and Betty liked the name for its whimsy and historical connection with the Seal of California (which features a grizzly bear). When they returned home, the Kimballs intended to bestow the name upon their 1/4-inch (O scale) model railroad layout. However, as full-sized trains entered their lives, plans for the smaller layout were abandoned. The Grizzly Flats name was applied instead to the Kimballs' backyard narrow-gauge line.

In 1938, Ward learned from his friend Gilbert Kneiss, chairman of the Pacific Coast Chapter of the Railway & Locomotive Historical Society, that the defunct Nevada Central Railroad's rolling stock was to be scrapped to benefit creditors. Included in the inventory was a vintage steam locomotive, numbered 2 and once named *Sidney Dillon*, which had performed faithfully for over a half century on this 96-mile central Nevada short line's run along the Toiyabe Range, between Austin and Battle Mountain. Another member of the Railway & Locomotive Historical Society, Jerry Best, provided his friend Ward with a photograph of the locomotive.

With Betty's approval, Ward made a $400 deal to save No. 2 from the cutter's torch. It was loaded on a Southern Pacific gondola at Battle Mountain, and hauled to SP's Taylor Yard and shops facility near Glendale, California. After a successful pressure test of the boiler and safety valves by SP crews, the engine was placed on a flatbed trailer and trucked to the Kimballs' two-acre San Gabriel homesite. It took the Kimballs and their friends several years to complete *Emma Nevada*'s transformation, in the process returning the locomotive to a Victorian showpiece. Along the way, the Kimballs became the nation's first private owners and operators of full-sized steam railroad equipment in a residential backyard.





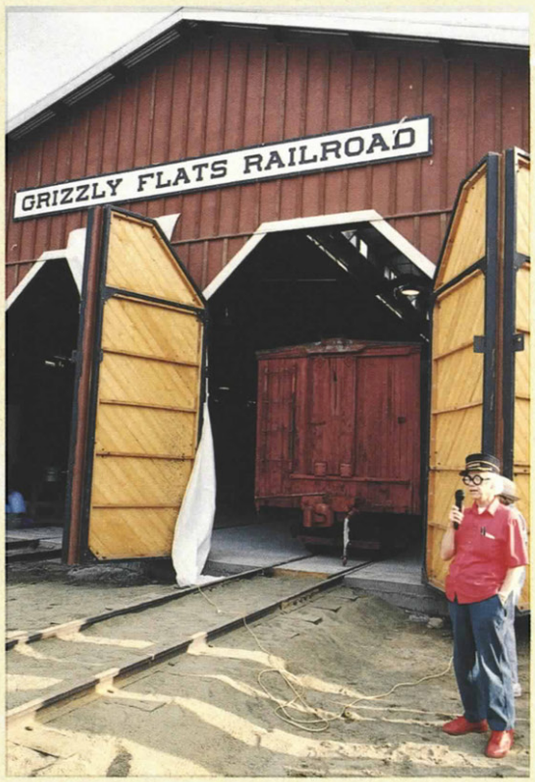
Above: Ward is seated at the operator's desk inside the Grizzly Flats depot, surrounded by a unique collection of railroadiana in this 1954 view. As completed, the depot—which began life as a set for a Disney movie—made for a quaint addition to the Kimballs' backyard railroad. For more detail about the structure, see pages 266-67. Betty Kimball photo.

Left: Ward Kimball is assisted by daughter Chloe in this April 1949 view by Bill Lange. The headlight, mounted on locomotive No. 2 Emma Nevada, *features Ward's original oil paintings.* Jim Jackson collection.

Opposite right: Former Waimanalo Sugar Company 0-4-2 No. 2 Pokaa *is seen in the Kimball backyard following its 1948 arrival from Hawaii.* Gerald Best photo, Jim Jackson collection.

Opposite left: Following its rebuilding and conversion into an older-style 0-4-2RT (rear tank), the Pokaa *was rechristened Grizzly Flats Railroad No. 1* Chloe. *Here, it pulls into the Grizzly Flats depot during a backyard outing at the Kimballs.* Kimball collection.





Above: In this November 15, 1992 view, Emma Nevada*'s tender has been loaded aboard a flatbed trailer at the Kimballs' San Gabriel residence for transportation to the Orange Empire Railway Museum in Perris, California.* Ward Kimball photo.

Right: Six weeks earlier, Ward and Betty (she's behind Ward) unveil a new sign while dedicating the just-completed Grizzly Flats Enginehouse at the museum. One of the first arrivals from the Kimball backyard, former Pacific Coast Railway boxcar No. 704, rests in the doorway. Paul Dieges photo, OERM collection.

Each spring, Ward and his wife, Betty, hosted parties at their home called "steam-ups," which enabled them to share their railroad with friends and neighbors. Walt enjoyed these gatherings, and relished swapping railroad lore with some of the most knowledgeable railfans in the country. At the first steam-up Walt attended, on October 20, 1945, he was given the coveted honor of being Chief Engineer, running *Emma Nevada* on its roll-out. Not since his days as a teenager working on the Missouri Pacific line had Walt been in the cab of a steam engine. Now he was at the throttle of a real locomotive—and it gave him a tremendous feeling.

At another steam-up party, Ward introduced Walt to one of his friends, a fellow railfan named Richard Jackson. In 1930, Jackson had become one of the first railroad hobbyists in the country to build a working miniature steam-powered locomotive and a complete 1/12th scale model railroad running around his home. At the time, Ward didn't know that—in addition to trains—Walt was fascinated by highly detailed miniatures of all types.

In 1992, the Kimballs began donating their railroad collection to the Orange Empire Railway Museum in Riverside County, California, along with shares of Disney stock that were used to build an "enginehouse" for the collection's storage and display. Eventually, the museum is slated to receive all of the rolling stock and structures that made the Grizzly Flats Railroad the highlight of the Kimballs' neighborhood for over half a century.



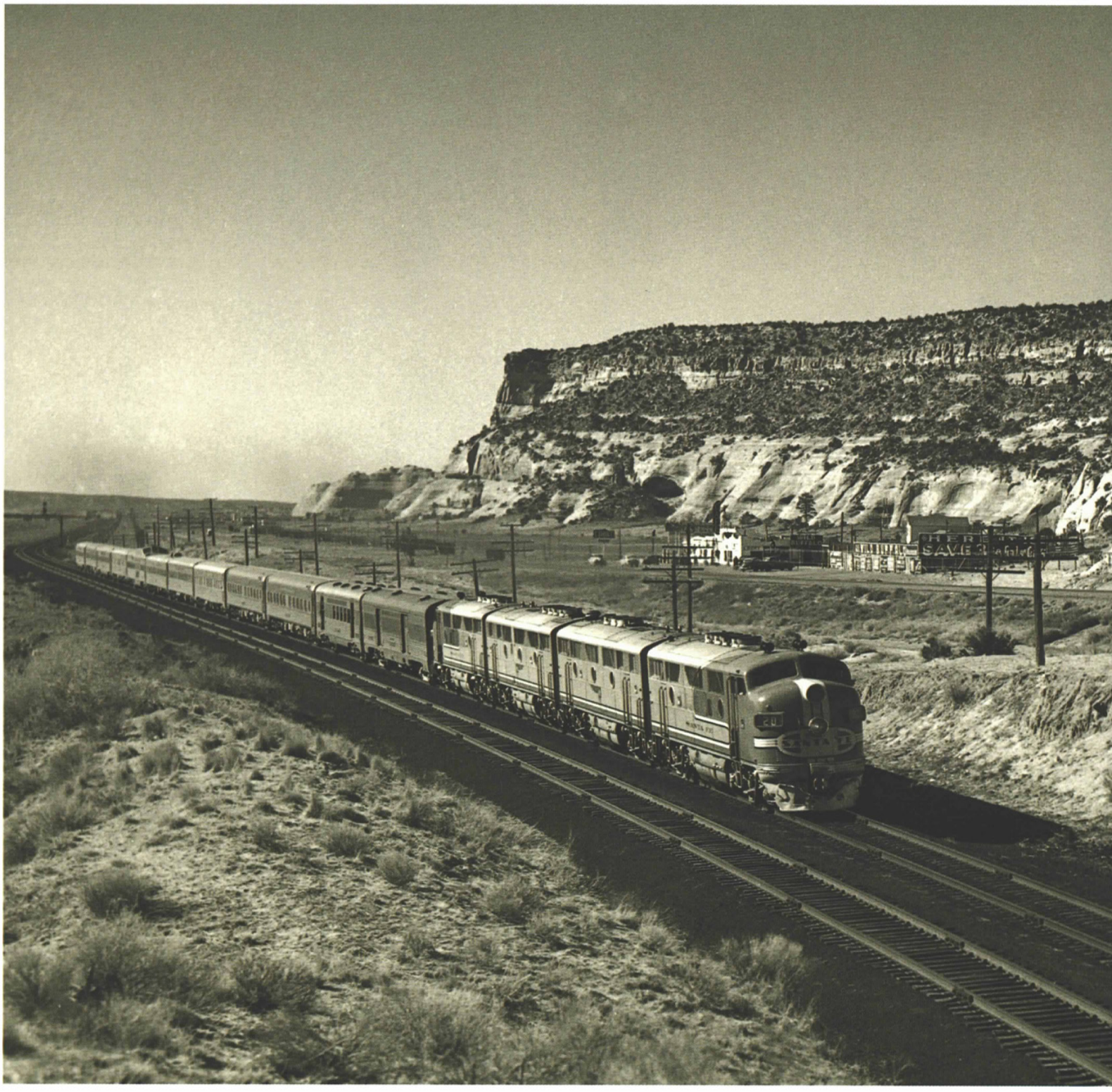
Walt and the crew pose beside Emma Nevada *on October 20, 1945.* Kari Berggrav photo, Jim Jackson collection.

"Yeah, Kimball is always relaxed," Walt observed to his nurse. "Maybe it's because he's got such a wonderful hobby running that big steam engine in his backyard." The envy in Walt's voice was understandable, because he certainly loved trains.

Time was quickly running out, so Walt picked up the phone. "Kimball, this is Walt. There's a swell train show they're opening in Chicago down by the lake. It's supposed to be the biggest event in railroad history and I want to go." He asked Ward if he were interested.

Ward recalled, "He said we would have to leave in two days to make it in time. I had been reading about the rail fair in the papers; how all the famous, historical railroad locomotives were refurbished, reboilered, retubed and put in running order by the big railroads. I replied to Walt, 'Wow, I want to see that.' Here was my chance. So, I told him I'd be happy to go along."

A couple days later, Walt and Ward met at the Pasadena train station, the most convenient place to catch the Santa Fe Railway's eastbound *Super Chief*. The streamlined, stainless-steel train represented the ultimate in fast, luxurious rail travel, offering lavish service, fine dining, and comfortable bedrooms. After saying "good-byes" to their wives, the pair climbed aboard to begin their cross-country adventure.





Aboard the *Super Chief*

Walt Disney was just a down-to-earth farmer's boy who happened to be a genius.

—Ward Kimball

After the two men were settled in their adjoining rooms aboard the train, Walt rapped on the mahogany paneling as a signal for Ward to meet him for dinner. The August sun was just setting as the two were seated in the dining car, next to a large picture window, and handed menus.

The steward, outfitted in a stiffly starched uniform with black bow tie and white gloves, stood by to write their order. Since—per long-standing railroad tradition—passengers normally wrote out their own meal tickets (orders), most probably wondered why these two were getting special attention. This was before Walt gained recognition as host of the popular weekly Disney television series; so, the other diners had no idea who he was. Of course, there was also no way for passengers to know that Walt just happened to be a personal friend of the Atchison, Topeka & Santa Fe Railway's president, Fred Gurley.

"So we studied the menu," Ward recalled. "I was looking forward to that famous selection, 'Santa Fe Beef Stew.' They had a way of preparing the dish where they would sear the meat before they put it in with the vegetables and potatoes. It had a wonderful flavor. All my railroad friends talked about it, and I was looking forward to this moment on the *Super Chief*, going over the Cajon Pass through the San Bernardino mountain range, eating Santa Fe's delicious stew."

Walt quickly studied the menu, then turned to the steward and announced, "I'll have the filet mignon steak, rare." He then looked over at Ward and asked, "Kimball, what are you having?" (Walt always called Ward by his last name.)

The Santa Fe Railway's premier luxury streamliner, the Super Chief, *races through the arid Southwest near the Arizona-New Mexico border circa 1955. During their 1948 journey aboard the train, Walt and Ward were invited aboard the lead locomotive's cab, where they enjoyed an engineer's view of the spectacular, passing scenery.* Santa Fe Railway photo.

Ward told him he was looking forward to a special treat, smiled at the steward, and said, "I'm having your wonderful and famous beef stew."

Upon hearing Ward's choice, Walt looked horrified.

"Beef stew, for God's sake!," Walt bellowed. Then, turning to the steward, he said, "He means he really wants filet mignon."

Soon, their meals arrived on platters covered by silver domes. With a flourish, the waiters removed the silver covers, revealing Walt's and Ward's dinners. Ward abided by his better judgment, and quietly began cutting the finely prepared steak while watching the sun disappear behind the San Bernardino Mountains. As the *Super Chief* smoothly picked up speed to cross California's barren Mojave Desert, he thought that his first evening aboard the train with his boss was perfect in every way—well, almost perfect.

"No doubt about it," Ward laughed years later. "Walt certainly could dominate any situation."

Crossing America

The trip from Los Angeles to Chicago took just under 40 hours—a full day, portions of two others, and two nights. Ward was given the rare opportunity to get to know his boss and hear him tell stories about his background. Another talent that Walt had, beyond anticipating the tastes of his audience, was his ability to spin tales. He was one of the best storytellers of his time.

"During a long train ride across the prairies of America there isn't much to do but talk," Ward recalled. "And the best conversations were the ones that took place two hours before dinner."

Walt would rap on the wall between their rooms and yell, "Kimball, come on in here, let's have a drink." He carried a small traveler's case with a cut-glass decanter of whiskey and two shot glasses, and would set out the glasses on a small round table between their chairs, facing a large window. He then poured each of them a drink.

Actually, Ward hated whiskey, but felt that it wasn't in his best interest to refuse. Besides, he recognized how unique this opportunity was and wanted to spend as much time with his boss as possible. "I hid my dis-



Walt's Menu

IN SPITE OF THE prime cut Walt selected on the *Super Chief*, his usual meal choices consisted of more low-brow fare such as macaroni and cheese, chili with beans, fried potatoes, cheeseburgers, canned peas, hash, and roast beef sandwiches. When he didn't have an appointment for lunch, his favorite meal—eaten at his desk—was a blend of canned Dennison's and Hormel chili (one for the beans and one for the meat sauce), accompanied by saltine crackers and tomato juice.

In the evenings, when Walt would arrive home from the studio, he almost always entered through the kitchen. That way, he could see what Thelma the housekeeper was preparing for dinner. Part of Walt's ritual was going to the refrigerator and grabbing a raw hot dog wiener, which he would then feed to the family dog.



The Super Chief *was truly a class act for its time. Room accommodations were provided for all passengers (no coach seating here!), and the train covered the entire Los Angeles-Chicago distance in just 39-3/4 hours. Outside, the train was a sleek symphony of stainless steel; inside, each car was uniquely appointed in rare woods, interwoven fabrics—and even sand paintings, based on ancient Navajo designs. This view shows the bar end of* Acoma, *a comfortable lounge car named for an Indian pueblo, with attentive employees "at the ready."* Santa Fe Railway photo.

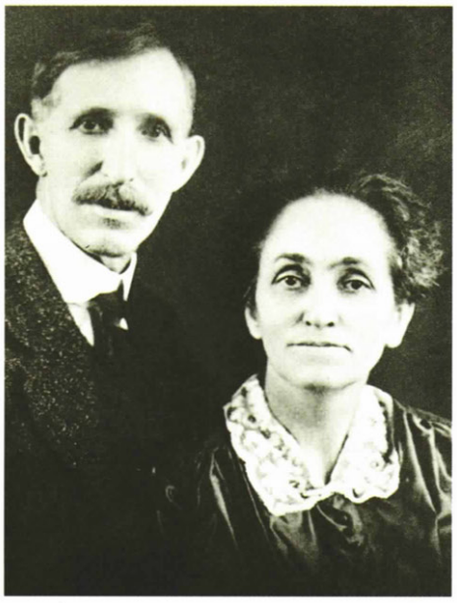
taste for the whiskey, but it was like drinking some kind of lye solution," Ward said. "Fortunately, I was a pretty good actor, so he never had a clue."

It was generally accepted by studio staff members that Walt saw his role as their leader; this didn't allow him to develop close friendships with employees. His attitude had stiffened further during an acrimonious 1941 strike by the Cartoonist Guild that Walt believed amounted to a breach of loyalty. After the strike was settled, Walt kept his friendships outside the studio gates—even though he maintained great respect for the talents of his people.

During the long train trip with Ward, however, Walt let his guard down. He began the first two evenings by discussing everything from politics to people. As they talked, America's wilderness prairies, family farms, small towns, factories, and neighborhoods provided ever-changing scenes through the large picture windows.

Walt commented on the conditions of the times: In 1948, America was experiencing a remarkable change as it adjusted to its postwar role as a victorious world leader. Slowly, the economy was gathering momentum after years of depression; these had nearly spelled doom for the studio. Walt was intrigued by a new electronic entertainment-and-information medium called television, just beginning to appear in living rooms across the country. Disagreeing with other Hollywood studio chiefs who saw television as a competitor, Walt thought it offered an important opportunity to reach more people with his films. (Ironically, Disney would become the only major studio not to sell its film library to television.)





Top: Walt's Chicago birthplace was designed by his mother, Flora, and built by his father, Elias. © Disney Enterprises, Inc.

Above: Elias and Flora Disney. © Disney Enterprises, Inc.

Walt and Mickey

On the first morning of their trip, the train's engineer invited the two men to visit the locomotive cab. Walt sent back an immediate acceptance, and when the train pulled into the station at Winslow, Arizona, Walt and Ward were introduced to the crew and shown to the cab of the huge diesel. Under way, the engineer gave Walt the job of sounding the locomotive's twin air horns. At each crossing, Walt delighted in yanking two long blasts, a short, then another long blast of the horns. He was like a kid, laughing and joking with the crew and having the time of his life crossing the Arizona desert in the cab of the *Super Chief*'s lead engine.

That evening, back in his compartment, Walt discussed the studio's projects and plans for the future. He also talked about his disappointment concerning the staff's strike. "He couldn't give that up," Ward recalled.

Walt told Ward about his life in a series of stories, including the early years when his father, Elias, moved the family from Walt's birthplace in Chicago to a farm in north-central Missouri. The farm was near the rural township of Marceline, on the Santa Fe's main line between Fort Madison and Kansas City. It was there, in the rural countryside, that Walt's lifelong passion for steam trains was ignited as he watched them chuffing, clanging, and rumbling along the broad stretches of rail disappearing on the horizon.

Walt revealed that, too young to join the army, he had lied about his age to get a tour of duty as a Red Cross ambulance driver in France during



A serious filmmaker by age 20, Walt Disney experienced several setbacks early in his business life. Eventually, these drove him to leave the Midwest and seek a career in Hollywood. Here, Walt looks through a Disney studio camera in 1937. © Disney Enterprises, Inc.

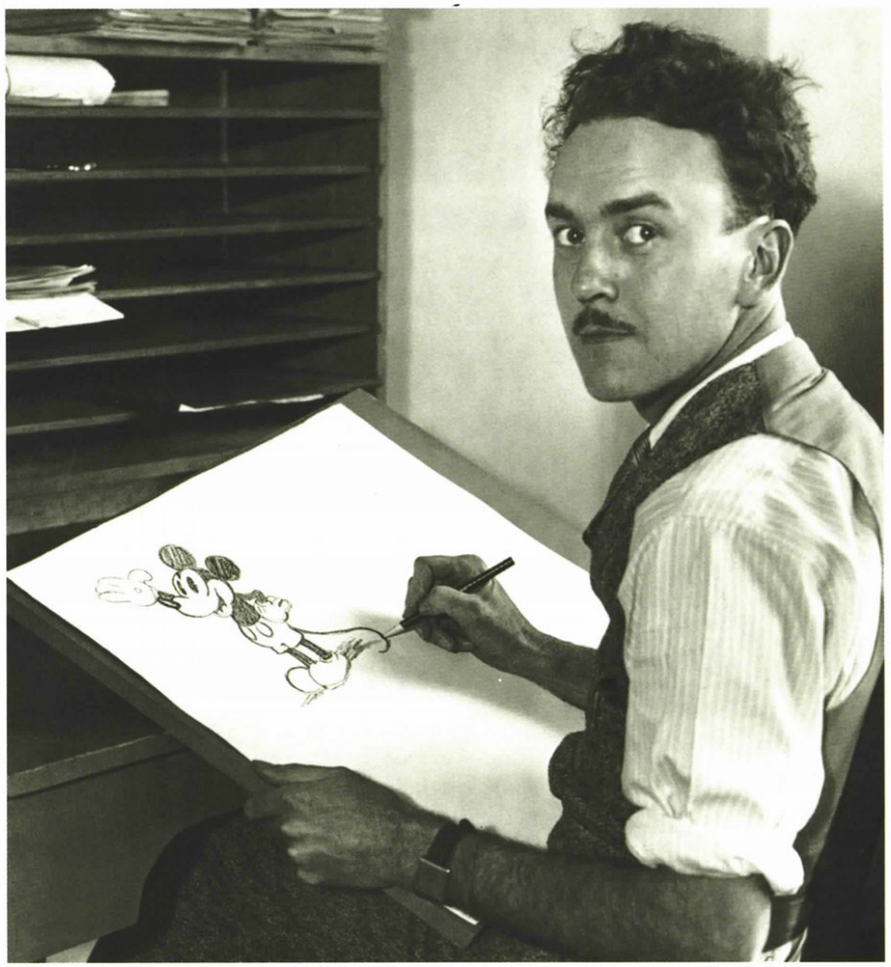


Margie Gay was the third and final star of the Disney brothers' live action-animation ALICE *comedies, produced between 1923 and 1927. Here, she poses with Walt and Roy.* © Disney Enterprises, Inc.



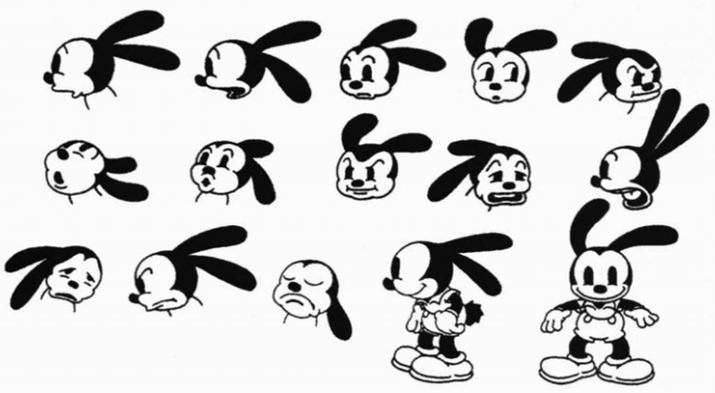
Storyteller Walt

WARD REMEMBERED a planning meeting he attended as a young animator during which, for three hours without a break, Walt told the entire story of SNOW WHITE AND THE SEVEN DWARFS. In addition to describing every detail of each scene and its characters, Walt actually portrayed the characters' movements and speech so his staff of artists and writers could understand exactly what he wanted.

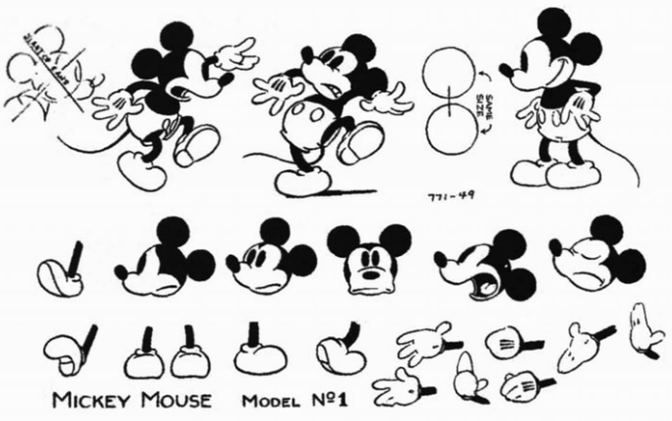


Right: Walt's close associate Ub Iwerks is seen working on a Mickey Mouse cartoon, circa 1930. Ub, perhaps the best animator of his day, was Mickey's original draftsman. © Disney Enterprises, Inc.

Below: This model sheet of Oswald the Lucky Rabbit illustrates the successful cartoon character that Walt lost control of in 1927. Courtesy MCA Publishing Rights, a division of MCA Inc. All rights reserved. © Universal City Studios, Inc.



Below right: Interesting comparisons can be made between this model sheet for Mickey Mouse, drawn by Ub Iwerks, and predecessor cartoon character Oswald the Lucky Rabbit. Disney character © Disney Enterprises, Inc. Used by permission.



the closing days of World War I. He also spoke about how he had struggled as a young artist, trying to get enough money to finance his projects.

"Much of what he told me I had never heard before." Ward remarked. "He was a private guy when it came to discussing personal things."

Walt recounted the meeting in New York during which he'd lost control over his first major cartoon character, Oswald the Lucky Rabbit. In his naive approach to business, Walt trusted people—sometimes the wrong people. He didn't know that upon signing a contract allowing Universal Studios to distribute his films, Universal had also acquired the copyright to Oswald. The deal was engineered by Charles Mintz, a film promoter who was distributing Disney cartoons. Mintz then hired away Walt's animators to continue producing the popular cartoons.

Rarely admitting mistakes, Walt dreaded telling the boys back at the studio that his misplaced trust had cost the company its major star. He knew that he had to create a replacement character during the long train ride back to Los Angeles with his wife. Recalling the trip, Lilly remembered how Walt sat quietly, thinking and sketching. Then, somewhere between Toluca, Illinois, and La Junta, Colorado, he turned to her and described a new character he called Mortimer, based on a cute, tame field mouse that he fed food scraps to whenever it climbed on his animation desk. He said that during those difficult times, when he was beginning his animation career in a rented barn in Kansas City, he often felt the little mouse was his only friend.

Lilly said she told Walt that she liked the concept but didn't care for his name. "Mortimer's too pompous for a cartoon mouse," she observed. "How 'bout Mickey?"

Walt looked at his wife for a long moment, then said, "Lilly, I like it. Mickey Mouse it is!"

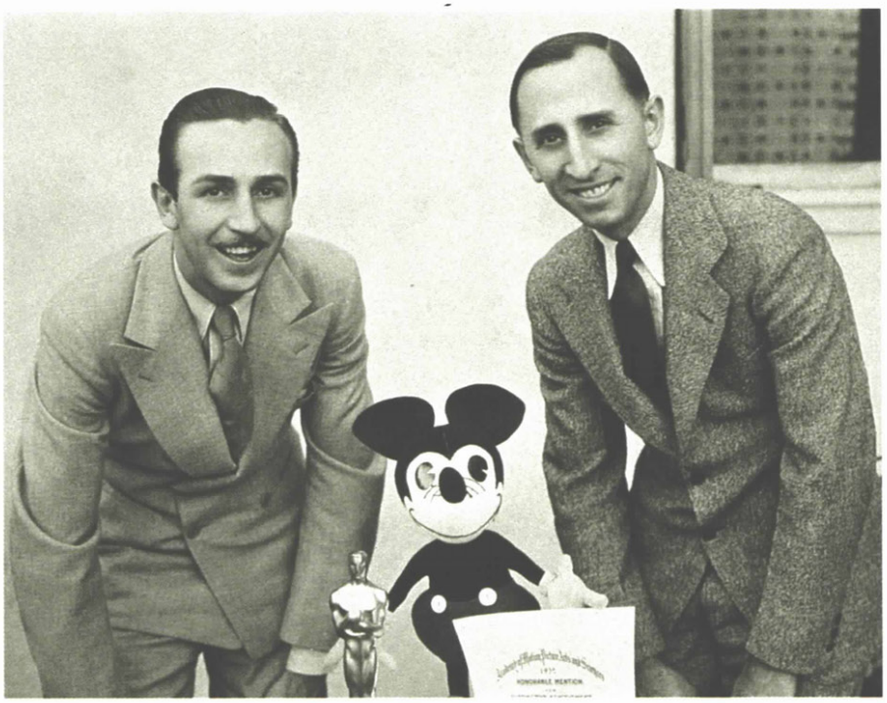
Silence and Opportunity

Immediately upon his return to the studio, Walt met secretly with his chief animator and character designer, Ub Iwerks. At Walt's direction, Ub—the first cartoonist hired by Walt when he started producing films in Kansas City—began designing the new character, which looked a lot like Oswald but with oval ears replacing the oblong rabbit ears. (Some believe this is how Mickey ended up being three feet tall; he was simply a cosmetically altered, three-foot-tall rabbit!)

Walt said later, "I often find myself surprised at what has been said about our redoubtable little Mickey who was never really a mouse nor yet wholly a man, although always recognizably human, I hope."

Originally, the first Mickey Mouse cartoon was to be a silent short. But Walt, who was avidly interested in new technology, had learned that RKO was experimenting with a synchronized sound and picture system and told Iwerks that he wanted to add a sound track. Ub was close to finishing the cartoon STEAMBOAT WILLIE, so—without on-screen credit and to save money—Walt supplied the distinctive falsetto voice of Mickey, which he continued to do until the late 1940s. The cartoon opened on November 18, 1928, at the Colony Theatre in New York City. Four years later, the Academy of Motion Picture Arts and Sciences presented Walt with a special Oscar award for the creation of Mickey Mouse. It was the





Above: At the 1939 Academy Awards, child actress Shirley Temple presents Walt with a special Academy Award—incorporating one large and seven little Oscars—for Disney's SNOW WHITE AND THE SEVEN DWARFS. © Disney Enterprises, Inc. Academy Award ® and Oscar ® are registered trademarks of the Academy of Motion Picture Arts and Sciences.

Above right: Walt and Roy Disney were honored in 1932 with a special Oscar, presented by the Academy of Motion Picture Arts and Sciences for creation of Mickey Mouse. Here, Walt, Roy, and Mickey pose with the Oscar statue. © Disney Enterprises, Inc. Oscar © A.M.P.A.S. ®.

first of 32 Academy Awards Walt would earn during his lifetime.

Besides hearing stories about Walt's early career, Ward learned about another important contribution to Disney's success. By hiring highly talented artists, Walt surrounded himself with people who were individually more talented than he was. He saw his role as the conductor of an orchestra: He might not be able to play all of the instruments, but he could direct the talents of each musician. He also characterized his function as somewhat like a honeybee, flying from flower to flower and pollinating each one he touched along the way. Whatever his technique, Walt managed to instill great loyalty and trust among his staff. Those uniquely gifted people followed him, willingly subordinating their individual identities under the name Walt Disney. For those seeking to understand the essence of Walt's abilities, his strong sense of leadership and his demands for quality above cost point the way.

Walt tried to get Ward to talk about his colleagues. He didn't expect Ward to be an informer; he was simply curious about people, wanting to know what made them tick. "I had the feeling that Walt remembered every word I said," Ward observed.

At one point during the journey, while looking out the window at the countless miles of desert passing by, Walt remarked, "I can't figure out why in the hell everybody lives in the city where they don't have any room and can't do anything. Why don't they come out here where they have this great empty land, filled with opportunity and silence?"

By the time the *Super Chief* pulled into Chicago's Dearborn Street Station, Walt and Ward had shared many details about their lives and their outlooks on a broad range of topics. It established a unique relationship between the two railfans that would continue through the following 18 years.

A True Genius?

IN THE BOOK THE STORY OF WALT DISNEY, written by Diane Disney Miller with Pete Martin, Walt made a comment that created problems for Ward Kimball with the other animators. The text first appeared as an eight-part series in the SATURDAY EVENING POST beginning November 17, 1956.

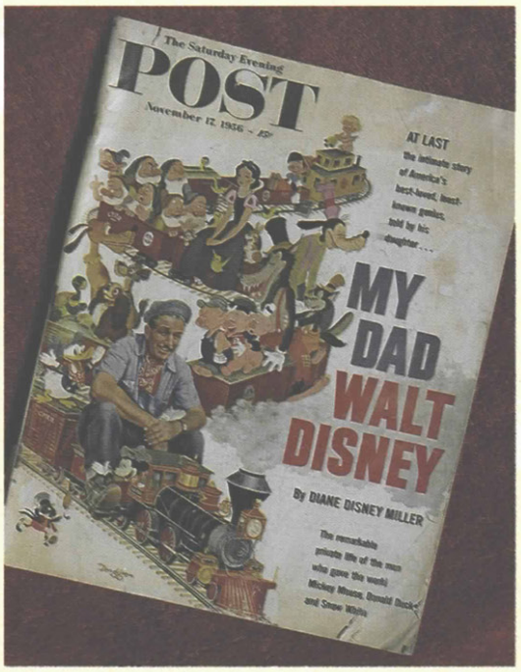
"A whole chapter was devoted to me and it contained a statement that was hard to live down, even though it was flattering," recalled Ward. In the book, Walt said, "Ward Kimball is one person that I can truly call a genius." Because Ward worked fast, he could get a lot done in a relatively short amount of time compared to most of the other animators. This allowed time for wandering the halls and offices of the Animation Building and walking around to other departments on the studio lot.

"It was to ease the tension and pressure of working over an animation desk hour after hour. Besides, I found it to be an interesting place because everything going on around the studio involved some form of creativity," remarked Ward.

Ward was not only one of the most creative animators, he was technically advanced. Unlike other creative uses of motion pictures, animation is unique in that the artist is in total control of the technical details of the medium. The animator can create every nuance of expression and movement. In no other form of entertainment does the creator have such control over

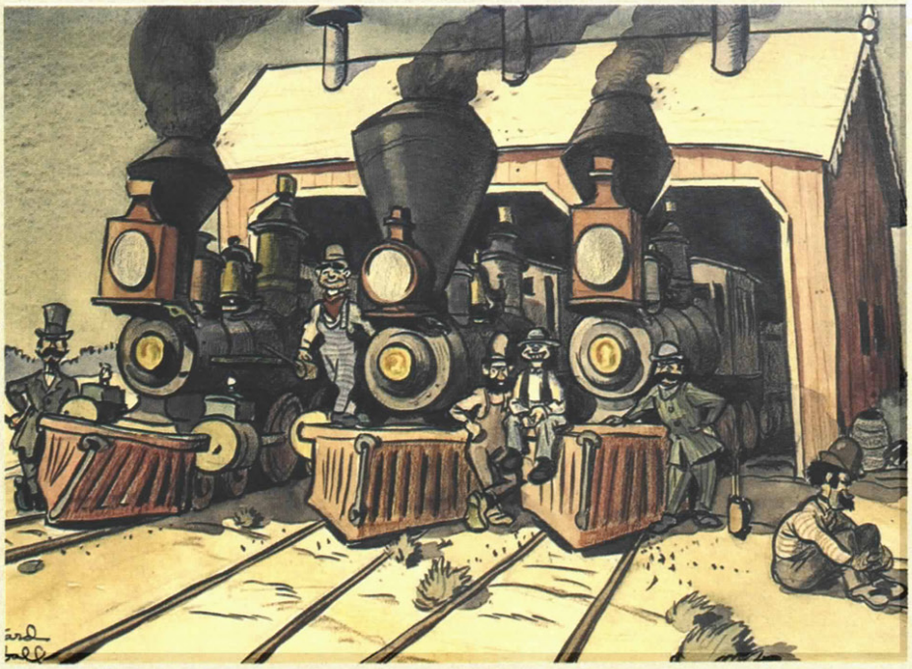
Below: Diane Disney Miller interviews her dad for a series of eight SATURDAY EVENING POST *articles. Looking on is Diane's sister, Sharon.* Mrs. Walt Disney collection.

Left: Cover artwork for the SATURDAY EVENING POST *series.* Disney characters © Disney Enterprises, Inc., Cover © The Curtis Publishing Co.









Above: Attired in traditional engineer's garb complete with bib overalls, Ward Kimball smiles mischieviously at the camera circa 1948. Gerald Best photo, Jim Jackson collection.

Above right: Ward Kimball sketched and presented this original illustration to Roger Broggie circa 1950. CPHS collection.

the performer, and Ward excelled at the process.

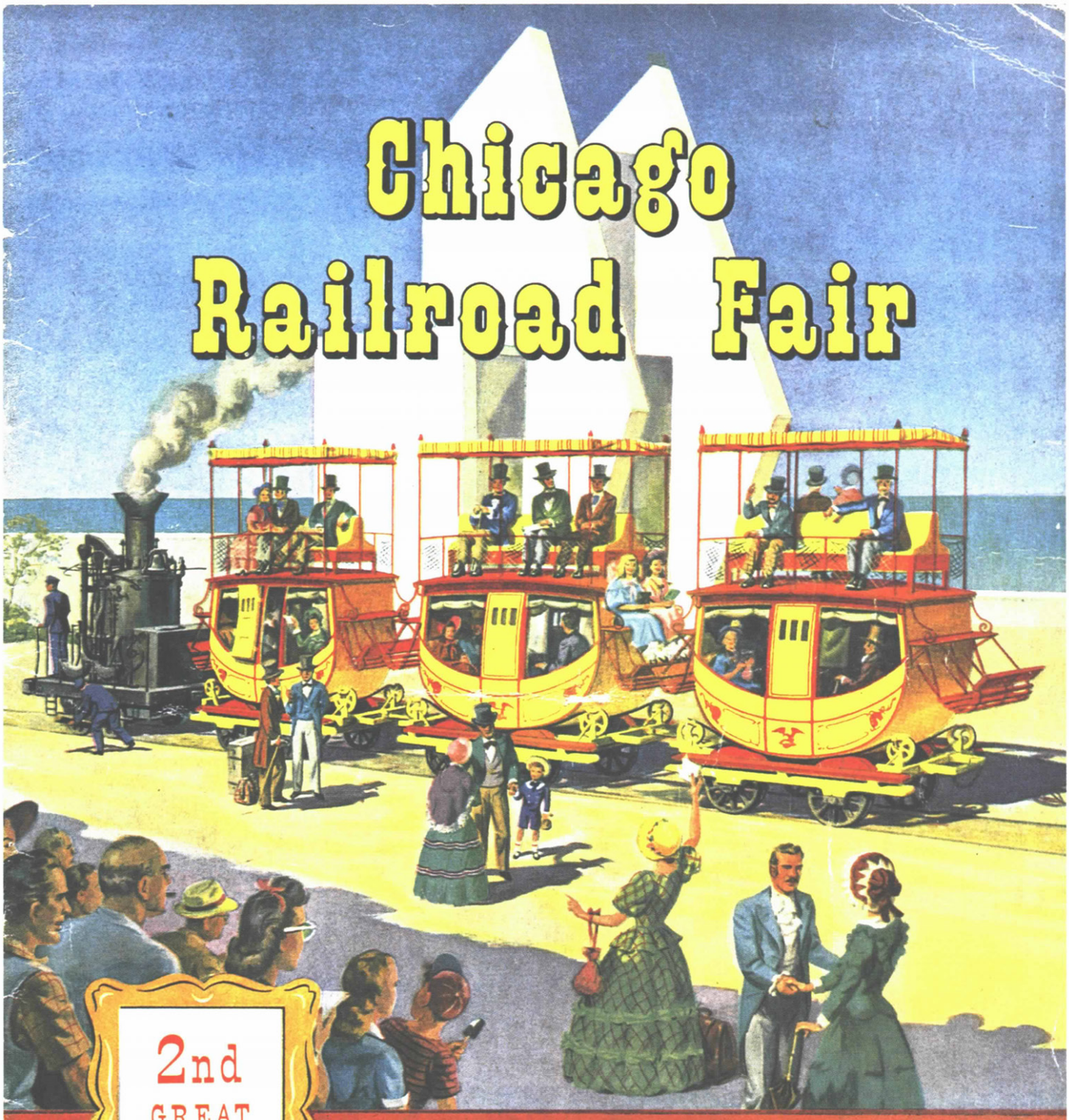
"One of the things that occurred to me years later," Ward recalled, "is that Walt built his core group of artists during the Great Depression when work was very difficult to find, especially for members of the creative community." It's doubtful that artists of such high quality would have been attracted to animation if they too hadn't been hurting from the Depression. All of the accomplished artists who became known and revered as the Nine Old Men had to be taught the highly technical aspects of filmmaking and the art of animation.

When Ward showed up at the old Hyperion studio in 1934, with a portfolio of charcoal sketches, watercolors, and oil paintings, he was only 20 and looking for any job he could get. He had recently dropped out of a college-level art school in Santa Barbara after only one semester. "Cartooning didn't appeal to me, but I figured if I had to be a cartoonist to support myself I might as well work for the best," he reflected.

He remembered the studio as being a casual place. When he entered without an appointment, a receptionist directed him to Walt's office in the back of the building. After looking at his work, Walt immediately hired him as an animator. Thus began one of the longest and most creative animation careers at Disney.

The idea of compiling a portfolio was new, by the way. After Ward, every artist applying to Disney had to produce one.

Chicago Railroad Fair



2nd GREAT YEAR

OFFICIAL GUIDE BOOK

and Program for the Pageant

'WHEELS a-ROLLING'

Price 35¢



The Railroad Fair

There are no days in life so memorable as those which vibrate to some shake of the imagination.

—Ralph Waldo Emerson

Arriving in Chicago, Walt and Ward checked into a hotel, then went directly to the site of the railroad fair. The result of only six months of planning and development, the event was designed to be the grandest salute to any industry ever staged. Coming out of the Depression and World War II, America's railroads wanted to put on a show and celebration rivaling any world's fair or international exposition.

A promotional brochure described the event:

> *Acres of ingenious and realistic exhibits by the railroads and the nation's outstanding railroad equipment and supply firms will give Fair visitors the scenic rewards of a hundred tours telescoped into the physical dimensions of a mile-long exposition.*
>
> *Within the fairgrounds you will find Indian tribes carrying on their normal day-to-day routine . . . a full-scale and actually functioning reproduction of Old Faithful, the picturesque geyser in Yellowstone National Park that has intrigued millions of tourists . . . sidelights on western life in the U. S. including a dude ranch with a rodeo show . . . a reconstructed version of early Chicago's first railroad station . . . a scene lifted from Florida's Everglades . . . diorama presentation of western mountain country . . . graphic illustration of the agriculture and economy of many western states . . . Mexican scenes . . . many views of the best known U. S. tourist attractions and examples of how U. S. railroads keep the nation humming.*

Baltimore & Ohio Railroad's 1832 locomotive Atlantic *graces the cover of this "2nd Great Year - Official Guide Book" for the Chicago Railroad Fair and its Wheels a-Rolling pageant. In tow are early stagecoach-like Imlay coaches. These and many other early-day B&O locomotives and cars (some replicas, others original, but all fascinating) are today displayed at the B&O Railroad Museum in Baltimore.* Brad S. Lomazzi, Western Railroad Collectibles collection.





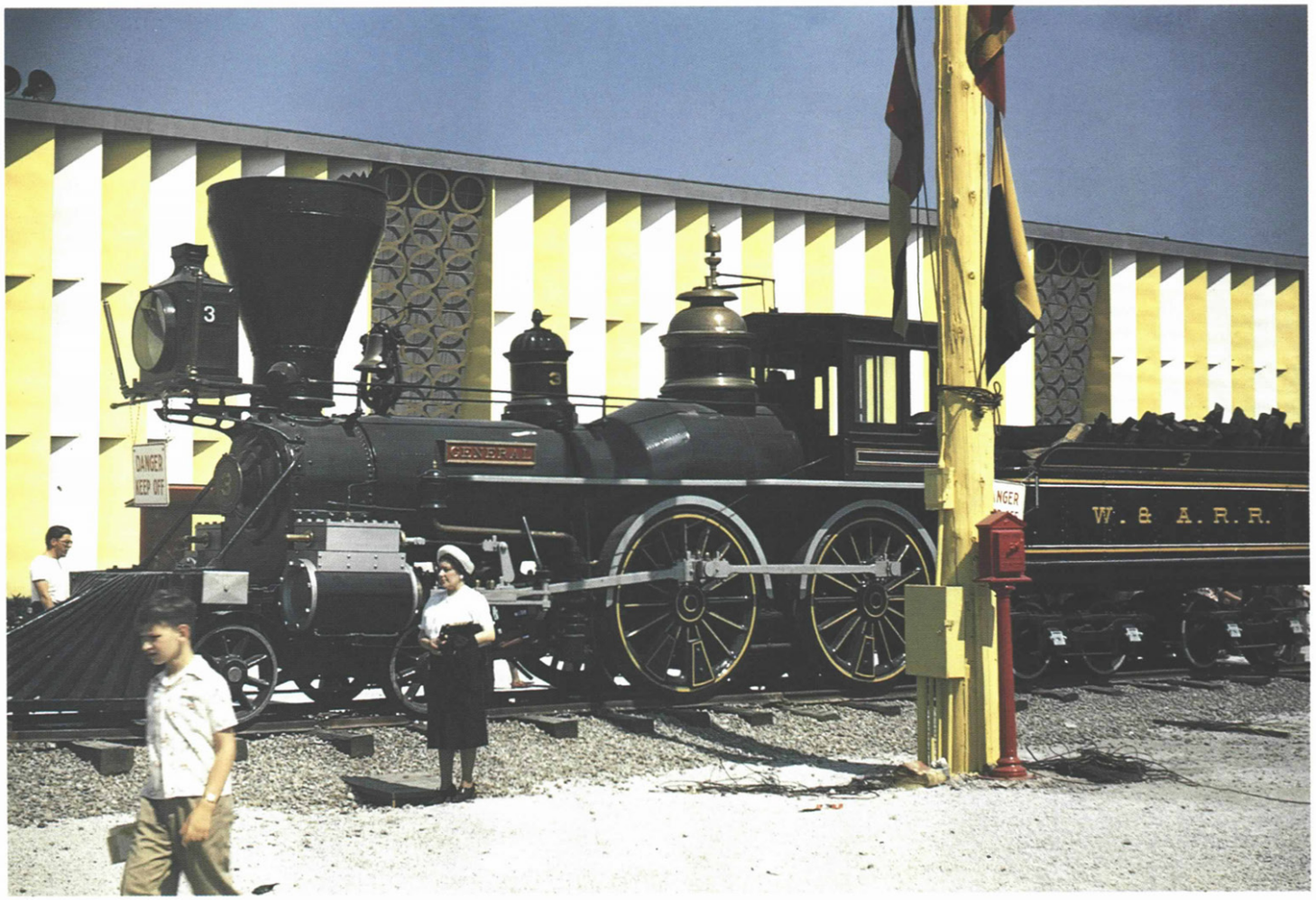
Above: Although the Pennsylvania Railroad's original No. 7002 was scrapped in 1934 (it had allegedly set a world speed record of 127.5 mph in 1905), the railroad's officials in 1939 set aside a similar "Atlantic"-type 4-4-2 locomotive for display purposes and eventual preservation. It is shown here, lettered to represent No. 7002, at the railroad's fair exhibit. Today this locomotive—and other historic Pennsylvania Railroad equipment—is displayed at the Railroad Museum of Pennsylvania, in Strasburg. Joe Zydlo photo.

Above right: An array of locomotives and rolling stock—including the Atchison, Topeka & Santa Fe's "Little Buttercup"; the Cumberland Valley's 1851 Pioneer*; and an Illinois Central suburban commuter locomotive—waits between showings of the Wheels a-Rolling pageant.* Joe Zydlo photo.



NARROW-GAUGE DEADWOOD CENTRAL TRAIN AT CHICAGO RAILROAD FAIR

Right: The three-foot gauge "Deadwood Central" railroad, with its gaudily decorated locomotives and bright yellow cars, was a favorite of fair visitors. It operated between the main entrance at 23rd Street and "Gold Gulch," the fair's "western" town; the locomotive and cars were supplied by the Burlington Route's Colorado & Southern subsidiary. Brad S. Lomazzi, Western Railroad Collectibles collection.



Western & Atlantic's original 4-4-0 General, *star of the Civil War's unforgettable Andrews Raid, was on hand as a static exhibit at the Chicago Railroad Fair. The 1855 veteran can today be viewed at the Kennesaw Civil War Museum in Kennesaw, Georgia.* Joe Zydlo photo.


V. & T. R. R.
J.W. BOWKER



Word quickly reached Major Lenox Lohr that Walt Disney had arrived at the fairgrounds. (The "Major," who was in charge of Chicago's Museum of Science and Industry—official host of the fair—was retired from the U. S. Army, but he continued to use his military rank in civilian life.) He wanted to make sure Walt and Ward received his personal red carpet treatment, and escorted them through various exhibits on the way to the main stage.

Wheels a-Rolling

Upon reaching their destination, Walt and Ward were amazed. The museum's crew had constructed a huge, 450-foot-long stage—big enough to hold a football field and a half. Situated on the shore of Lake Michigan (which provided a natural backdrop), the viewing area was framed by simple flats at both ends; these also served as wings. Across the stage, track had been laid to accommodate presentation of famous old steam engines as well as modern streamliners. Opposite the stage was a large stadium for the audience.

After six months of planning and coordination, and with the generous support of railroad companies, all was ready for four performances of "Wheels a-Rolling," the railroad pageant of the building of America. Major Lohr suggested that Walt and Ward come backstage in the morning, before the first performance, to run some of the historic locomotives. It was like inviting two kids to a toy factory.

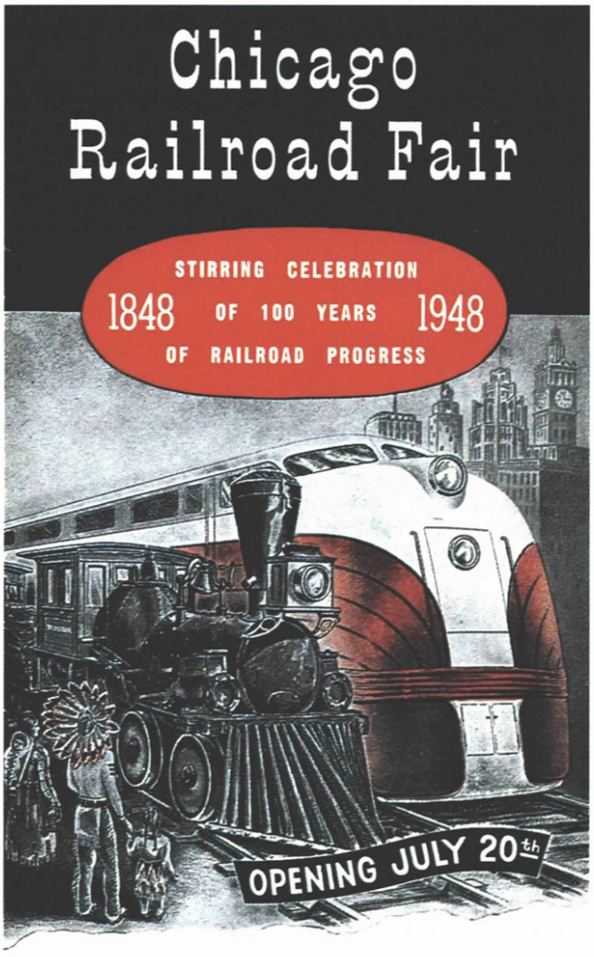
"We could do anything we wanted," Ward recalled. "They let us run the steam locomotives around the three or four miles of trackage. Running the *DeWitt Clinton* was one of the greatest thrills of my life. It was like shaking hands with George Washington."

Early the next morning, Walt and Ward returned for an up-close inspection of the vintage locomotives. They climbed into the 100-year-old *Pioneer*, Chicago's first locomotive, and examined a replica of the *Best Friend of Charleston*, which debuted in 1830 but blew up after a crewman—annoyed by the sound of a hissing boiler-pressure safety valve—tightened the safety valve shut! Walt and Ward pitched in to help a crew fire-up the Baltimore & Ohio's replica of *Tom Thumb*, then took turns running the historic locomotive back and forth. While enjoying these rare experiences, they took movies of each other. Ward's 16-millimeter camera produced excellent shots of Walt running various locomotives, including *Thatcher Perkins* and *William Mason* (which pulled Lincoln's funeral train in the pageant). Unfortunately for Ward, Walt's camera wasn't set for the proper speed and the film was underexposed.

Meanwhile, Walt was invited by the pageant's director to play a bit part in a scene featuring the Harvey Girls. The scene cast him in a cameo role where passengers got off the train and had lunch at dining tables, served by Harvey Girls in their starched white uniforms. Walt, costumed in a stovepipe hat and frock coat, was directed to mimic the other performers. Flawlessly, he imitated their movements and simulated the dialogue. His early days as an actor and his years of filmmaking helped him to anticipate the flow of the performance.

Opposite above: Locomotive J. W. Bowker, *a diminutive 2-4-0 switcher built in 1872, served for many years on Nevada's most famous railroad, the Virginia & Truckee. On hand for the fair, it had previously starred in Cecil B. DeMille's 1930s epic* UNION PACIFIC. *The little steamer eventually wound up at the California State Railroad Museum in Sacramento, where it is displayed today.* Joe Zydlo photo.

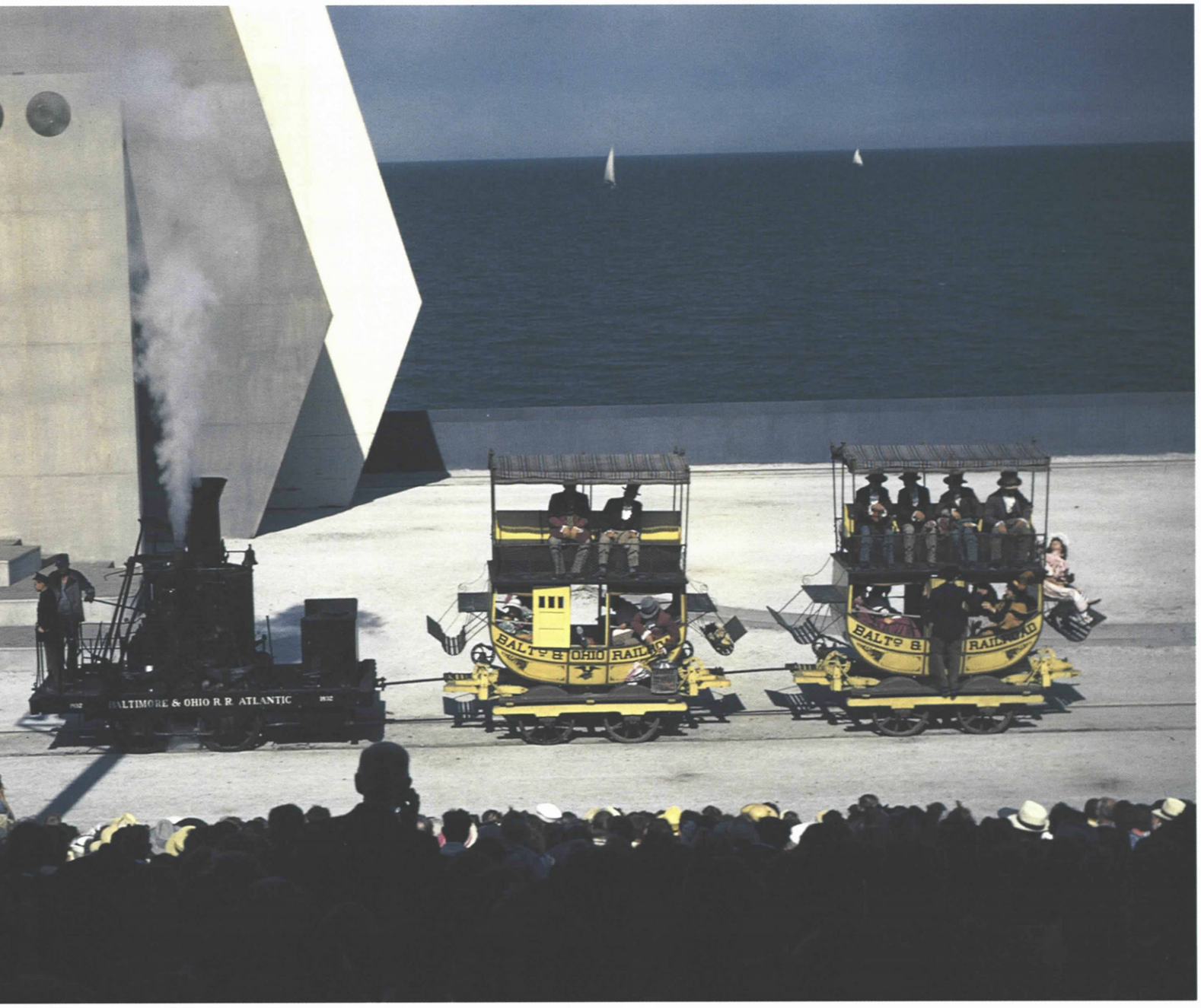
Opposite below: The Santa Fe's "Little Buttercup" has two vintage wooden coaches in tow as it rolls on the stage of the Wheels a-Rolling pageant. Joe Zydlo photo.



Right: The high-powered copy in this promotional Chicago Railroad Fair brochure proudly proclaims, "As American railroading has grown so has the nation. Steel rails have been the veritable backbone of our country in its development from a loosely-knit federation of infant states on the eastern seaboard to a thoroughly united empire. . . . In Chicago this summer, the Chicago Railroad Fair graphically retraces this parallel history of railroading and the nation to give America its first great outdoor exposition since the war." The tri-fold brochure concludes with this helpful suggestion: "Your local railroad ticket agent will be glad to help you plan your trip." Brad S. Lomazzi, Western Railroad Collectibles collection.



Far right: Baltimore & Ohio's Atlantic *(a heavily reconstructed locomotive based on an 1832 original of similar appearance) waltzes across the stage during a performance of Wheels a-Rolling, pulling two early replica coaches. This same train is on the cover of the fair's brochure (see page 72), but in that sketch, the illustrator has added a third coach.* Joe Zydlo photo.


BALTIMORE & OHIO R.R. ATLANTIC
BALT & OHIO RAILROAD
BALT & OHIO RAILROAD



This 1963 view shows one of Chicago's famous "L" trains operating over the Windy City's elevated downtown Loop. The scene is largely unchanged since that 1948 evening when, upon Walt's urging, he and Ward took a fast-paced ride on the L.
John Gruber photo.

Ward filmed three performances of "Wheels a-Rolling." He particularly liked the humorous scenes filled with sight gags, such as one featuring *Tom Thumb* and its famous challenge race with a horse-drawn carriage, and a funny Roaring Twenties scene with a Keystone Cop chasing a drunk doing pratfalls all over the stage.

The highlight of Ward's visit, however, was an invitation to play the operating fireman in a night scene featuring New York Central 4-4-0 locomotive No. 999, famed for setting a world speed record of 112 miles per hour in 1893. The setup required a high-speed run on a special, 2,000-foot length of track. By the time the locomotive reached center stage, it appeared to be roaring by. Ward's job was to ring the big brass bell all the way across the 450-foot stage. "That's one thrill I'll never forget," Ward asserted.

After the last run in the evening, the show ended with an elaborate fireworks display over Lake Michigan, which Walt particularly enjoyed. Not surprisingly, fireworks would later become a nightly feature at Disneyland.

Sentimental Journey

Walking out of the showgrounds one particularly hot evening, Ward suggested going to Rush Street to hear some of the country's best jazz musicians. Air conditioning was relatively uncommon, and it was too hot to go back and sit in the hotel. Walt had a different idea, though: He wanted to ride the elevated train system that ran throughout Chicago. "Let's take a ride on the 'L,'" he suggested. "I think I know where all the trains go."

Ward remembered, "We took a taxi to some station. I didn't know where the hell we were. Walt said, 'Yeah, this is the one we take.' We got on this thing, and it was unbelievable. We were roaring through the tenement districts just three feet away from guys sitting on their beds reading the paper in their shorts. Walt said, 'I remember this



Meals by Fred Harvey

FOR OVER 80 YEARS, Fred Harvey's staff served meals to passengers stopping along the Santa Fe Route, and later aboard the line's dining cars. Known for its impeccable service, well-trained personnel, and quality food, the Harvey House operation was the envy of the railroad and restaurant industries. A 1945 MGM feature film, starring Judy Garland, told a glorified version of its story.



California State Railroad Museum collection.

whole thing.' We got off at some isolated station which was noisy and dirty, and he said, 'This is where I used to catch the train that made the connection downtown.' Walt was reliving his youth. He knew Chicago well."

When he was a young man, Walt had served as a postman in the Chicago area and used the train to commute to his route. He amazed Ward with his accurate recall of the streets and stations; it was as if he'd never been away. "We always said that Walt had a memory like an elephant," Ward recalled.

Back at the railroad fair, according to Ward, the emotional highlight of the "Wheels a-Rolling" show was the re-creation of President Lincoln's funeral train. As the vintage train—dressed exactly as the cortege had been—slowly crossed the stage, the orchestra played "The Battle Hymn of the Republic" while a chorus sang its stirring words. Two African-American actors walked beside the tracks as the train passed. Each night, Walt was moved to tears as this mournful episode was re-enacted.

Ward Kimball believes the trip to Chicago turned out to be a tremendously sentimental week for Walt, who loved nostalgia before it became fashionable. "That's why so many of his pictures were set in the innocent period of American history, the Gay Nineties or the early 1900s—because that was when he was a kid," Ward pointed out.

All too soon, however, their visit to the Chicago Railroad Fair—and the Windy City—came to an end. Walt and Ward then boarded a Wabash Railway train heading for Dearborn, Michigan, where yet another adventure awaited.



The "Deadwood Central" narrow-gauge train ride was so popular at the railroad fair's first year that another trainset was brought in for the second. Known as the "Cripple Creek and Tin Cup," this train's locomotive and cars were supplied by the Denver & Rio Grande Western Railroad, then-operator of numerous narrow-gauge lines in the Centennial State—including the soon-to-become-famous Durango to Silverton route through the spectacular Animas River gorge. Joe Zydlo photo.


ROUGE RIVER
CHRISTY STREET
WASHINGTON BOULEVARD
EAGLEY AVENUE
STATE STREET
MAIN STREET
A Pictorial Map of
EDISON INSTITUTE
MUSEUM & HISTORICAL
GREENFIELD VILLAGE
LOCATED AT DEARBORN, MICHIGAN
★
FOUNDED BY HENRY FORD
★
OPEN TO THE PUBLIC
★



Genesis of a Kingdom

Walt Disney was a master executive capable of harnessing vast numbers of talented people to work out the details of his childlike vision. Like an innocent, Disney did not recognize the ordinary limitations implied by knowledge. All his creative productions realize the visions of childhood—they reach beyond the stars.

—Donald Jackson, professor of psychiatry, Stanford University

While Walt Disney admired many of America's great historical figures, he particularly revered Henry Ford. The great automotive industrialist is, of course, credited with putting the nation on wheels by mass-producing affordable (pun intended) vehicles. Without knowing it, Henry Ford also played a significant role in helping Walt visualize his revolutionary concept for a multi-themed amusement park.

This bird's-eye sketch of Greenfield Village shows the general arrangement of Henry Ford's early outdoor "museum of buildings." Walt's 1948 visit to the automobile magnate's attraction started him thinking about how he might someday build his own themed amusement park. © Henry Ford Museum & Greenfield Village.

Ford's Land

A little-known facet of Ford's personal interests was his penchant for collecting buildings. During the Great Depression, when nearly everyone was broke, Henry Ford amassed a personal fortune greater than the value of many of America's leading corporations. He used his tremendous financial leverage to acquire things that would never have been available under normal economic conditions.

For instance, Ford learned that the descendants of aviation pioneers Orville and Wilbur Wright were financially strapped. He reasoned correctly that they might be interested in selling the family house and bicycle shop they had inherited. The city fathers of Dayton, Ohio, were disheartened to see these historical landmarks hauled off to Greenfield Village. However, they lacked the resources to match the lucrative Ford offer. The Wright Brothers' buildings therefore became a permanent



The bicycle shop run by aviation pioneers Orville and Wilbur Wright is seen here at Greenfield Village. During the Depression, Ford purchased the shop as well as the family house from the Wright brothers' heirs. © Henry Ford Museum & Greenfield Village.

part of a private collection recognizing and preserving structures of historical or architectural significance.

Several years later, Ford purchased the Menlo Park, New Jersey, laboratory and assorted other buildings that had belonged to America's most prolific inventor, Thomas Edison. (Ford considered Edison one of history's greatest geniuses; like Roy and Walt Disney, Edison had worked as a railroad news butcher when he was a teenager.) Edison's numerous personal research instruments and experimental devices—down to assorted test tubes and apothecary jars—were transported to Greenfield Village, occupying a corner of what was the huge Ford Fairlane estate in Dearborn, Michigan.

Over the years, Ford's collection grew with the addition of dictionary magnate Noah Webster's home; a southern plantation mansion; a Dutch windmill; and a 16th-century sandstone cottage and barn from Cotswold, England. To these he added a 1913 merry-go-round (carousels have only horses) with a variety of skillfully hand-carved Dentzel figures, and a sternwheeled riverboat to ply the waters of a man-made river encircling a small island. Additional antique buildings were found that demonstrated various crafts of the 18th and 19th centuries, such as a sawmill, a family farm, a blacksmith shop, and a weaving mill. A small brick livery garage that had served as the original Ford assembly shop in 1896 was acquired as well. Best of all, Ford installed a steam locomotive and a train of vintage passenger coaches to chuff around the property. A 1901 turntable relocated from Petoskey, Michigan, provided operational flexibility for turning the locomotive and rolling stock.



Henry Ford's influence on Walt's future planning for Disneyland can be seen in this view of sternwheeler Suwanee *circling a small island in man-made waters at Greenfield Village.* © Henry Ford Museum & Greenfield Village.

Next to the village, a handsome building was constructed of brick, glass, and cut stone to house Ford's vast collections. The artifacts and memorabilia reflected Ford's wide array of interests, including an assortment of steam-powered contraptions that helped launch the Industrial Revolution. Displayed were collections of cameras; furniture; bicycles; farm and dairy implements; knives and guns; kitchen appliances; tractors; planes; trains; and—of course—automobiles.

Walt Disney and Henry Ford admired the ingenuity they found in each other. When Ward and Walt visited the museum and village, the automobile magnate had died only shortly before. Aware of Ford's fondness for Walt, the managers of the facility—a privately endowed enterprise of the Ford Foundation—provided Walt and Ward with a special tour.

As he had done at the Railroad Fair, Walt made the most of this brief escape from the pressures of his California studio. The other visitors didn't recognize him, so he could move about with ease until word of his identity spread from a museum employee to a group of visitors—then everyone wanted his autograph.

Along the way, the two visitors stopped at the tintype photo studio. Being avid photography buffs, they watched with interest as metal plates were prepared with emulsion to make their pictures. Using the provided props of hats, tools, and a conductor's lantern, Walt and Ward re-created a series of vintage character poses. "Walt got a big kick out of that because he knew all about the old tintype bit," Ward recalled. "They put those old-fashioned metal clamps on our heads to hold us steady during the long exposure, just like in the old days." Ward had the prints copied and gave a set to Dave Smith for the Disney Archives.





Above: Locomotive No. 1 "Edison" is rotated, by hand, on Greenfield Village's small turn-of-the-century turntable. Larger railroad turntables generally were rotated using compressed air or electric motors. © Henry Ford Museum & Greenfield Village.

Above right: The "Edison," a 1920s Ford Motor Company rebuild of an 1870s locomotive, waits patiently at a station stop along the route of the Greenfield Village Railroad. © Henry Ford Museum & Greenfield Village.

California Dreaming

After spending the better part of two days looking at nearly everything Ford had collected during his long and productive life, Walt and Ward boarded a train and headed back to California. Absorbed in what he had seen over the past 10 days, Walt began to formulate a new entertainment concept.

When he arrived back at the studio, Walt reviewed the numerous notes he had written on the train. From these, he composed an internal memo dated August 31, 1948, to Dick Kelsey, one of his talented production designers. For the first time, Walt described a revolutionary idea he called "Mickey Mouse Park":

The Main Village, which includes the Railroad Station is built around a village green or informal park. In the park will be benches, a bandstand, drinking fountain, trees and shrubs. It will be a place for people to sit and rest, mothers and grandmothers can watch over small children at play. I want it to be very relaxing, cool and inviting.

Around the park will be built the town. At one end will be the Railroad Station, at the other end, the Town Hall. The Hall will be built to represent a Town Hall, but actually we will use it as our administration building. It will be the headquarters of the entire project.

Adjoining the Town Hall will be the Fire and Police Stations. The Fire Station will contain practical fire apparatus, scaled down. The Police Station will also be put to practical use. Here the visitors will report all violations, lost articles, lost kids, etc. In it we could have a little jail where the kids could look in. We might even have some characters in it.

We will also have a drug store with a soda fountain and sell the usual articles . . . candy, cigarettes, magazines, camera and film supplies and all sorts of novelty souvenirs.

The Opera House and Movie Theatre, with a capacity of three

hundred seats. Here we will put on little kids' plays of all kinds, together with motion pictures. We can also use it as a radio and television broadcasting place. We will have a variety of little stores around the park. One would be a toy store. Here we would sell the Disney toys and whatever toys that would be suitable. There should be a repair shop in the store where the toys can be fixed. We could include a book department here that would carry all the Disney books.

A doll store, featuring Disney dolls and other kinds too, together with a doll hospital. Another store could be an old-fashioned candy factory where we would sell candy that is no longer obtainable. We would use only the best materials and stress the fact that it is the old-fashioned kind that can't be bought today.

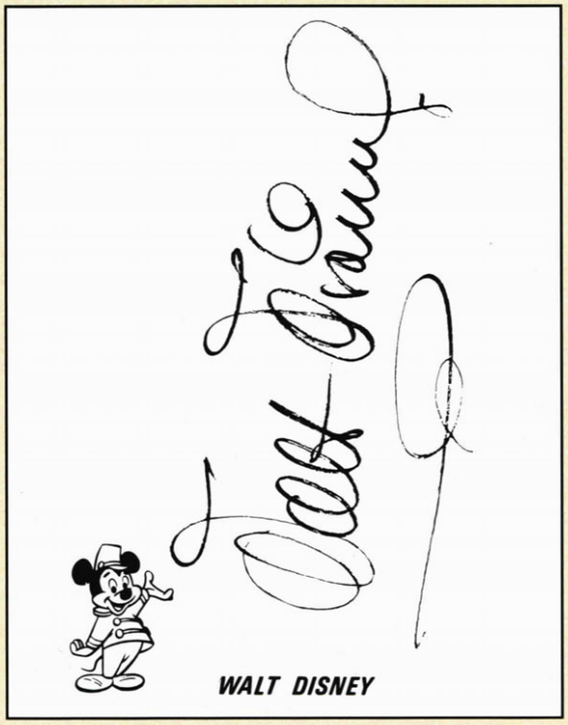
Next is the Hobby Shop where all kinds of stuff can be bought. This will be for both boys and girls.

There will be another shop (we will think of an appropriate title) where the Disney artists can sell what they most enjoy doing in their leisure hours, i.e., their hobbies, whatever they may be.



Autograph, Please?

MANY YEARS LATER, while walking through Disneyland, Walt was constantly approached by Park guests for his highly prized signature. He devised a clever way to give his autograph without creating attention or causing ill feelings. He pre-signed 4 x 5 inch personalized memo notes imprinted with a small drawing of Mickey Mouse, and carried them in his pocket whenever he was in the Park. When recognized by guests and approached for autographs, Walt would quietly slip them the signed memos and move on before other guests would notice. Those slips of paper are very popular today with collectors of Disney memorabilia.



Walt's pre-signed memo notes are a prized Disneyana collector's item. Mrs. Walt Disney collection, Disney character © Disney Enterprises, Inc. Used by permission.



Walt Disney and Ward Kimball "ham it up" for the photographer at Greenfield Village's old-time tintype photo studio. Their heads are being held steady by metal clamps, made neccessary (to avoid blurred faces) by the long exposure. Kimball collection, © Henry Ford Museum & Greenfield Village.

Maybe we could have a magic shop where we would have all kinds of tricks for kids, party favors, etc.

Next would be a kids' furniture store. Here we would have all types of furniture, play-houses, etc., but the point is it would be the same type of furniture that would be on display in the residential section.

Then a kids' clothing store. Here we would have all types of play suits, Indian suits, soldier suits, cowboy outfits . . . all the things kids love to dress up in.

Restaurant. We would have a lunch counter and dining room. Probably we would have a separate dining room, or rooms, that could be reserved for birthday parties of a private kind. This would be arranged through a special catering set-up.

In the center of the park we will have a little hot-dog/ice cream stand which would be very colorful.

Music Store. Here the kids can buy the Disney records and all other kinds of kids' records.

In the Town Hall we will have a real Post Office where mail and packages can be mailed. (Note: Check with Burbank on how to go about getting our own postal stamp).

The Horse Car. The car would start at the Main Entrance and pick up those who did not want to walk. The car would take them down the street to the Railroad Station. The car would stop here for those who wanted to get off at the village or they could continue on to the Western village, then loop around and come back by way of the Carnival section; then onto the Main Village for a stop and continue until it was back at the Main Entrance.

We will have a Livery Stable where buck-boards are for hire. These will carry adults and children and will be pulled by a team of ponies which would drive them all around the village. Surreys and buck-boards will be available to go through the Western Village and the old farm. In other words, they can use any road. They will be rented by the half-hour, including the driver.

Carnival Section. This will be attached off the village and will be the regular concession type which will appeal to adults and kids alike. There will be roller coasters, merry-go-rounds . . . typical Midway stuff. (This will be worked out later.)

The Western Village. A general store with a soda fountain and lunch counter. We could sell most of the articles we have in the drug store in the village but we would also sell Western toys, Western outfits, toy guns, etc.

We might want to put in another little movie set-up here where we would run nothing but Western pictures.

We might also put in some kind of a Western museum.

We will have a pony ring, set up in a corral, where the kids can ride.

The Stage Coach. The coach would leave from the Western village, pass through the farm, go through the Indian village and pass

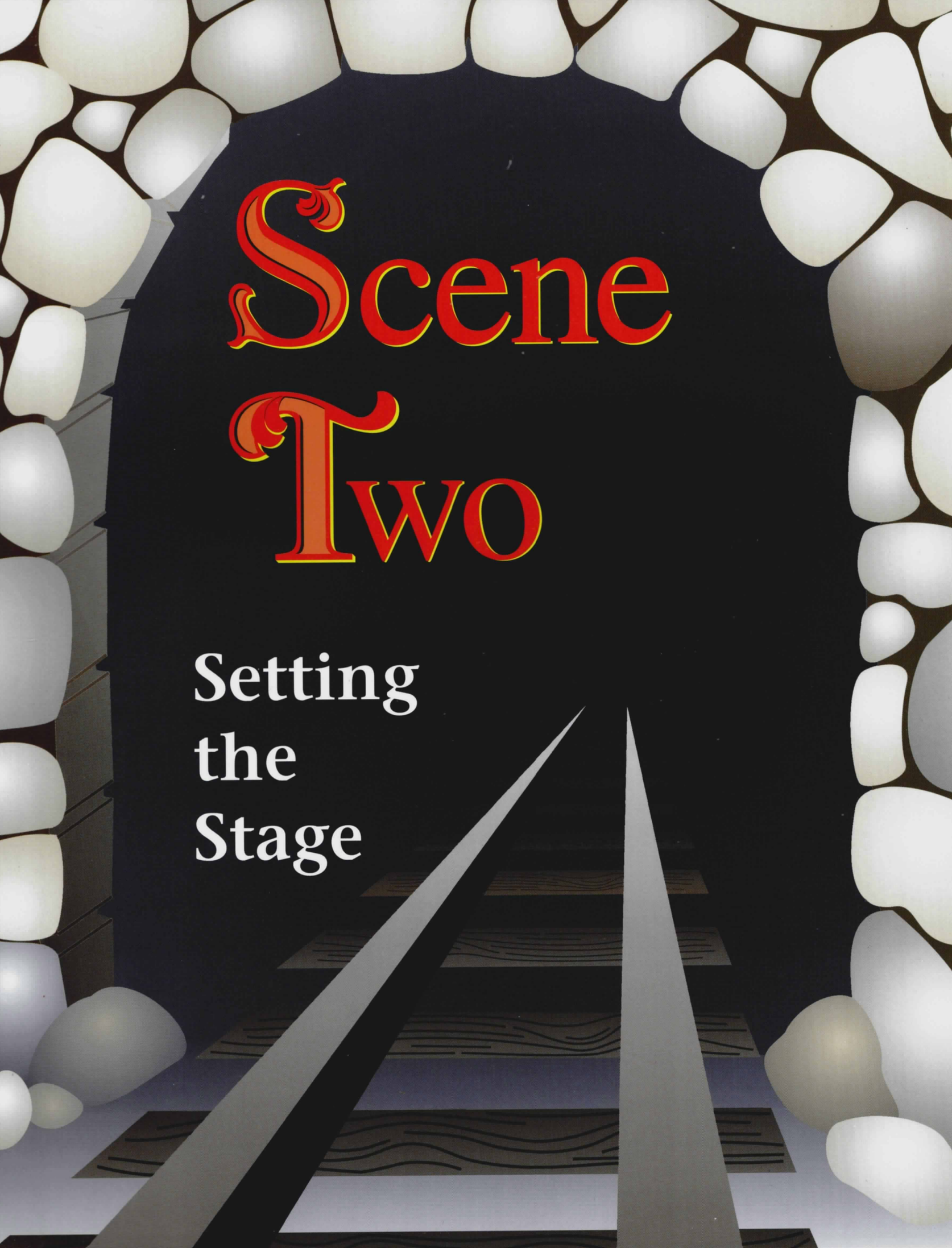
the old mill. This would be by a special road.

The Donkey Pack Train. The donkeys would be all hooked together and handled by one man. This would take ten kids.

This memo demonstrated the thoroughness of Walt's thinking. He was concerned about people getting what he termed "museum feet" from too much walking, so his park would feature various forms of transportation in harmony with the era of each section. Through his visualization of a Main Village with a Railroad Station, Carnival Section with a midway and carousel, and Western Village with surreys and buckboards, we see the beginning of a themed amusement park that would appeal to all age groups. The description clearly shows how visiting the Chicago Railroad Fair and Greenfield Village helped Walt create the magic of his kingdom.

Over the next four years, the Mickey Mouse Park idea would evolve in Walt's fertile imagination while he pursued another goal in his own back yard.

Pioneer automaker Henry Ford's collections, including a series of machines tracing the history of steam power, continue to be maintained—many in working condition—at the Henry Ford Museum & Greenfield Village in Dearborn, Michigan.


Scene Two
Setting the Stage





Discovering Miniature Live Steam

[Walt Disney] has the innocence and unself-consciousness of a child. He still looks at the world with uncontaminated wonder.

—Salvadore Dali (TIME, December 27, 1954)

After he had operated working steam locomotives at the Chicago Railroad Fair and observed model steam-driven engines at Henry Ford's museum, Walt Disney wanted to learn more about the miniature railroad hobby known as "live steam."

Walt's first step in developing the hobby was his introduction to Dick Jackson during a 1948 Grizzly Flats Railroad steam-up party at Betty and Ward Kimball's San Gabriel home. Jackson, considered by many hobbyists to be the "Dean of Miniature Live Steam," impressed Walt with his thorough knowledge of the history and mechanics of railroading. In 1930, Jackson became the first rail enthusiast west of Chicago to build a working 1/12th scale (one inch on the model equals 12 inches—one foot—in full size) miniature steam engine that would operate on 4-3/4-inch gauge trackage. To Walt, the concept was incredible: Two of his prized interests—trains and miniatures—could be rolled into one.

Jackson explained that 1/12th scale was large enough to carry a dozen adult passengers riding on precision models of boxcars; gondolas ("coal cars"); and flatcars. Walt was intrigued as he envisioned a steam train, in perfectly scaled miniature, that worked just like the big ones. He wanted to see Jackson's model train and layout, and asked if it would be possible to visit him. Appreciating Walt's interest, the affable Jackson invited him to his home in Beverly Hills.

Walt Disney is seen here on April 4, 1948, at the throttle of "Colorado Central" 4-4-0 No. 900, a 1/12th scale live steamer owned by Dick Jackson. Behind Walt are Ward Kimball; Betty Kimball (holding daughter Chloe); Ollie Johnston; Laurence Hiney; Martin Lewis; C. R. Wright; and Marie Johnston. Only a few weeks earlier, Walt first encountered the live steam hobby here in Jackson's Beverly Hills back yard. Richard Jackson photo, Ollie Johnston collection.

The following Sunday Walt, Lilly, and their younger daughter, Sharon, headed west on Sunset Boulevard through Los Angeles, with the top down on Walt's Cadillac convertible in anticipation of pleasant autumn California weather. Soon, they arrived at Jackson's home on Alpine Drive in Beverly Hills. It was a handsome California ranch-style structure with ample, well-manicured grounds.

Dick Jackson welcomed the Disneys at the door and introduced Lilly to his friend Harriet. Taking Walt by the arm, Dick motioned him toward the back yard as Sharon followed along. As Walt stepped onto the patio, his attention focused immediately on a black locomotive sitting on two shiny rails in front of a row of perfectly scaled freight cars. He could hear the pulsating sound of steam escaping from the safety valve, and he could see the oily glint of precision steel rods connected to drive wheels under a muted black boiler and cab. The smell of coal smoke and creosote-treated wood ties permeated the air.

For Walt it was a powerful experience. It evoked distant memories of his childhood in Missouri, as he savored the selfsame thrill of anticipation he had felt as a four year old boarding his first train on the Santa Fe line. That train had transported the Disney family from Chicago to its new home near Marceline.



Jackson's Hobby

RICHARD JACKSON MADE a sizable fortune early in his career. Born in 1886, he was the right age to witness the development of the automobile industry in the United States. Realizing that buyers with financial means would want extra features on their cars and trucks, he created the first major after-market motor vehicle equipment business. In the emerging days of the automobile industry, such basics as horns, lights, spare tires, and luggage racks were accessories—and not offered by vehicle manufacturers.

One of Jackson's major contributions was developing a 12-volt incandescent light bulb that greatly improved night driving. By the time he was 42, Jackson had saved enough money to live comfortably the rest of his life, so he sold his business. It was the year before the stock market crash of 1929 and the beginning of the Depression. Fortunately, he had wisely secured his business profits.

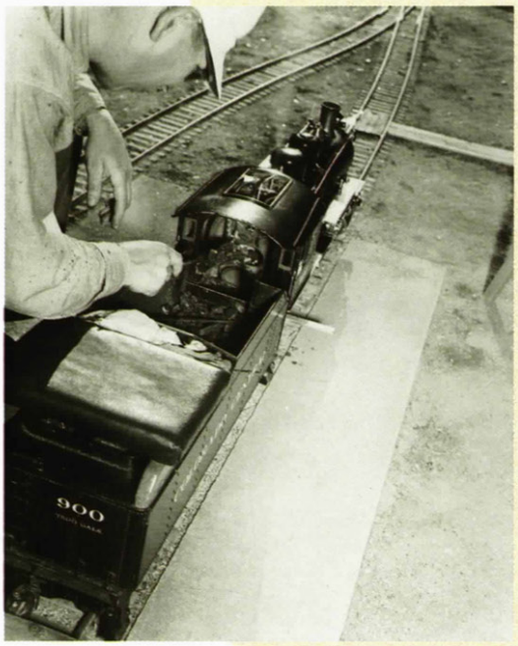
Jackson dedicated his time to developing miniature live steam as a hobby, and set out to interest railfans in this pastime. He attracted engineers, business people, blue-collar workers, and professionals—people of all occupations, whose only common bond was their love of railroading. In 1956, he encouraged formation of the Los Angeles Live Steamers and, as a charter member, supported many club activities, including acquisition of a permanent club site in L.A.'s Griffith Park.





Above: "Dean of Miniature Live Steam" Dick Jackson is seen here at the throttle of Disney animator Ollie Johnston's 1/12th scale locomotive No. 515. In his search to learn more about the hobby, Walt Disney visited this 4-6-2 locomotive as it was being constructed in a Santa Monica machine shop. Ollie Johnston photo.

Left: Jim Jackson proudly shows off his father's 1930-vintage Colorado Central 4-4-0. The first 1/12th scale live steam locomotive built west of Chicago, No. 900 is still operated by Jim today. CPHS collection.





Above: Veteran live steamer Bob Day stokes the firebox with coal on Dick Jackson's locomotive No. 900. Roger Broggie photo, Jim Jackson collection.

Above right: Sharon Disney takes her turn at the throttle of No. 900, with a trainload of happy passengers in tow. Richard Jackson photo, Jim Jackson collection.

An accomplished photographer, Jackson documented many advances in miniature railroad engineering; included were photographs of Walt's Carolwood layout. He died in 1971. His son Jim, a retired mathematics professor who taught at UCLA, continues to preserve his family's railroad tradition at his home in the hills of Bear Valley Springs, California, near Tehachapi. Occasionally, Jim hosts a steam-up party and operates his father's engine No. 900 to the delight of guests.

Dick Jackson straddled the tender, then sat down on a padded seat and positioned his feet on rubber-covered steel pegs protruding from each side of the engine. The 1/12 scale model of a 1920 Baltimore & Ohio steamer had been precisely constructed in 1930 by Jackson, using the original Baldwin Locomotive Works plans.

He reached into the mouth of the tender and brought out a miniature shovel filled with perfectly scaled lumps of anthracite coal. Opening the firebox door, he deposited the coal into the glowing underbelly of the engine. With two quick blasts of the whistle, he squeezed the release lever on the throttle and gently pulled it back, causing the

four drive wheels to grab for steel-on-steel traction, eliminating the slack between the freight cars. Easing back on the throttle, he said to his guests, "Come on, Walt, Sharon, get on board! This train is pulling out."

Walt quickly stepped into a gondola fitted with a padded seat, settling into a comfortable position with his arms around his knees. Sharon chose a flatcar positioned in front of the caboose. The two men looked like giants out of GULLIVER'S TRAVELS, riding the miniature train as it picked up speed through the landscaped gardens of flowering plants, shade trees, and a dark fish pond dotted with floating water lilies.

As they pulled back into the patio area, Walt started peppering Jackson with questions about construction, operation, and maintenance. Instead of giving him a reply, Jackson suggested that he try his hand at the throttle. Walt didn't need to hear the offer twice. With a few quick instructions, he was under way, running the scale-model 4-4-0 through its paces around Jackson's backyard pike.

Walt was surprised at the little locomotive's power under the sensitive throttle. He took several more turns at the controls and asked as many questions as his quizzical mind could produce. The Disneys then left the party, after thanking Dick and Harriet for their hospitality.

Getting On Board

Next, Walt asked Ward Kimball if he knew anyone else who was familiar with the hobby. Ward recommended that he see Ollie Johnston's miniature locomotive, under construction in a Santa Monica shop run by precision machinist Laurence Hiney. Walt called Ollie and arranged to visit the shop.

"He came down three or four times to see the machining of my engine," Ollie said. "Walt was fascinated by the tools and techniques that Larry was using to build the scale model. He asked a lot of questions and listened carefully to the answers." Ollie Johnston's 1/12th scale 4-6-2-type live steamer was finally completed in October 1949.



The Whyte Classification System

IN 1900, A NEW YORK CENTRAL Railroad mechanical engineer named Frederick M. Whyte developed a standard method to designate the wheel arrangements of various locomotive designs. Counting from the front of the engine, the number of wheels on the lead truck are listed first, followed by the number of drive wheels, then the trailing wheels—always in that order (since there are two wheels per axle, the numbers are always even).

Jackson's locomotive, a 4-4-0 under the Whyte system, thus had four leading or guide wheels; four powered "drivers" (on two axles); and no trailing wheels (these were employed on locomotives with large fireboxes—generally meaning they had greater steaming abilities—or ones making frequent back-up movements). "Whyte's System of Locomotive Classification" became a universal method for categorizing steam locomotives.





Above: In 1949, Ollie and Marie Johnston pose proudly with their brand-new 4-6-2 live steamer, No. 515. It was soon redesignated for the Johnstons' backyard La Cañada Valley Railroad. Roger Broggie photo, Ollie Johnston collection.

Above right: The Johnstons' La Cañada Valley also features a Shay-type steam locomotive, one of the more difficult to construct because of its intricate drive system. CPHS collection



Ollie Johnston

DISNEY LEGEND OLLIE JOHNSTON, one of the original Nine Old Men of Animation, is the proud owner and operator of two railroads: the La Cañada Valley and the Deerlake Park & Julian.

After Walt and Ward Kimball returned from their trip to the Chicago Railroad Fair, word spread around the studio lot that those who wanted to be "in" with the boss should talk to him about trains. However Walt—who was difficult if not impossible to impress—discovered on his own that another animator on his staff was a genuine railfan: the affable and mild-mannered Ollie Johnston, never one to boast about his many talents and interests.

"Until Walt started his hobby, most of the guys around the studio didn't share my interest in trains," Ollie remembered. "Besides Kimball, the railfans I knew were not on the Disney staff but were members of the Live Steamers club."

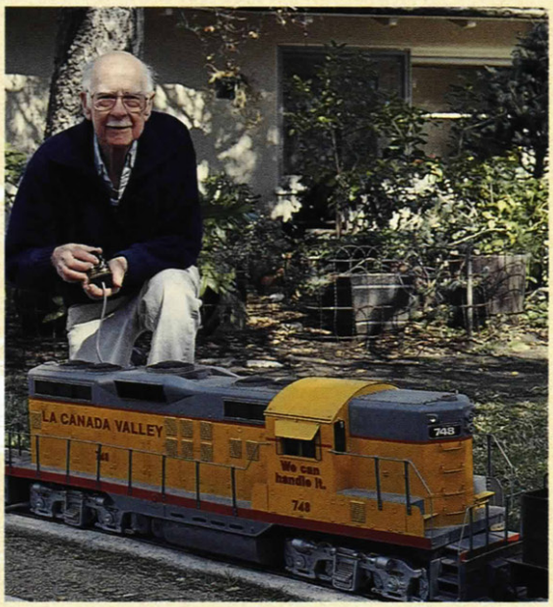
Ollie's 1/12th scale backyard pike, the La Cañada Valley, features a 4-6-2 steam locomotive modeled after a circa-1920 Baltimore & Ohio Railroad prototype. He also has a modern diesel-electric engine, and a type of gear-driven steam locomotive known as a Shay. These run at Ollie and Marie Johnston's home in La Cañada-Flintridge, in the San Gabriel foothills northwest of Pasadena, California. The couple has lived in the same house since the 1940s, next door to their

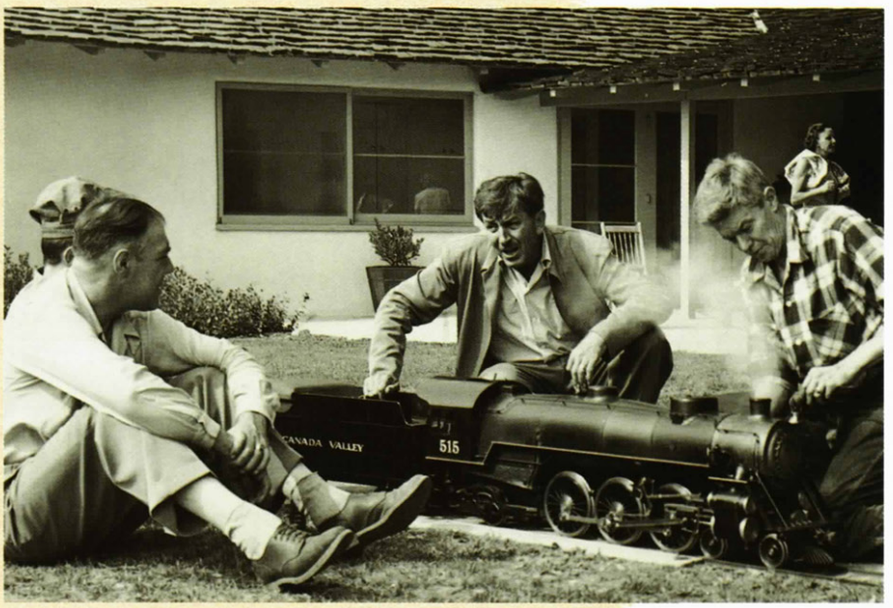


Ollie's grandchildren continue to enjoy rides on his backyard pike. Roger Broggie photo, Ollie Johnston collection.



The Johnstons' 1901-vintage 0-4-0 steamer Marie E. *chuffs along their Deerlake Park & Julian Railroad, a three-foot narrow-gauge line near Julian, California.*
CPHS collection.





Above left: Ollie Johnston poses with his somewhat-more-modern 1/12th scale diesel locomotive, La Cañada Valley No. 748. This engine runs on batteries.
CPHS collection.

Above: Machinist Laurence Hiney polishes the front of Ollie Johnston's 4-6-2 locomotive as Walt "talks shop" with fellow railfans.
Roger Broggie photo, Ollie Johnston collection.

good friends, animator and fellow Disney Legend Frank Thomas and his wife, Jeanette.

The heart of Ollie's other railroad is a three-car train hauled by a gleaming, full-sized 1901 Porter 0-4-0 he spent two and a half years restoring. The Johnstons enjoy hosting steam-up parties for railfans, who come to visit and ride their Deerlake Park & Julian Railroad. (Marie was working in the studio's ink and paint department when she met Ollie nearly 60 years ago.)

Ollie loves to play Chief Engineer, operating his vintage steam locomotive *Marie E.* on a half-mile of 36-inch-gauge trackage laid with 20-pound rails. (Rail weight is determined on a per-yard basis.) The line runs by the Johnstons' vacation home near Julian, in the rolling, pine-covered hills of northern San Diego County.

The railway's 1,100 wood crossties were originally used at Disneyland for the "Viewliner Train of Tomorrow" attraction. When the ride was dismantled in 1959 (making room for the Matterhorn and its Bobsleds, the Submarine Voyage, and the sleek Monorail), Ollie was able to acquire the five-foot-long ties through Mickey Clark, then-vice president of WED Enterprises, which owned and operated the Viewliner as part of Walt's personal property at Disneyland.

Ollie has fond memories of working on his own time in the studio's machine shop with Walt, who would share plans and problems. "I think the railroad hobby was good for him because he was under terrific pressure from several sources," recalled Ollie. For example, Walt would be telling Ollie he didn't like the whole company just hanging financially from one picture to the next; then, he'd get involved in working on a part for his train, and the conversation would switch to something he enjoyed—such as the Chicago Railroad Fair, and the thrill he'd had running the historic locomotives.

At the suggestion of his close friend Frank Thomas (whom he'd met at Stanford University in 1931), Ollie joined the studio in January 1935, after finishing his studies at Stanford and the Chouinard Art Institute. "When I was at Stanford, my fraternity would always go down and watch Disney cartoons. Finally, when I left college to go to art school, I told my friends that maybe I'd go to work for Disney. I was only kidding, though. I was interested in illustration and was going to become a magazine illustrator."

Ollie's father, a professor of romantic languages at Stanford, borrowed money to send his son to art school—even though he felt that nobody could make a living doing drawings. "He thought that I was going to end up living in an attic," smiled Ollie. "Of course, when I went to work for Disney he was enamored by the company. My mother was a music teacher and she was really excited when I started to work on FANTASIA."

Frank joined Disney about three months before Ollie, at a time when Walt was looking for people to work on SNOW WHITE. Walt didn't want cartoonists to illustrate Snow White's character because they didn't know human anatomy. Prior to going to work for the studio, Ollie didn't know anything about animation—but he did know how to draw human figures. Over his long career, Ollie became a specialist in delicate animation such as the classic "Blue Fairy" scene in PINOCCHIO. (Frank and Ollie are the subjects of a feature-length documentary, written and directed by Frank's son, Ted, and released in 1995. The delightful film, appropriately titled FRANK AND OLLIE, highlights the six-decades-long friendship between the two venerable animators who have co-written four definitive books about their Disney animation craft.)

Walt's final exploratory visit took place soon thereafter. While passing through the studio's machine shop, he asked the shop's manager, Roger Broggie, if he knew anyone who might have a backyard model steam railroad operating in the area. Roger recalled that Eddie Sargeant, a master draftsman who worked for him, knew David Rose, the world-renowned composer and conductor. Rose was an avid model live steam railroader whom Eddie had met through a club of railfans called the Southern California Live Steamers.

A visit to David and Betty Rose's house in Sherman Oaks was arranged so Walt could see the collection. "It was February 5, 1949, when we began to really look into the hobby, with more than just curiosity," Roger remembered. "Walt, his brother Roy and I went out to David Rose's layout to take a look." It was clear that Rose shared Walt's love of railroading. He had a 1/8th scale British locomotive hauling a train of cars and quite a few stationary steam engines that he had collected in Europe.



After a few hours of running the train and discussing railroad operations, the trio thanked the Roses for their hospitality and drove back to the studio. On the way, Walt remarked that he didn't particularly care for the plain European design of the engine. He had something more ornate in mind. However, he did like the size: It could haul a number of passengers and allow for exacting, miniature detail.

Savoring the day's experience, Walt visualized building his own miniature live steamer. He decided, however, that the first thing he needed was a much larger back yard.

Famed orchestral conductor David Rose takes his turn at the throttle of Dick Jackson's 1/12th scale Colorado Central locomotive. During a visit to Rose's own 1/8th scale backyard live steam layout, which utilized a locomotive and rolling stock of British design, Walt Disney found that he liked the larger size of trains built to this scale. Roger Broggie photo, Jim Jackson collection.





Carolwood Pacific Railroad

I am a patient listener, but opinionated to the point of stubbornness when my mind is made up.

—Walt Disney

Dr. Peter Janss was a Los Angeles physician and land developer, responsible for creating several major Southern California communities including Thousand Oaks and Westwood. As a gift to California's public university system, he donated 385 acres of prime West Los Angeles land to house the campus of UCLA. One of his sons, who was developing some of the family's land north of Sunset Boulevard next to Bel Air, learned through a mutual friend that Walt and Lilly Disney were looking for a site to build a home.

"I believe that I have something special to show you," Harold Janss suggested to Walt on the telephone in early 1949. "Come out next weekend for a look at one of the choicest pieces of real estate in Los Angeles. In fact, I've been thinking of building a home for myself on this property, but if you want it, it can be yours." The property was part of a subdivided estate called Holmby Hills; the Janss family had owned it since 1926.

The Disneys' Holmby Hills home (at upper right) overlooks Yensid Valley, Walt's barn, and his live steam Carolwood Pacific Railroad layout. Roger Broggie photo, Mrs. Walt Disney collection.

Home to Holmby Hills

The following Sunday, as late-morning sunshine was burning off the remnants of marine fog (these frequent Southern California's coast in the early spring), Walt drove Lilly west along Sunset. He turned the car north up a narrow, winding road bisecting a narrow strip of Los Angeles sandwiched between sedate Bel Air and glamorous Beverly Hills.

Lilly was pleased that Walt had changed his plans to go to the studio that day. Perhaps, she thought, building a new house would give her husband some much-needed relief from his self-imposed six-and-a-





Eddie Sargeant works on the initial Carolwood Pacific Railroad layout.
Roger Broggie photo, CPHS collection.

half days per week working schedule.

Driving up the twisting, tree-lined road nearly to its crest, they spotted Harold Janss standing in front of a vacant lot. As Walt pulled the car over to the edge of the roadway, Janss waved his hat across the horizon and asked, "Isn't this the loveliest spot you've ever seen?"

Without acknowledging Janss' obvious pitch, Walt helped Lilly from the car, then stood silently for a few moments studying the site. As Janss and Lilly watched, Walt walked across the barren bluff to its westerly edge and stopped. Pushing back his narrow-brimmed fedora, and resting his hands characteristically on his hips, Walt slowly surveyed the balance of the property.

Twenty feet below, a level shelf of land jutted west and south from the base of the two-acre bluff. Walt carefully scanned beyond the shelf, where the property disappeared into a canyon thick with stands of eucalyptus, cypress, and oak. Except for a few Bel Air mansions on a distant ridge, the only visible structure was a large Spanish Revival-style house just beyond the southern boundary of the property. Several trees were already beginning to conceal its presence, and a few fast-growing cypress could finish the job.

There was plenty of privacy, and room for a comfortably sized home, swimming pool, and even a recreation house. Too, the ample room



Above and opposite right: In 1949, the Disney residence is nearly complete on Carolwood Drive. Yensid Valley's contours are being shaped for installation of Walt's dream, a backyard railroad. Roger Broggie photos, Mrs. Walt Disney collection.

below would allow for a barn—and lots of railroad track! Yes, this was the place he'd always wanted for Lilly and the girls, and for his new hobby.

Returning to Janss and Lilly, Walt asked about the size of the property. "We won't sell any parcel in Holmby Hills that's less than five acres," Janss answered. "That way, we won't have any shacky houses in the neighborhood. I don't know if you're aware of it, but I live right down the street, and may build a nice home right next door."

Walt asked him where the boundary lines ran, and confirmed that the five-acre site included the lower shelf and all the land between the canyon and the road—totaling over 210,000 square feet. After short negotiations on the price, the deal was finalized and recorded in the County of Los Angeles. On June 1, 1949, the Disneys became legal owners of the hilltop property at 355 Carolwood Drive. At the time, Lilly had no idea how extensive Walt's plans were for his Carolwood Pacific Railroad.

Something Bigger

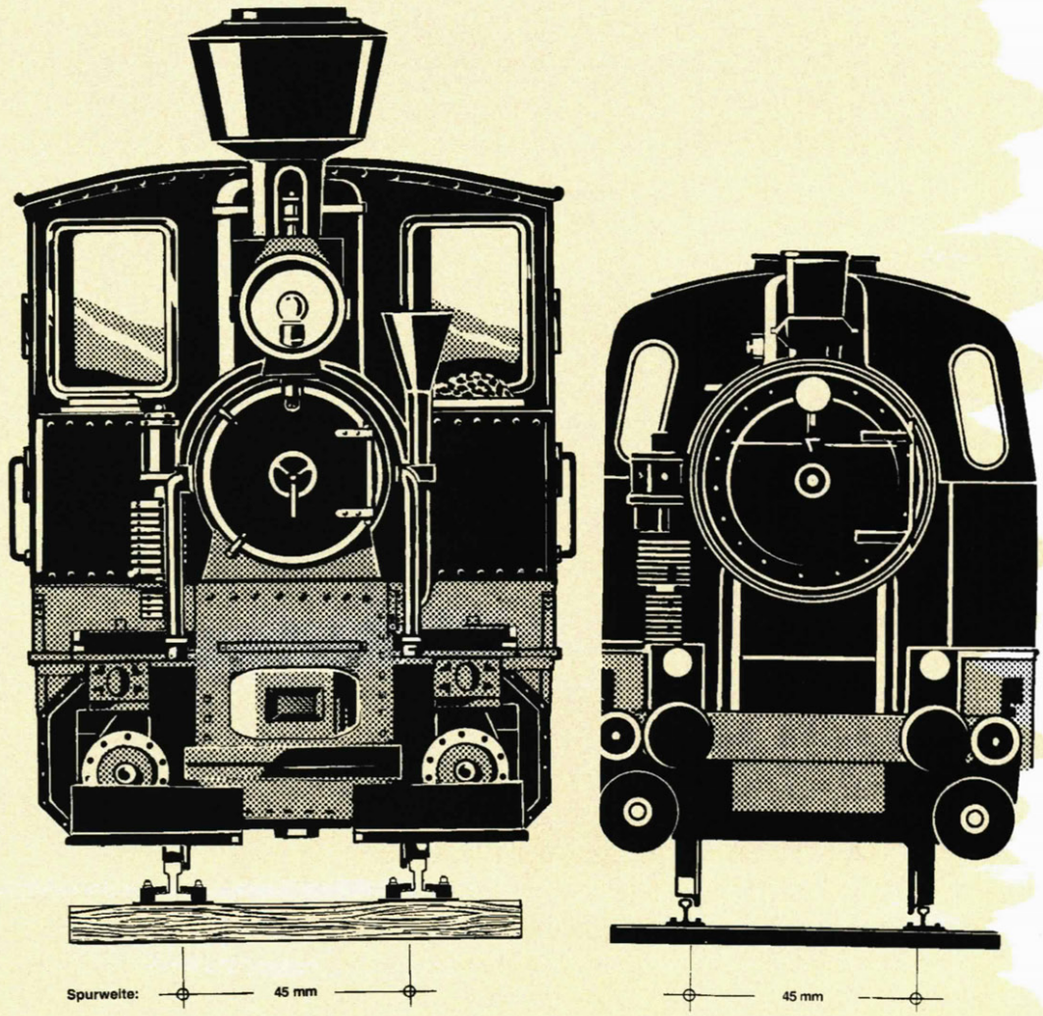
With a topographical plan in his hand, Walt Disney went to the studio's machine shop and asked Roger Broggie to evaluate the site on Carolwood Drive for a railroad layout. Together, they unrolled the large site plan on a drafting table and examined the contour lines to determine the best routing for a roadbed. Roger recommended assigning the



Railroads and Track Gauge

Nearly everyone knows what train tracks are. But for readers who may not be familiar with railroading basics, the distance from the inside face of one rail head to the inside face of the other is referred to as the track's *gauge*. Today, "standard gauge" for railroads in North America and many other countries is 4 feet, 8-1/2 inches. It is generally believed that this somewhat arbitrary distance had its origin in the ancient Roman Empire, where grooved stone "tracks" were laid parallel to one another, in a standardized measurement, for horse-drawn chariot racing. The concept of using tracks to move heavy objects dates back over 4,500 years, to construction of the Egyptian pyramids.

In the United States, before the Civil War, railroads generally determined their own track gauge. With the numerous companies and differing gauges, passengers and freight were required to transfer from one train to another wherever the different lines met. A train trip from Baltimore to New Orleans, for instance, required eight changes! Yet there was little hope



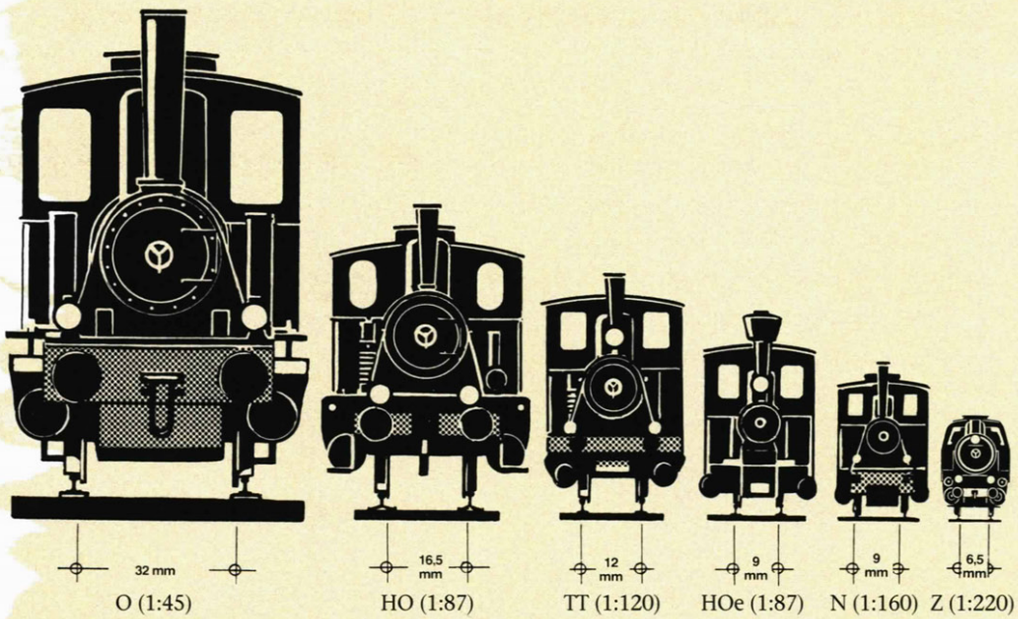
G (1:22.5) G-I (1:32)

of adopting a common track gauge, as none of the companies wanted to have to pay for the necessary changes. Then, America's first transcontinental railroad line, completed in 1869, was specified by the U.S. government to be constructed to a gauge of 4 feet, 8-1/2 inches. With this important link in place, nearly all North American railroads eventually converted to this increasingly standard gauge, simply to remain competitive.

Even before a standard track gauge had been adopted, "Narrow-Gauge Fever" took hold in the United States. It captured the attention of investors, many of whom hoped to extend lightly built railroads into communities that could not support the investment required by a full-sized, standard-gauge railroad. The most common narrow track gauge of 36 inches—three feet—was also useful in mountainous terrain, where utilization of tighter curves and reduced clearances helped keep construction costs down. Narrow-gauge track mileage declined precipitously after 1900; except for a few isolated instances, the lightly built lines were quickly superceded by improved roadways.

How does this relate to the small-scale trains used in hobby railroading? The sizes of buildings and equipment used, and the corresponding track gauges, are based on scaled reductions of full-sized dimensions. As an example, HO scale (the most popular model railroading scale in use today) is 1/87th of full size, and half the size of O scale (used by Lionel), hence the initials *HO*. Modelers long ago adopted standard track gauges for both O and HO

Model railroading appeals to fans of all ages. With a variety of scales ranging from Z to HO (today the most popular scale) to G, the hobby offers many choices to fit nearly any space and budget. Courtesy of LGB of America.
© Lehmann-Gross-Bahn (LGB).



scales; these scales even offer narrower track gauges (HOn3, for instance, is three-foot gauge trackage in HO scale) for modelers of narrow-gauge railroads. However, in the scale Walt selected for the Carolwood Pacific—1-1/2 inches to the foot, or 1/8th of full size—there were slight variations; live steam hobbyists were divided over the exact gauge of the track, although the *scale* remained 1/8th.

When Disneyland was being planned, Walt decided to make the two Santa Fe and Disneyland Railroad steam locomotives 5/8ths of full size, the construction scale used for motion picture sets. Luckily, when 5/8ths scale was translated to the distance between the rails (based on standard-gauge trackage), the rails were nominally 36 inches apart, equal to the dimensions employed by full-sized narrow-gauge railroads. (Later, this fortunate coincidence would enable used narrow-gauge locomotives to be acquired and refurbished for the Park's railroad.)

The scale of the trains also generated one of the most widely accepted Disneyland myths: that Main Street is constructed in 5/8ths scale. The fact is, Main Street consists of various dimensions, determined by the individual project designers of the buildings. The second and third floors are built in successively smaller scales, a trick filmmakers call "forced perspective"—giving the appearance of additional height or distance by fooling the eye with diminishing proportions.



Disney Imagineer and railroading expert Bob Harpur, seen here in 1994, was a 19-year-old machinist at Little Engines (a live steam hobby shop) when he first met Walt Disney in 1949. He joined the Disney organization 20 years later. CPHS collection.

Opposite: The completed layout for the Carolwood Pacific Railroad included 2,615 feet of track with 11 switches, running around the house and under Lilly Disney's garden via a thrilling "S"-curved tunnel.
© Retlaw Enterprises, Inc.

track design to Eddie Sargeant. In addition to being a master draftsman, Eddie enjoyed scratch-building model steam engines and had a thorough understanding of railway engineering.

The first step in determining the layout was deciding on the scale of the trains and the gauge of their tracks.

Walt wanted something bigger than Dick Jackson's and Ollie Johnston's 1-inch scale railroads. Roger recommended 1/8th scale, or 1-1/2 inches to the foot, which would be 50 percent bigger. To get some design ideas, Roger suggested visiting a railroad hobby store called Little Engines in Lomita, California, that specialized in live steam. At the store, Walt and Roger were greeted by a young machinist named Bob Harpur.

Walt and Roger spent the afternoon with Harpur, looking at rolling stock and other equipment as well as track and blueprints. Harpur showed them everything in the shop and explained the working details of live steam operations. Roger took notes while Walt listened intently, absorbing everything Harpur said.

On the drive back to the studio, Walt told Roger, "I didn't see anything that I would want. All of their stuff is modern. I'm more interested in the classic period, the Victorian age, when they used a lot of brass and fancy scroll work. I think modern equipment is boring by comparison. Maybe we could find something with a large diamond stack, a wood burner with brass straps around the boiler and a wooden cab."

Back at the studio, Eddie Sargeant calculated that standard track gauge converted into 1/8th scale would fall somewhere between 7-1/16 inches and 7-1/2 inches. He decided to compromise at 7-1/4, to allow for 30-foot radius curves. Working for several days with a site map showing exact contours and elevations, Eddie charted several loops of track, accessed by various track switches, that would pass over and

Bob Harpur

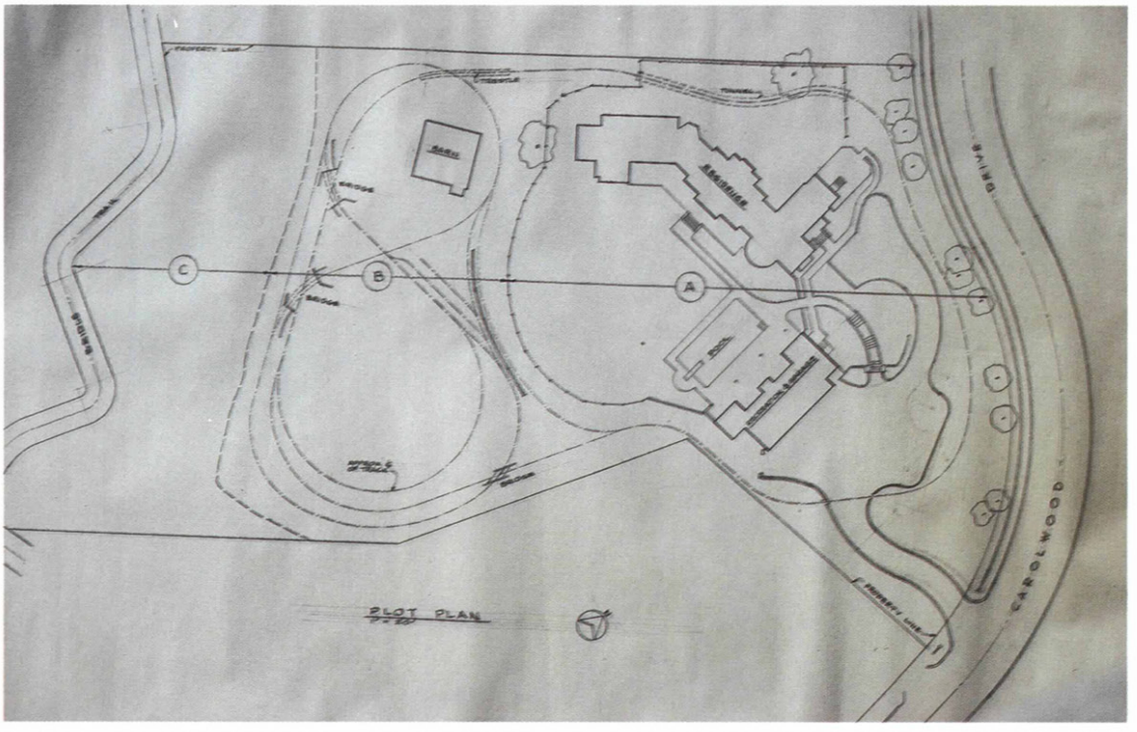
FOR SOME, RAILROADING seems to come naturally. Among this select group of railroaders are the master model makers who possess the multiple skills necessary to build intricate, functioning miniatures of full-sized trains. It has been observed that, to be an ideal model builder, one should possess an abundance of time, talent, and money.

Although Bob Harpur wasn't wealthy, he had the advantages of time and requisite talents to design and construct prized models during the 1950s, when live steam flourished. "I had just gotten out of the service," Bob said. "There were no jobs available. I went over to Little Engines and talked to the owner, Martin Lewis, who had worked for my father. He put me to work running a lathe."

It was easy for Bob. When he was young, his dad had a lathe in the garage and taught him to do all kinds of precision machining. At Little Engines, under Martin Lewis' guidance, he learned to build working live steam models.

"In 1949 was the first time I met Walt. He and his daughter Sharon came down to Little Engines with Roger Broggie. They went through the facility and asked a lot of questions and saw what was going on. At that time I was building model railroad equipment for Seymour Johnson, the founder and chairman of Johnson Controls. He had an elaborate live steam layout at his estate in Goleta, near Santa Barbara. At one time, Walt told me he wanted to talk to Seymour about becoming one of the original investors in Disneyland, but that never happened."

Bob eventually joined the Disney organization in 1969, and his talents have been utilized in a number of projects. Among Bob's major accomplishments was supervising a small crew who converted four old, rusted Baldwin engines into the beautiful puffers that travel around the Magic Kingdom at Walt Disney World Resort. He was on the team that managed construction of the rolling stock at Disneyland Paris. His latest project is the trains for Disney's Animal Kingdom at Walt Disney World.



John Vince Cowles, M.D.

IN THE EARLY 1920S, when Walt was struggling as an animation producer in Kansas City, he frequently received support and advice from a local doctor. Occasionally, Dr. John Cowles stopped by the garage at 3028 Bellefontaine Street serving as a makeshift animation studio to see how Walt and Ub Iwerks were doing. When things got really tough, Dr. Cowles would take some cash from his wallet and lay it on Walt's animation board, encouraging the young men not to give up. The doctor never expected anything in return. He genuinely cared for the enterprising animators.

When Laugh-O-Gram Films got rolling in 1922—on $15,000 Walt and Ub raised from local businessmen and professionals, including Dr. Cowles and a number of his friends—the animators hired Dr. Cowles' wife, Minnie, to be their company treasurer. With youthful confidence, they moved to larger quarters in the McConahay Building, at the corner of 31st and Troost, and expanded to a staff of 11. By July 1923 however, the company had depleted its funding and, with the high costs of production, was forced to declare bankruptcy. Walt asked Dr. Cowles for another $2,500 to pay the company's major debts.

Not being able to pay rent at his rooming house, Walt stayed with Ub Iwerks for a few weeks—then moved into the Laugh-O-Gram studio where the rent had been paid in advance. For a dime he was able to get a bath once a week at the train depot. Walt's credit at the Forest Inn Cafe downstairs also had run its limit. One day he was sitting in his studio, eating from a can of beans, when one of the restaurant owners—a Greek named Jerry Raggos—happened to walk in. Seeing his plight, the man invited Walt to come down to his cafe and eat a "decent meal." Little did he know that beans *were* Walt's favorite meal!

As he often did when he was in a pinch, Walt called his brother Roy for advice. Roy, recuperating from tuberculosis in a veteran's hospital near Los Angeles, urged him to come out to California. Heeding his brother's advice, Walt quickly raised some money doing baby photography and newsreel footage. Then he sold his camera and bought a one-way train ticket to Southern California. He was 21 years old.

Many years later, Walt received the opportunity to repay Dr. and Mrs. Cowles' kindness and support by hiring their son—John V. Cowles, Jr., an accomplished architect—to work at the studio. According to John, Mickey Mouse's girlfriend was named after his mother, Minnie Cowles—Laugh-O-Gram's treasurer.



Walt may have based the name for Mickey Mouse's girlfriend, Minnie, on that of his first Laugh-O-Gram treasurer, Minnie Cowles. Disney character © Disney Enterprises, Inc. Used by permission.



Walt (at far right) looks over the progress of grading near the site of his soon-to-be-memorable 46-foot-long trestle. Roger Broggie photo, Mrs. Walt Disney collection.

under the main line to gain more distance over a short area. This blueprint had been prepared by architect and Disney motion picture set designer, John V. Cowles, Jr., son of Walt's Kansas City supporters, John and Minnie Cowles.

To take advantage of the view, Sargeant proposed building an elevated dirt berm around the lower shelf and laying track on top of it. It was a useful idea that saw application later at Disneyland.

On Walt's next visit to the machine shop, when he saw what Eddie had laid out, he said, "No, that's not what I want. You show track only on the lower shelf. I want the line to run completely around the house. That's why I bought five acres of land, so I'd have plenty of running room!"

After another week on the drawing board, Eddie showed Walt a system of rails that crossed a ravine atop a 46-foot-long trestle, nine feet above another roadbed below. There were overpasses, tunnels through the berms, and gentle gradients to handle the climb to the upper area around the front of the house.

In all, Eddie squeezed 2,615 feet of track onto the property. With the engineer throwing a series of 11 track switches, a train could travel almost a full mile without running on the same track in the same direction. In 1/8th scale, this single mile represented eight operating miles. Delighted, Walt rolled up the plans so he could take them home to show Lilly.

Gardens and Tunnels

That night, Lilly let Walt know emphatically that she was *not* going to agree to having his train tracks running through her flowers! Assisted by architect J. E. Dolena and landscaping designer Jack Evans, Lilly had been planning a large garden for the north side of the house. Walt had





An impasse regarding the railroad's right-of-way through Lilly Disney's flower garden (above) was resolved by excavating a 90-foot tunnel to run under the garden (top). Both, Mrs. Walt Disney collection.

to think of a solution that wouldn't disrupt that special garden.

The next day, Walt called Spencer Olin and asked him to come to his office. He was one of the studio's attorneys, specializing in contract law. Walt quickly got to the point: "Spence, I want you to draw up an agreement between me and my family. I want it to say that I'll be allowed to own a right-of-way through my place for a railroad."

"You don't have to do that, Walt," Olin replied. "The property is in your name anyway."

"Lilly has made up her mind that I shouldn't run my railroad completely around the house," Walt explained, "because it was going to run right through the middle of her garden. She wanted to have a large window put in so her friends can look out at her flowers while they're playing Canasta."

The attorney advised Walt of California's community property law, which states that all property a couple acquires during their marriage is jointly owned unless one of the parties signs a quitclaim deed.

"Oh, I don't want to do anything that would interfere with Lilly's ownership of the property," Walt said. "I just want the right to run my railroad."

Olin was familiar with rights-of-way law and, getting into the spirit of the gag, he recommended a written agreement to provide Walt with clear permission to run his train. After a few drafts, the exaggeratedly legalese text read: ". . . between Walter E. Disney (hereinafter called Walt), as first party; Lillian B. Disney (hereinafter called Lillian), as second party; and Diane Marie Disney and Sharon Mae Disney, both minors (hereinafter called, respectively, Diane and Sharon), as third parties."

The agreement set forth its declaration that Walt planned to construct a residence "for the comfort, convenience, welfare and betterment of the Second and Third Parties and for himself."

> *WHEREAS, Walt is or is about to become the sole proprietor and owner of a certain railroad company known as the Walt Disney R. R. Co., which railroad company proposes to construct and operate a railroad in, on, upon and over the right of way hereinafter described and delineated, in the operation of which railroad Walt desires to have and at all times to retain complete, full, undisturbed, unfettered and unrestricted control and supervision, unhampered and unimpeded by the other parties hereto or by any of them, they having heretofore made known and asserted to Walt in various sundry and devious ways their collective intention to reign supreme within, and so for as concerns [sic], the aforesaid residence, and*
>
> *WHEREAS, the Second and Third Parties, in the future and notwithstanding Walt's ownership of the fee title to the aforesaid parcel of land, and notwithstanding their many enthusiastic assurances verbally given to Walt in their present enthusiasm over said new residence and their anticipated pleasures and happiness therein, may, and probably will, seek to assert rights, privileges and authori-*

ties inconsistent with Walt's reserved and retained control and supervision over said railroad company and the operation of said railroad company upon the right of way herein referred to, all to the detriment of said railroad and its efficient, profitable and pleasurable operation, and to the injury of Walt's peace of mind (the presence and soundness of which mind Second and Third Parties hereby admit).

THAT WHEREAS, Walt and Lillian are husband and wife and Diane and Sharon are their children, in which family there presently exists an atmosphere of love, understanding and trust which all parties hereto are intensely desirous of preserving;

NOW, THEREFORE, in consideration of the promises and of other good and valuable considerations the receipt of which is hereby acknowledged by Lillian, Diane and Sharon, the said Lillian, Diane and Sharon hereby jointly and severally quit claim, transfer, assign and set over to Walt all their right, title and interest in and to the right of way. . . .

It wasn't just the agreement that Walt presented to Lilly; he also had a plan that would sweeten the deal. As an inducement for her to sign, Walt proposed building a 90-foot-long tunnel built *under* her flower garden. That way, she'd neither see nor hear the train on that side of the house.

While the agreement was in the works, Walt discussed his "right-of-way vs. the flower garden" dilemma with Jack Rorex, who supervised construction on the backlot of the studio. After considering an elevated berm, screen fencing, and a bridge, Jack suggested a tunnel as the solution. He also recommended that it not be built in a straight line, but rather in a double curve like an "S," so passengers wouldn't be able to see the light at the other end as they entered. Walt loved the idea; in appreciation of Jack's contribution, he named it "Rorex Tunnel." The idea of a "dark ride" would later be repeated in dozens of Disneyland attractions.

In the end, Lilly prevailed in her desire to have a peaceful flower garden. Her card parties were not disrupted by the huffing and puffing of a miniature steam train. And, Walt got his Carolwood Pacific line—



The Red Barn

BY HIS OWN ACCOUNT, Walt's happiest childhood memories were of his family's farm in Marceline, Missouri. He and his younger sister, Ruth, spent many hours in the barn, climbing in the hayloft, chasing chickens, and playing games of hide-and-seek and kick-the-can.

The barn was the setting for Walt's first venture as a showman. He dressed some of the pets and farm animals in costumes and announced the "Disney Circus" to neighborhood kids, charging 10 cents for admission. His audience, however, complained that all they saw were a dog, a cat, and a pig dressed in some children's clothes.

Flora Disney ordered her son to shut down his circus and refund the admission fees. Walt learned a valuable lesson: "Give the audience *more* entertainment value than they expect and they'll be happy customers."



Walt's barn, fully equipped with wood-working and machine tools, was surrounded by the Carolwood Pacific Railroad. CPHS collection.

with an appealing addition to help thrill its riders.

Meanwhile, John Dolena was busy at his Beverly Hills architectural firm, designing the buildings for the property. They included a two-story, split-level main house of 5,669 square feet, plus a two-story building featuring a 1,566-square-foot recreation room with motion picture projection equipment as well as a fully-equipped ice cream fountain and liquor bar. Below the recreation room was a four-car garage and service area.

Construction was under way soon. Between the buildings, a 22 x 45 foot swimming pool was being installed. On the lower level, a bulldozer was creating an earthen berm while a crew constructed wooden forms for a barn's concrete foundation.

Walt had always wanted his own barn. For the barn's architect, he again selected John Cowles, Jr. In addition to his set designs, John had also planned permanent buildings for the studio, including one of the largest sound stages in the country.

A skilled surveyor, John spent many hours at Carolwood taking the measurements needed to build the right-of-way and trackage for Walt's



Landscaping a Kingdom

WHEN WALT DISNEY BEGAN developing the estate on Carolwood Drive, Jack Evans and his younger brother, Bill, were designing and installing landscaping. "Jack was introduced to Walt by Hal Adelquist, who was a neighbor of my brother," recalled Bill Evans. "Walt and Jack got along well."

As a result, the brothers got the extensive job of landscaping Carolwood. Bill supervised a crew doing the installation, according to a design devised by his brother. After completing the work on Walt and Lilly's home, Jack Evans experienced problems with his heart, forcing him to retire.

In 1954, Walt called the Evans brothers and asked them to come to the studio. "Walt showed us the plans for Disneyland and told us how important the landscaping was to create the proper atmosphere for each theme area," Bill said. "Within a very short time, my brother's heart condition made it clear that he couldn't handle walking around that sandy soil at the Park's building site. He told Walt that I should take over the project. Jack knew he was no longer physically able to perform a job as big as Disneyland."

Walt turned to Bill and asked him to supervise the landscaping. "Do you think you can get the job done in a year?"

"We'll do our very best," Bill answered.

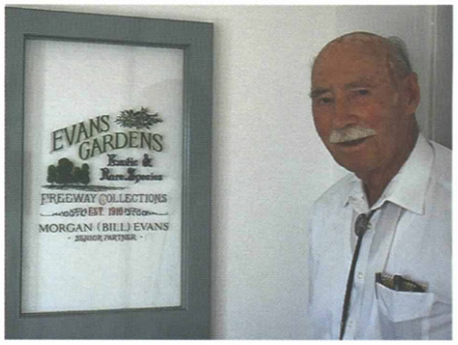
One of Bill Evans' first assignments at Disneyland's construction site didn't quite go according to plan. He had taken a long time to carefully study the existing trees, identifying those that would stay with a green ribbon and those that were to be cleared with a red ribbon. When a large bulldozer came plowing through doing the removal, Bill was astonished to see the powerful machine cut everything in its path, ignoring the colored ribbons. He yelled frantically for someone to stop the operator; finally, a crewman, waving his hat, jumped in the path of the bulldozer. Looking around with a quizzical expression, the operator asked what was wrong.

miniature railroad. Walt became John's assistant, holding the surveyor's pole while Cowles made his measurements through a theodolite (the surveying instrument also known as a transit).

One of the sets John designed for the studio was a handsome red barn for the 1949 feature So Dear to My Heart; when Walt saw the building, it reminded him of the barn from his childhood in Missouri. (The film's story took place during the same time period as Walt's boyhood, which influenced him to acquire the film rights to Sterling North's sentimental novel [of the same name] about an Indiana farm family.)

The only variation in Walt's 834-square-foot barn, adapted by John Cowles from his original set design, was a concrete slab foundation and windows along the east wall—plus a small room housing the central track control board for Walt's railroad.

Landscaping was begun with several large trees, relocated to the site by landscape designer Jack Evans of the firm Evans and Reeves. The crew, headed by Jack's brother Morgan "Bill" Evans, also installed state-of-the-art landscape lighting and electrically controlled irrigation systems.



Disney's landscape expert, Morgan "Bill" Evans, poses next to a model of his window on Main Street, U.S.A. at Disneyland. Bill's career with Disney began when he and his brother Jack landscaped Carolwood in 1950. CPHS collection.

No one had thought to check beforehand; the operator happened to be colorblind! Fortunately the damage was minor, and Bill was relieved he had been there to prevent a costly mistake.

A fortunate opportunity to obtain full-sized trees for Disneyland materialized when California's Department of Transportation let Bill know he could have any of the trees growing in the path of freeways being developed throughout Southern California. All he had to do was remove them. Later, Bill would walk through the Park and point to various large specimens and say, "This one's from the Ventura, that's from the San Diego, and that one over there's from the Santa Monica [freeways]."

"We had to do a lot of planting by July 17, 1955," Bill recalled. "In June Walt told me that we were all out of loot. We didn't have any more money, and he told me to put Latin names on the weeds. Somehow we pulled it off. Toward the opening, we did a lot of irrigating to get the weeds to grow on the barren areas, particularly on the dirt berm that surrounded the Park."

Indeed, Disneyland was rather sparse when it opened; but the soil was good, benefiting from all those years the previous owners—the Dominguez family—had tilled it for their productive orange grove. Eventually, things began to fill in. Besides, the guests coming into the Park had nothing with which to compare it. They had never seen a themed amusement park before and didn't know what to expect.

"Of all the Disney parks, I like Disneyland the best," Bill Evans said. "Nobody had ever done a park like this before. Walt knew it had to be clean, courteous, colorful and wrapped in pretty landscaping. That's what separated it from other attractions of the period. We kinda set the standards. We built the park for $17 million. One-half million of that went for landscaping and irrigation. As with Carolwood, Lilly Disney always maintained an interest in Disneyland's landscaping."


GRIZZLY FLATS
3
OLOMAN
3
3



Just Like the Big Ones

We're always exploring and experimenting . . . we call it Imagineering—the blending of creative imagination and technical know-how.

—Walt Disney

Now that Walt had won his right-of-way and decided on the Victorian period for his train, the next step in developing his railroad was selecting a design for the locomotive. For expert advice, Roger Broggie recommended his friend Jerry Best. A pioneering Warner Brothers sound engineer, Jerry also happened to be one of the country's pre-eminent railroad historians and photographers. Roger understood that Walt approached things visually, and thought Jerry's extensive collection of pictures would surely provide the design.

Walt, who seldom forgot anything, thought the name sounded familiar. It turned out that, several years before, Jerry had been introduced to Walt by Dick Jackson at one of Ward Kimball's Grizzly Flats Railroad steam-up parties.

Roger contacted Jerry and told him that Walt wanted to see his pictures of old-time steam engines. "Sure, Roger, I'll invite him to come over to my house where I have all of my files," was Best's reply.

When it came time to select a design for his locomotive, Walt Disney was referred to railroad historian and motion-picture sound engineer Gerald M. "Jerry" Best. Here, Jerry is seen—in Ward and Betty Kimball's back yard—in front of his own locomotive, former Waimanalo Sugar Company No. 3 Olomano. *This 0-4-2T plantation engine, brought from Hawaii, was restored to its as-built appearance with help from Chad O'Connor and others. Today it is on permanent display at the Railroad Hall in the Museum of American History, Smithsonian Institution.* Chadwell O'Connor photo.

Walt's Workplace

The next day, Walt arrived at Jerry's handsome Tudor residence on South Sierra Drive in Beverly Hills. As Jerry showed him around, Walt was impressed by the extent to which railroading was present throughout the home—in paintings, antiques, books, and furnishings. When Jerry showed his visitor into the den, Walt saw a model locomotive on the mantelpiece, complete with a train of Narragansett-style passenger cars. (The cars received this designation from a line that had once run in

Massachusetts to Narragansett Bay, a popular summer recreation area.)

The locomotive was Central Pacific Railroad's No. 173, built by Jerry in 1939 to 1/2-inch scale to run at the Golden Gate International Exposition (held on San Francisco Bay's Treasure Island). It had successfully operated 5,000 actual miles there, around a loop of track, during its extended display. Jerry explained, "Dave Joslyn, who worked for the Southern Pacific office in Sacramento, had found the blueprints and sent a set to me. I completed the model just before the fair was ready to open."

A public relations man had come down to look at the model railroad in the garage, and offered to rent it for two years. "I wouldn't take any money," Jerry said. "The only thing I asked was that he take good care of it and return it in the same excellent condition." Expo management compensated Jerry by inviting him and his wife to spend four days at the event—with all expenses paid. "I got a permit to photograph at the Expo roundhouse and on the railway system without any interference," Jerry recalled.

Jerry later commented, "It was those pictures and my little model that sold Walt—he said that it was the most beautifully proportioned



Gerald M. Best

DURING A PERIOD of more than 60 years, Jerry Best assembled one of the most comprehensive collections of railroad car- and locomotive-related photographic prints and negatives. Eventually, his collection topped 130,000 images, blueprints, records, books, notes, and journals, and encompassed over half the 160,000 steam locomotives built in the United States. Jerry also produced a dozen authoritative books and countless articles on various railroad systems.

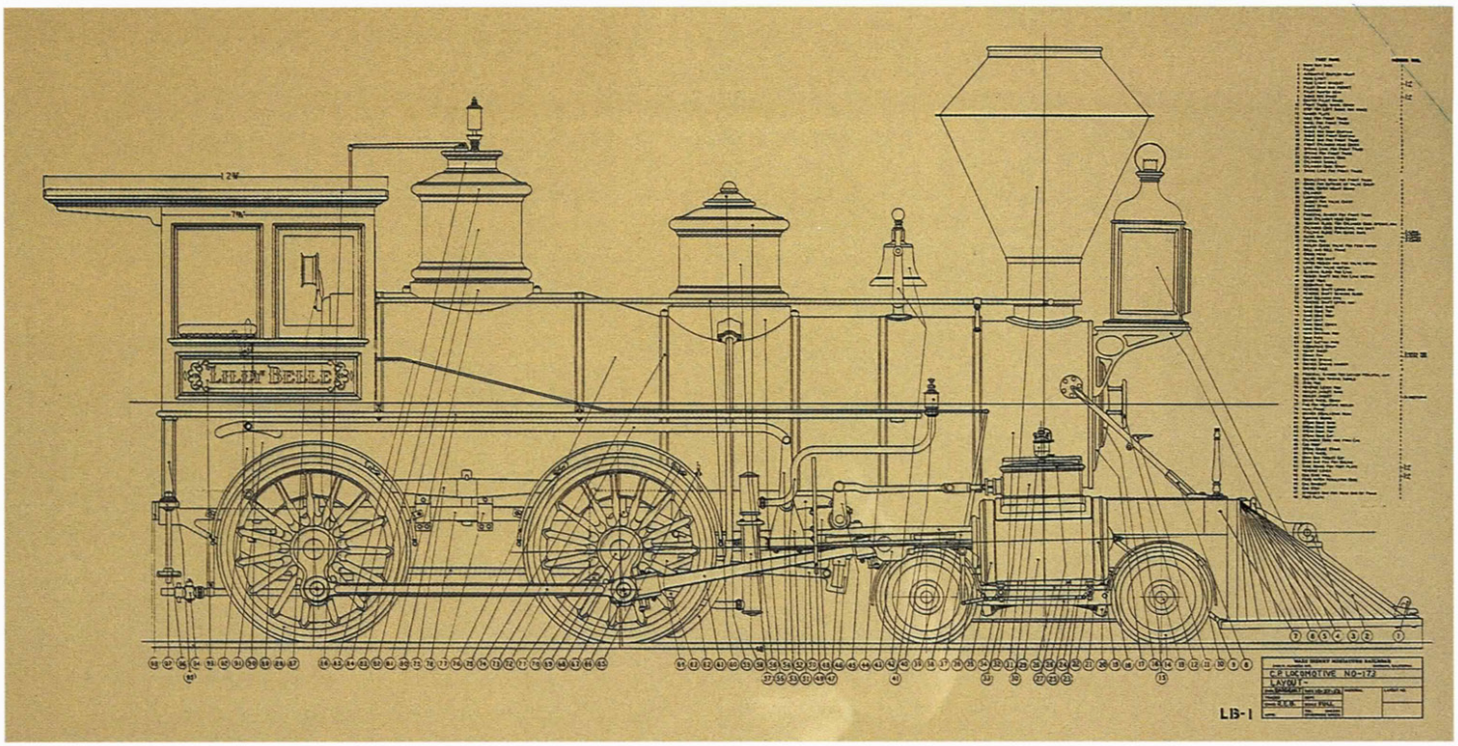
A master modelmaker, Best built several live steam models—including one that ran for two years at the Golden Gate International Exposition. Jerry also worked in "full size," meticulously restoring (with the help of Chad O'Connor) the *Olomana*, a 1907 Baldwin 0-4-2 saddle-tank locomotive. He purchased the little steamer for $250 from the Waimanalo Sugar Plantation on the Hawaiian island of Oahu, in 1948.

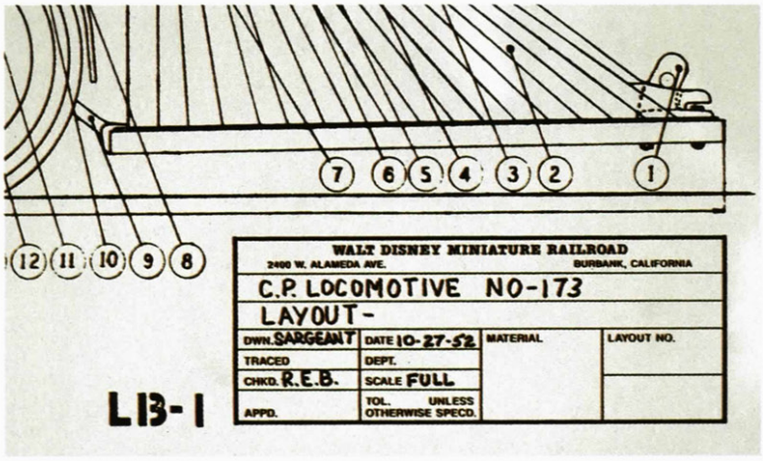
One of the top sound engineers in the motion picture industry, Best joined Walt Disney Productions in 1958 after Warner Brothers fired its entire engineering department. According to Jerry, Jack Warner remarked, "Let RCA do engineering and experimenting for us. Why have our own department?"

When Warner Brothers unceremoniously presented Jerry with a pink slip, he was short just 200 hours of qualifying for his motion picture industry pension—after nearly 30 years. He called his friend Roger Broggie to help him get hired at Disney.

It took Jerry only a few weeks to qualify for his pension. Bob Cook, head of the sound department, asked how he liked it at Disney—and did he want to stay on, since he had made his required hours? Jerry replied, "This place is great compared to the mill I was working in for 30 years. Everybody here treats me so nicely, it is a pleasure to work for them." He continued working on Disney productions until retiring in 1962.

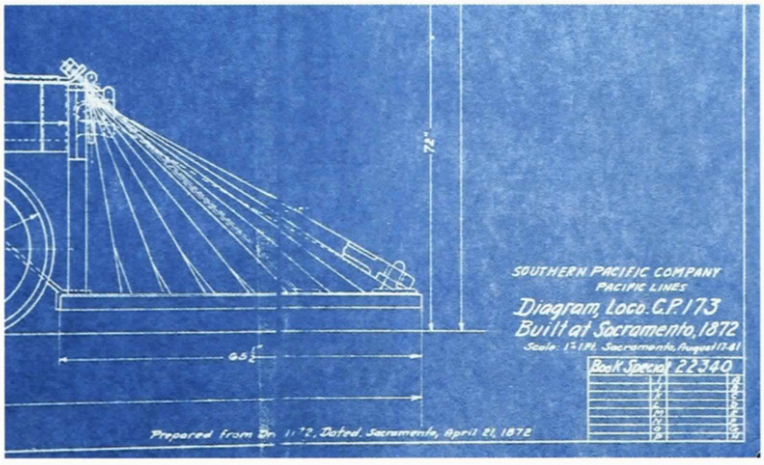
In 1977, Best donated his locomotive *Olomana* to the Smithsonian Institution in Washington, D.C., where it remains on permanent display. Following Jerry's death in 1985, at the age of 90, his wife, Harriet, arranged for his vast railroad research collection to go to the California State Railroad Museum in Old Sacramento, one of the finest railroad historical centers in the nation. Best's collection can be accessed there today.





Above: This drawing of Central Pacific Railroad No. 173, adapted by Eddie Sargeant from the original railroad blueprints, demonstrates his painstaking attention to detail. © Retlaw Enterprises, Inc.

Left: The drawing's design block shows the first application of a new company name: Walt Disney Miniature Railroad. From this early endeavor, WED Enterprises and eventually Retlaw Enterprises would develop. © Retlaw Enterprises, Inc.



Below left: This detail of a huge blueprint illustrates the original drawings from which Eddie adapted the 1/8th scale plans for Walt's locomotive. © Retlaw Enterprises, Inc. collection.

locomotive ever built, and the one he wanted for his model. He had a great eye for design."

Walt wasted no time getting to the machine shop with the pictures Jerry Best had provided. At 7:15 the next morning, he walked into Roger Broggie's office and placed the photos on Roger's desk. "I've found the design I want to build," Walt said. "We can get the blueprints from the Southern Pacific which, Jerry Best told me, took



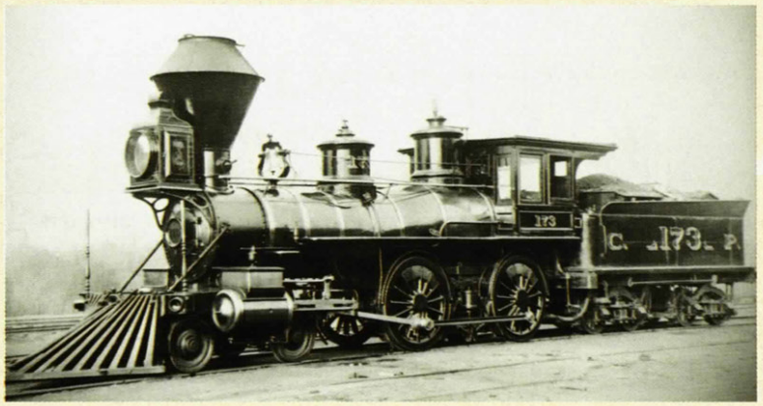
Central Pacific No. 173

CENTRAL PACIFIC RAILROAD 4-4-0 locomotive No. 173 arrived in California early on, prior to completion of the first transcontinental rail line at Promontory Summit, Utah (on May 10, 1869). Originally designated Western Pacific Railroad "H," the engine, built by Norris Brothers of Lancaster, Pennsylvania, was shipped in parts around Cape Horn in 1864. It was assembled at the Central Pacific shops in Sacramento on behalf of the neighboring Western Pacific. Following that line's acquisition by the Central Pacific in 1868, locomotive H was redesignated CP No. 173.

On the morning of November 14, 1869, No. 173—also named *Sonoma*—was involved in the first serious passenger train accident in Central Pacific's history. Near Alameda Junction, California, because of the negligence of a railroad employee responsible for signals and switches, the locomotive crashed head-on into locomotive No. 177 *Atherton*. Fifteen people—including the locomotive crews—died, and both engines sustained heavy damage. They were hauled on flatcars back to the shops in Sacramento, and stored.

After several years, when the Central Pacific needed more engines, the wrecked No. 173 was taken out of storage by Master Mechanic Andrew Jackson Stevens. He determined that the boiler and frame could be repaired, and between May and November 1872, Stevens supervised the locomotive's renovation and redesign. When finished, the now 74,000-pound engine had gained nearly 8,000 pounds, and been fitted with smaller 54-inch drive wheels and slightly larger 17 x 24 inch cylinders.

The new design was very popular, and Central Pacific's management had Stevens build 12 more locomotives just like the "new" No. 173. After 37 years of service, mostly in northern California, this pioneering locomotive was scrapped in 1909. However, one of the 12 engines built in its likeness—Virginia & Truckee Railroad No. 18 *Dayton*—has survived. Beautifully restored and permanently displayed at the Nevada State Railroad Museum in Carson City, it can be viewed there today by visitors.

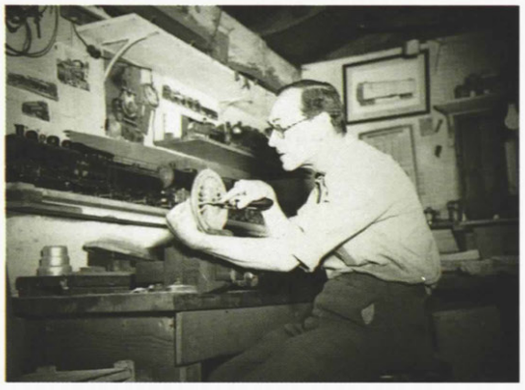


Central Pacific Railroad 4-4-0 No. 173—the prototype for Walt's locomotive—is shown circa 1873, following its rebuilding by Master Mechanic A. J. Stevens. CPHS collection.

over the Central Pacific."

Roger agreed to start on it immediately, knowing that Walt didn't like giving directions more than once. Eddie Sargeant contacted his friend Dave Joslyn at Southern Pacific, and received a complete set of No. 173's blueprints within a few weeks. On September 20, 1948, he began making meticulous drawings for the 1/8th scale model. He completed these drawings on January 20, 1949.

Next, the locomotive's scale model plans required 35 separate, highly detailed engineering drawings. Upon completion of these, Roger divided the various building tasks among the shop's machinists. Gene Foster worked on fashioning the boiler out of high-grade copper. Dick VanEvery machined the rods, pistons, and cylinders. Willie Gillis worked on the sand dome, steam dome, and backhead controls, while Roger machined the frame. Wooden patterns for the castings were made by George Bauer and Ray Fox in the studio prop shop. Castings for the wheels, backhead, smoke box, and pilot ("cowcatcher") were poured at a foundry, then precision-machined in the machine shop.



Disney draftsman Eddie Sargeant applies his railroad hobbyist background to help build Walt's Carolwood Pacific Railroad. Roger Broggie photo, CPHS collection.

Early each day, on the way to his office in the Animation Building, Walt walked through the machine shop to watch the progress. In the late 1940s, the shop was housed in wooden buildings referred to as "boxcars," near the main entrance to the lot. Walt knew his staff of precision machinists could only work on his project as time permitted, while giving first priority to the building and maintaining of intricate animation camera equipment.

One day, Walt talked with Roger about being taught some machining procedures. "I don't want to interfere with what the boys are doing, but I don't think it is fair that they're having all the fun. I'd like to help, too," he implored.

After Walt left, Roger cleared off one of the unused workbenches toward the rear of the shop. He equipped it with an assortment of basic hand tools and placed a clean shop apron on a hook nearby. The next morning Walt came in as usual, chatting with the machinists as he worked his way through the shop. Then he spotted a hand-lettered sign on a workbench: "Walt's Workplace."

Without missing a beat, Walt removed his coat, slipped on the bib apron, and began sorting through the tools and looking through the drawers. He then looked up at everyone in the shop; the crew was waiting for his reaction. "Well, what the hell are you guys gawking at?" he said with mock annoyance. "Haven't you ever seen a rookie machinist before?" The men laughed and spontaneously applauded, wishing him a big "welcome aboard." It was characteristic of Walt to want to be thought of as "one of the boys."

During the ensuing weeks—which eventually stretched into months—Walt worked as a willing apprentice under Roger's tutelage. He learned to lay out patterns for the smokestack, the headlamp, and the cab's woodwork. He turned the flagstands, whistle, and hand rails on a jeweler's lathe (also used to machine intricate camera parts). Walt became proficient at operating a miniature drill press, and made parts on a milling machine. He performed sheet metal work, and learned how to silver-solder and braze while helping to build the headlamp and



The genesis for Walt Disney Imagineering took place here, in the Disney studios' machine shop, located in one of several little studio structures nicknamed "boxcars." The wooden buildings, holdovers from the original Walt Disney Studios' location on Hyperion Avenue, were moved to Burbank in 1939. CPHS collection.

smokestack. As his knowledge grew, so did his interest in machine work.

As the patterns were made and the parts molded into shape, studio personnel developed a feeling of community ownership in their boss' new hobby. Suggestions for changes and improvements were given daily.

"I guess we made a pretty good apprentice machinist out of him," Roger later recalled. "He surprised all of us. In many ways, Walt [was] a temperamental guy. Most of the boys didn't think he'd be much good in the shop. But he had a high aptitude for machine work."

Walt had a natural ability to quickly grasp what he was being taught by focusing his attention and listening carefully. He then was able to perform the task by drawing from his acute memory. Walt sloughed off such compliments. His comment was, "Any boy of 16 could build a train like mine if he applied himself. And it wouldn't cost him much money!"

Roger recalled: "I think that one of the reasons I always got along with Walt was because I knew more than he did about machines." According to people who worked closely with both of them, Walt and Roger were perfectionists who respected each other's talents. Neither

Roger E. Broggie

FOR ALMOST A HALF-CENTURY, Disney's original Imagineer—Roger Broggie—worked in the entertainment industry. Among his many accomplishments were discovering mechanical solutions for motion picture special effects, developing electronic robots that could sing and dance, and building transportation systems ranging from old-fashioned steam trains to futuristic monorails.

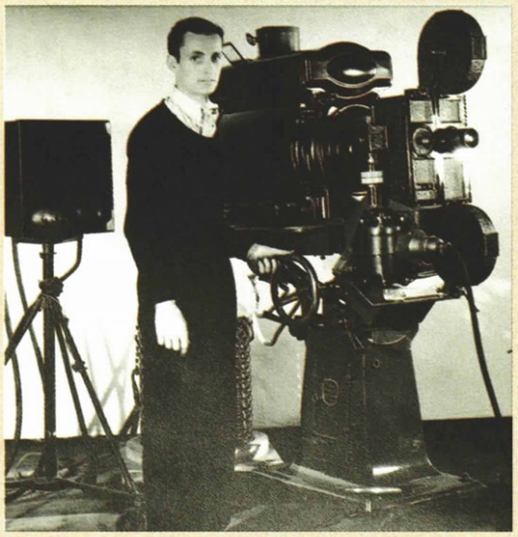
Roger's training as a precision machinist was acquired at Mooseheart High School in Illinois. Upon graduation in 1927, he was qualified to become a third-year apprentice toolmaker and received job offers from the Chicago Telephone Company and the Elgin Watch Company, both located in the Windy City.

To Roger, however, a more appealing setting was warm Southern California, which he learned about in letters from Mooseheart alumni. Their invitations to come west were much more enticing than the prospect of enduring long Chicago winters. As soon as graduation ceremonies were over, Roger bought a one-way train ticket to Los Angeles. Arriving there in mid-June 1927, he found a room in a boarding house—in Seal Beach, south of Los Angeles—with several other Mooseheart grads.

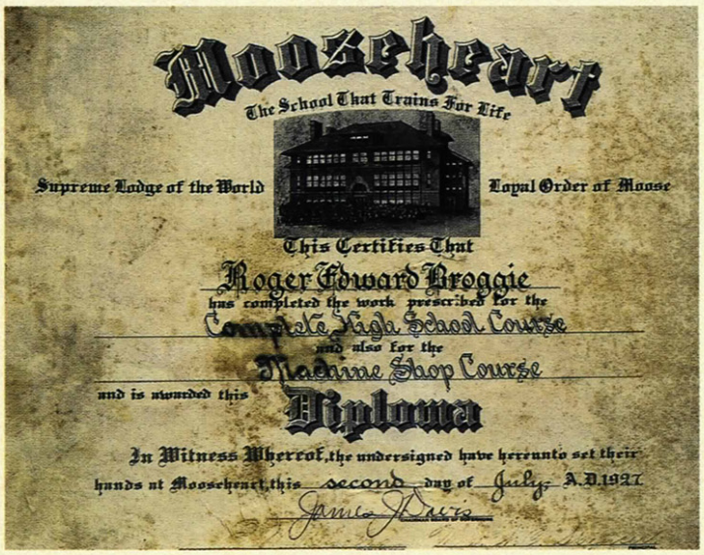
One of his friends gave him a lead for a job with a young aircraft builder named Donald Douglas. Roger interviewed at the Douglas Aircraft plant in Santa Monica, and would have become employee number 40 in the embryonic company. However, a better rate of pay was being offered by a company with a contract to build huge generators for Boulder Dam. Even though it was a temporary job, the experience helped Roger realize that he was not only qualified to build tools small enough to repair a watch, he could also build parts big enough to harness the energy of a dam—or drive a locomotive.

Six months later he became intrigued with the burgeoning motion picture industry, which had recently discovered a way to give actors the ability to speak to their audiences. Film production, he thought, was a less volatile industry than building flying machines at Douglas Aircraft.

Initially, he was employed as a precision machinist by DuPont Vitacolor Corporation, then by Technicolor, followed by Bell & Howell. In 1932, he built and operated a rear-projection system for Teague Process Company, based at General Service Studios (now Zoetrope Studios). During this period, he worked on films for Harold Lloyd, Walter Wanger, and other producers



In 1928, prior to joining the Disney organization, Roger Broggie began his 50-year Hollywood career working for film moguls David O. Selznick, Charlie Chaplin, and Jules Stein. CPHS collection.


Mooseheart
The School That Trains For Life
Supreme Lodge of the World
Loyal Order of Moose
This Certifies That
Roger Edward Broggie
has completed the work prescribed for the
Complete High School Course
and also for the
Machine Shop Course
and is awarded this
Diploma
In Witness Whereof, the undersigned have hereunto set their hands at Mooseheart, this second day of July A.D. 1927

By the time he graduated from high school, Roger Broggie was already qualified as a third-year apprentice toolmaker. CPHS collection.

at General Service. He also worked on MODERN TIMES and THE GREAT DICTATOR for Charlie Chaplin, and on films produced by the David O. Selznick Studio in Culver City.

In 1937, he and his boss, George Teague, were employed by Dick Jones, of Universal Studios' special effects department, to build process projectors housed in bulbous sound-proof casings nicknamed "blimps." These machines were used to project scenes on a screen behind actors, and had to function without making any noise that might be picked up by nearby, sensitive microphones.

In 1939 Dick Jones was hired by Mickey Batchelder at Disney Studios. Jones insisted that he be allowed to hire Roger, who joined Walt Disney Productions as a precision machinist on October 1, 1939. The new Disney studio at Burbank was in its final phase of construction, and engineers were needed to move and adapt old animation cameras from the original location on Hyperion Avenue, in Los Angeles' Silverlake District, to the new facilities.

Roger's initial assignment was to install the complicated multiplane animation equipment. Later he worked closely with Ub Iwerks, the Academy Award-winning designer of animation processes and camera equipment. Together, they developed rear-screen special effects, camera cranes, and high-speed optical printers: If Ub could imagine it, Roger would figure out a way to build it.

In 1950, Roger was promoted to department manager of the studio's machine shop, which had a staff of 12 machinists. Two years later, preliminary design work was commenced on Disneyland. A new company was formed called Walt Disney, Inc., to oversee the task. To avoid stockholder objections, the company's name was changed to WED Enterprises. Roger was one of WED's early leaders, selected by Walt Disney to guide Disneyland's development.

By 1954, the machine shop had grown into a new, larger facility on the studio's back lot and was producing rides and shows for the Park. Under Roger's direction, new processes and techniques were introduced, including "Circarama," a motion-picture format with a screen completely surrounding the audience. The public first experienced this innovative attraction at the opening of Disneyland in 1955. The process has also been exhibited at other Disney theme parks and at international fairs and expositions. Later, the process was renamed "Circle-Vision 360."

By 1958, the studio machine shop was staffed with 70 employees who were producing the Monorail system, the Matterhorn Bobsleds, and other rides and attractions for Disneyland's continuing expansion. In 1963, the department completed four major attractions for the 1964 New York World's Fair, including "Great Moments With Mr. Lincoln," the first application of "Audio-Animatronics" to a life-sized human figure. The patented electro-magnetic process,

developed by Wathel Rogers and Roger, had been used initially to animate wildlife critters for the "Nature's Wonderland" mine train ride.

At the conclusion of the World's Fair, Roger was transferred to WED's facilities in Glendale and promoted to vice-president and general manager of Mapo, Inc., the Imagineering research and manufacturing subsidiary of WED Enterprises. At the time, WED was beginning to design and produce shows and attractions for Walt Disney World, the largest privately funded construction project in history. Starting with 80 employees in 1965, Mapo's staff reached 285 by the opening of Walt Disney World in 1971.

In addition to his work with mechanical animation and camera processes, Roger directed the design and construction of all Disney conveyance systems. These included the Viewliner, Monorail, WEDway PeopleMover, Skyway, Mine Train, and the remarkable steam-powered railroads surrounding the theme parks.

In 1973, Roger was named vice president of research and development for WED Enterprises, leaving Mapo to concentrate on development of EPCOT (Experimental Prototype Community Of Tomorrow) Center in Walt Disney World and a proposed California ski resort near Yosemite. On October 1, 1973, he retired from the company under a then-mandatory program for employees who had reached age 65. (Eventually, the U. S. Supreme Court determined that this practice constituted age discrimination.) In an interview for Tokyo Disneyland conducted by Mitsuko Kurumizawa of the Oriental Land Company, Roger said, "Walt left me 10 years of work when he died; once it was done, I was ready to retire."

On October 18, 1990, Roger was honored by the Disney organization at a Disney Legend Awards ceremony along with six of his colleagues who "helped create the happiest place on Earth," in the words of company Chairman Michael Eisner. In recognizing Roger, Roy E. Disney—company co-chairman and nephew of Walt Disney—said, "Any mechanical things you had to do, what you said was, 'Call Roger, he'll know how to fix it.' Without him, Disneyland wouldn't have happened."

Roger Broggie died in November 1991. Two years later, Mooseheart High School designated Roger as one of its "distinguished alumni."

was inclined to provide—nor want—gratuitous praise.

Occasionally, Roger's perfectionism resulted in unhappy experiences for those less inclined. One morning, he was walking through the shop and noticed a chuck wrench had been left in the chuck of one of the lathes. He fired the errant machinist on the spot. During his training as a high school apprentice machinist, Roger had been taught the hazards of a chuck wrench flying off a lathe and hitting someone. He believed strongly in a no-tolerance policy regarding safety violations. In his many years of working around machines, Roger never had an injury—until, at age 82, he lacerated his right thumb on a table saw at his home workshop. (Fortunately, he was left-handed.)

Around the studio, Roger had a well-earned reputation as a demanding, no-nonsense manager, giving rise to his nickname, "Prince of Darkness." One machinist recalled how Roger could scan a box full of freshly machined parts and quickly pick out just the one that had a small flaw. He expected them all to be right.

Willie Gillis, who was Roger's shop foreman for many years, remembered an incident that happened in the shop during a lunch break. He and a colleague were clowning around on one of the locomotives being

built for Disneyland, causing it to roll off its track stand. "We sweated like sheep to get that engine back on its stand before Roger returned from a meeting he was having with Walt," Willie recalled.

"Just as we eased it back into place, with two-by-fours and a couple of heavy-duty floor jacks, in he walked. We were sure he was going to give us hell because we were just messing around and it could have caused serious damage—like 22,000 pounds of locomotive rolling right through the shop wall. Well, he looked at the two grooves in the concrete floor left by the drive wheels and walked on to his office without uttering a word."

Years later, when asked about the incident, Roger said he knew right away what had happened when he saw the sweat-drenched men. "From their worried look, I figured they'd learned their lesson the hard way. Sometimes, saying nothing causes a more lasting impression."

Like Walt, Roger rarely verbalized his approval. He would, however, let his people know when he expected more from them than he was getting. According to workers in the shop, he was respected as "the best precision machinist on the lot," even after he replaced his workbench with a desk.

Another trait Roger shared with Walt was a near-total-recall memory. He could still remember the serial numbers on the multiplane cameras, years after he had moved on to other responsibilities. A former colleague said that Roger could state the manufacturing date for each piece of equipment in the shop, and its location—or where it had better be located.



Above: Unanticipated delays and expenses were incurred by Walt during planning and erection of this impressive wooden trestle. Its height—crossing nine feet above a lower level of track—subjected the 46-foot-long scale-model structure to costly public construction standards. Steve Booth photo.

Opposite: All manner of construction is under way on the Carolwood Pacific Railroad in this early 1951 view. Taking a break from the work, Walt and John Cowles, Jr., sit astride a brand-new boxcar, while Roger Broggie checks his light meter for the documentation film he is making. In the background, others are engaged in trackwork. Mrs. Walt Disney collection, © Disney Enterprises, Inc.

Practical Alternatives

Meanwhile, work continued at Carolwood, where a major project was under way: digging the 90-foot tunnel under Lilly's flower garden. Jack Rorex showed Walt the progress and told him it was going to be expensive to finish.

Walt replied, "Hell, it's cheaper not to do it at all." Later, back at the studio, he gave instructions to his secretary, Dolores Scott: "I don't want you to tell me any of the costs for the Carolwood tunnel." It was a good thing, because Walt was about to learn from a structural engineer that Eddie Sergeant's intricate plan for a 46-foot-long wooden trestle was subject to the same costly construction standards and certification as a public bridge.

James E. Lill was hired to engineer the trestle and certify the structure's safety for L.A. city building code approval. Using the same design as a full-sized trestle, each main upright support (known as a "bent") consisted of four two-by-four-inch redwood beams, held together at the proper spacing by two-inch square redwood crossmembers and bolts. These vertical supports rested on reinforced concrete footings, set a foot below grade and bolted to the upright bents. At its highest point, the trestle was nine feet above the ground; in spite of the height, there would be no safety handrails.

"We had a goal around the shop," Roger said proudly. "Everything was to be built in the same manner as the 1880s. That applied to the rolling stock and the way things were built at Carolwood." If safety rail-



Track Technology

TO INSTALL WALT'S SCALE model railroad, studio technicians learned new methods that would prove invaluable only a few years later in creating the Disneyland railroad.

The railway was first plotted on paper at a "one inch equals 20 feet" scale. Full-sized masonite templates were then made in 10-foot lengths, in tangent (representing straight trackage) and, for the curves, in radii ranging from 45 to 60 feet (in five-foot steps) and 100 feet; two templates of each were required. The templates were laid on the ground, starting from the crossover point, and a record was made of the lengths of tangent and curved sections required to make the track follow the paper layout.

"We tried to keep full 10-foot sections wherever possible since the dural (durable aluminum) rail came in 10-foot lengths," Roger Broggie said. "The rail was rolled to the required radii in a set of motor-driven rollers shaped to fit the rail contour. Then, using a jig, the rails were spiked to 12-1/2 inch redwood ties." Ties were the appropriate length according to 1/8th scale; they were rabbited (notched) for rail seating. They were also spaced in scale, according to full-sized practice.

Track panels were laid out utilizing a three-inch offset as a baseline, and the track was bolted together in place on top of two inches of crushed decomposed granite ballast. More ballast material was added between the ties, then tamped into place by a Mexican section gang who had worked for the Southern Pacific Railroad.

Walt was there every step of the way, from surveying the route to laying the track.

ings had been installed on the trestle, they would have ruined the structure's "period look" as well as the railroad's overall illusion of scale.

To enhance the ambiance of his layout, Walt paid to have some nearby utility poles relocated out of sight; they weren't in keeping with the era of his railroad. He also had landscaper Jack Evans install bushes and trees to hide neighboring houses from view.

Great care and detail were evident throughout the Carolwood Pacific Railroad's installation. "We approached the challenge of laying the rails first as was done in full-size practice," Roger Broggie recalled. "But we abandoned it for what we termed the 'Lionel Method' as being more practical." With this alternative technique of installing track, complete sections of rail and ties were carefully prefabricated at the studio, then installed in pieces—in much the same way as is done on a model railroad layout. Using this process required exact measurements at the site and precise production of the track sections.

Actually, it was the curved sections of track that were trickiest to produce; after the first abortive attempts in the field, these were prefabricated at the studio. But the straightaways could be built "in place" at Carolwood. Three section hands, or "gandy dancers," worked along with Walt and Roger Broggie to install the dural rails. The trio had gained trackbuilding experience on the Southern Pacific Railroad.

After contouring of the roadbed's subgrade was completed, a layer of decomposed granite ballast was spread. Track (crossties, rails, and spikes) was laid on this layer, then more ballast was spread around the ties. (Ballast forms a level and firm base for the wood ties, keeps them from shifting position, and allows moisture to drain.) To keep the Carolwood Pacific's track neat in appearance, borders of thin red clay bricks were also laid on edge in the ground, along the outside edge of the ballast to retain the decomposed granite.

Roger had masonite templates cut at the studio prop shop; these were used to help align curves to the exact desired radii (one of the most difficult tasks in laying track). The rails were held in place with perfectly scaled spikes, hammered into resin-dipped redwood ties.



The Gandy Dancer

FOR READERS NEW to railroading, a "gandy dancer" historically was a track worker. Gandy dancers generally worked as part of a "track gang" whose duties included inspecting tracks regularly and correcting any hardware problems—such as loose spikes or bolts—and irregularities with the track's line (horizontal alignment); level (keeping the rails properly banked on curves or flat, in relation to each other, on straightaways); and surface (avoiding bumps or dips).

The beat of heavy hammers hitting the spikes suggests the rhythm of a dance. Utilizing only hand tools in earlier times, gandy dancers often sang to keep a cadence to their work, which often required great collective effort (shifting a section of track sideways, using only long steel bars and muscles, for instance). The term "gandy dancer" is thought to have been derived from an early railway equipment supply company named Gandy Manufacturing. Like many characterized terms, the true origin of the gandy dancer has been obscured by time.

Walt's job was to check the level and gauge of the track, and to help tamp the ballast between the ties. (Many years later, the templates were donated by Mrs. Disney to the Los Angeles Live Steamers club, located in Griffith Park between the Los Angeles Zoo and the Travel Town Museum. Walt had been a charter member of the club.)

A Proud Motto

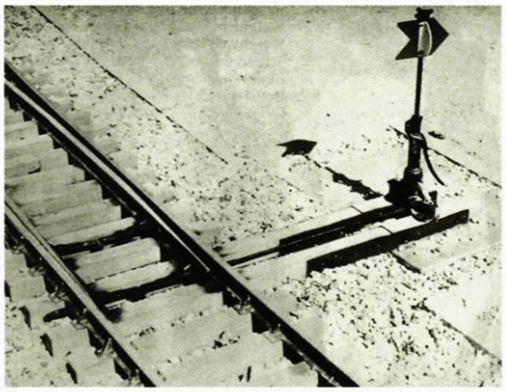
The first portion of the Carolwood Pacific Railroad's trackage was laid in December 1949, consisting of a complete loop with a figure 8 inside, one passing track, and one spur. Eleven switches and one crossover were required to join all these sections of track, totaling 1,200 feet. By May 1950, the tracks were complete. In addition to the original figure 8 inside a complete loop around Yensid Valley (Yensid, Disney spelled backward, was Walt's name for the lower plateau of his property), the trackage consisted of a 1,400-foot loop climbing from the lower loop with two connecting, curved sections of track laid on 3 percent grades (meaning they rose three feet for every 100 feet of forward travel).

The upper loop crossed a 46-foot-long trestle nine feet above the track, then ran through a 90-foot tunnel. It also crossed three other short overpasses and a three-foot high, 20-foot long trestle. The combination of track, bridges, and tunnels was necessary to fit the contour of the land, and enable the train to run in either direction over any part of the track.

Both right- and left-hand switches (otherwise known as turnouts) were involved; all switches on the line utilized "frogs"—the track component in a switch where one rail actually crosses the other—constructed to a No. 6 (one-in-six) angle. Guard rails and switch points were bent and machined from dural rail, while frogs were cast aluminum (guard rails are an extra set of rails, installed between the running rails on bridges and trestles, and at various points within switches, to help prevent derailments). To help ensure they remained in proper alignment, switches were nailed down to diagonal stringers (underlying wood pieces).

Each switchstand (the device on a switch that "throws" the movable points, directing the train one way or the other) could be operated electrically or by hand. Automatic controls were also installed in the track; contacts in the rail made it impossible to "trail" (operate through in the direction that brings two tracks together) an "open" (improperly thrown) switch. Controls in the locomotive's tender (a car carrying fuel and water) enabled the engineer to select either the main line or the diverging route when "facing" each switch (approaching from the direction in which the two tracks diverge). All these controls on the track allowed a person, when alone, to traverse the complete system in any direction, without getting off the train to throw switches and without danger of derailing at open switches.

A CTC (centralized traffic control) board was mounted in the Carolwood Pacific dispatcher's office, part of the red barn workshop in the center of the railroad yard. From this control board any of the railroad's 11 switches could be thrown, enabling a dispatcher to send a train over any route desired.



Is it full-sized, or is it a model? Typical of the fine detail lavished on Walt's miniature railroad are these movable "points" in a Carolwood Pacific Railroad track switch. The switchstand, at upper right, is the mechanism used by trainmen to manually "throw" the switch (align the points for the proper track). Steve Booth photo.



Walt "demonstrates" his Carolwood Pacific CTC dispatching board. Any of the railroad's 11 switches could be thrown electrically from the board, located inside the red barn, sending a train over a number of different routes. Progress of trains was monitored by tiny lights that would flick on, then off, as a train was "sensed" by track circuits along the route. Mrs. Walt Disney collection, © Disney Enterprises, Inc.

The complete electrical system, designed by Lee Adams of the studio's electrical department, was based on the principles of safety and convenience for train operation. Most of the train operators were Walt's friends; many were also celebrities in motion pictures, radio, and television, and they often knew very little about the intricacies of railroad operation. The CTC system and safety contacts were installed so that anyone could be shown the throttle and reverse lever and sent around the track, without fear of having him or her go through open switches and end up in the shrubbery.

Although he never did so, Walt planned to add other locomotives to his layout. These would have made the CTC system necessary (it really never was, with only the single train to worry about); to avoid collisions, the running of trains would have had to be monitored and directed by a dispatcher. However, Walt's plans helped ensure that everything, including safety features, on the Carolwood Pacific would be "just like the big ones"—a reference that became the proud motto of the studio machinists, craftsmen, and artists who worked with Walt and Roger on the railroad.





The Birth of *Lilly Belle*

Most of my life I have done what I wanted to do. I have had fun on the job. I have never been able to confine that fun to office hours.

—Walt Disney

Christmas Eve 1949 was almost a week away when Walt entered the machine shop to work on a few parts and pieces for his locomotive. Most of his staff had already left for home, or had gone shopping for last-minute gifts.

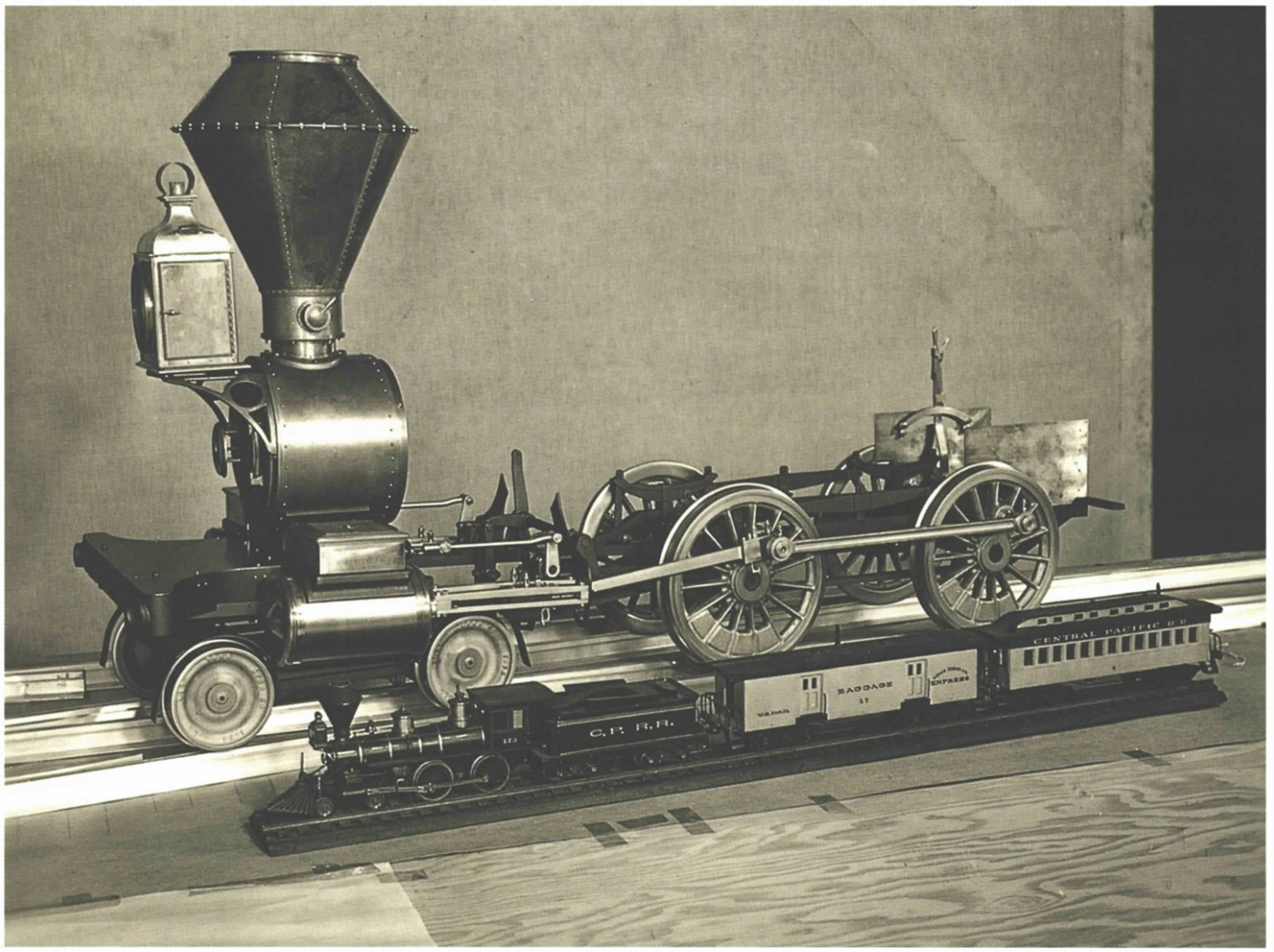
"I think I have the perfect name for the locomotive," he told Roger. "I'm going to call her *'Lilly Belle.'* It's for Lillian and I think she'll be pleased. Besides, she's been a good sport about this whole railroading project."

Roger told Walt that he'd had the engine running for the first time earlier that day, using pressurized air to test the boiler and check the drive mechanism. "Everything worked smoothly," he said. "Next step will be the steam-up, so we'll finally see how she runs under her own power."

Hearing this, Walt had an idea that demonstrated his inherent flair for showmanship. "We could hold the steam-up during the Christmas party next Saturday, and give rides to everyone," he suggested.

Roger knew what this meant. He and his staff of machinists would be conducting the maiden run in front of the entire studio staff! What, he thought, were the chances that all the fittings and pieces would work as they were supposed to? After all, this engine was built entirely from scratch by people who had never built a steam engine. Nothing on it had been purchased "off the shelf." For instance, its boiler was solidly made of the finest-quality copper, fitted with 35 half-inch copper tubes. Machining of the drive mechanism—the pistons, connecting rods, and drive wheels—had all been undertaken according to Eddie Sargeant's drawings.

A smile lights up Walt's face as he hears Lilly Belle*'s four-chime steam whistle for the first time. Eddie Sargeant and Dick VanEvery look on while Ward Kimball "assists" Walt in tinkering with his fine new machine.* © Disney Enterprises, Inc.



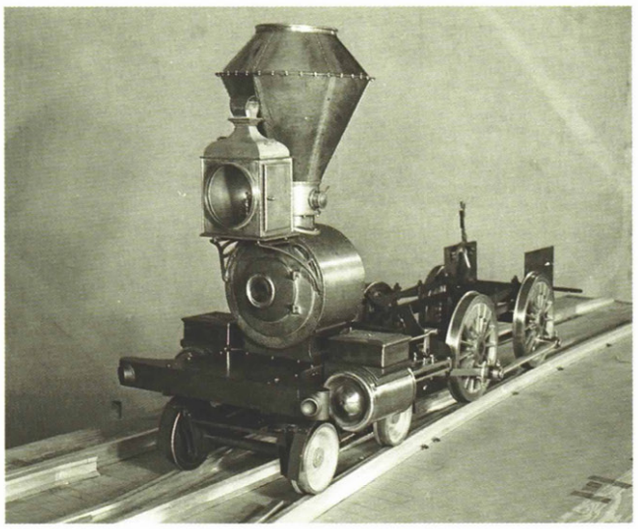
Above and right: These construction views of Lilly Belle *show the locomotive's frame, drive mechanism, and smokebox nearly complete. The studio machine shop staff's precision machining and fine workmanship are apparent. The smaller 1/2-inch scale—1/2 inch equals 1 foot—locomotive (seen in the view above), built years earlier by rail historian Jerry Best, was the first model of CP No. 173 seen by Walt.* Both, CPHS collection.

Ready to Roll

The next morning, Roger broke the news to the four key machinists working with him on the project: "We need to put together a show for Walt. He wants everyone to see [*Lilly Belle*'s] first steam-up." To meet that goal, the men divided up the tasks that needed to be completed for the trial run, and Roger enlisted the prop shop to build a 300-foot loop of track on Stage One.

For the next 48 hours, the men fine-tuned and fitted every moving piece. Since there wasn't enough time to finish the wooden cab on which Walt had been working (he was particularly skilled at woodworking), they would have to run without it.

The tender was another matter; it had to be finished to run the engine since it carried the water supply and provided the seat for the





A crowd gathers on Stage One at the studio on December 24, 1949, as Eddie Sargeant, Roger Broggie, and Dick VanEvery do a little "final assembly" work. © Disney Enterprises, Inc.

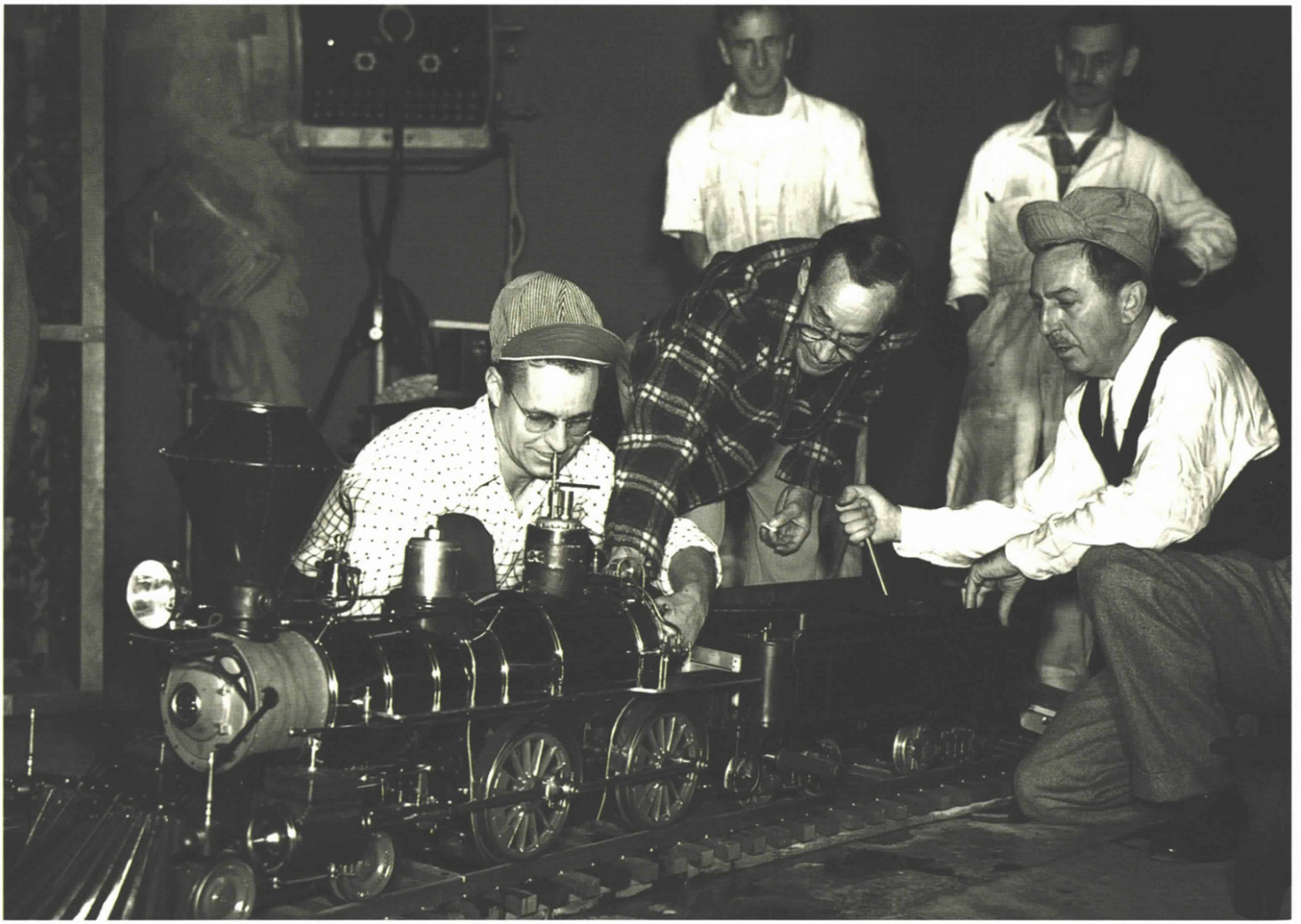
engineer! Willie Gillis and Dick VanEvery went to work and completed it on Saturday morning, December 24—the day of the party. The covers for the sand dome and steam dome weren't ready, but they weren't needed to operate the engine. Since the brass housing for the headlamp was incomplete, Roger simply mounted the light on the base and wired the connection to flashlight batteries.

"We'd better get her over to the sound stage, so we can take a few practice runs before everyone shows up," Roger told his men. Using a carpeted dolly designed to move motion picture set pieces, they loaded the 200-pound engine and 150-pound tender. Very carefully, Willie Gillis, Gene Foster, Dick VanEvery, Eddie Sargeant, and Roger Broggie pulled and pushed the miniature they had been working on for the better part of a year to her debut party.

Sound Stage One was 100 feet from the machine shop. The cavernous room, with light rigging hanging 40 feet above the floor, made the model appear even smaller than its 1/8th scale size. Gently, the engine and tender were lowered onto the loop of rails. The prop department had done a remarkable job finishing the track in time. Eddie pushed the tender around the 300 feet of railway to confirm that the 7-1/4 inch track gauge was true.

Distilled water was poured into the tender's brass tank. Roger shoveled coal, specially ordered from Pennsylvania—where it had been crushed to scale-sized lumps—into the firebox. At this point, Walt walked in carrying a couple of engineer's caps (he had always been a hat fancier). He handed one to Roger and placed the other on his head at a jaunty angle, making it clear that he expected to be on the steam-up team.

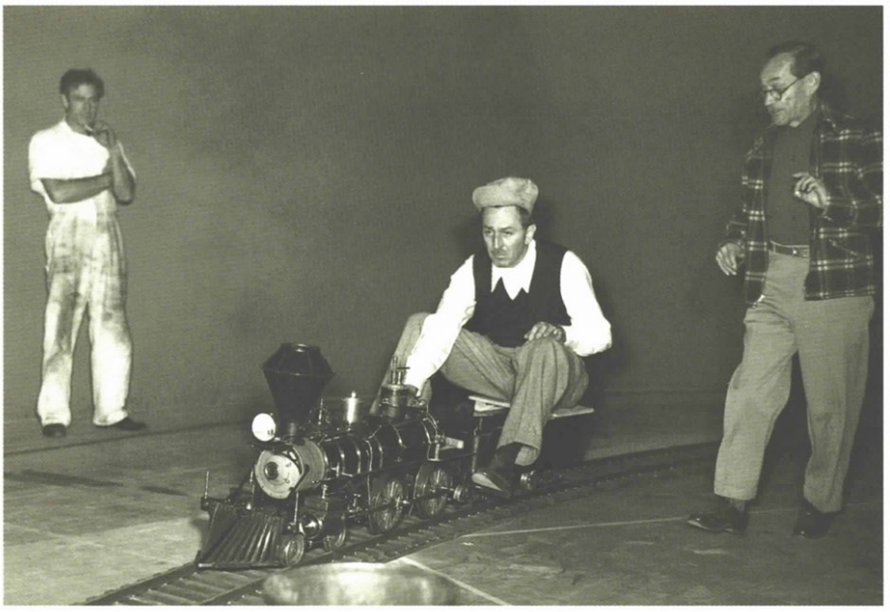
Roger showed Walt how water was delivered to the locomotive's boiler by pumping air pressure into the tender with a lever. Soon the



Operating a small lever, Walt pumps water from the tender into Lilly Belle*'s boiler as Eddie and Roger make adjustments.*
© Disney Enterprises, Inc.

water level in the boiler's sight glass showed "two bolts" (fasteners in the sight glass indicating the water level): enough to submerge the tubing inside the boiler and keep the firebox's crown sheet cool. Roger checked to make sure the sight glass valves were fully open and that steam and water valves on the left and right side injectors were closed. Willie Gillis added a few shots of machine oil to the locomotive's valve gear and connecting rods. Roger made sure the throttle lever was closed, and moved the Johnson bar to a neutral position. (Since the *Lilly Belle* didn't have conventional railroad-style air brakes, the Johnson bar was used to reverse the direction of the locomotive's drive wheels, providing stopping power.)

A compressed air source was brought in to create a draft through the smokebox and help with starting a good fire. A small piece of cotton cloth was lit and inserted into the firebox, then the firedoor was closed. As the men watched, the steam pressure gauge slowly lifted off its peg



The First Trip! As Walt intently eases out the trim 4-4-0's throttle lever, Eddie Sargeant runs alongside and Willie Gillis looks on. © Disney Enterprises, Inc.

and began to climb. The needle slowly crept upward: 10—20—30—60—80, finally reaching the maximum working pressure of 120 psi (pounds per square inch). Suddenly, the safety valve popped off with a loud burst of steam, announcing *Lilly Belle*'s birth to everyone within hearing distance. The little engine was fully steamed up and ready to roll.

Walt wanted to try something. He leaned forward and pressed the connecting rod to the four-chime steam whistle. It released a throaty blast, piercing the silence in the huge room. A bright smile lit up Walt's face, indicating his approval. By now, more than a dozen men had gathered around the model watching the spirited activities. Most of them were animators who knew of Ward Kimball's full-sized steam train and Ollie Johnston's miniature live steam railroad.

A Compromising Situation

Walt was accorded the honor of being engineer for the locomotive's roll-out, and given some quick suggestions by Roger about keeping the engine at a safe speed. A padded seat was placed on the tender, and two rubber-clad pegs protruding from the tender served as footrests. Standing astride the tender, Walt positioned himself on the seat and placed his feet on the pegs. He moved the Johnson bar into "forward" position and slowly pulled the throttle open. With a slight slipping of its drive wheels, the engine began to move. Smoke billowed from the diamond-shaped stack and hung lazily in the still air of the stage. In time to an increasing tempo of rhythmic chuffs, the *Lilly Belle* began picking up speed.

With Eddie Sargeant running to keep up with Walt, and the small

crowd looking on, the little engine ran smoothly with surprising strength. Secretly, Roger Broggie and his crew breathed a collective sigh of relief; the locomotive had worked beautifully! Walt scrapped his idea of giving rides, simply savoring the pleasure of running *Lilly Belle*.

After everyone else had left the sound stage to join the rest of the Christmas party in the commissary, Eddie decided to try out the locomotive. Curious to see how fast it could go, he proceeded to open the throttle a notch at a time. Without warning, *Lilly Belle*'s left wheels lifted and the engine suddenly tipped off the track, rolling over onto its side.

Just then, Roger returned with Roy Disney, who wanted to see Walt's brand-new pride and joy. There was Eddie lying beside the track with the *Lilly Belle* next to him. For Eddie it was a rather compromising situation!

Roger immediately went for help, returning with Walt and Ward Kimball. Their attention focused on the condition of the locomotive, as they gently righted then lifted it back on the track. Fortunately, *Lilly Belle* was unscathed; the flooring of the sound stage was a soft, sound-absorbing material that had cushioned its fall.

Eddie watched for a moment, then raised himself up on one elbow. "Hey guys, what 'bout me?" he complained. "You care more about that darned engine . . . I coulda been hurt!"

Looking at Eddie with an eyebrow cocked high, Walt growled, "Sargeant, count yourself lucky; that's the last time you'll ever run my *Lilly Belle*." Walt kept this promise: Much to Eddie's chagrin, every time he visited Carolwood, his name was excluded from Walt's list of guest engineers.


CAROLWOOD PACIFIC R. R.
CAROLWOOD
FAIR WEATHER ROUTE
PACIFIC
13



The Rolling Stock

After serving an apprenticeship in a machine shop, I studied metalwork and carpentry before I figured I was ready to start building.

—Walt Disney

While work continued in the shop on *Lilly Belle*, Walt was busy building freight cars out of select hardwoods he had discovered at the studio. As Ollie Johnston recalled, Walt dropped by his office one day to tell him in a clandestine sort of way that he'd discovered where the best hardwoods were stored.

"He told me to follow him and we went to the mill on the back lot," Ollie said. There, Walt showed his fellow railfan a bin containing an abundant selection of eastern hardwoods—including ash, hickory, maple, and oak. The prop shop used this premium stock to build furniture and provide finishing trim on motion picture sets.

Using this convenient supply of material, Walt and Ollie built a cattle car, a sheep car, two boxcars, and a flatcar with the help of prop shop employees Ray Fox and George Bauer. The machine shop provided the cars' frames and their arch-bar truck (wheelsets, associated bearings, and frames) assemblies. Walt and Ollie did most of the woodwork.

Walt explains the details of building his prized Carolwood Pacific Railroad caboose to Joe van Cottom, a French journalist. Based on the design of an 1880s Colorado & Southern original, the caboose—crafted almost entirely by Walt—was fitted with numerous, intricately detailed miniature furnishings. CPHS collection, © Disney Enterprises, Inc.

Fair Weather Route

Production of the six gondolas was done differently. Since they would serve as the primary passenger vehicles, more were needed—and they had to be of stout construction. First, a prototype of the superstructure was made of wood. Ray Fox then made patterns from the prototype's wooden parts; these were used to hot-mold the production pieces in aluminum. Using this method, the original woodgrain was transferred to the castings. Once the cars were painted, it was impossi-

ble to distinguish the aluminum from wood without touching it. (Several years later, this knowledge would prove useful for Disneyland.)

While each freight car received his attention, Walt's personal project was his bright yellow, four-wheeled "bobber" caboose. As Eddie Sargeant had done with all the Carolwood Pacific rolling stock, construction plans were based on an actual railroad car. In this case it was Colorado & Southern's circa-1880 narrow-gauge caboose No. 1002. The original blueprints were provided by Walt's friend, master railroad model-builder Dick Jackson. The car featured a vertical wood-slat exterior, and was typical of the thousands of cabooses that tagged along behind freight trains. (Today, modern technology has replaced the familiar caboose with small electronic gadgets known as ETDs, or end-of-train devices.)

Except for the caboose's frame and its pedestal trucks (provided by the studio's machine shop), Walt built it entirely on his own during a year-long period beginning in late December 1949. His lifelong fascination with miniatures was clearly evident in the painstaking care he lavished on the details.

The model's intricate fittings included hinged, cut-paneled doors with working brass hardware, oil lamps, and a cupola with eight windows. Among the highly detailed furnishings were a fully functional pot-bellied stove, a copper washbasin and water heater, a broom, newspapers, and even a Grizzly Flats Railroad calendar hung on the wall—all in perfect 1/8th scale. Walt hinged one side of the roof so it could be opened to see the interior features. His caboose was the only car designed not to be ridden, and it was stored on a special pedestal inside the barn. The rest of Carolwood Pacific's rolling stock was stored in the 90-foot tunnel.

A final authentic touch for Walt's freight cars was the application of markings. Walt had been working on an emblem's design, and was

Below: Another view of Walt's caboose. The only car designed not to be ridden on the Carolwood Pacific Railroad, it was truly the "showman's showpiece." Steve Booth photo.

Below right: For a time beginning in the 1970s, Walt's caboose was a prized exhibit inside the Disneyland Railroad's posh VIP car Lilly Belle. *It later was displayed, along with Walt's* Lilly Belle *locomotive, in Disneyland's Main Street Station.* CPHS collection, © Disney Enterprises, Inc.





Chadwell O'Connor: Steam-Driven Man

A CHANCE ENCOUNTER between two railfans eventually led to a friendship and business relationship lasting nearly two decades.

On a sunny spring morning in 1950, Chad O'Connor was setting up a motion-picture camera at the busy Glendale, California, suburban train station to film Southern Pacific's arriving and departing trains. As Chad fastened a 16-millimeter Bell & Howell camera to its custom-built tripod, he noticed a stranger standing alone on the platform.

Not giving him any more thought, Chad began panning the camera to test-frame his view; the expected *Daylight* streamliner would be arriving any moment. Engrossed in his task, Chad was surprised when a voice from behind asked about his filming technique. Looking around, Chad saw the man he'd noticed earlier.

"Sorry to bother you," the stranger said, "but I noticed the way your camera was moving on your tripod. I've never seen such a smooth movement. Mind if I take a look?"

As the fellow moved the camera back and forth, Chad could tell he was used to handling motion picture equipment. "How do you get the smoothness?" was his next question.

Chad explained that he had created a liquid platform between the camera and its tripod mounting. The fluid greatly reduced friction between the metal surfaces, allowing for incredibly smooth panning and tilting of the camera when he was shooting his favorite movie subject: steam locomotives.

"Can you build these for me?," he was asked.

"That's not my business," was Chad's reply.

Becoming more direct, the man implored, "I don't think you understand. I need this mount for a film I'm making. It's being shot on location in the desert and the crew is using long telephoto lenses to film animals. The dailies I've seen are terrible because of the camera's jerky movement. Your mount is the best one I've ever seen and I need it. By the way, my name is Walt Disney."

One month later, Chad delivered the first commercial version of his invention to Walt



Chad O'Connor poses in 1996 with a motion-picture camera and his original fluid-head tripod camera mount. CPHS collection.

Disney Productions. Placing an order for more, Walt directed that no Disney film would go on location without using an O'Connor fluid-head tripod. Word soon spread in the film industry as camera technicians and cinematographers discovered the unique fluid head crafted by this former aircraft engineer.

To meet increasing demand for the mount, Chad eventually formed O'Connor Engineering Labs. In 1976, the Academy of Motion Picture Arts and Sciences presented Chadwell O'Connor with a Scientific and Technical Achievement Award for his concept and design. In 1993, the Academy upgraded the achievement award with an Oscar® for "contributions to the art of movie making."

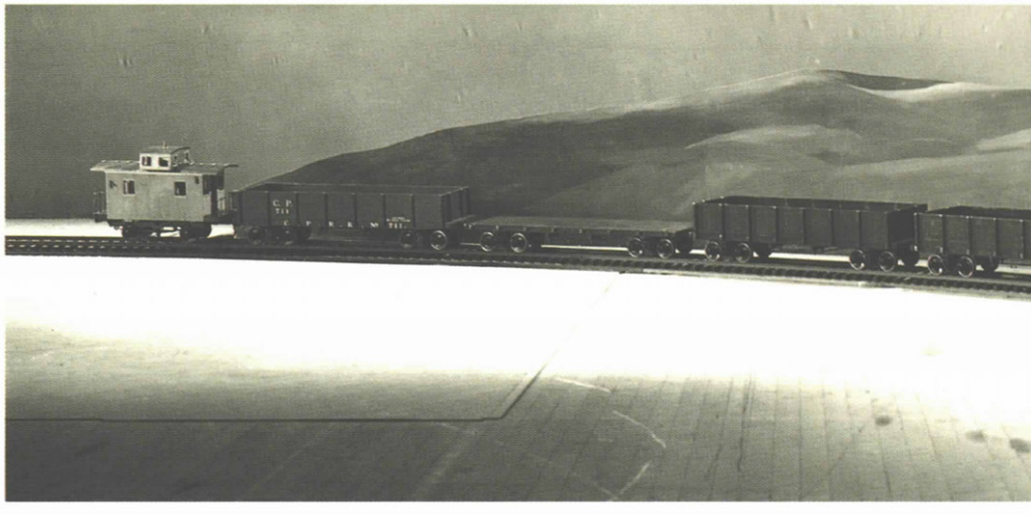
In addition to his engineering abilities, Chad is recognized as a leading expert on steam power (his business cards depict an ancient Greek prototypal steam engine). He has owned, built, or restored nearly every imaginable kind of steam-driven conveyance, including boats, locomotives, and even a Stanley Steamer automobile.

Not surprisingly, Chad harbors a love of railroading; it began at age four when he received his first train set for Christmas. The year was 1916, and steam locomotives were a common sight running through Chad's Massachusetts hometown. Later, after obtaining a master's degree in mechanical engineering, Chad was hired by the Douglas Aircraft Company of Santa Monica, California. There, he is credited with creating the first standardized-parts system to make aircraft components interchangeable.

Never treading far from his railroading passion, Chad was honored when his engineering firm was selected by the National Park Service for a special contract: design and construction of exact working replicas of the Central Pacific Railroad's *Jupiter* and Union Pacific Railroad's No. 119, both 4-4-0s constructed in the 1860s. The two locomotives would be placed on permanent operating exhibit at Promontory Summit, Utah, site of the famous May 10, 1869, "Golden Spike ceremony" (in which the original *Jupiter* and No. 119 participated) signifying completion of the nation's first transcontinental rail line, and today home to Golden Spike National Historic Site.

A close friend of rail enthusiasts and historians Jerry Best and Ward Kimball, Chad became involved in refurbishment efforts for the pair's two full-sized, narrow-gauge Hawaiian plantation locomotives. Jerry's locomotive would be restored to its Hawaiian appearance, while Kimball's would be refurbished into Grizzly Flats Railroad No. 1 *Chloe*—with Chad helping on major alterations to backdate its appearance.

Now in his mid-80s, Chad O'Connor still reports to his engineering office every weekday to oversee a variety of projects. On weekends he can often be found in Ward and Betty Kimball's backyard, where yet another project is under way.



close to developing one he liked. Utilizing his early background as a letterhead and advertising designer at Pesmen-Rubin Commercial Art Studio in Kansas City, Walt had produced an ornate Victorian-style letterhead for his railroad—along with a luggage tag, a ticket, and a special "Vice President" identification card that he issued to friends and business associates. All his railroad lacked was a formal emblem.

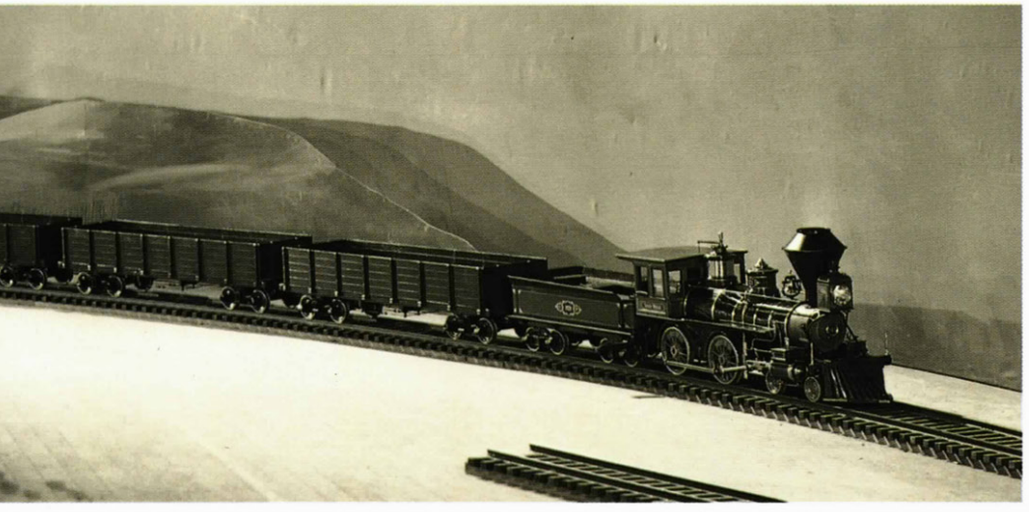
Walt drew a concept for the design, and Roger gave it to Eddie Sargeant for final development. After a few days, Eddie produced a clean rendering based on Walt's concept and featuring the slogan "Fair Weather Route." The slogan reflected Walt's acute memory of the bitter winters he endured for six years while delivering the Kansas City TIMES and STAR newspapers for his father's distributorship.

Where's Walt?

Naming his layout the Carolwood Pacific Railroad gave Walt's railroad the same initials as the Central Pacific Railroad—the line that had built and operated locomotive No. 173, *Lilly Belle*'s prototype. Given Walt Disney's preference for railroaders over critics, it is a safe bet he would not have been swayed in his choice even if he *had* seen the following commentary, written by Ambrose Bierce and published in the SAN FRANCISCO EXAMINER of July 22, 1888:

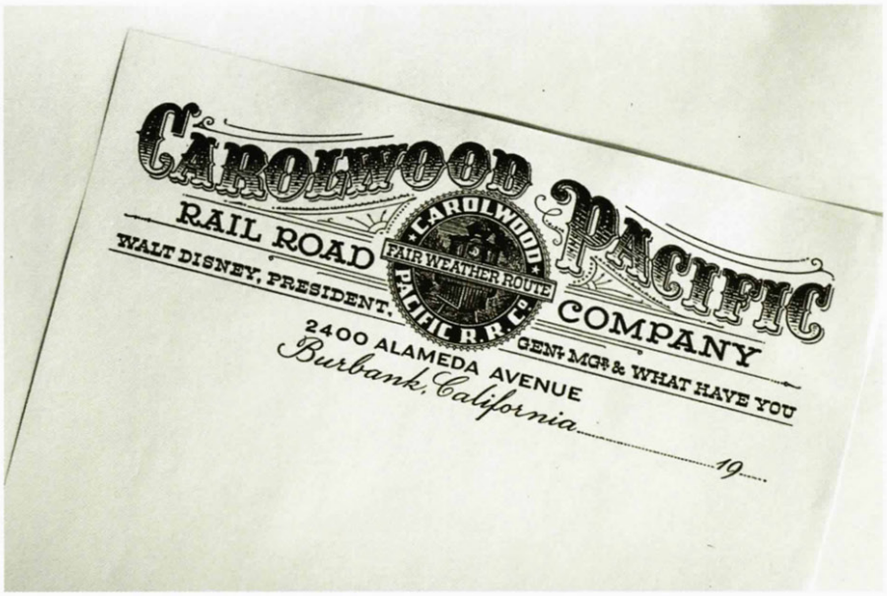
> *The worst railroads on the Pacific Coast are those operated by the Southern Pacific Company. The worst railroad operated by the Southern Pacific Company is the Central Pacific. It owes the government more millions of dollars than Leland Stanford has vanities, it will pay fewer cents than Collis P. Huntington has virtues. It has always been managed by rapacity tempered by incompetence.*

Notwithstanding these harsh words, the Central Pacific and its "Big Four" principals—Leland Stanford, Mark Hopkins, Charles Crocker, and Collis Huntington—had in the early 1860s taken an enormous gamble in deciding to build a railroad from Sacramento, California, east to meet the Union Pacific Railroad (itself building west from Omaha,



A consist of gondolas (one still a flatcar) follows the Lilly Belle *in this early 1950 view. Although the trim 4-4-0 appears to be complete, Walt's caboose is still "in the rough," and nearly all the freight cars have yet to be painted.* © Disney Enterprises, Inc.

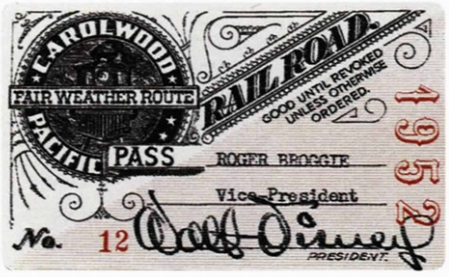




Above: Walt sketched the design, and Eddie Sargeant produced this final version of the Carolwood Pacific logo. © Retlaw Enterprises, Inc.

Above right: Using a somewhat-more-ornate logo, Walt then put together this whimsical letterhead for his "Fair Weather Route." © Retlaw Enterprises, Inc.

Below: Walt's handiwork is also seen in this example of an identification card bestowing the title Vice President of the Carolwood Pacific Railroad on Roger Broggie. He enjoyed giving the ornate cards, which have become treasured keepsakes, to friends and colleagues.



Nebraska). The 1869 completion of this first transcontinental railroad had signalled a new era of prosperity for the Golden State—and vast income for the Big Four. Settlers and vacationers could travel to California in a matter of days; manufactured goods could be brought in cheaply from the East; grain, fruits, and vegetables could be shipped out quickly to new markets. Walt Disney undoubtedly enjoyed the symbolism inherent in his railroad's "C.P.R.R." initials.

Eventually, Walt equipped his barn with all the basic machines and tools necessary for a complete woodworking and metalworking shop. He spent many hours in the barn, making miniatures that he would show to Lilly and their daughters at dinner. Taking great pride in his ability to build things, Walt admired the skill displayed by others who could create with their hands, and would invite them to Carolwood to share his barn.

When Lilly was asked, "Where's Walt?," her usual reply was, "He's down in the barn with the boys." Some weekends, he would be seen only at the dinner table. Lilly responded by sending housekeeper Thelma Howard down to the barn—with enough sandwiches and sodas for everyone.





Steaming Up at Carolwood

Everyone has to contribute, or they become laborers.

—Walt Disney

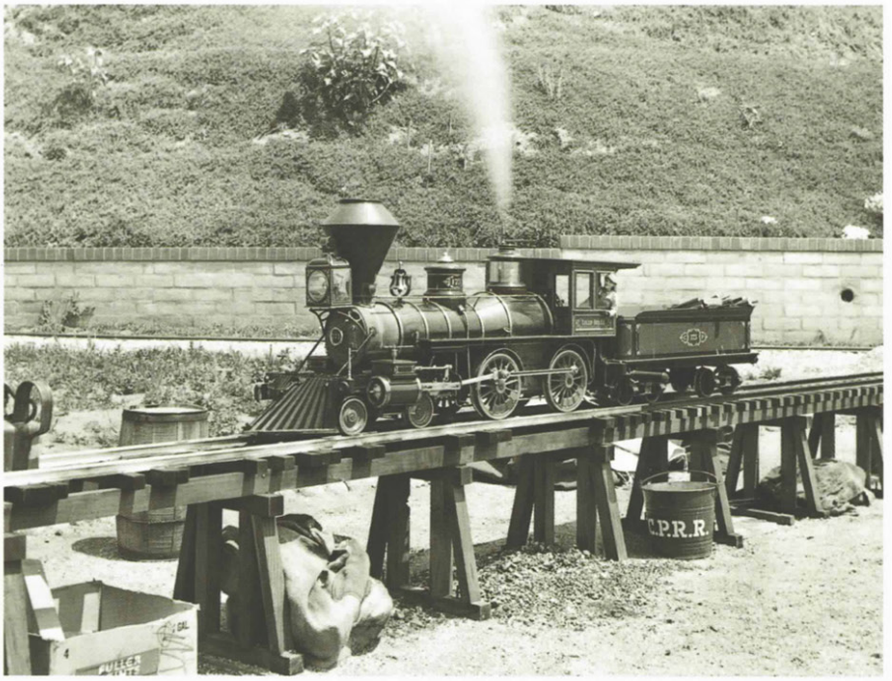
On March 15, 1950, the first freight car to be completed in the machine shop was transported via a studio truck to Carolwood. The gondola was set on the partially completed railway and immediately placed in service, helping to lay the track by hauling the decomposed granite used for ballast. It worked so well that Walt ordered five more to be built.

He also reasoned correctly that a gondola, fitted with two padded seats, was the perfect riding car for passengers—particularly small children and women wearing dresses. It was easy to get into and out of and relatively stable, in contrast to the top of a swaying boxcar—the choice of many older children. (Roy E. Disney later confessed that he'd caused his uncle's train to derail while he was riding on a cattle car. Roy dragged his foot along the ground and kicked rocks that got under the wheels, causing the cars to jump off the rails.)

Walt demonstrates the Lilly Belle*'s controls to a somewhat timid Disney relative. Other lucky children (and adults, in the shadows) enjoy the ride as well.* Mrs. Walt Disney collection, © Disney Enterprises, Inc.

The big day finally came in early May 1950: delivery of locomotive *Lilly Belle*. That morning at the machine shop, Roger Broggie and Eddie Sargeant carefully loaded and secured the engine and tender on one of the studio's three-quarter-ton stakebed trucks. About 40 minutes later, they turned up Carolwood Drive and arrived at the driveway of the Disney estate. They were met by Walt, who guided the truck as it backed down past the house into the lower plateau of his property. Roger, Eddie, and Walt—who was obviously excited—lifted the 200-pound engine from the bed of the truck and placed it on the track.

Roger checked the main and connecting rods to be sure they were operating smoothly. The tender was unloaded and coupled on, then *Lilly Belle* was pushed to the steaming track—an elevated spur on a 30-



Ready for a run, the Lilly Belle *is "popping off" as the boiler's safety valve releases excess pressure. The little trestle in the view is the "ready track," located in the Yensid Valley's rail yard. Here, the locomotive and rolling stock were easily worked on; the elevated track allowed unrestricted access.*
Mrs. Walt Disney collection, © Retlaw Enterprises, Inc.

inch high trestle, designed to raise the model for convenient maintenance. Under the steaming track was a pit for dumping spent coals.

Sleepers Awake

Preparations quickly got under way for the first steam-up of the Carolwood Pacific Railroad. Eddie set the valves while Roger lubricated the engine's moving parts. A full-sized pump can was used to oil the Stephenson valve gear, the main drive rods, and the connecting rods. A miniature brass oilcan Walt had made was kept in a tray over the firebox door, but the full-sized can was much more efficient.

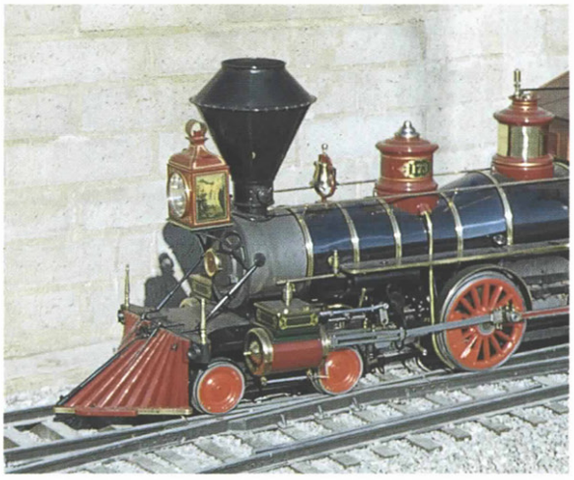
As the boiler heated to its operating pressure of 120 psi, water was added to the tender's brass tank. Then—without warning—the safety valve popped off with a resounding blast of steam, echoing down the canyon beyond the Disneys' property. "Well, I think we've awakened the late sleepers in the neighborhood," Walt said. "Let's give 'em something to really hear." He pushed a lever on the steam dome; the unmistakable sound of a four-chime steam whistle carried off in the clear morning air. "Now they know the Carolwood Pacific is in business!"

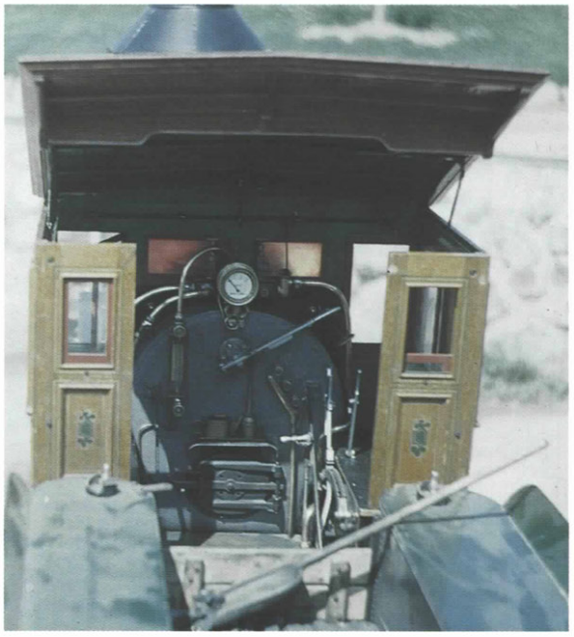
For a few moments, Walt stepped back and silently examined his prized possession. Surrounded by the crews installing the landscaping and the track, Walt carefully studied *Lilly Belle*'s bright red-and-gold striped headlamp, with its highly detailed miniature oil paintings—crafted in the Hudson River school tradition—by studio background artist W. Richard Anthony. A bull elk was depicted on the right panel, and a Yosemite Valley scene on the left. Inside the lamp's brass housing, a glass hurricane chimney sat in front of a polished reflector. A small electric light bulb inside the chimney was a minor concession, to help maintain the intricate scale.

Walt's attention moved to the large, black diamond-shaped smokestack, on which he had learned how to braze and silver solder. Next was the brass bell—which had a surprisingly loud ring for its size—and



Except for the brick wall at left, it's hard to tell that Lilly Belle *isn't a full-sized 1880s steam locomotive. Note the footrests sticking out from both sides of the tender.*
William L. Bay collection.





behind that was the brass-and-red sand dome with gold striping. On each side, the number "173" was painted in gold on a green background, tracing the engine's history back 70 years to the old Central Pacific line. The sander was connected to two pipes leading to an opening directly above the rails in front of the drive wheels; by opening a valve, the engineer could cause traction-producing sand to flow onto sometimes-slippery rails.

Next was the steam dome, with its wide brass body and red cap

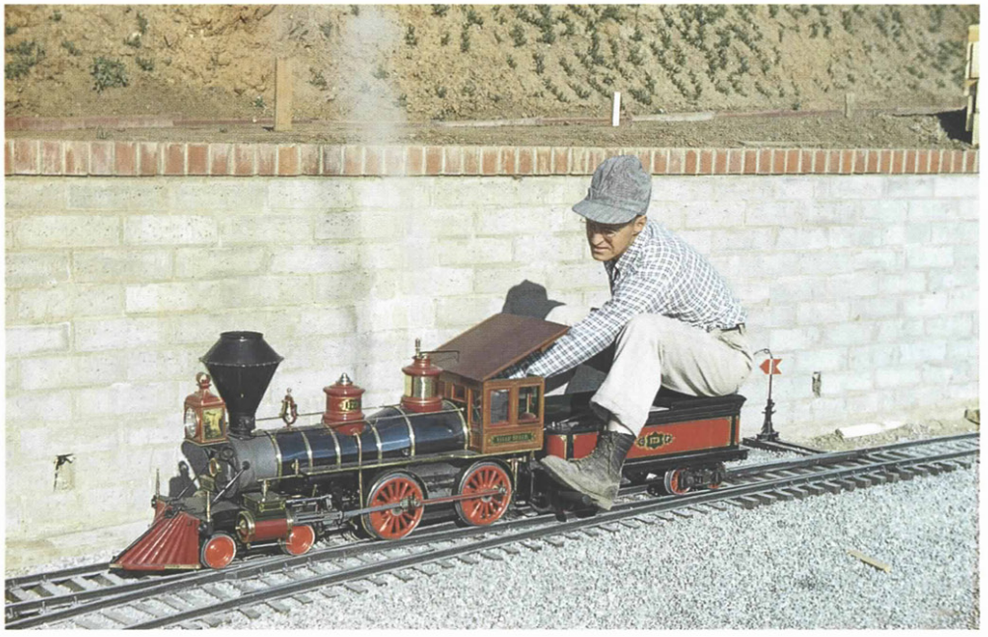


Headlights in the Garden

FROM ABOUT THE 1840s THROUGH THE 1870s, an interesting railroading tradition involved the lamps used as locomotive headlights. Often, the lamps were the personal property of engineers. Each took great pride in the style and shape of his lamp, and would take the heavy, boxy affair from engine to engine as he changed duty assignments. There was a degree of competition among engineers for the most elaborately decorated lamp, which might include bright colors, highly polished brass, gold-leaf striping, and original oil paintings detailed on the side panels.

These classic locomotive headlights today are highly prized by railfans and antique collectors. Although it is quite rare to find one with intact, original paint, the artistry embodied in representative oil paintings was of the highest Victorian order. One of the most popular styles, known as the Hudson River school of painting, took its name from the group of artists who created a body of work based on Hudson River scenes. The Hudson River school eventually encompassed a wider range of subjects, yet all its examples feature bucolic views of nature rendered in warm, twilight colors with an almost ethereal quality.

Today, it seems ironic that paintings celebrating the glory of America's landscape, and humanity's ability to live in harmony with it, were once regularly featured on headlights of steam locomotives—perhaps the ultimate symbols, for their time, of society's continuing dilemma: what to do about the "machine in the garden."



with gold striping. Protruding from the cap was the whistle (which extended down through and under the boiler to furnish a lower note and bigger sound). The red-and-brass domes contrasted with the polished, blued-steel boiler jacket, itself dressed with six brass jacket bands. Brass handrails and brass-trimmed running boards ran along each side of the boiler.

The natural hardwood cab was all Walt's handiwork. He had laid out the patterns and produced the panels using fine lumber. The red roof was hinged, allowing easier access to the controls (a provision that live steam expert Richard Bagley opposed, but one that became common in model live steam railroading). The two larger front windows were hinged to open, and two of the four side windows could be slid open horizontally. On each side of the cab, in cut panels, the name *Lilly Belle* was hand-lettered in gold on a green background.

The mechanical and design accuracy of the scale model was enhanced by numerous additional details. Among these were a red pilot with a black coupler and drawbar; two brass flag holders Walt had turned on a jeweler's lathe; brass-capped piston chambers on each side, topped with dark green-and-gold striped steam chests; four red pilot truck wheels; and four red drive wheels with shiny steel connecting rods and Stephenson-style valve gear.

Lilly Belle was also equipped with two feedwater pumps and two injectors for delivering water to the boiler. A mechanical lubricating system supplied oil to vital working parts in the slide valves and piston cylinders. Inside the cab, on the locomotive's backhead (the rear of the boiler and firebox), were the reverse lever (Johnson bar); throttle; various valve handles; pressure gauge; water glass; and firebox door. Last but not least, the front of the boiler's smokebox sported a round number plate, with the raised brass numerals "173" highlighted against a red background and embellished with a surrounding circle of brass.

The red, green, and black tender—mounted on two trucks each

Above: A proud Roger Broggie takes Lilly Belle *for an early run at Carolwood on May 6, 1950. Track laying began in December 1949 and was completed in July 1950.* Walt Disney photo, © Retlaw Enterprises, Inc.

Opposite left: As the most visible product of the industrial age, steam locomotives in the 19th century represented the triumph of engineering combined with the grace and style of artistry. Here, Lilly Belle*'s exquisite detailing is evident in this close-up of the engine's boiler and running gear. Note the headlight painting and the brass "brightwork" throughout.* Walt Disney photo, © Retlaw Enterprises, Inc.

Opposite right: Looking into Lilly Belle*'s cab, with the roof raised for ease of access, we can see that the boiler's backhead is an elegant yet simple reflection of the locomotive's careful craftsmanship.* Walt Disney photo, © Retlaw Enterprises, Inc.





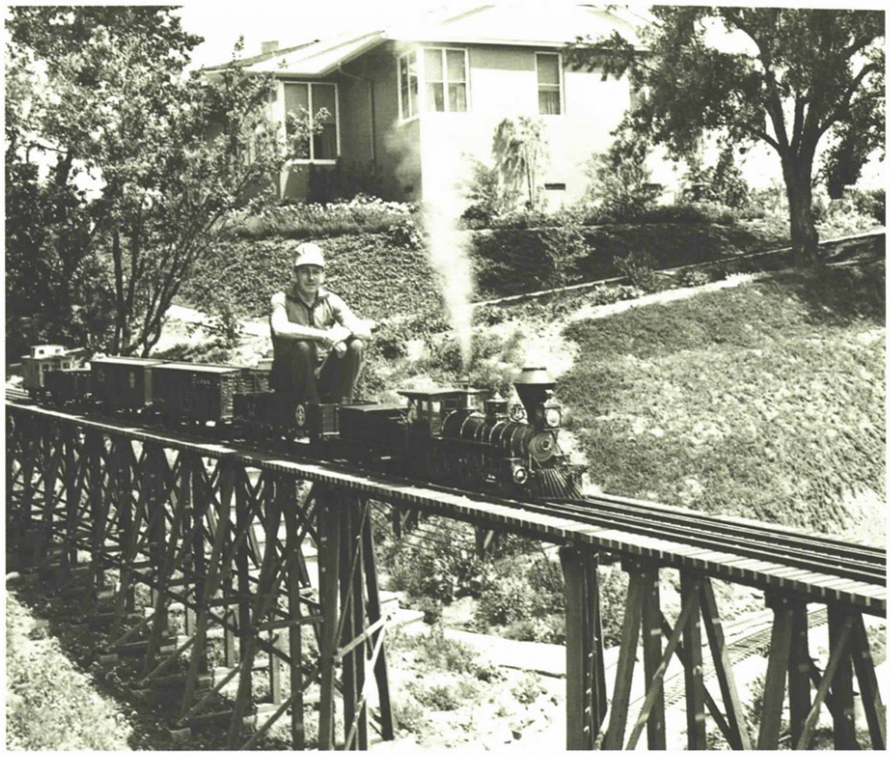
Top: Diane and Sharon Disney join their dad as he adds water to No. 173's tender in preparation for a steam-up. Mrs. Walt Disney collection, © Disney Enterprises, Inc.

Above: Walt never hesitated to get his hands dirty on the Carolwood Pacific. While operating his railroad, he enjoyed being "just one of the boys." Mrs. Walt Disney collection, © Disney Enterprises, Inc.

Right: A trainload of identically dressed Disney cousins rides in gondolas and atop a livestock car as "Engineer Walt" opens the throttle. Heading into an uphill climb out of the Yensid Valley, the Lilly Belle *will conquer the 3 percent grade with little difficulty. Most everything on the line was built to full-sized specification; for instance, note the trestle's extra (inner) set of rails, there to prevent equipment from falling off the structure even if the wheels should derail.* Mrs. Walt Disney collection, © Disney Enterprises, Inc.





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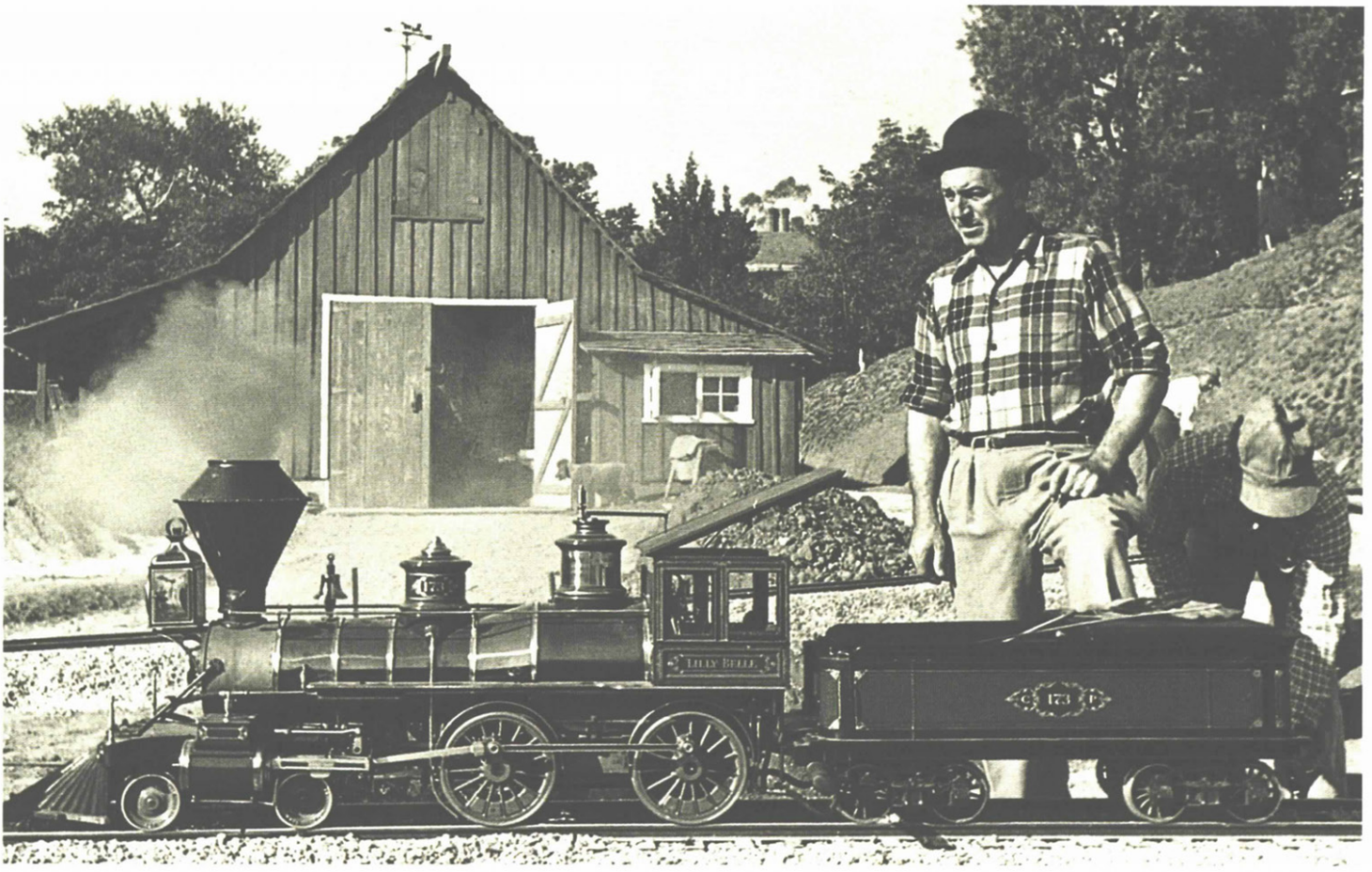


equipped with four spoked wheels—had been meticulously fashioned from hand-drilled brass and then riveted together. The tender held three-and-one-half gallons of water, and was equipped with a pump to supply water to the locomotive's boiler through a connecting line.

Too Precise?

As Walt absorbed the visual image of the engine and tender, he savored the aromas of coal smoke and lubricating oil and the sound of hissing steam. These sensations reminded him of a favorite boyhood pastime—watching the big puffers chuffing through the Missouri countryside.

With the boiler at full operating pressure and the drive mechanism lubricated, Roger reached into the cab and opened the throttle a notch, allowing pressurized steam in the dome to escape into the "dry pipe" and run forward to the cylinders. Once in the cylinders, the steam went through a series of channels in the steam chests, pushing the pistons back and forth. The expended steam was vented by the steam chests' valve system—creating the unique "chuff-chuff" sound of the engine.

Smoothly, *Lilly Belle* eased into a position on the main line where Walt could step over the tender and sit down on the padded leather seat cushion. "Let's go for a ride!" Walt exclaimed as he placed his feet on the rubber pegs protruding from the front corners of the tender. Tilting open the roof, he reached into the cab and opened the throttle. Suddenly, the drive wheels spun on the smooth rails—too much

Above: After a long day of live steam running, Walt and Roger prepare to "drop the fire" and empty the firebox of its ashes and "clinker." The hat was one of Walt's favorites; he later had it bronzed and presented to Mrs. Disney. Today, it hangs in the den at Carolwood.
Mrs. Walt Disney collection.

Opposite top: Nine feet above the lower track on his impressive, 46-foot-long trestle, Walt pauses for a picture with his prized live steamer. Roger Broggie photo, Mrs. Walt Disney collection, © Disney Enterprises, Inc.

Opposite below: An assortment of freight cars stands ready in the foreground as the Lilly Belle *is readied for running on the steam-up trestle by Roger Broggie and Walt.*
Mrs. Walt Disney collection, © Disney Enterprises, Inc.



Dick Jackson, the "Dean of Live Steam," takes Lilly Belle *for a spin around Carolwood as Roger Broggie looks on. The boxcar provides handy storage for Dick's coat.* Ollie Johnston photo.

throttle! Walt quickly backed the throttle lever off.

"The throttle takes a very light touch," Roger advised. "If you need traction on the grades use the sanding valve. Remember, since there are no brakes, you have to use the reverse lever if you need to stop quickly."

As *Lilly Belle* started to move again, Walt pulled on the whistle cord twice to signal "forward." Slowly, the miniature steam locomotive gathered speed as Walt headed south, passing under a deck girder bridge. On the other side of the dirt berm surrounding Yensid Valley, he entered a curve leading to the right. Suddenly and without warning, *Lilly Belle* left the track and plowed into the soft ground.

Walt jumped off and called for Roger Broggie and Eddie Sargeant to come quickly. When the two arrived at the derailment site, Walt was trying to lift the front of the engine back onto the track. Uncoupling the tender, Roger lifted the back as Walt and Eddie hoisted the front. Together, they placed the locomotive back on the line. Eddie checked the wheels for alignment and correct positioning on the rails while Roger checked the drive mechanism.

"I don't understand what happened," Walt said. "I was moving right along picking up speed when she seemed to just roll right off the track."

"We'll have to check; maybe there's a slight flaw in the gauge or a defective section of track," Roger suggested.

Walt examined the front of the locomotive closely for damage while Eddie checked the undercarriage. Both were unscathed. "Looks like I was lucky," Walt said with relief. "She could've turned over on this soft ground."

Soon he was under way again, heading north on a straight line of track paralleling the canyon along the west boundary of Carolwood. Walt dubbed the spectacular view "Canyon Vista."

There were three more derailments that morning, all on curved sections of track. In each incident there was no appreciable damage, except for a few scratches on the drive wheels from the rock ballast. Walt, Eddie,



Walt prepares to light a fire in Lilly Belle*'s firebox. The hose in the left foreground carries compressed air from the barn to the locomotive's smokebox, creating a draft through the boiler tubes that will help get the fire roaring.* William L. Bay collection.

and Roger discussed possible causes, and reached some conclusions.

"Roger, I think your precision machining might have been a bit too precise on the pilot truck," Eddie said. He went on to explain that railroad rolling stock has to have some "play," allowing for uneven rails, shifting loads, and the motion of the train as it reacts to its own weight by bouncing on its springs. When Walt went into a curve, he leaned to the inside. This weight shift was enough to cause the pilot truck's flanges (the ridges on the inside of the wheels that keep trains on the tracks) to ride over the rail. The rest of the engine and tender followed the pilot truck into the dirt.

"We'll take it back to the shop and look at the axles," Roger told Walt, who had become rather annoyed with himself for derailing *Lilly Belle* on her maiden run.

"Yeah, you're right," Walt replied. "Let's cure the problem before I have a bunch of people out here expecting to ride a smooth-running railroad."

Back at the studio's machine shop, Roger checked the tolerances of the locomotive's axle bearings, and found them be one-thirteen-thousandth of an inch (the tolerance used for machining highly precise motion picture equipment.) Roger subsequently wrote a set of revised specifications modifying the axles to lower tolerances.

The freight cars benefited too: "We cured [their] tendency of track-jumping by making the side-bearing plates free by about 1/8th inch on each side and making the center bearing loose in the center plate," he explained. While checking the specifications of the freight cars, Roger discovered that the arch-bar trucks on which they were mounted had been machined exactly as the originals from the 1880-1900 period.

"We discovered, in following the practice of building everything just as it was made in that era, the equipment was going to give us the same kind of trouble that owners of full-sized trains experienced during those early days of railroading," he explained. Particularly, this was true



Track is freshly completed in the Yensid Valley, but (at top left and at right) trackage remains to be laid on the Carolwood Pacific Railroad's right-of-way, and landscaping has yet to be undertaken in this spring 1950 view. The crowd of mostly adult guests was typical for Sunday afternoons.
Ollie Johnston collection.

of the arch-bar trucks. "We also found them to be very rigid and liable to jump the track at any time," Roger concluded from the test runs at Carolwood. With modifications complete—followed by another thorough testing—the Carolwood Pacific Railroad was back in operation. Similar procedures for testing and evaluation would be used a few years later to build rides for Disneyland.

A Memorable Journey

A typical operating Saturday or Sunday at Carolwood would start with the arrival of Roger Broggie around eight o'clock in the morning, usually accompanied by his young boys, Roger Jr. and Michael (this book's author). Walt would toss a couple of towels toward the boys, and direct them to dust off the freight cars. First, the cars had to be pulled from the 90-foot tunnel where they were stored (this was easy because the tracks ran downhill from the tunnel's entrance). The boys simply removed the wheel chocks, and the cars would start to roll. After all the seats were dusted and the cars wiped down, the rolling stock was "walked" down into the rail yard in Yensid Valley.

Another chore was topping off the tender's 10 pounds of coal and three-and-one-half gallons of water, assuring *Lilly Belle*'s appetite could be satiated. Such menial duties often earned a special treat from the Disneys' combination bar and ice cream fountain, in the recreation building next to the swimming pool. Walt enjoyed making outrageous ice cream concoctions for children and generous libations for adults.

Once the freight cars were ready, Walt carried his yellow caboose from the barn, placing it on the track and coupling it to the end of the train. (The stubby little "bobber" caboose, with its fully detailed interior, never needed dusting; Walt always kept it covered on its perch in the barn, and he preferred to do any cleaning himself.)

By then, *Lilly Belle*'s safety valve had popped off, and guests would be showing up. Depending on the expected turnout, Walt and his helpers would couple together enough rolling stock to handle up to 12 adult passengers. (*Lilly Belle*'s tractive effort rating was over 2,000 pounds—quite a feat for such a small locomotive.)

When everyone was settled on top of a box car or cattle car, or seated in a gondola, Walt pushed up his engineer's cap and looked back for one last check. He then signaled departure with two short blasts of the whistle. With a slight jolt that echoed along the train—as the "slack" was taken up between each car's couplers—the procession was under way for a scenic tour along the "Fair Weather Route."

Departing the loading area in front of the barn, the train began to pick up speed as it left the siding. It rolled onto the main line, heading south under a deck girder bridge and outside the dirt berm surrounding Yensid Valley. Now heading west and into a long northerly curve, the Carolwood Pacific train treated passengers to a spectacular view of Canyon Vista, with its eucalyptus, cedar, oak, and sage. Spring wildflowers carpeted the sloping canyon wall marking the western boundary of Carolwood. Way down below, a bridle path traced the canyon's floor. The rail line then entered an easterly curve, followed by a straight run toward the long trestle. As the train passed under the wood struc-



Above: This panorama of Yensid Valley and Carolwood illustrates the extent to which Walt's railroad hobby dominated the five-acre site. Today, except for the tunnels and barn, little remains of the once-extensive Carolwood Pacific layout.
Eddie Sargeant photo, Ollie Johnston collection.

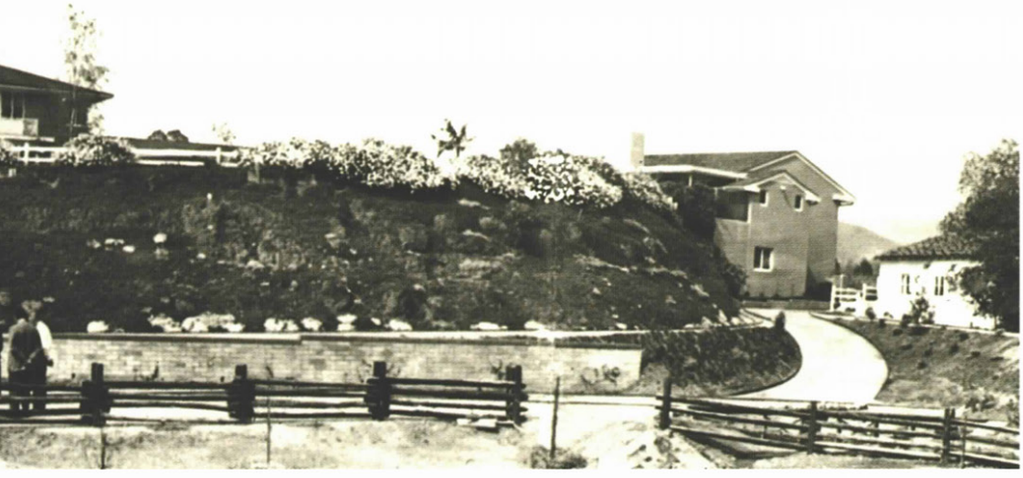
Opposite: Roger Broggie, Jr., an attentive 11 year old, listens to Walt explain the workings of the Lilly Belle *to Carolwood visitors.*
CPHS collection.

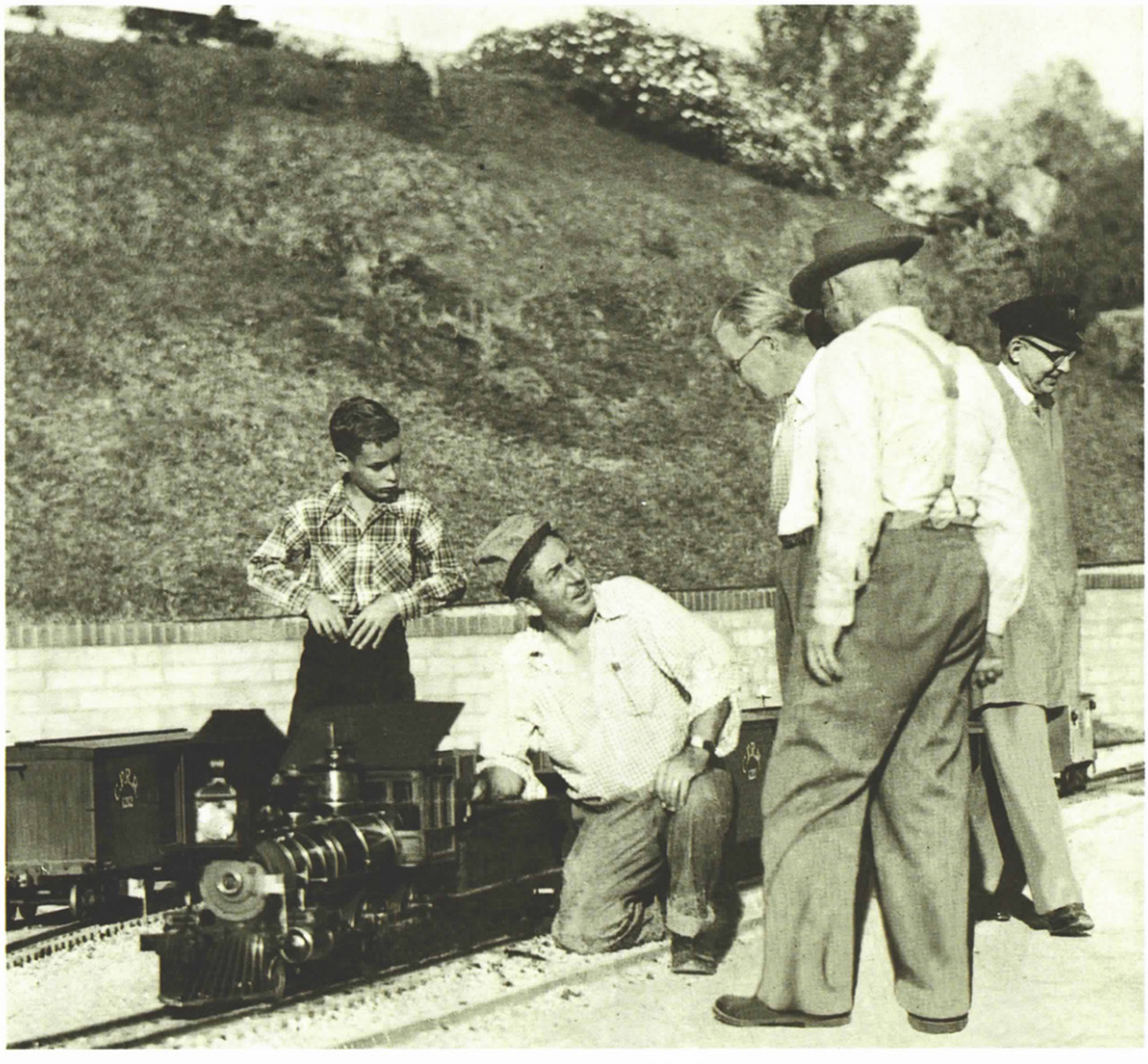
ture, it towered nine feet above.

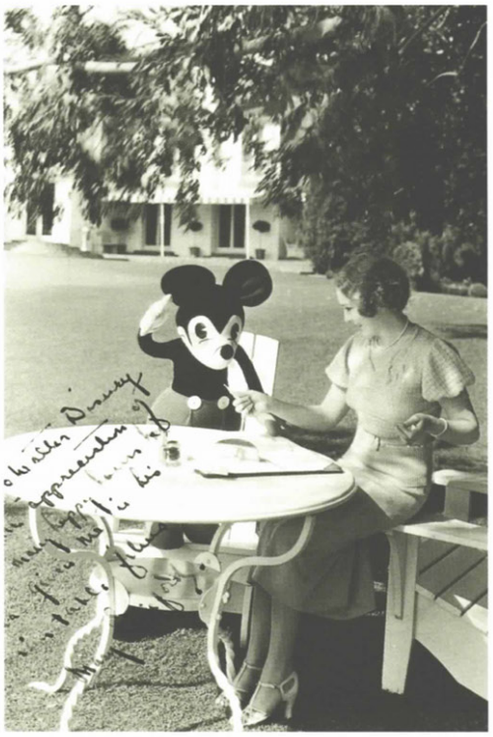
Walt stoked the fire with additional coal to maintain optimum boiler pressure. He opened the throttle fully, gaining momentum for the 3 percent grade ahead, as *Lilly Belle* started the long climb up the loop encircling the house. With gray smoke billowing from the diamond-shaped stack, the little 4-4-0 proved mighty for its size as Walt released some sand onto the rails to improve traction on the grade. Finally topping the hill, the train slowed as it approached the driveway. With a long-short-long blast from the four-tone whistle, Walt crossed the driveway and headed for one of the Carolwood Pacific's highlights: the long, dark tunnel.

Ahead, passengers saw a hillside with a stone facing at its base. An arched opening in the rock curved up from the ground, meeting at top center in a keystone with the year "1950" chiseled on its face. A black maw opened ahead, and then the locomotive disappeared into a cloud of coal smoke and total darkness. The chuff-chuff sounds of the engine echoed back at passengers as the cool, damp, coal-scented air brought a welcome change from the bright California sunlight. Their eyes searched for something to indicate space and motion, but only the sounds of the engine and the vibration of the track provided sensory stimulation. Then—just as it seemed the darkness had no boundary—a slight crescent of light appeared in the distance, growing larger with each rhythmic stroke of the engine, until the 90-foot long tunnel's opening was reached.

As the tunnel's dark ambiance was abruptly replaced by bright sun and blue skies, the train picked up speed on the downgrade. Suddenly, the ground dropped away as the tracks straightened out over the 46-foot-long redwood trestle (looking down from the height of the trestle, the effect was much greater than that of seeing it a few moments before from beneath). For passengers sitting atop the swaying freight cars,







Mary Pickford inscribed this 1930s photo, "To Walter Disney, in appreciation of the many happy hours he has given me in his inimitable films." Pickford was among the numerous celebrities who rode Walt's Carolwood Pacific Railroad. Mrs. Walt Disney collection, Disney character © Disney Enterprises, Inc.



Limping Lilly

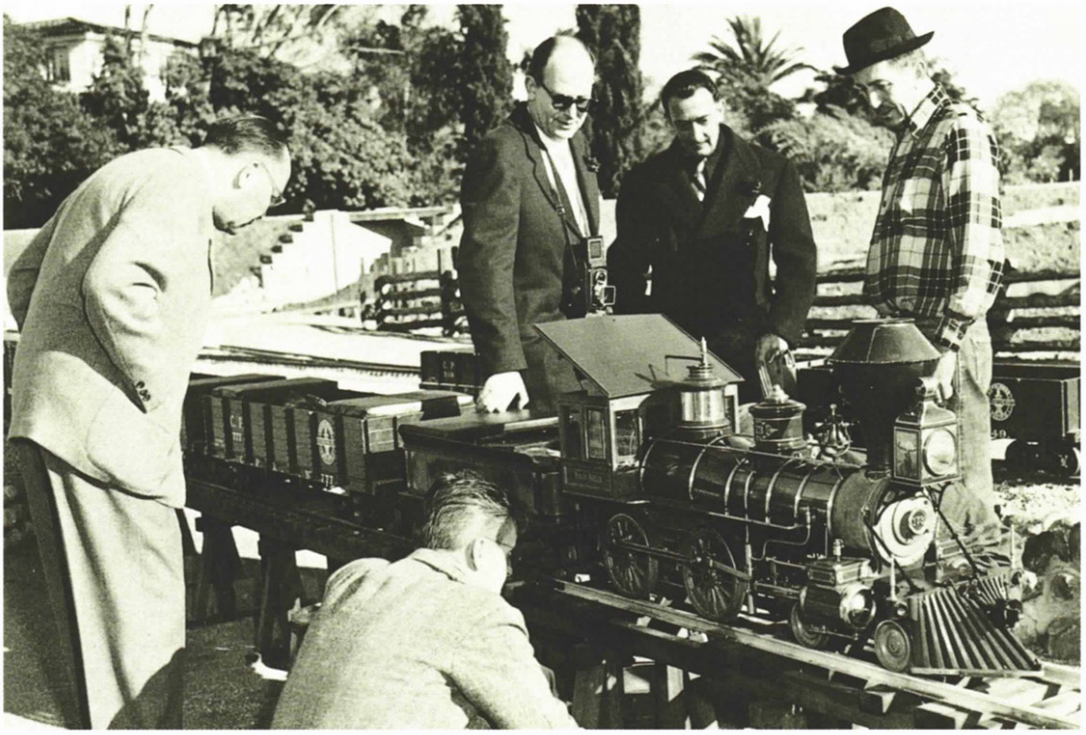
DISNEY LEGEND OLLIE JOHNSTON has fond memories of the Carolwood Pacific Railroad and its proprietor's locomotive. He recalled, "Walt's *Lilly Belle* was a wonderful running engine. I ran it several times. It had a lot of power. I think I took the first pictures of Walt's Carolwood track as Roger Broggie taught Walt the finer points of operating the miniature."

One day, while Ollie was on a run at Carolwood, *Lilly Belle* derailed and ended up in some shrubbery. Walt came running over and pretended, in a good-natured way, to write down all the mistakes Ollie had made. Then they lifted *Lilly* back on the track, and Walt took the locomotive around. It ran off in the exact same spot. Later, they learned from one of the gardeners that he had inadvertently backed his truck over the track in that spot and hadn't told anyone.

Regardless of this new evidence, Walt persisted in admonishing Ollie about going too fast. After the gardening crew fixed the low spot in the track, Walt took the train around and it ran adequately. However, he noted, "It's kinda limping a little."

Ollie looked at the engine's suspension, and found that a spring-rigging pin had come out. "So I told him to get me a shingle nail and I put the spring rigging back together."

Walt laughed, "You're a good mechanic but I still say, as a locomotive engineer, you still need some practice."



Celebrities and associates, from both within and without the Disney studios, were regular visitors to Carolwood. Here, artist Salvador Dali and Imagineer John Hench are among a group inspecting Walt's locomotive.
© Disney Enterprises, Inc.

looking off the trestle hundreds of feet down the canyon, the thrill was memorable. After another curve around Walt's quaint red barn, the line dropped into a tight 180-degree turn, corkscrewing to the floor of Yensid Valley and returning passengers to their embarkation point.

Route of the Stars

Among the many passengers and guest engineers through the years were actress Mary Pickford; Candice Bergen and her father, the renowned ventriloquist Edgar Bergen; comic Red Skelton; filmmakers Jules Stein, Hal Wallis, and Walter Wanger; artist Salvador Dali; railroad historian Jerry Best; and Disney animators and railfans Ollie Johnston and Ward Kimball.

Infrequently, a turn at *Lilly Belle*'s throttle was granted to a child (such as this author) who had nagged persistently. Walt would wait until the other guests were gone, and extract a promise from the "guest engineer to-be" *not* to tell the other children. With Walt, nothing could ever be assumed or taken for granted; he almost always placed a value or a commitment on his dealings, even the small ones with children. Yet, Walt was generous with his possessions and his private time. He thoroughly enjoyed sharing his miniature railroad with colleagues, friends, and family.

Before long, however, Walt was formulating another layout that would reach far beyond that of his miniature railroad.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WED

Of all the things I've done, the most vital is coordinating those who work with me and aiming their efforts at a certain goal.

—Walt Disney

When Walt informally established the Walt Disney Miniature Railroad Company in 1950, it marked his first entrepreneurial venture since the days, long ago, when he'd struggled to produce cartoons in Kansas City. Launching the railroad company created a chain of events that took the Disney organization to levels of expansion and success that no one, not even Walt, could possibly have imagined.

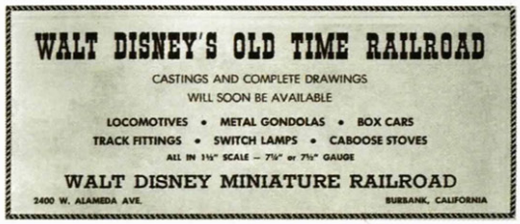
The new enterprise had its beginnings more in happenstance than planning. With completion of the Carolwood Pacific Railroad—at a cost of $50,000, split evenly between the layout and the rolling stock—word had spread among fans and serious railroad hobbyists that Walt Disney was operating one of the world's most elaborate and meticulously detailed miniature private railroads. Railroad-buff magazines such as LOCOMOTIVE ENGINEERS JOURNAL, MINIATURE LOCOMOTIVE, LIVE STEAM, and ELECTRIC TRAINS carried cover stories on Walt's hobby.

Requests for more information began arriving at the studio. Going against his policy of not allowing personal publicity, Walt agreed to a photo essay in LOOK magazine, featuring pictures of the Carolwood layout. This fueled more public interest, and people began writing to Walt asking to visit the Disney estate—some out of plain curiosity, others out of a sincere interest in model railroading.

During a visit to the Los Gatos, California, ranch of live steam enthusiast Billy Jones, Walt was photographed by Roger Broggie. Back at the studio, machine shop employee Gene Foster photographed the Lilly Belle *with matching lighting, then superimposed Walt from the earlier photo. This composite image resulted. Note how convincing the model's detailing really is; it holds together well even when greatly enlarged.*
© Disney Enterprises, Inc.

Railroading and Relationships

Walt was surprised and pleased by the public's reaction to his railroading hobby. He had his secretaries divide the letters into categories,



and asked Roger Broggie to answer the hobbyists' inquiries. During a discussion with Roger, Walt asked how much time would be needed to respond to the requests. Knowing that Walt required correspondence be answered quickly, Roger replied that he and his staff could handle the dozen or so letters arriving each week—but it could become a problem if volume increased.

As interest—and the volume of business—grew, Walt hired a knowledgeable locomotive builder and part-time writer named Dick Bagley to fill orders for Eddie Sargeant's engineering prints of the Carolwood Pacific rolling stock. Dick was a railfan who'd met Walt through the Southern California Live Steamers. He wanted a job at the studio and would talk to Walt at various rail meets, until Walt finally agreed to hire him. Eventually, Walt dubbed the entity Walt Disney Miniature Railroad, and by mid-1951, it was operating out of 2400 West Alameda Avenue in Burbank—the same address as the studio's. (The Disney company's current Burbank address—500 South Buena Vista Street—wasn't established until 1957.)

Advertisements offering castings and complete construction drawings of the *Lilly Belle* locomotive, switch lamps, caboose stoves, and track fittings began appearing in railfan magazines such as the May 1952 issue of MINIATURE LOCOMOTIVE, which Bagley and Robert Day edited and published. That same issue carried one of the first detailed feature articles about the Carolwood Pacific Railroad. Written by Roger Broggie and illustrated with his photographs, the story generated several dozen letters of interest in Walt's live steam hobby—and more orders for drawings of *Lilly Belle*.

Beyond the admiration of his many Carolwood Pacific Railroad followers, Walt found the miniature railroad useful for cultivating connec-



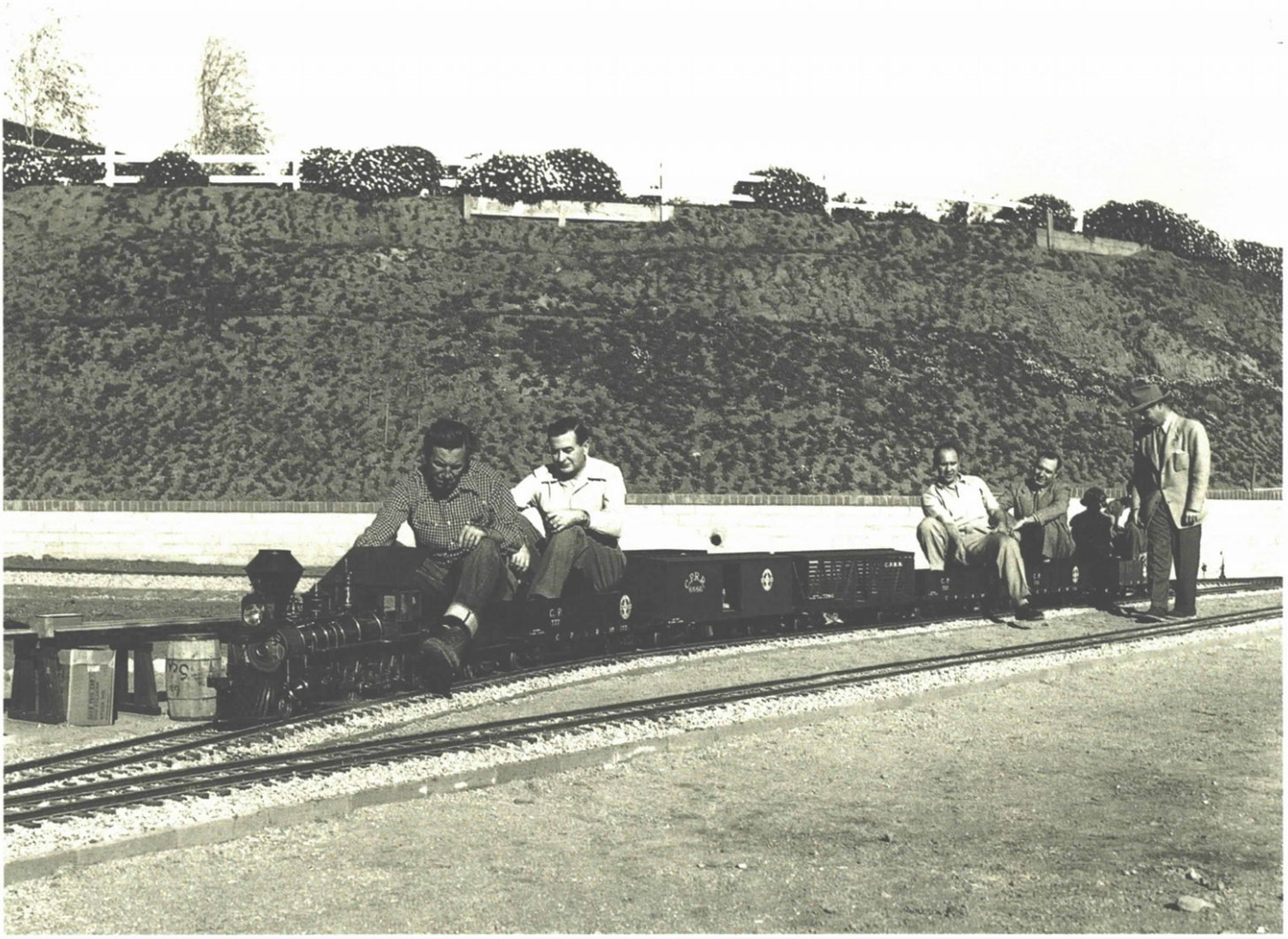
Name Games

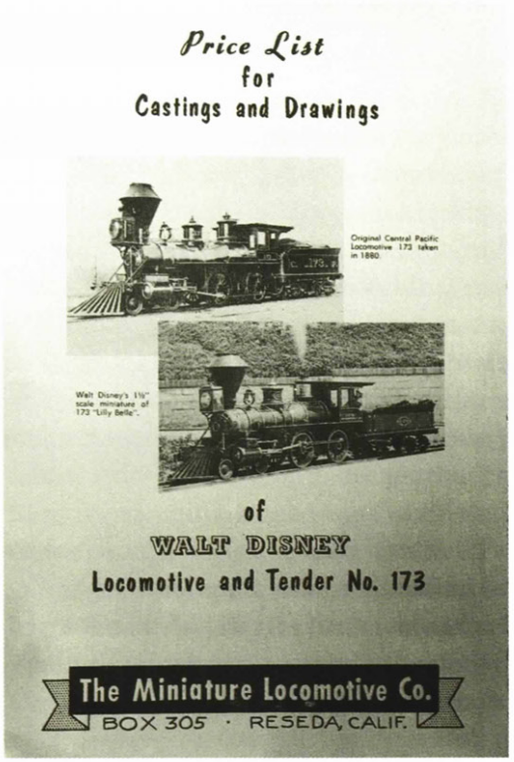
COPIES OF EDDIE SARGEANT'S engineering drawings for the Carolwood Pacific Railroad became the initial enterprise under a new banner: Walt Disney Miniature Railroad. This entity was the first step effectively separating Walt's personal interests and business activities from those of the stockholder-owned Walt Disney Productions, renamed The Walt Disney Company in 1986.

The miniature railroad company was followed in succession by Walt Disney Incorporated—December 16, 1952—then WED (Walt's initials) Enterprises, Inc. in 1953, and Retlaw (Walter spelled backward) Enterprises, Inc., on February 5, 1965. Retlaw continues as the management company for the holdings of Mrs. Lillian Disney; her grandchildren are members of the board of directors.

Through all of the corporate name switching, one constant remained: The Carolwood Pacific Railroad Company. With its ornate Victorian letterhead describing "Walt Disney, President, Genl. Mgr. & What Have You," this "company" operated the Carolwood Pacific Railroad around the Disneys' Holmby Hills estate. Its rolling stock is still owned and controlled by Retlaw Enterprises.

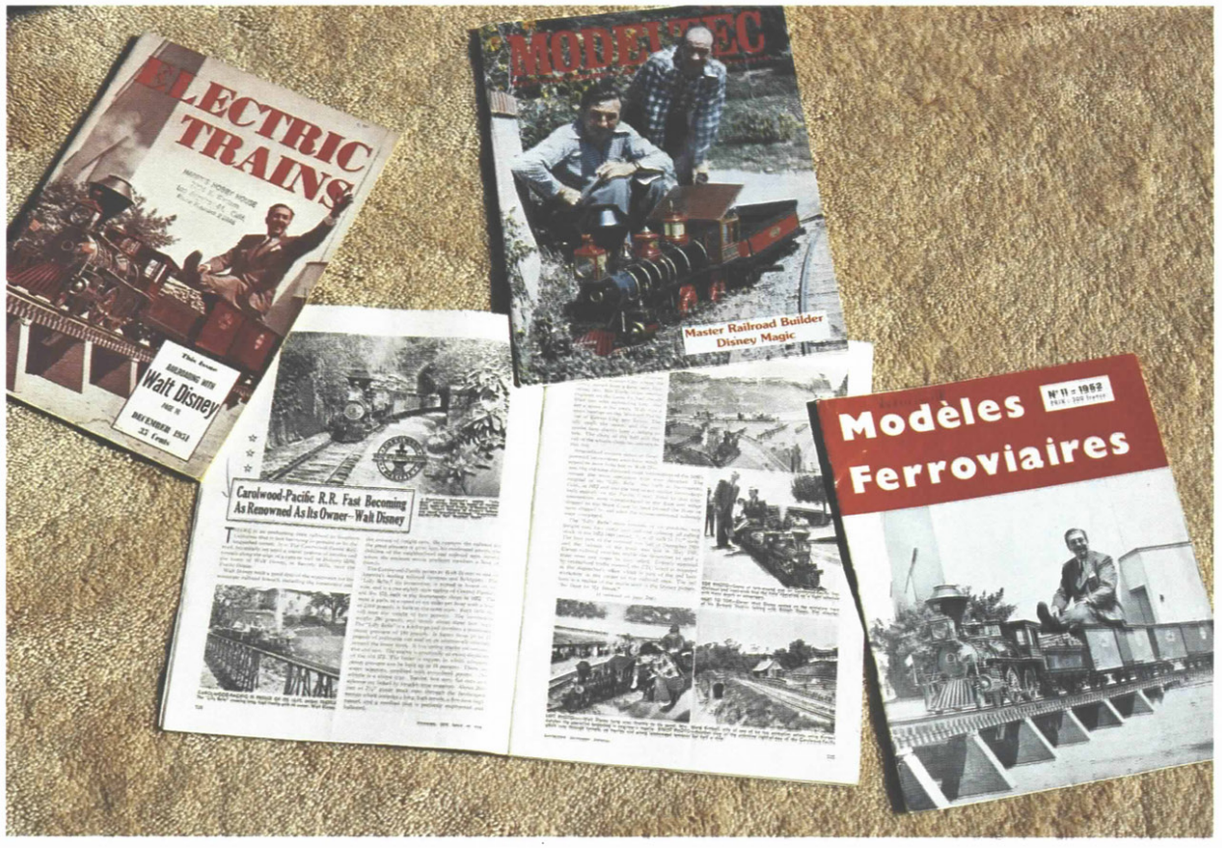
Since 1968, Retlaw has permitted exhibition of the *Lilly Belle* at Disneyland, in Anaheim, and at Florida's Walt Disney World Resort.





Above: Walt eases Lilly Belle *and train out onto the main line with a group of appreciative guests. Seated behind him is Dick Bagley, co-editor and publisher (with Bob Day) of* MINIATURE LOCOMOTIVE *magazine. An expert in live steam railroading, Bagley helped other hobbyists develop their own models of Central Pacific No. 173.* Ollie Johnston collection.

Opposite and left: Ads and price lists offered access to Carolwood Pacific Railroad rolling stock for live steam enthusiasts. The first of these appeared in 1952, signalling the beginning of Walt's personal business activities. These soon evolved into WED, the development company for Disneyland, and then Retlaw, the management company for Walt's family. Both, © Retlaw Enterprises, Inc.



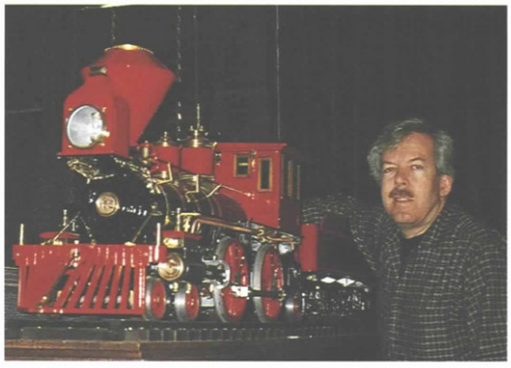


Admiration, Respect, Response

WALT'S CONCERN FOR ANSWERING correspondence may have been fueled by his recollections of the struggles he'd encountered while trying to start his Laugh-O-Gram Studio. With a few exceptions from some members of the local community, he hadn't gotten much help along the way. More often than not, his efforts to contact important business people had been ignored. As a result, he went out of his way to offer encouragement to young people starting out in business and tried to be particularly responsive to their letters.

Throughout his life, Walt admired and respected successful risk-taking entrepreneurs such as Henry Ford and Thomas Edison. He encouraged his employees to volunteer their time helping youth, through organizations such as the Boy Scouts and Girl Scouts, and through serving as advisors to the Junior Achievement program (which shows students how to create and run businesses of their own). He also supported 4H Clubs and the Future Farmers of America, which teach young people about ranching and farming—a lifestyle Walt never strayed far from, at least in his heart.





tions with Southern California business leaders. The Disneys weren't inclined to socialize through Hollywood parties, and Roy Disney handled most of the company's business affairs. By inviting guests to Carolwood, the Disneys were able to develop relationships in a relaxed and conducive environment.

A Broken Belle

Heavy winter rains in 1952 produced considerable damage at Carolwood. Several washouts destroyed portions of the track and roadbed, and the berm along the property's western edge was particularly hard-hit by mudslides. The following spring, undaunted, Walt ordered crews to rebuild the line with better drainage control. In his annual invitation letter to a select list of friends and business associates, he noted that the Carolwood Pacific Railroad was operating, and soon the entire track would be running better than ever.

He went on to advise the recipient that he had been "elected" an honorary vice president of the Carolwood Pacific Railroad, and pointed

Opposite: Articles about Walt's backyard live steam railroad appeared in both domestic and international railroad magazines, leading to a flood of requests from railfans interested in visiting the Disney estate. Steve Booth photo.

Above left: Central Pacific No. 173 has been modeled by numerous live steam enthusiasts, including Richard and Samma Thompson. Their locomotive, although based on the same plans, is outwardly Disneyland Railroad No. 1 C. K. Holliday *(it, too, was built to No. 173's dimensions, although in a larger scale). The coach is based on the Park's posh VIP car* Lilly Belle. Thompson collection.

Above right: Disney Imagineer Tony Baxter built this handsome rendition of CP No 173. Tony Baxter collection.

out "The only obligations this office entails is, when you're in the vicinity of the 'Fair Weather Route' that you stop by for a ride and try your hand at the throttle."

A few of Walt's colleagues at the studio also received "Vice-President, C.P.R.R." appointments, including Ollie Johnston, Ward Kimball, Bill Cottrell, and Roger Broggie. The ornate identification cards accompanying the appointment, designed and signed by Walt, have become highly prized today among Disneyana collectors.

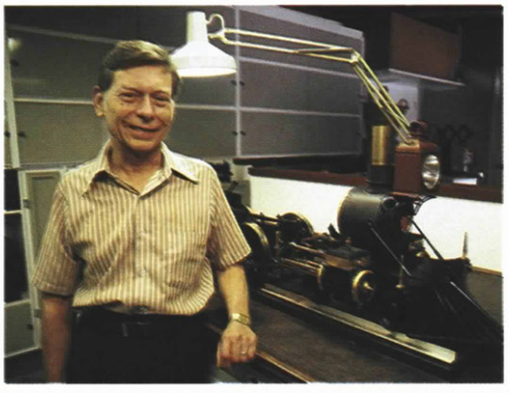
Never one to rest content, Walt was spending much of his time experimenting with various remote-control devices for *Lilly Belle*. These, he hoped, would allow him to control things from further back in the train—while permitting children to sit in the engineer's position behind the engine. One of his more memorable setups involved a "Rube Goldberg" affair with long control wires.

"I sat on the first car instead of the tender and operated the locomotive with wires," Walt later explained. "As I was rounding a turn, the front wheel hit a rock and bobbled the engine so that she uncoupled from the tender and I was jolted backward. My hand jerked the throttle valve all the way back, and the engine went racing down the track."

Walt leaped off the car, chasing *Lilly Belle* around the curve behind the barn. The engine quickly gained on its top speed of 30 miles per hour, while shooting steam 40 feet into the air! Since he couldn't outrun *Lilly,* Walt headed for the driveway at the front of the house, where he hoped to cut the engine off. Soon *Lilly Belle* was there and about to negotiate a sharp curve—when the runaway locomotive tumbled off the track and rolled over, breaking off the smokestack and pilot.

Walt went to the door of the main house and called for Lilly to come out and see a terrible sight. She emerged to view the scene of a shattered locomotive and a downhearted engineer; the forlorn engine hissed and puffed slowly like a small, wounded animal. "Oh, Walt, that's too bad!" she said, understanding how much the *Lilly Belle* meant to him. (Many years later, Lilly remarked that she knew Walt loved his railroad, and she appreciated his getting so much pleasure from it. Seeing him so downhearted touched her.)

As they both stood there looking at the sorry engine, Walt looked at



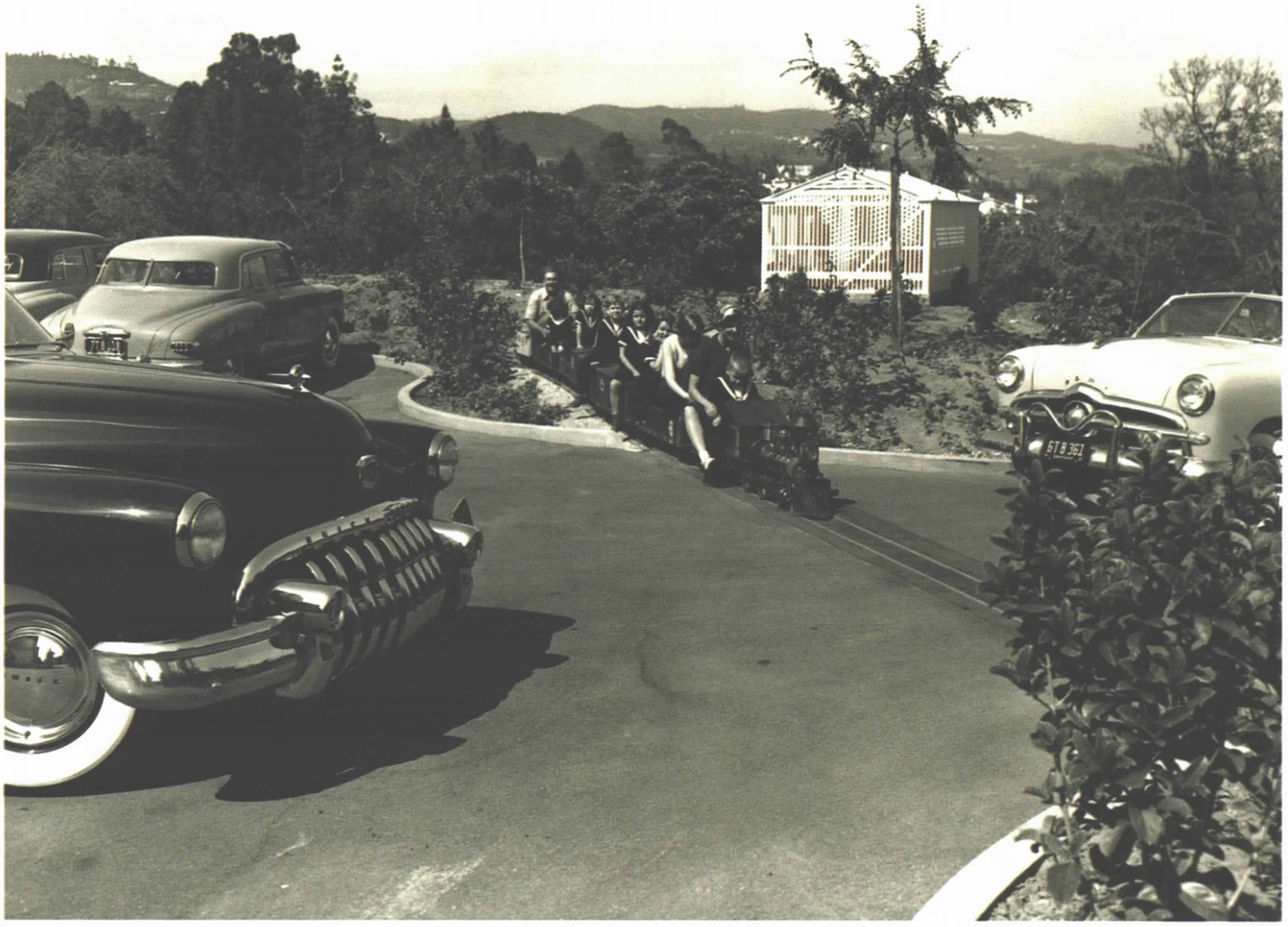
Miniature railroading has drawn many people together over the years. Morrie Houser, seen here with his own abuilding CP 173 live steam model, was given Walt Disney Miniature Railroad plans for his birthday so he could build this locomotive. He later joined WED, serving Disney as an Imagineer for many years. CPHS collection.



Morrie's Loco

AMONG THOSE RESPONDING to the ads for *Lilly Belle* construction drawings was Marge Houser. Each year, as gifts for various special occasions, she ordered another part of the set of plans for her husband, Morrie. At the time, he worked as a mechanical engineer at the Electro-Motive Division of General Motors (which builds railroad locomotives) in La Grange, Illinois.

After several years of meticulous work on his locomotive No. 173, Morrie decided to try for a job at Disney and contacted Roger Broggie for an interview. He traveled to California at his own expense and was hired as an Imagineer in 1959. Eventually, Morrie took over Roger's position at Mapo, following Roger's 1973 promotion to vice president of research and development for WED.



Diane and Sharon, up front, are joined by their cousins and father Walt (at rear) for a ride on the Carolwood Pacific Railroad. Dwarfed by full-sized automobiles, their train crosses the driveway at the front of the Disney estate. Mrs. Walt Disney collection.

Lilly and realized it was the first time she had shown any positive emotion about the railroad—the same one that had almost interfered with her plans for a grand flower garden! He smiled at the thought, and they both started laughing at how a hobby could affect the lives of two mature adults. Walt felt he had finally succeeded in getting Lilly on his side—although he later noted, "I had to have a train wreck to do it."

The next day, *Lilly Belle* was taken to the studio's machine shop. With a few repairs, the shop's crew soon had the sturdy engine back in operation.

Beyond Carolwood

Spring 1953 was a busy time for Walt, as he began thinking beyond the Carolwood-sized layout to something much bigger. He had long admired Ward Kimball's full-scale narrow-gauge steam locomotive, and began formulating plans to have one of his own. Then, something happened at Carolwood late on a Sunday afternoon, interrupting his smooth transition to a bigger railroad.

Coming around a curve on the main line, a guest engineer had the *Lilly Belle* going too fast, and the locomotive turned over on its side. The impact broke the whistle, releasing a jet of high-pressure steam across the ground and attracting a five-year-old passenger who ran up to see what had happened. Before anyone realized how hazardous the situation was, the girl had stepped into the invisible jet's stream—receiving a good scare as well as minor but painful burns on her legs.

After comforting the little girl and placing ice on her burns, Walt telephoned Roger Broggie, who had already gone home. Walt explained what had happened, and related how upset and concerned he was about his little guest. At first, Walt wanted Roger to return to Carolwood from his home in the north end of the San Fernando Valley. But, because it was getting late in the afternoon, Walt changed his mind about having him make the hour-long drive.

Walt then expressed concern about the possibility of other accidents. His weekends were filled with people visiting his layout—many of whom were strangers. Realizing that things had gotten out of hand with so many visitors, Walt recognized that a substantial risk had developed—unnoticed until now.

"That's it," he concluded with Roger. "I want it outta here. Take it back to the studio and store it in the machine shop."



Positive Identification

ILLUSTRATOR HARPER GOFF, who joined Disney as an Imagineer in 1951, tells an interesting story about losing his passport while traveling in Europe. He'd left it in a hotel room, and officials at the international border wouldn't accept any of his other identification (driver's license, business cards, medical record card, etc.). Finally, out of desperation, he showed his Carolwood Pacific Railroad identification pass, signed by Walt Disney.

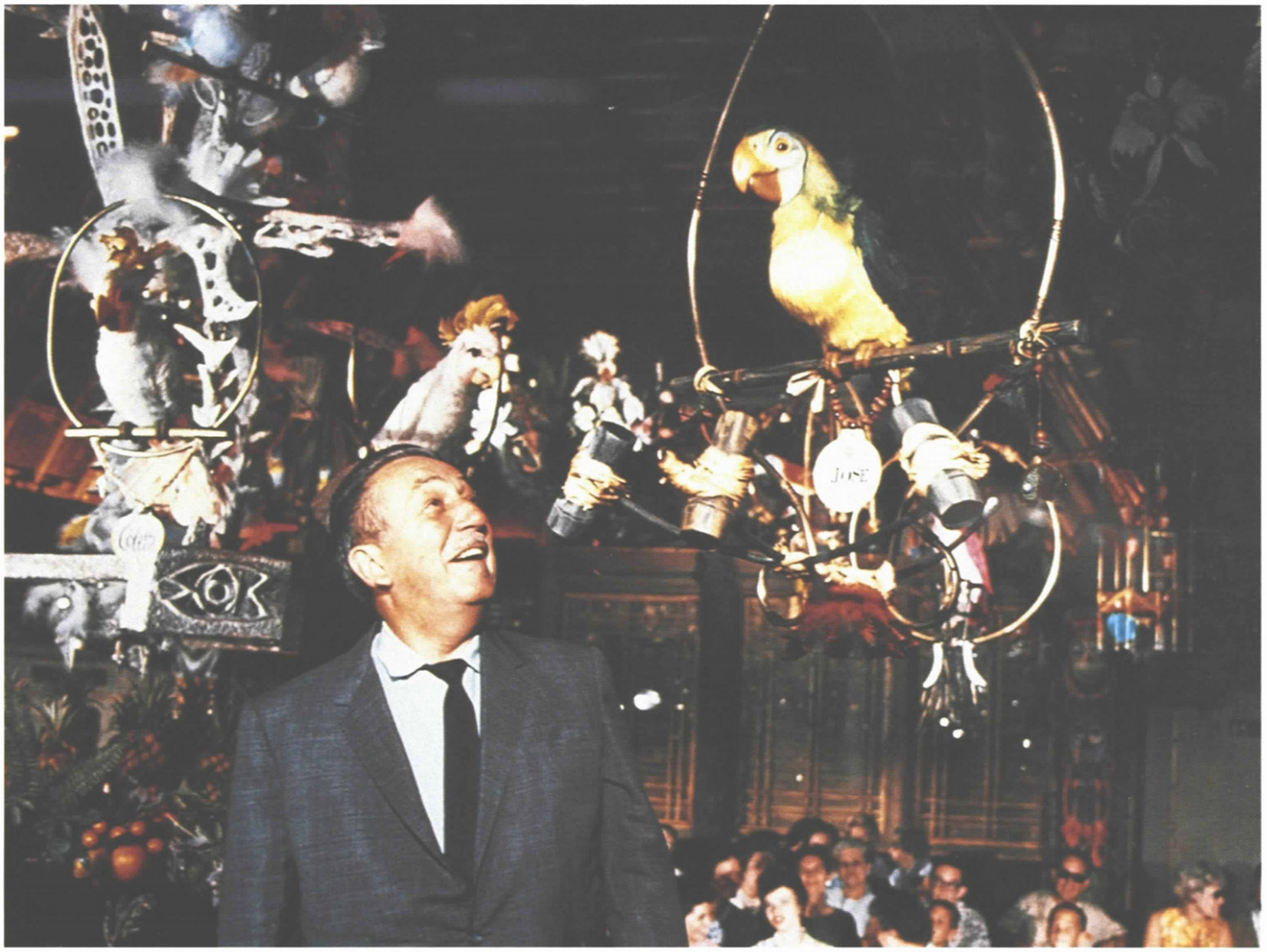
"It was an almost illegible signature but everybody had seen it on Mickey Mouse cartoons," Harper said. "I was really in a tight spot, but they recognized the signature and it said I was vice president of the railroad. They had no idea that the engine and tender were only about 60 inches long. The officials were most impressed that the famous Walt Disney owned a railroad and that I was his vice president."

"I've had Warner Brothers cards and cards in every kind of organization, but they didn't mean a thing. However, with Walt Disney, it was totally different," Harper explained. "The Disney name was magic." On the basis of this unique piece of identification, the officials issued Harper a passport waiver and sent him on his way.



Scene Three

Happiest Place on Earth


JOSE



Sowing the Magic Seeds

Courage is the main quality of leadership, in my opinion, no matter where it is exercised.

—Walt Disney

The morning following the incident at Carolwood, Roger Broggie met Gene Foster at the studio, and the two drove out to the Disney estate to pick up the *Lilly Belle*. Freight cars were stored in the tunnel, and the caboose was returned to its special perch in the barn. Walt had already left for the studio before the pair arrived.

After loading the engine and tender onto the truck, Roger paused to look across Yensid Valley, where he had spent many weekends operating the train with Walt. He remarked to Gene, "Walt's upset right now and concerned about people getting hurt. But, he created a fine layout here and we've all learned a lot designing and building it and the rolling stock." Roger thought for a moment, then concluded, "Walt doesn't give up, so he must have something else in mind."

Back at the machine shop, *Lilly Belle* was stored under Bob Gurr's drafting table in the room next to Roger's office, on the building's second floor. "Once in awhile, Walt would wander in and look at his engine," Bob Gurr recalled. "He would always touch it in a special way, making sure that it was all right." Walt also ordered a halt to work on a second locomotive, a "Ten-Wheeler"-type 4-6-0 that looked nearly identical to the *Lilly Belle* except for an additional set of drive wheels providing more tractive power.

Constantly searching for innovative forms of entertainment, Walt Disney wanted to create a new form of three-dimensional animation. Prompted by his fascination for miniatures, the resulting Audio-Animatronics technology, which took years to develop, saw first full-scale production at Disneyland's "Walt Disney's Enchanted Tiki Room." It was this passion for another dimension in animation and trains that led Walt to develop ideas for a "Magic Kingdom." © Disney Enterprises, Inc.

Beyond the Gates

During one of Walt's visits to see *Lilly Belle*, he commented to Roger that there must be a way to use the train. Perhaps they could lay some track so studio visitors could take a ride through portions of the lot?

Actually, Walt was thinking of a variety of ways to entertain the public; not just at the studio, but beyond the gates as well. In his constant search for new forms of entertainment—spurred on by mechanical amusement devices he'd brought from Europe—Walt wanted to create a new form of three-dimensional animation.

For many years, Walt had been collecting toys of various types while traveling with Lilly and their daughters. One of his favorite pastimes in Europe was exploring toy and antique shops, where he would often buy wind-up mechanical toys and miniatures. Walt brought many of the toys to the studio's machine shop, where Roger Broggie and Wathel Rogers would take them apart to determine what made them work, and then explain the mechanisms to Walt.

"He was very curious about gadgets and was always searching for unusual things that were mechanically animated," Roger recalled. "He never said much about how he planned to apply the knowledge we were developing."

One of the toys analyzed in the machine shop was a French-made mechanical bird in a cage. Operated by air pressure delivered through a bellows, it could whistle and move its wings and beak in time with a song. Its simple mechanism became the basis for the vastly more intricate Audio-Animatronics birds and other characters first introduced in Disneyland's Enchanted Tiki Room.



Audio-Animatronics

DURING ONE OF HIS TRIPS, Walt discovered the original mechanical system that would eventually evolve into an elaborate computerized robotic process known as Audio-Animatronics.

What Walt acquired in a New Orleans antique shop was a mechanical bird, in a cage, that could whistle and move its head, wings, and beak in time with a tune. As he did with many mechanical gadgets bought on trips, Walt gave the device to Roger Broggie; it was carefully taken apart in the studio's machine shop by Wathel Rogers to determine how it worked.

Wathel discovered that the bird operated with a unique wind-up mechanism that turned cams to produce its animation. Each cam performed a different action, such as a head-turn or wing-flip; as it turned, the cam would move a rod that in turn caused an individual movement.

When Roger and Wathel explained the process to Walt, he became intrigued with the possibilities it offered. With his usual boundless curiosity, Walt directed his Imagineers to explore precise animation produced by a mechanical figure. But, he wanted the figure to be a human one—the most difficult subject to animate accurately.

To examine the potential of this process, Imagineers needed images of real-time movement to reproduce. For this, Walt engaged the services of actor Buddy Ebsen, an accomplished vaudeville "hoofer" prior to his move to Hollywood. Ebsen was filmed from several angles, doing a time-step in front of a white background lined with a one-foot grid pattern. This 35 millimeter film footage, personally directed by Walt, recorded highly detailed information about human movement at 24 frames per second. The films could be—and were—enlarged and subsequently analyzed, frame-by-frame. After careful study of Ebsen's various movement ranges against the grid pattern, Imagineers translated the information into measurements. These measurements determined the shape of the cams that would be needed.

At Walt's direction, Wathel and Roger constructed a nine-inch-tall figure of a male dancer,

representing a 1/8th scale model of Ebsen. As the cams turned in unison on a central spindle, a follower arm rode the edge of each cam, transmitting the movements via small cables attached to the appropriate parts of the figure. The puppet figure itself was suspended by a rod on its backside; to complete the effect, Walt built a 1/8th scale stage with a curtain that hid the animation source. The result was amazing: The figure perfectly reproduced the programmed dance sequence.

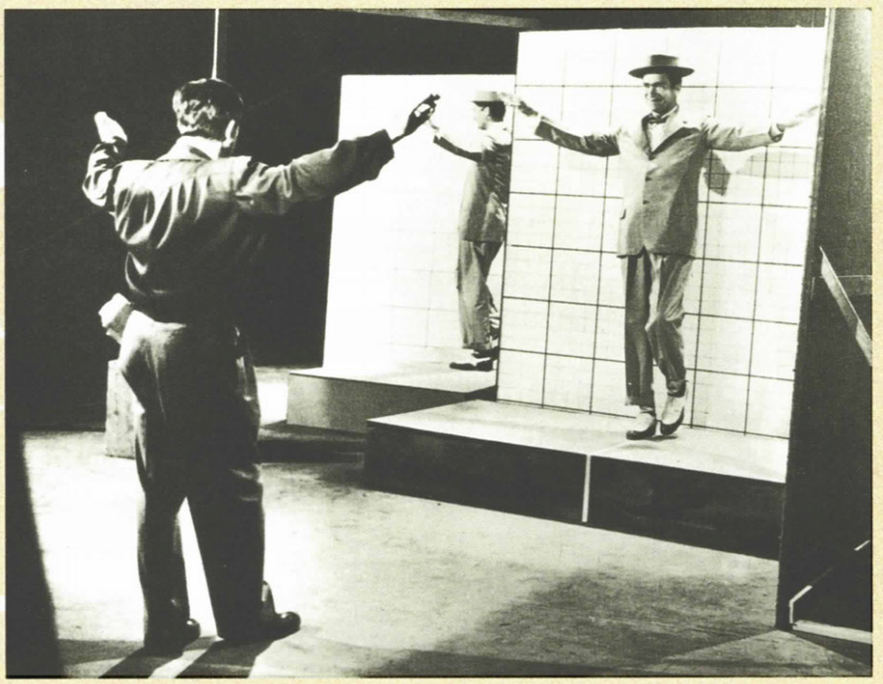
Never one to rest content, Walt pushed for a more advanced mechanical animation process. In response, Roger Broggie, Herb Taylor, and Ub Iwerks developed a revolutionary electronic programming system that replaced the cam follower arm with a small light beam and a photocell that could "read" the irregular shape of the cam. As it rotated, the cam would pass through the light beam at varying depths, causing the system to produce voltage at varying intensities and resulting in an analog-type signal. There were also four digital types of signals available for each cam.

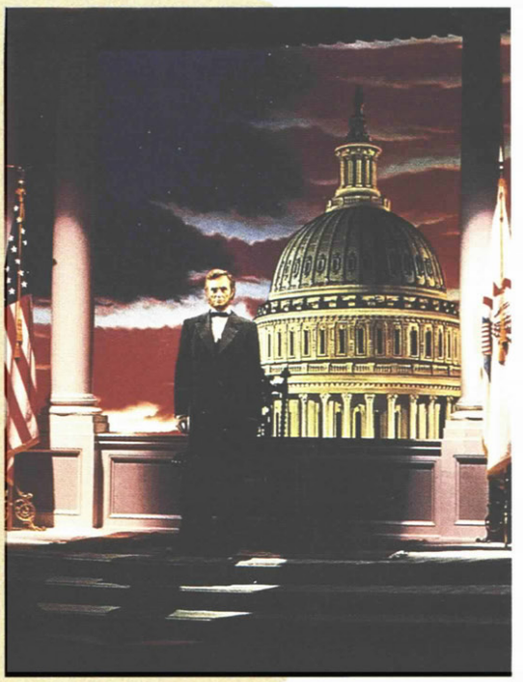
The first A-A production show, driven by an improved process using pneumatic and servo actuators, featured robotic birds and other creatures performing in Disneyland's "Enchanted Tiki Room." However, it was the life-sized figure of Abraham Lincoln—which stood up and delivered a speech in the Illinois Pavilion at the 1964 World's Fair, and later at Disneyland—that created an overwhelmingly positive audience reaction to this new animation process.

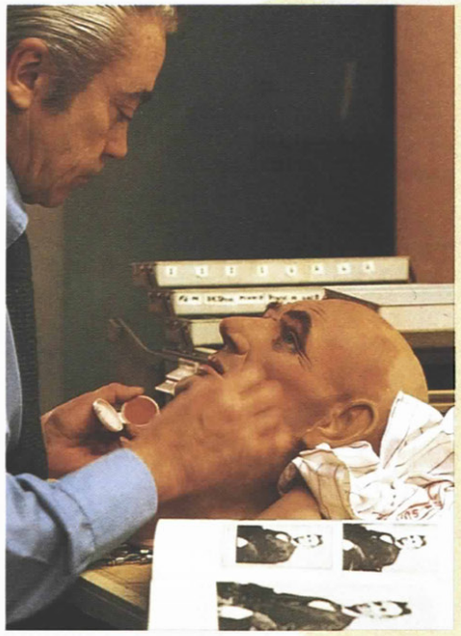
For the Enchanted Tiki Room attraction, patents were granted for a "joy stick" programming device, a harness, and light-sensitive film control—all invented by Roger and Herb. More advances were made in the process when Roger, Herb, and Wathel designed pneumatic and servo actuators to work the system. The animation process evolved in conjunction with tech-

Below left: Walt directs Buddy Ebsen during a session designed to capture the actor's movements on film. Imagineers used the footage to produce a predecessor to Audio-Animatronic technology called "Dancing Man." © Disney Enterprises, Inc.

Below: Lincoln's life-sized Audio-Animatronic figure was first seen at the 1964 World's Fair. © Disney Enterprises, Inc.









Above: Imagineer Ken O'Brien carefully crafts the face for the Abraham Lincoln Audio-Animatronic figure. © Disney Enterprises, Inc.

Above right: These busy beavers, near Disneyland's "Mine Train Through Nature's Wonderland" attraction, illustrate another application of early electronic animation technology. © Disney Enterprises, Inc.

nological progress until, eventually, all information formerly transmitted by cams was instead captured on magnetic tape during programming. In a show such as "Great Moments with Mr. Lincoln" (relocated to Disneyland following the close of the World's Fair), the recorded tape relayed the information to the animated figure's actuators. At the same time, it could also precisely control multiple, additional show elements such as sound, lighting, and staging.

As computers became increasingly sophisticated and capable of processing ever-greater amounts of information, the Audio-Animatronics process progressed accordingly. An expanded edition of the Lincoln presentation—known as "The Hall of Presidents" and featuring every U.S. president since George Washington—was subsequently installed at the Magic Kingdom in Walt Disney World. Today, nearly every major attraction at the Disney theme parks in Anaheim, Orlando, Tokyo, and Paris has an application of Audio-Animatronics.

Walt Disney perhaps summed up the process most eloquently when he said, "It's just another dimension in the animation we have been doing all our life."

During this period, Walt was developing entertainment concepts that combined his collection of miniatures with rides around the studio aboard his Carolwood Pacific Railroad rolling stock. One idea for amusing studio visitors utilized highly detailed, three-dimensional miniature scenes drawn from his childhood memories of Marceline, Missouri. The scenes, Walt thought, could feature realistic puppets animated by a new technology his Imagineers were developing.

Because of the world-wide popularity of Disney products, the studio

attracted a steady parade of guests, even though it wasn't open to the public. It was standard procedure for tours to be conducted by young writers from the publicity department, who were instructed to call the animation department's administrator to get clearance for visits. (Many years ago, the author of this book was one of these tour guides.)

Walt was particularly annoyed when he hosted visitors and there wasn't a live-action motion picture in production on the Burbank lot; he felt there wasn't much to see otherwise. Watching an animator draw cartoons was interesting, but it didn't have the entertainment value and showmanship flair expected of Disney. Walt also recognized that interrupting his artists could be costly for a production, especially if an animator was deeply engrossed in a particularly critical scene.

And so from a need to entertain studio visitors, a passion for trains and miniatures, and a desire to create three-dimensional animation, Walt sowed the seeds for his Magic Kingdom.

During production of an early television special airing in December 1951, Sharon and Diane join their dad in welcoming Edgar Bergen and Charlie McCarthy to the studio. Other special guests, of course, were Mickey Mouse and Lilly Belle.
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DISNE
PETER PAN
FLY THRU
ALICE IN
WONDERLAND
WALK
THRU



The Dream Team

I feel there is no door which, with the kind of talent we have in our organization, could not be opened.

—Walt Disney

A chance meeting in London at Basset-Loke, a world-renowned model train store, was to develop into a long-term relationship between Walt Disney and illustrator Harper Goff. In early winter 1951 Harper, a devout railfan, traveled to London to purchase a vintage 1/8th scale live steam model of an English locomotive and bring it back to his home in America.

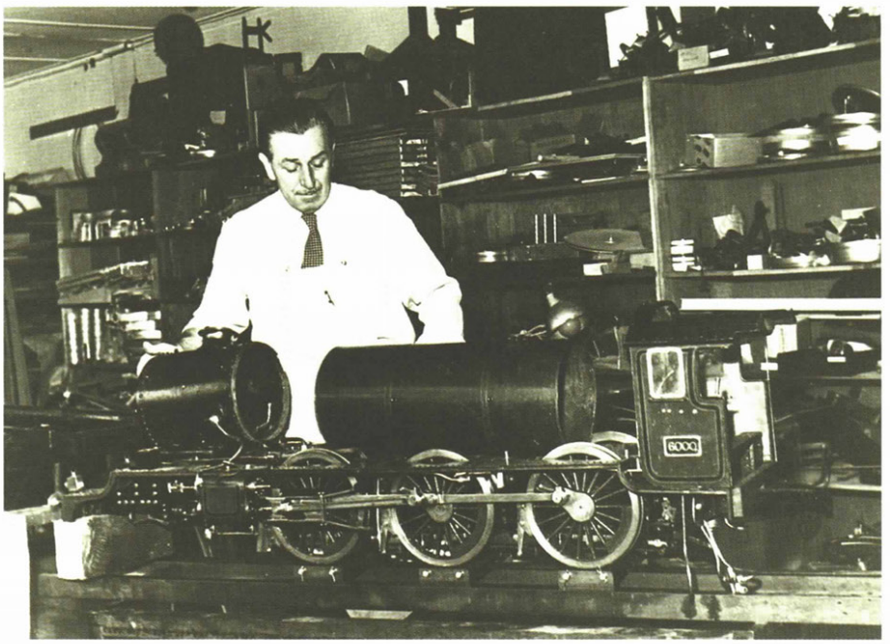
He had corresponded with the store and received photographs of two engines meeting his requirements. Upon arriving at the store, however, Harper was shocked and disappointed to discover that someone had been there just before him and bought both engines. He asked for the name of the culprit, hoping to persuade him to part with one of the models, and was told by the clerk that a famous American chap named Walt Disney was the buyer—and that he was staying at a nearby hotel.

Harper phoned Walt and went to the hotel in hopes of talking him into selling one of the locomotives. Walt, however, was adamant, explaining that he had an extensive layout at home and needed both of his new acquisitions. To make up for Harper's obvious disappointment, Walt invited him to dinner that evening.

In a meeting with economic research experts C. V. Wood and Harrison "Buzz" Price, Walt discusses planning for Disneyland. The two researchers predicted Anaheim would become Southern California's population center, and Disneyland was eventually located there. Harrison Price collection, © Disney Enterprises, Inc.

The Secret Project

At the restaurant, Walt reminisced with his guest about the excellent illustrations Harper had created for ESQUIRE and CORNET magazines. Walt told him how much he had admired his work in a series featuring the Wright Brothers' achievements and other highlights of American history. As a comfortable level of admiration developed between the



Walt learns about the many mechanical components in a live steam model as he disassembles an English locomotive purchased in London. "Walt's Workplace," in the studio's machine shop, was equipped with a bench and hand tools, allowing Walt to learn machine work at his own pace.
© Disney Enterprises, Inc.

two, Walt shared his ideas and vision for a special project he was planning called "Walt Disney's America."

"It's sort of a kiddieland," Walt explained. "I don't want it to just entertain kids with pony rides and slides and swings. I want them to learn something about their heritage." To underscore this point, Walt described a series of scenes highlighting events in America's history. Before the evening's end, Walt had invited Harper to join his team of Imagineers at the studio—a small group of designers and planners doing secret work for Walt and paid out of his own pocket.

What happened to the English locomotives? They were heavily damaged during a storm at sea while being shipped to Walt. The Imagineers in the studio's machine shop took them apart, to see how they were made, and put them back together. They never became operational, and remain in the Retlaw collection of rolling stock.

Back in Burbank, Harper Goff was assigned to a private location, with an "off limits" sign on the door, in the studio's Animation Building. Inside the locked office, under Walt's personal direction, Harper began sketching the first conceptual drawings for The Secret Project.

In another secured office a few doors away, Ken Anderson—one of Walt's key animation storyboard illustrators—was busy with another confidential project: he was creating a show that could be transported on a specially designed train traveling throughout the country. It was to consist of miniature scenes showing American folklore and historical highlights. Walt directed Ken to study Norman Rockwell's approach to visual storytelling, then design an assortment of 24 original scenes that Walt would build in miniature, to 1/8th scale—the same as his Carolwood Pacific Railroad. Walt admired Rockwell's ability to capture highly detailed scenes of Americana. Usually the artist had a "wink" in his illustrations, and this style appealed to Walt's midwestern taste and sense of humor.

Walt envisioned that school children would be invited to visit their local train station where they could see a series of three-dimensional,



Walt shows young actress Kathryn Beaumont one of a series of tableaux featuring animated scenes of Americana. These were among Walt's early attempts to develop animated, three-dimensional entertainment for studio visitors. Unfortunately, the associated project was cancelled after it was determined production and operating costs could never be recovered. Since small audience capacity was the problem, Walt simply expanded the scope of his ideas. © Disney Enterprises, Inc.

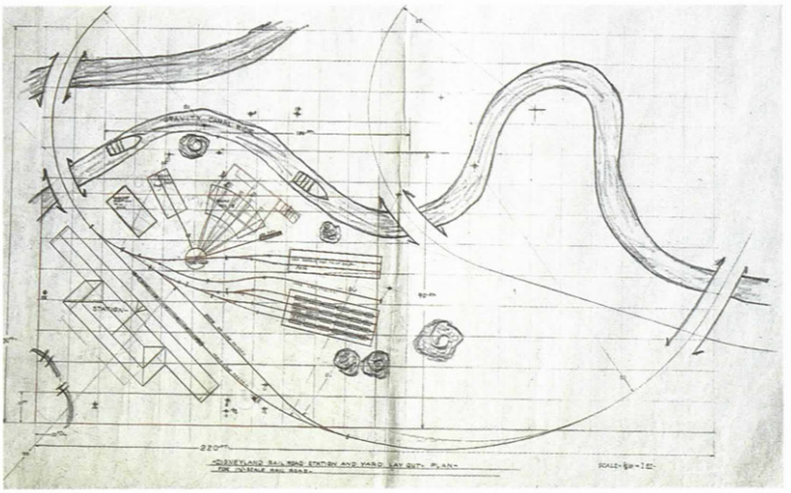
mechanically animated tableaux. The miniature scenes were to be installed in modified baggage cars; each car would represent a different region, showing historical and entertaining features about the area. He dubbed the project "Disneylandia."

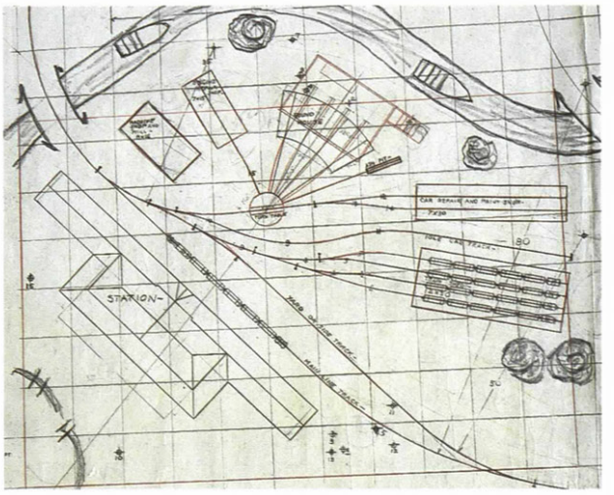
Utilizing his model-building skill, Walt created a working, 1/8th scale mockup of the interior of Granny Kincaid's cabin, based on plans Ken Anderson adapted from the 1949 feature So Dear to My Heart. When the model was finished, Walt met with Roger Broggie to discuss the results. Walt was justifiably proud of the fully detailed living room, complete with its river-rock fireplace. The next step was to build a kindly looking 1/8th scale grandmother who would be animated to rock back-and-forth in her chair while knitting.

Roger, however, had serious concerns about the whole project. He explained to Walt that the high cost of building the miniature scenes, and their limited capacity, wouldn't allow for recovery of costs—let alone maintenance and operation. Besides, Roger had discovered that moving the show around the country by rail would be very expensive. Walt thought for a while, then suggested a smaller series of scale model attractions that could be shown to studio visitors. He directed his staff to begin building a nine-inch-tall animated figure of a vaudevillian hoofer while he began working on a presentation stage he called the Opera House.

Lessons in Red

Meanwhile, Walt wanted to sample public reaction to his model interior of Granny's Cabin, so in November 1952 he put it on display at the Los Angeles Pan Pacific Auditorium, in a show entitled "Festival of Living." As soon as he determined that the public liked the display, he pulled Granny's Cabin from the show: no sense in alerting anyone that Walt Disney was up to anything besides making movies.






DISNEY STUDIO
RIVERSIDE DR.
ENTRANCE
L.A. FLOOD CONTROL CHANNEL

Walt then suggested running his Carolwood Pacific Railroad on a loop of track and opening a portion of the studio's backlot for paid admission on weekends. Roger ran the costs again, then suggested Walt think about doing it in a larger scale to increase capacity.

De-miniaturized, Walt's vision eventually led to his proposing a small amusement park: Disneylandia became Disneyland. His initial idea called for it to be sited on 16 acres of unused land, across Riverside Drive from the studio's main lot. (In December 1994, this heretofore-unused land became the new home for Disney Animation, in a distinctive $54 million structure.)

Initial design drawings by Eddie Sargeant showed an elaborate 1/8th scale railroad layout, complete with a roundhouse and covered rail equipment storage tracks; rails wound over bridges crossing a gravity-flow canal boat ride. The project's design was assumed by Harper Goff, who began developing a master plan for the site. When completed, the large color rendering depicted a circus area with carousel; a country fair; Victorian village; miniature steam railroad; boat ride; picnic area; Granny's farm; an Old West town; a Mississippi steamboat running around an island on a small lake; walkways; and a full-sized, narrow-gauge steam railroad.

Walt had spent many hours at Travel Town, a portion of Los Angeles' sprawling Griffith Park featuring static displays of vintage steam locomotives and railroad cars. A short steam train ride was being planned, and equipment acquisition was under way. He thought that the City and County of Los Angeles might agree to run Travel Town's narrow-gauge railroad—soon-to-be known as the Crystal Springs & Southwestern, with just over one-half mile of trackage in operation by 1955—through his attraction if he dedicated a right-of-way for tracks. Instead, Walt received a lesson in bureaucratic red tape.

It turned out that the federal government had jurisdiction over a strip of land running between the Disney property and the city-owned Griffith Park. This strip was the Los Angeles River, a major flood-control channel administered by the U.S. Army Corps of Engineers. The City of Burbank was the agency Walt would deal with for zoning and construction permits. The Los Angeles County Parks and Recreation Department was the agency operating Griffith Park. The State of California was yet another player: it had a master plan for a freeway system that, in its opinion, would solve forever the problem of heavy traffic burdening residential commuters and commercial haulers. The proposed Ventura Freeway would require a bite out of the land Walt wanted to develop—and it would (along with the river, which it paralleled) physically separate Griffith Park from Walt's property.

Not one to give up easily, Walt took Harper Goff and a set of preliminary plans and drawings to a Burbank City Council meeting, hoping to solicit a positive response. After Walt's exuberant presentation, a councilman spoke up: "We don't want the carny atmosphere in Burbank. We don't want people falling in the river, or merry-go-rounds squawking all day long." Instead of replying, Walt packed up his boards and walked out.

Realizing that there were members of the studio staff who didn't support his vision, Walt told close colleagues that he suspected some-

Opposite upper left: This initial design drawing visually interpreted the first of Walt's many ideas for his amusement park. Drawn by Eddie Sargeant, the layout included a 1/8th scale steam railroad—the same scale as that of the Carolwood Pacific—and a gravity boat ride. CPHS collection, © Retlaw Enterprises, Inc.

Opposite upper right: This detail of Eddie's initial drawing focuses on the proposed railroad operations center. CPHS collection, © Retlaw Enterprises, Inc.

Opposite below: The following year, Harper Goff fine-tuned Eddie's initial concepts into this more elaborate vision. Based on siting Disneyland on 16 acres in Burbank (across the street from the studio), the plan began taking on more of the look of what we know today as Disneyland—including steam trains, a Mississippi River steamboat, and an Old West town. CPHS collection, © Retlaw Enterprises, Inc.

one might have influenced the councilman, in hopes of discouraging him. Walt's suspicion was never confirmed. Neither, however, was his hope dashed.

The Language of Vision

Frustrated by trying to obtain approval from myriad agencies—and also because his concepts had grown beyond the Burbank site's capacity—Walt pursued alternatives. His growing staff visited various locations throughout Southern California, among them Descanso Gardens (above Pasadena) and ranch property on the western fringe of the San Fernando Valley, in Calabasas. However, none met one of Walt's primary requirements: plenty of relatively flat area for a real steam railroad.

While the site selection process moved forward, the design staff visited amusement parks and attractions such as Henry Ford's Greenfield Village, in Dearborn, Michigan; the San Diego Zoo; Cincinnati, Ohio's



Griffith Park

IN 1882, COLONEL GRIFFITH J. GRIFFITH purchased 4,000 acres of the 6,600-acre Rancho Los Feliz, owned by the widow of Antonio Feliz (who had received the land from the Mexican governor of California in 1841). Griffith donated the land to the City of Los Angeles in 1920, creating the largest municipal park in the country. His generous gift was granted in perpetuity to the people of Los Angeles—with the provision that the area remain accessible to the public, free of charge.

The park today features an observatory and planetarium, where scenes for many Hollywood films have been made; riding and hiking trails; the Greek Theatre; Ferndell Park; the famous "Hollywood" sign; the Los Angeles Zoo; a golf course; the old-fashioned carousel where Walt took his young daughters on Sundays; Travel Town Museum; and the impressive layout of the Los Angeles Live Steamers, a club devoted to perpetuating the hobby of miniature live steam railroading. The park also has many permanently preserved nature areas, providing habitats for a variety of wildlife.







Coney Island; Tivoli Gardens in Copenhagen; Knott's Berry Farm, in nearby Buena Park, California; and the Los Angeles County Fair, in Pomona. They also visited Mount Vernon, Virginia, and Severton Village in Connecticut. The purpose of all these visits was to look at what worked—and what didn't. Walt's staff wanted to see how crowds were handled; how maintenance and sanitation were accomplished; and how music, color, landscaping, walking surfaces, and costumes combined to create the desired ambiance. John Hench, a leading force behind the "look" of Disney products and places, refers to it as "the language of vision."

A respected member of the organization for over 55 years, Hench has enjoyed one of the longest continuing tenures with Disney. He was selected by Walt to provide "little touches of humanity" to the design of Disneyland. One of his many contributions was Snow White's Wishing Well and Grotto, adjacent to Sleeping Beauty Castle. The grotto's beautifully carved white marble statues—a gift to Walt from an Italian sculptor—were turned by Hench into a lovely and restful display, patterned after a fountain he'd admired while traveling in France. For his trademark touch, Hench added Snow White's soundtrack voice (Adriana Caselotti) singing "I'm Wishing," which harmonizes with the soft sounds of the fountains and waterfalls.

Unknown to most observers was John's skillful placement of the statues in a way that created a "forced perspective" illusion, hiding the fact that the statue of Snow White is carved to the same height as those of the dwarfs. Typical of Walt's understanding of show, the display is one of many unique little pleasures awaiting discovery. The coins tossed by Park guests into the water are donated to children's charities throughout the world.

Site selection for Disneyland was becoming urgent. To help out, C. V. Wood and Harrison "Buzz" Price—partners in a project consulting firm called Stanford Research Associates—were brought aboard. Walt had heard their work was both thorough and reliable, so he called them to a meeting at the studio. After a status briefing, he quickly gave them the assignment to determine where the exploding Southern California population was going to be centered. Walt also had them research temperature averages for each month throughout the year, topography, wind velocity, smog and fog levels, roadway and freeway access, utilities, taxes, local government support for business, and building code requirements on 40 different sites.

As more people became involved, Walt's Secret Project was becoming less so. Not only did the staff know, but word had also leaked to a few members of the news media, and rumors of a major entertainment center started to circulate. Eventually, speculation ran wild as people attempted to predict the location; some out of curiosity, others hoping to gain a quick profit by acquiring adjacent land. A "decoy" was set up to convince "Disney watchers" that a former sheriff's pistol range at Chatsworth, in the northern San Fernando Valley, was the final choice. Meanwhile, negotiations were under way between Walt's personal representatives—led by Bill Cottrell, vice president of WED—and 17 families owning contiguous parcels of orchard land in Orange County.

Opposite left and middle: Oahu Railway & Land narrow-gauge 4-6-0 No. 85, built by the American Locomotive Company in 1910 for service in the Honolulu area, was brought to Los Angeles' Travel Town in 1954 for display. Several years before the locomotive arrived, though, Walt—through his contacts with Jerry Best and other rail historians—learned that local railfans had visions of operating a steam train at Travel Town, and he thought perhaps it could operate to his proposed Burbank amusement park. By 1955, the little locomotive was operating on Travel Town's "Crystal Springs & Southwestern Railroad." Both, CPHS collection.

Opposite right: Locomotive No. 85 pulls Oahu Railway & Land combination baggage-coach 36 and coach 1 along Travel Town's short three-foot-gauge railroad circa 1955. The elderly, circa-1900 passenger cars would later help Walt decide upon the proper scale for Disneyland's railroad equipment. CPHS collection.

John Hench

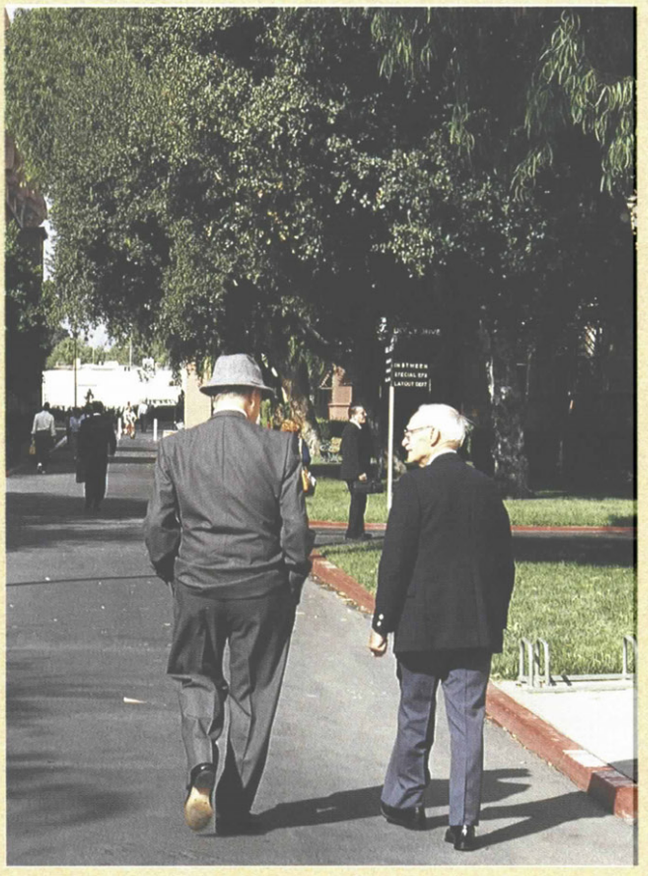
IF THERE IS ANYONE in the organization who typifies the appellation "Disney Legend," arguably it is John Hench. Hired when the studio was still on Hyperion Avenue in 1939, he was initially assigned to sketch scenes for a film called "The Concert Feature."

Later, it was released under its more familiar title, FANTASIA. John provided many of the masterful background paintings used with the "Toccata and Fugue" and "The Nutcracker Suite" sequences. Walt was quick to notice the promising talent John displayed in his background paintings; they seemed to capture the essence of a mood or setting with little effort.

John applied his skills to a host of projects, including the backgrounds for DUMBO; layouts for THE THREE CABALLEROS and FUN AND FANCY FREE; art supervision of MAKE MINE MUSIC; and color and style direction for THE ADVENTURES OF ICHABOD AND MR. TOAD, CINDERELLA, and PETER PAN. He also worked on live-action films, doing the animation effects for THE LIVING DESERT and special effects for 20,000 LEAGUES UNDER THE SEA, for which he received an Academy Award.

One of John's favorite activities was the occasional formal portrait he produced of Mickey Mouse, which started when he was assigned by Walt to do one for Mickey's 25th birthday. This led to a series of commemorative paintings delighting collectors of Disneyana merchandise.

His talent was put to the test in 1954 when Walt asked him to wrap up the work he was doing on 20,000 LEAGUES and join his team of Imagineers working on the design for Disneyland. Ten years later, John was Walt's key creative director for the four New York World's



In 1990, veteran Imagineers John Hench and Roger Broggie reminisce as they stroll along Mickey Avenue at the studio. CPHS collection, Disney characters © Disney Enterprises, Inc.

Fair attractions: Carousel of Progress, Great Moments with Mr. Lincoln, It's a Small World, and Magic Skyway. Each of these shows became a major addition at Disneyland after the fair closed.

John was amused when guests mistook him for Walt—a rather common occurrence when John walked through Disneyland, wearing typically stylish sports clothes and a tweed hat to protect his bare pate. He had a rather regal air about him as he glided about the Park, going in and out of areas where guests were not permitted. With his stature and Disney-style mustache, people saw what they wanted to see—Uncle Walt in person—making it a great story for the folks back home. Some say Walt was mildly annoyed by John's mistaken identity, but the pair never discussed it. Besides, John couldn't oblige the many guests who requested a "Walt Disney" autograph.

After Walt's death in late 1966, John stepped into the role of chief planner for Walt Disney World. He became directly involved in every aspect, from show and design concepts to architectural solutions and graphics. John continued his direction on other major projects such as Tokyo Disneyland, EPCOT, Disney-MGM Studios, and Disneyland Paris.

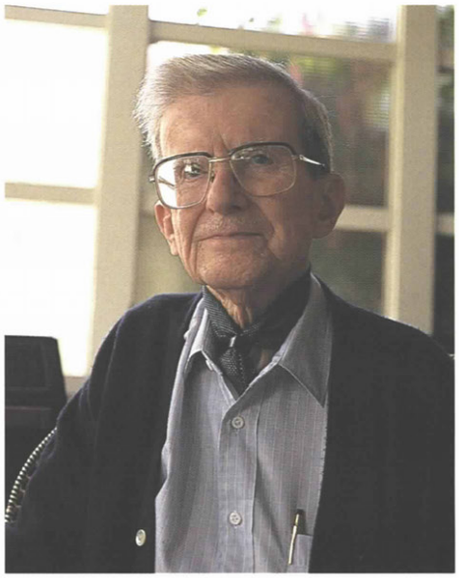
Besides being a gifted artist, John Hench has also become unofficially identified by younger Imagineers as the philosophical mentor of the organization. Often, he provides guidance to young designers and artists seeking that elusive Disney Touch for a project. Honed over nearly six decades, John's expertise helps maintain Walt's standards of quality and innovation.

Why Orange County? Because Buzz Price had predicted that the population center for Southern California's eight growing counties would be there, in a small agricultural community called Anaheim. Using seasonal studies of the San Diego Zoo, Price and his colleagues estimated first-year attendance at 2.5 to 3 million, and per capita spending of between $2.5 and $3. Based on these projections, they recommended an $11 million construction budget. (Some 40 years later, the actual geo-population center of Southern California is only four miles from the orange orchards and sweet potato patch that are Disneyland today, covering 139 acres bounded by Ball Road, Harbor Boulevard, and Katella Avenue in Anaheim. Buzz Price's prediction was amazingly accurate.)

Architects of the Show

By 1953, Walt's ambitious entrepreneurial enterprise was beginning to take shape under the capable direction of Bill Cottrell, a veteran of many years' studio experience dating to 1929. Walt's project leaders included art directors, planners, designers, architects, and engineers. Among the key members were Richard Irvine, who had first worked for Walt during World War II as art director for the feature film Victory Through Air Power and the animated feature The Three Caballeros.

Irvine left Disney to work as an art director at 20th Century Fox under distinguished designer Lyle Wheeler. When that studio planned to cut back its art department staff, Wheeler recommended Richard to



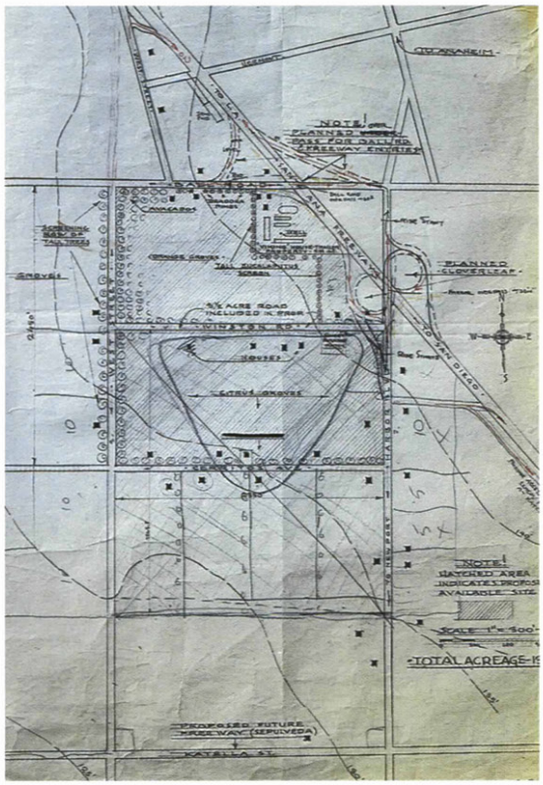
Disney Legend Bill Cottrell was the guiding light behind formation and management of Walt's personal companies, WED and Retlaw. Starting out with Disney in 1929, he held positions in nearly every department of the studio, achieving additional status when he became the first employee to reach 50 years of continuous Disney service. CPHS collection.

Walt, who hired him initially to design the sets for a television series called "Zorro." It wasn't long before Walt reassigned Richard Irvine as liaison between WED and an architectural design firm headed by Bill Pereira and Charles Luckman.

At first, Walt believed he needed architects to help design Disneyland. However his friend Welton Becket, a well-respected architect in his own right, told Walt that no one could design Disneyland except the Disney organization. As Walt thought more about it, he realized that motion picture art directors were the answer: They would understand his creative approach, and could work with structural engineers to figure out how the buildings should be constructed. The important issue was the show, and motion picture people understood this better than most architects. Walt canceled the relationship with Pereira and Luckman and began hiring art directors to design Disneyland under Richard Irvine's direction.

Irvine's former studio proved to be an excellent source of talent. Marvin Davis, who had just been laid off, became the assistant art director; he readily accepted Richard's offer to join a totally different type of design project. With a degree in architecture and considerable experience in motion picture set design, Marvin was assigned to work on the conceptualization and initial architectural planning already started by Harper Goff. Harper's design talent was more urgently needed on the feature film 20,000 Leagues Under the Sea.

Marvin developed the first diagrammatic plan for the Park. He recalled he was in his office on the morning of August 8, 1953, reviewing a site map he'd just finished, when Walt walked in and looked at the freshly completed layout. Picking up a No. 1 carbon pencil, Walt drew a triangle in the middle of the orange grove, saying, "This is where I want the railroad to run." That triangle became the general boundary for Disneyland Park. Marvin also worked on the designs for Main Street U.S.A., Sleeping Beauty Castle, and the Haunted Mansion.



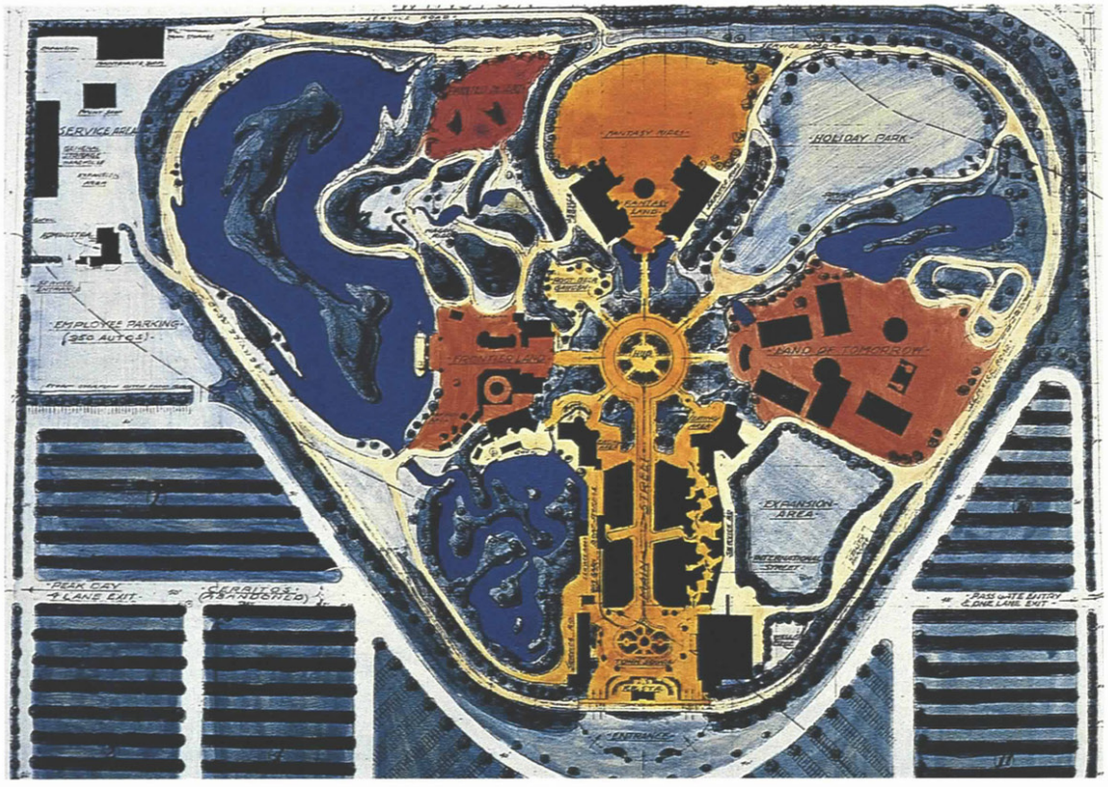
On this site plan, drawn in August 1953 by Imagineer Marvin Davis, Walt first determined Disneyland's exact placement by sketching a railway around the Park to serve as a triangular boundary.
© Retlaw Enterprises, Inc.

Underground Money

Another alumnus from 20th Century Fox was Bill Martin, whose talents as an accomplished art director and project designer were applied to scores of Disneyland attractions. These included Pirates of the Caribbean; the Monorail; Flying Saucers; and the Mine Train Through Nature's Wonderland (this last was one of the most popular attractions among Park cast members prior to its transformation into Big Thunder Mountain Railroad).

Martin was joined by Robert "Bud" Washo, an art director recruited from Fox to direct construction. Bud recounted the time Walt saw a huge pile of cement under a tarpaulin. "What's all this?" he asked. Bud explained that buildings were considerably different to construct than sets; they had to withstand the visits of millions of Park attendees. As a result John Wise, the structural engineer at WED, had specified commercial-grade foundations for the buildings on Main Street U.S.A.

Walt was incredulous. "They're wasting all my money underground," he complained to Dick Irvine. He was concerned there wouldn't be any funds left for the structures themselves.



Completed by Davis, this first diagrammatic layout for Disneyland became the basic plan for the Park's final design.
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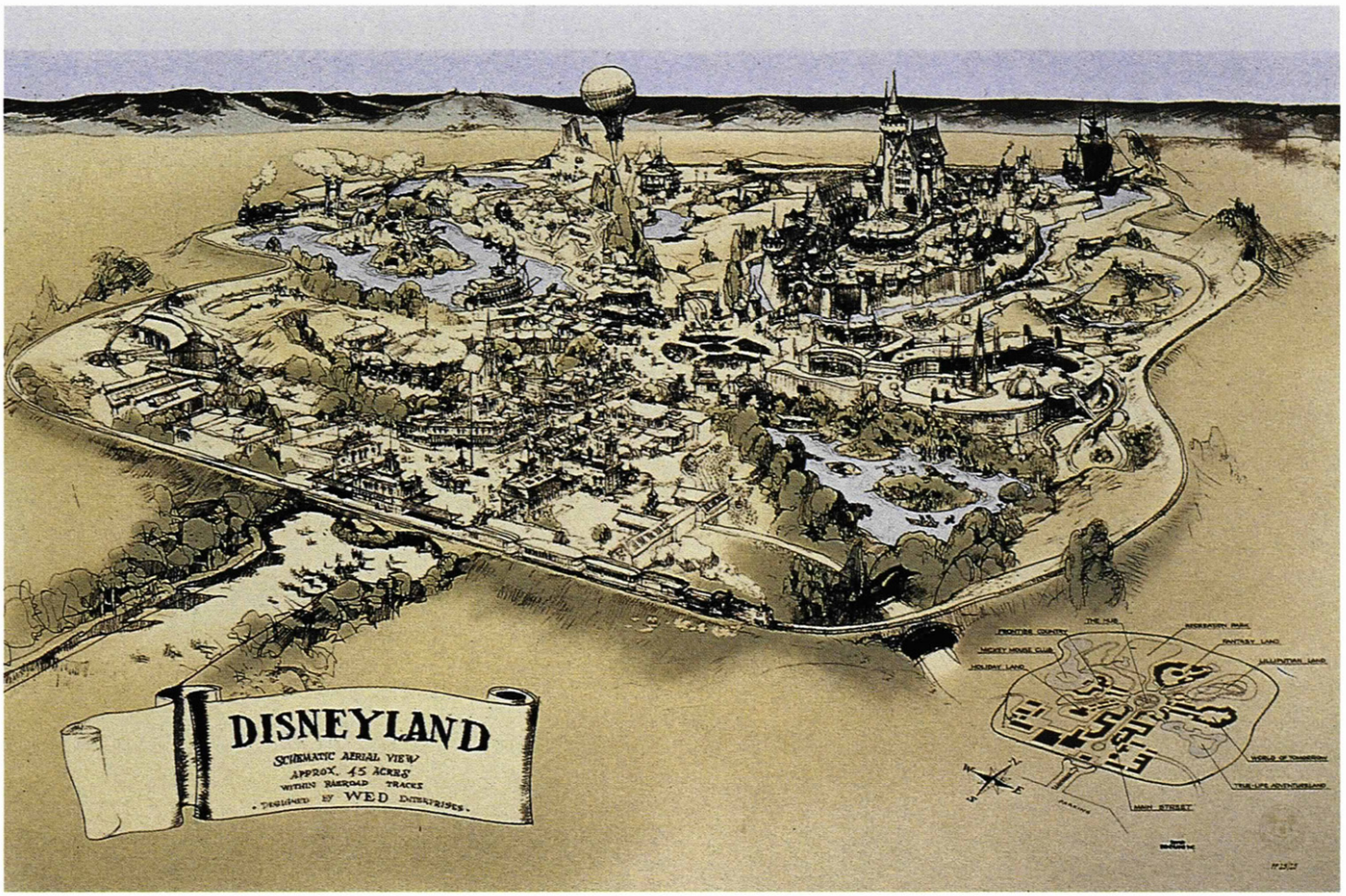

DISNEYLAND
SCHEMATIC AERIAL VIEW
APPROX. 45 ACRES
WITHIN RAILROAD TRACKS
DESIGNED BY WED ENTERPRISES
FRONTIER COUNTRY
MICKEY MOUSE CLUB
HOLIDAY LAND
THE HUB
RECREATION PARK
FANTASY LAND
JULIUSTHAN LAND
WORLD OF TOMORROW
MAIN STREET



Brother, Can You Spare a Few Million?

Money—or rather the lack of it to carry out my ideas—may worry me, but it does not excite me. Ideas excite me.

—Walt Disney

Throughout their partnership, Walt and Roy Disney understood and respected each other's special talents. Walt was the dreamer and visionary while Roy tended to the financing and organizational details. Together, they made an unparalleled show business team.

However, Roy's toughest assignment was just beginning: lining up funding for Disneyland. First, he had to be convinced that the venture was feasible. It wasn't easy for Walt to sell his older brother on the idea. Roy's initial reaction was that Walt should stick to making movies, and in the early 1950s the studio desperately needed a box-office hit. Walt assured him that he would continue to be involved in producing films, and that his Park would help promote and market the studio's releases. It would also perpetuate the popularity of the company's stable of leading characters.

This became one of the brilliant aspects of Disneyland: Unlike those of any other studio in Hollywood, Disney's stars can exist indefinitely. Walt wanted to provide the public with the opportunity to meet these stars, and Disneyland would be the tangible place where Mickey, Donald, Goofy, Pluto, and Snow White would dwell happily ever after.

During a 48-hour weekend marathon, Herb Ryman and Walt produced this first conceptual bird's-eye view of Disneyland. Roy Disney immediately took it to New York where he showed potential investors what his brother was trying to create.
© Disney Enterprises, Inc.

Eye of the Storm

But there was much more to Walt's plan than a fantasy land. He wanted to enlighten and educate as well as entertain. Walt wholeheart-

edly believed that Disneyland could fill the gap between education and entertainment. He also thought the Park's atmosphere could be sophisticated yet relaxed enough that adults would feel comfortable allowing their "inner child" to play, without feeling embarrassed.

Walt understood the importance of play and relaxation. He knew that many adults of his generation hadn't had quality childhoods, because of the terrible economic conditions of the Great Depression. His generation had been through two world wars, followed by another conflict in Korea. The nation—and the world—deserved a break from harsh reality. Additionally, families were expanding at a booming rate, and the economy was finally on solid footing following the war years.

Yes, this was the right time for Disneyland. The prize far outweighed the risk, and the new medium of television was available to promote this new land in 10 million living rooms across the country.



Herb Ryman is regarded, by those familiar with his work, as one of the finest illustrators ever to work for Disney. His technical brilliance and gifted imagination resulted in a prolific body of work spanning more than 60 years. Lucille Ryman Carroll collection.

Under Walt's persistence, Roy was finally convinced; in fact, he became his brother's strongest supporter. Lilly, naturally, was concerned about the pressures the project would place on her husband (he had suffered a nervous breakdown in 1931). She also recognized Walt was happiest when he had a personal goal and direction: she had witnessed this while he was building the miniature railway around their home. Now, as planning advanced for the Disneyland project, she had never seen him so intent on anything.

Lilly didn't know that Walt would eventually borrow every dollar he could get his hands on to finish the Park. To raise capital, he mortgaged or sold all the property they owned, except their home on Carolwood Drive. He even parted with their beloved Smoke Tree Ranch property in Palm Springs, and borrowed from his own life insurance policy to build the steam trains.

"Carolwood became the calm eye of the storm," Lillian recalled years later. "Walt would come home literally exhausted from the creative and planning sessions that went on all day with his Imagineers." And, if he wasn't with the WED people, he was keeping his promise to Roy by participating in story and planning meetings with the studio's film production staff. "We need you to create a hit motion picture," Roy reminded his brother.

Meanwhile, Roy was keeping his part of the bargain, arranging a series of meetings in New York with potential financial backers for Disneyland. He didn't get word until late Thursday, September 24, 1953, that the prospective financiers wanted to meet the following week. He quickly contacted Walt and told him he needed a visual presentation to take to New York. Roy's acute business instinct told him that he needed pictorial images of Disneyland to convince the backers.

A Good Name

Walt knew whom to call: Herbert Dickens Ryman. Walt had first met Ryman in 1938, during a showing of his exquisitely rendered Asian and European sketches and paintings at the Chouinard Art Institute. Chouinard's director, Vernon Caldwell, knew both men well and thought that they should meet; Walt had told Caldwell he was seeking talented artists to work on feature-length animated films, fol-

lowing the resounding artistic and commercial success of SNOW WHITE (released a year earlier). Caldwell predicted correctly that Walt would appreciate Herb's bubbly, self-effacing attitude; ready wit; and talent as a fine arts illustrator.

September 26, 1953, was a warm Saturday morning in Van Nuys, California, where Herb Ryman was working in his home studio. When the phone rang, it was his friend and former colleague from 20th Century Fox, Dick Irvine.

"We're over here at Disney Studios, and Walt would like to talk to you."

Walt got on the line, and asked "Herbie, whatcha doin'?"

Herb replied, "I'm working on my circus pictures."

"Can you come over to see me?" Walt asked.

"Yeah, sure," Herb answered. "What do you want to talk about?"



Herbert D. Ryman

DURING HIS VISIT to the Chouinard Art Institute, Walt was so impressed with the quality of Herb Ryman's work that he immediately invited Herb to join his staff at the studio. Herb—protesting that he wasn't a cartoonist or an animator—told Walt that he must be mistaken. Walt persisted, telling him about a special motion picture that was in the planning stages. It would not have any dialogue, only the soundtrack of classical music that Disney artists would interpret visually through animation. Intrigued, Herb agreed to join the Disney staff and eventually stayed for eight years as an illustrator and art director on such classics as FANTASIA, DUMBO, and PINOCCHIO.

In 1941, Herb toured with Walt and 15 other Disney Studio artists and management personnel on a three-month "Good Will Tour of South America." Through an invitation from Nelson Rockefeller, Coordinator of Inter-American Affairs, the tour was part of an Allied effort to maintain solid relations with southern countries in the Western Hemisphere. They traveled by aircraft and regional railway systems connecting the countries of Brazil, Bolivia, Guatemala, Peru, Ecuador, Argentina, and Mexico. Production of two Disney classics, SALUDOS AMIGOS and THE THREE CABALLEROS, resulted from this trip.

When the war ended, and world travel by private citizens was once again unrestricted, Herb left Disney to be an art director for 20th Century Fox, working on ANNA AND THE KING OF SIAM. After a string of successful art directing assignments on THE ROBE, DOWN TO THE SEA IN SHIPS, DAVID AND BATHSHEBA, and FOREVER AMBER, he left Fox for a commission by John Ringling North to illustrate the people, animals, equipment, and operations of a traveling circus billed as "The Greatest Show on Earth." Herb spent two seasons traveling on the Ringling Brothers, Barnum & Bailey circus train, creating sketches, watercolors, oils, and pen-and-ink drawings.

After his extended circus tour, Herb decided it was time to settle down for a while, create some art, and earn enough money so he could afford another first-class trip around the world (he had previously done this during a two-year period in 1936-1937). On that trip, he lived and sketched his way through Paris, London, Bangkok, Singapore, and Peking. He also traveled extensively in China, Japan, Cambodia, and the Gobi Desert. When he returned home, the results of his travels became the subject of a two-artist show at the prestigious Macbeth Gallery in New York City (the other artist, a young fellow named Andrew Wyeth, was also being introduced to the art world). After the show, Herb returned to Van Nuys, California, to paint his circus pictures.

"I'll tell you when you get here. How long will it take you?"

Herb told Walt that, if he came as he was, it would be about 20 minutes. If he cleaned up, it would be an hour. "Come as you are," Walt suggested. "I'll be out in front to meet you."

Herb then drove the short 20-minute route east on Riverside Drive to the studio. When he got there, Walt was waiting at the main gate on Buena Vista Street. "Hi ya, Herbie," Disney greeted his friend as he entered the campus-like grounds of the studio.

"What's on your mind, Walt?"

"I want to talk to you about an amusement park," was the reply.

"You mean you're going to go ahead with your idea across the street?," Herb asked.

"No, it is not going to be like that. It's bigger than that."

Herb asked where the Park would be located, and was told that the site had not been selected yet—but people were researching potential locations.

"What are you going to call it?" Herb inquired.

"Well," Walt responded, "I'm going to call it Disneyland."

"That's a kind of egotistical thing to call it, isn't it?" Herb teased, then offered that he thought it was a good name.

Walt moved closer to the point, telling Herb that his brother Roy was leaving for New York on the following Monday morning. "He's going to talk to the financial boys: it's going to take millions of dollars to get this thing started," he explained.

Herb asked what the Park was going to be like, and Walt explained that it would have plenty of rides, a steam train running around it, and a big castle in the middle. There also would be themed areas—and a new home for the Carolwood Pacific Railroad.

"My brother has to take a large rendering of Disneyland with him to show the investors," he continued. "You know, most financial types don't have much imagination. Roy has to show them what we're going to do."

Agreeing, Herb asked, "Well, where are these drawings? I'd like to see 'em."

Walt said, "Oh, you're going to make them."

"No, I'm not," was Herb's emphatic response. "This is the first I ever heard about this. You'd better forget it. It'll embarrass both you and me. I'm not going to make a fool of either one of us."

Walt, not one to give up easily, simply pleaded, "If I stay here with you, will you do something?"

Sketching the Dream

Walt moved quickly to the next step, ordering in sandwiches while Bill Cottrell, Marvin Davis, and Dick Irvine presented the concepts they'd been secretly developing with Harper Goff. Herb listened as the trio described how big the Park was going to be, and how a real steam railroad was going to run completely around it on an elevated earthen berm. Marvin showed a map, with a tunnel by the main railroad station where visitors would enter the Park. Once inside, they would be in a town square; the view down the main street would be toward a cen-



Herb and Walt are seen working together on a series of smaller sketches at the Disney studio. © Disney Enterprises, Inc.

tral hub, highlighted by a large Medieval castle. Branching out from the hub would be several pie-shaped, themed realms.

True-Life Adventureland would feature a cruise on the Rivers of Romance. World of Tomorrow would have moving sidewalks, a monorail, a diving bell, a rocket-ship ride to the moon, and a miniature freeway where children could drive scaled-down automobiles. In Lilliputian Land, an Erie Canal barge would take passengers for a tour of great canals of the world, passing miniature towns with nine-inch-tall residents; Walt's 1/8th scale Carolwood Pacific Railroad would wind through the miniature settings, carrying full-sized passengers.

Fantasy Land would be located inside the Medieval castle's walls, and would include King Arthur's Carousel and rides themed with the characters and stories from SNOW WHITE, ALICE IN WONDERLAND, and PETER PAN. Frontier Country would have an old western flavor, offering pony and stagecoach rides and featuring a river with a real sternwheel-powered steamboat gliding past scenic towns and colorful waterfronts of the romantic Old South. Holiday Land would be a flexible area with a one-ring circus, a large picnic area, and seasonal attractions such as ice skating and sledding in winter. Last but not least, the Mickey Mouse Club would be home to the famous star and his friends.

When the presentation was completed, Marvin and Dick left the meeting. Herb sat for awhile, absorbing the information he had just witnessed, then told Walt, "I can't do anything between now and Monday morning. I need time to think about it. What if it was turned down because my sketch was terrible?" he asked.

Walt stood up, then slowly walked away from Herbie and stood facing a wall. He was silent for a few moments before turning around. There were tears welling up in his eyes.

"Herbie, this is my dream. I've wanted this for years and I need your help," he pleaded. "You're the only one who can do it. I'll stay





Above: Although several major rearrangements were made later (for instance, the castle shown here—atop Fantasyland—ended up instead atop Main Street, with a much smaller moat) Herb and Walt achieved a remarkable level of detail during their marathon weekend-sketching session. © Disney Enterprises, Inc.

here with you and we'll do it together."

Convinced and moved by Walt's unusual, emotional display of sincerity, Herbie agreed. Soon, he created a few quick conceptual sketches of the project, aided not only by the drawings and plans of Marvin Davis and Dick Irvine, but also Walt's verbal descriptions.

"This is a magical place," Walt began. "The important thing is the castle. Make it tall enough to be seen from all around the Park. It's got to keep people oriented. And, I want a hub at the end of Main Street, from where the other lands will radiate, like spokes of a wheel. I've been studying the way people go to museums and other entertainment places. Everybody's got tired feet. I don't want that to happen in this place. I want a place for people to sit down and where older folks can say, 'You kids run on. I'll meet you there in a half hour.' Disneyland is going to be a place where you can't get lost or tired unless you want to."

With each themed section, Walt carefully crafted—in precise detail—how it would work, mentally walking through every area and building, and riding on every attraction. His storytelling ability wove word pictures, from which Herb quick-sketched visual interpretations with a carbon pencil. For the next 42 hours, the two spent all of their imaginative and creative energy in a marathon session.

Dollars for Disneyland

Early Monday morning, Marvin Davis and Dick Irvine walked into the littered room. They found a bedraggled Walt and a bone-weary Herbie sitting there, looking at a large vellum panel, illustrated in pen, with a bird's-eye view of a completely detailed theme park. In the lower left corner, a scroll proclaimed "Disneyland—schematic aerial view—



Left and opposite right: With the participation of ABC-Paramount Theatres secured by his brother Roy, Walt was able to move ahead with planning and construction for Disneyland. The weekly "Disneyland" television show included in the deal presented a year-long series of construction updates—forerunners to infomercials.
Both, © Disney Enterprises, Inc.

approximately 45 acres within railroad tracks—designed by WED Enterprises." The two Imagineers immediately grabbed color pencils, and began adding shading and highlights to Herb's incredible line art.

During those years, Herb's mother kept a diary of her son's assignments. In her entry for Sunday, September 27, 1953, she wrote: "Herbert is helping Walt to do a map of an amusement park. Roy Disney is going to New York soon to talk to the money people about helping to finance Disneyland." The entry was innocently yet masterfully understated. That weekend marathon became well-known among the legends and the lore surrounding the Disney organization. It likely represents one of the most intently creative and inspiring sessions in the company's design history.

Herb's rendering was combined in a presentation portfolio with a six-page description of Disneyland. It included the first formal definition of the Park, which was written by Bill Walsh based on Walt's verbalizations:

> *The idea of Disneyland is a simple one. It will be a place for people to find happiness and knowledge.*
>
> *It will be a place for parents and children to share pleasant times in each other's company; a place for teachers and pupils to discover greater ways of understanding and education. Here the older generation can recapture the nostalgia of days gone by, and the younger generation can savor the challenge of the future. Here will be the wonders of Nature and Man for all to see and understand.*
>
> *Disneyland will be based upon and dedicated to the ideals, the dreams and hard facts that have created America. And it will be*

uniquely equipped to dramatize these dreams and facts and send them forth as a source of courage and inspiration to all the world.

Disneyland will be something of a fair, an exhibition, a playground, a community center, a museum of living facts, and a showplace of beauty and magic.

It will be filled with the accomplishments, the joys and hopes of the world we live in. And it will remind us and show us how to make those wonders part of our own lives.

In New York, Roy had an unproductive meeting with William Paley at CBS. At RCA, NBC's parent company, General David Sarnoff expressed interest in the theme park idea, but his subordinates couldn't seem to grasp Walt's vision. Both television networks wanted Disney films, but the real challenge for Roy was convincing them to back a high-risk venture called Disneyland.

Undeterred, Roy called his friend Leonard Goldenson, head of the fledgling ABC television network. Roy's persistence—and his faith in Walt's concept—finally paid off, resulting in a commitment from Goldenson to invest $500,000 in the Park and provide a guarantee for a $4.5 million line of credit. In return, Disney gave ABC-Paramount Theatres a 35 percent interest in Disneyland, Incorporated, and agreed to produce a weekly one-hour television program featuring Disney theatrical films and productions made for TV.

Opposite top: An elaborate made-for-television film production in the late 1950s featured a tour of the Disney studios aboard Walt's Lilly Belle *and train. Hundreds of feet of track were laid for each scene.* © Disney Enterprises, Inc.

Opposite below: During a break in filming, producer Robert Florey admires Lilly Belle*'s fine detailing along with Walt.* © Disney Enterprises, Inc.

The following United Press story appeared on March 30, 1954:

Disney, ABC Join Forces

HOLLYWOOD—Walt Disney's movie studio confirmed today it planned a partnership with the American Broadcasting Co., making it the first major film studio to enter the television field.

Disney will produce both live and cartoon pictures for the network, but continue to produce films for theaters.

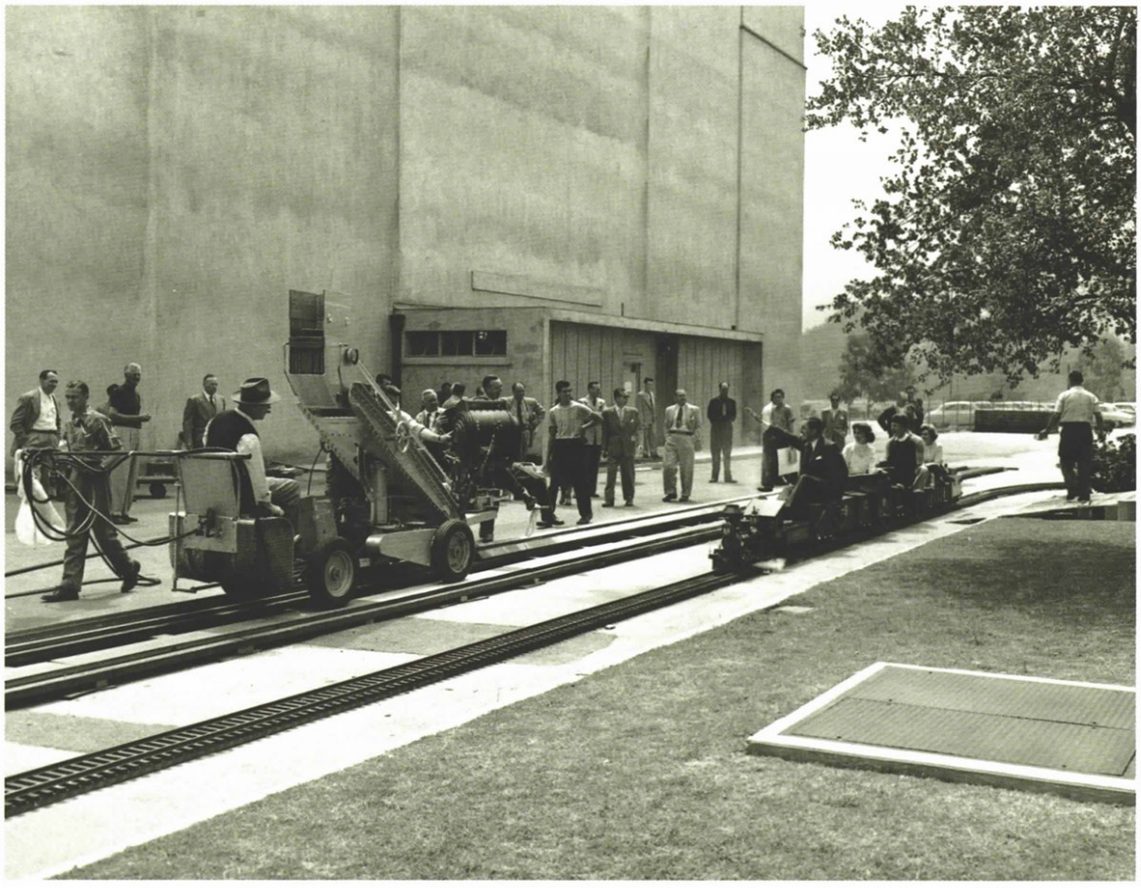
Studio officials said many of the video features will be filmed at a six-million-dollar miniature world's fair, Disneyland, which he plans to build here.

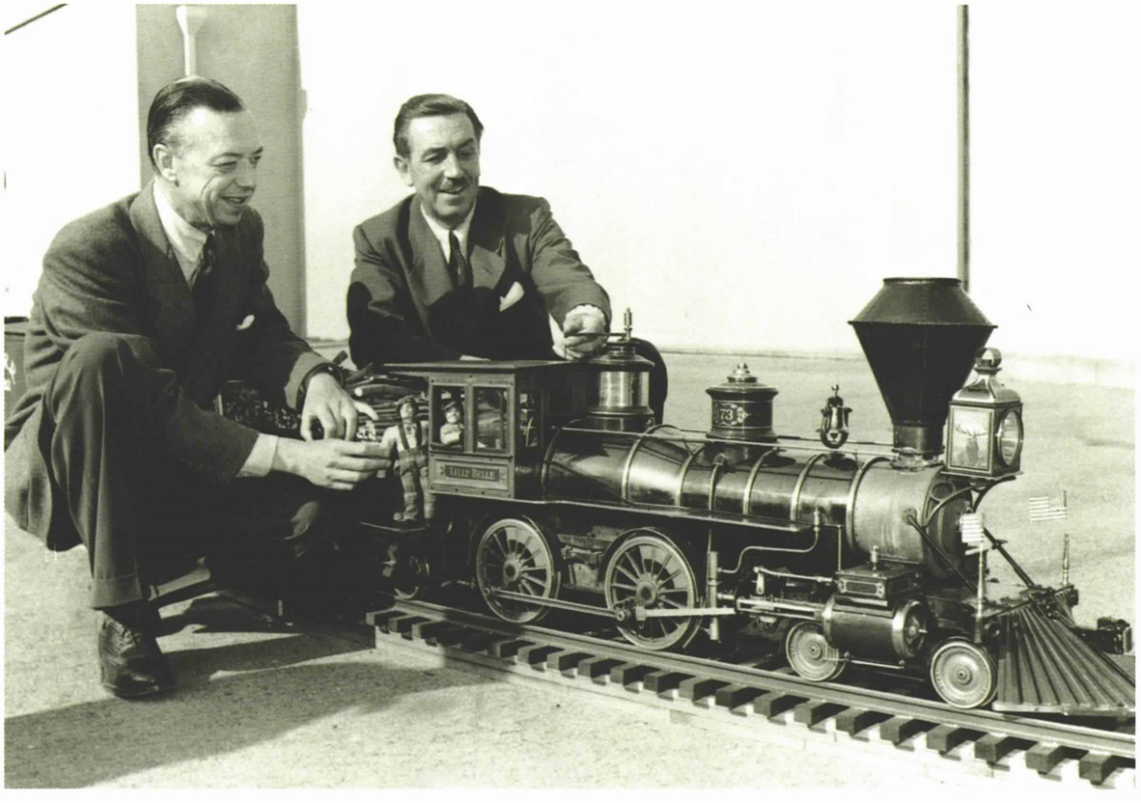
A studio spokesman said ABC's current telefilms, now being shot at rental studios, will be made at the Disney plant. Disney has for two years leased space to the TV creators of "Dragnet."

The alliance created perfect synergy: the ABC television network needed programming to compete against CBS and NBC, and Disney needed capital to build Disneyland. Disney also needed national exposure to advertise the Park's opening in 1955. Ideally, this could be accomplished through the relatively new medium of television.

New Beginnings

Beginning October 27, 1954, the "Disneyland" television show aired Wednesday evenings at 7:30, with Walt as its host. The weekly show, which soon switched to Sundays to reach a larger family audience, made Walt a national celebrity. It also permitted him to introduce the American public to his new vision of family entertainment—







just as families and the economy were growing after the Korean War.

Through its willingness to risk backing Disneyland, ABC achieved top ratings after launching one of the longest-running television series in broadcast history—seen weekly for nearly 30 years under a variety of titles, including "The Wonderful World of Color" and "The Wonderful World of Walt Disney." In 1955, ABC launched its second Disney show, the popular "Mickey Mouse Club" weekday series. This series not only captured the after-school youth audience, it also set up viewing for ABC's evening programming.

(Had Roy Disney and Leonard Goldenson failed to form the initial relationship, it's quite possible the two companies might not have survived the difficult economic times each was later to experience. Ironically, over 40 years later, Disney CEO Michael Eisner negotiated the purchase of Capital Cities/ABC in a transaction creating the largest media conglomerate in the world. The corporate relationship had traveled full circle.)

Soon, Walt announced that Disneyland would open in July 1955. Some critics at the studio wondered how their boss would accomplish this in such a short time—ground hadn't even been broken in Anaheim. This finally occurred in August 1954, leaving a construction window of only 11 months.

Walt rides into one of the sound stages in preparation for filming the next scene. Roger Broggie approaches the doorway as other employees return from a break.
© Disney Enterprises, Inc.


FRONTIERLAND



Workin' on the Railroad

Anything one man can imagine, other men can make real.

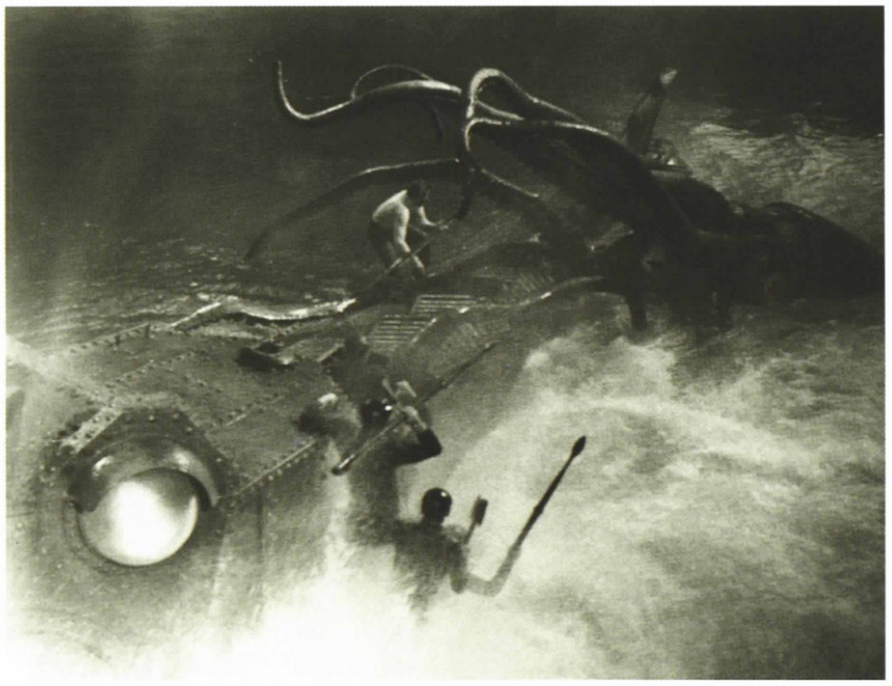
—Jules Verne

Walt was anxious to get started on the attractions for the Park, particularly the trains, which he wanted built at the studio. However Roger Broggie—selected by Walt to head the project—was busy with a climactic scene in the studio's film production of Jules Verne's 20,000 LEAGUES UNDER THE SEA, featuring a fierce battle between the *Nautilus* crew and a horrendous giant squid. After several failed attempts with a creature that looked more like a rubber puppet octopus than a real squid, Roger had been called in to work with John Hench, who was in charge of special effects, to figure out a way to get a more realistic monster on the screen.

Working around the clock for a week, a team of technicians, machinists, and artists fabricated a terrifyingly credible creature. It weighed in at two tons and required 27 operators to animate the body, tentacles, eye movement, and a menacing snapping beak. Seeing the new squid, Walt insisted on adding a raging storm to heighten the excitement. Continuing to work late into the night for a week, the cast and crew finally completed the scene to Walt's demanding satisfaction.

The new scene cost an additional $50,000—spent with Roy Disney's approval. Some observers thought Roy was being unusually supportive financially because he preferred that Walt stay focused on filmmaking. However, as it turned out, both Disneys were right; the battle with the squid became the film's exclamation point, and the primary reason it won an Oscar for special effects (it also won Academy Awards for John Meehan's art direction and Emile Kuri's set decoration). Stage 3, where the scene was shot, took many months to dry out from the thousands of gallons of water used to create Walt's storm.

During a July 4, 1955, pre-opening party for Disney employees, Santa Fe and Disneyland Railroad locomotive No. 1 C. K. Holliday *pauses at the Frontierland Station. The just-completed water tower lacks paint, but things are coming together well for Walt's 5/8ths scale railroad in Anaheim.* Roger Broggie photo, © Disney Enterprises, Inc.



Filming for the studio's production of 20,000 Leagues Under the Sea was nearing completion when this climactic, raging storm scene was staged. The two-ton monstrous squid required 27 operators to animate its body, tentacles, eye movement, and menacing beak. Soon after, work began on building Disneyland's railroad.
© Disney Enterprises, Inc.

Filming at Carolwood

The following week, Walt stopped in the machine shop to see Roger. "We need to get started building the railroad for the Park," he said. "Do you think our boys can do it here at the studio?"

"Sure," Roger replied. "Since we did the *Lilly Belle* locomotive and have all the information on the trains already, we can just take the drawings and blow them up for the Park locomotives."

Roger then told Walt that the members of the Los Angeles Live Steamers club had requested to see the *Lilly Belle* run at Carolwood. Walt, a charter member of the club, responded, "No way. I can't have a bunch of people at the house with the train running. We've had too many close calls." Roger suggested that instead, perhaps a film could be made of the train in operation and shown to club members. Walt liked the idea of running his railroad again. He had missed the little train, so he agreed.

On the day of the filming, Walt invited actor Kirk Douglas to visit Carolwood. Douglas was starring in 20,000 Leagues Under the Sea for the studio, and Walt thought that he and his boys, Michael and Joel, would enjoy a pleasant afternoon on the train.

Roger went to Carolwood with a new 16 millimeter Arriflex studio camera to get color footage for the live steam railroad club. He also planned to use this opportunity to test the camera, a common procedure for new photographic equipment. A push rod was coupled between the front of the locomotive and a flat car, serving as a camera platform. As the locomotive pushed the flat car, Roger photographed the train from this unique point of view.

Douglas was at the throttle, with his boys riding behind on the freight cars. After filming from the front angle, Roger got off and captured several passing scenes. Douglas asked him who he was and why he was filming. Roger explained that he worked for the studio and was

testing the camera. "My kids enjoyed it, I enjoyed it," Douglas recalled years later in his autobiography, THE RAGMAN'S SON.

Douglas likely had forgotten the day at Carolwood until the following year, when he was relaxing at home on a Sunday evening watching the Disneyland television show. The evening's program, entitled "Where Do the Stories Come From?", demonstrated how the studio developed stories for its films. Suddenly, Douglas saw something on his television screen that got his attention: a brief segment showing the Douglas family running the miniature train at Carolwood. (Roger also was surprised to see this footage on the show, since he was not one of the studio's professional cameramen.) Apparently, someone in television production at the studio had seen the test footage and decided it would add an entertaining and personal highlight to the program.

Douglas was furious about what he believed was an invasion of his privacy. In particular, he was concerned that the program showed his children, of whom he was very protective. "[Walt] never mentioned it to me; never asked my permission," he stated in his book. He then wrote a letter to Walt, asking that the film not be used again on a commercial program. A letter of apology was sent to Douglas; at the time, Walt was becoming increasingly tied up in Disneyland's planning, and was not involved in scheduling the weekly television shows.

Two months later, ABC aired the program in its rerun schedule—with the Douglas sequence intact. No one in production at Disney had followed through to delete the offending footage and replace the master film at the network. Fuming, Douglas promptly sued Walt personally—and the Disney company as well—for invasion of privacy, seeking $200,000 in damages.

In his deposition, Walt explained that Douglas' contract stated he was obligated to promote 20,000 LEAGUES UNDER THE SEA. Since the television episode had identified Douglas as star of the Jules Verne classic, Disney's lawyers contended that Kirk didn't have a valid claim. Douglas withdrew the lawsuit, concluding, "I doubt if I could have gotten anywhere with it." Although he never worked for Walt again, he did return to the studio over 30 years later to co-star in TOUGH GUYS with his longtime friend, Burt Lancaster.

The Right Size

Before commencing the building of Disneyland's railroad, Walt recommended looking at several existing trains to be sure there wasn't one that could be purchased. The following weekend, Walt and Roger Broggie drove north up California's scenic Highway 1 to Los Gatos (a small community near San Jose) where they visited William "Casey" Jones, a devout railfan and collector. Among Jones' collection of rolling stock was a set of five 19-inch gauge locomotives built for the 1915 Panama-Pacific International Exposition. Jones was selling the equipment because it couldn't run on his 18-inch gauge track.

After Walt and Roger spent several hours examining the equipment, Walt offered $50,000 for the lot. Believing that there was more Disney money available, and knowing there wasn't much time for new equipment to be built before Disneyland's opening, Jones



turned the offer down. To his surprise and chagrin, Walt left without raising his offer. During the drive home, Walt commented that he didn't want a "zoo train" like the ones in Jones' collection anyway; he was used to seeing those at kiddie parks.

Back in Los Angeles, Walt took Roger to the railroad display at Griffith Park's Travel Town. There, he showed Roger a comfortable scale for a downsized passenger car: six-foot doorways and three-foot (narrow) track gauge. Walt explained what had always bothered him about the kiddie trains: The equipment wasn't in proportion to the track, and it didn't offer sufficient capacity.

Knowing that Roger and the other Imagineers would need a lot more room, Walt approved plans for a large machine shop to be constructed behind the studio's ink and paint department. "Just tell Purchasing to order the equipment and materials you'll need. Don't get anything extra—budgets will be kinda tight around here for quite a while," he reminded.

Within 90 days Jack Rorex, head of construction for the studio, had the new building up. During this time, planning continued for the Disneyland railroad. "We built it once," Roger told his expanding staff of machinists, draftsmen, and engineers. "We can do it again, only this time it'll be larger." The first step was to ascertain equipment proportions, based on Walt's observations at Travel Town.

To determine the right scale for the trains, Imagineers used a huge blackboard in the studio's annex. "We drew a full-sized car on the blackboard," Roger Broggie explained. "Railroad cars are 10 feet wide, so we drew a 10-foot car with a standard six-foot, eight-inch door; then reduced the size until we got down to a six-foot doorway." A plywood mock-up was then built according to scale.

Walt, who was paying close attention to the work, tried the opening. "Well, I can go through a six-foot doorway. That ought to be enough," was his conclusion. On this basis, the overall proportions resulted in a seven-foot-wide car—nominally 5/8ths scale. (Comparable standard-gauge equipment would have ranged from nine to ten feet in width.)



Above: Walt visited a number of California's novelty and excursion railroads as he pursued his theme-park vision. This one was located near Los Angeles. CPHS collection.

Opposite: Walt crouches on the step of a former Oahu Railway coach to sign an autograph for a young admirer, during a 1954 visit to Los Angeles' Travel Town, in Griffith Park. The coach, constructed to narrow-gauge rolling stock specifications, was built to operate on three-foot gauge trackage in the Hawaiian Islands circa 1900. Walt liked its proportions, and the Santa Fe and Disneyland Railroad's passenger cars were built to a similar overall size. Mrs. Walt Disney collection.

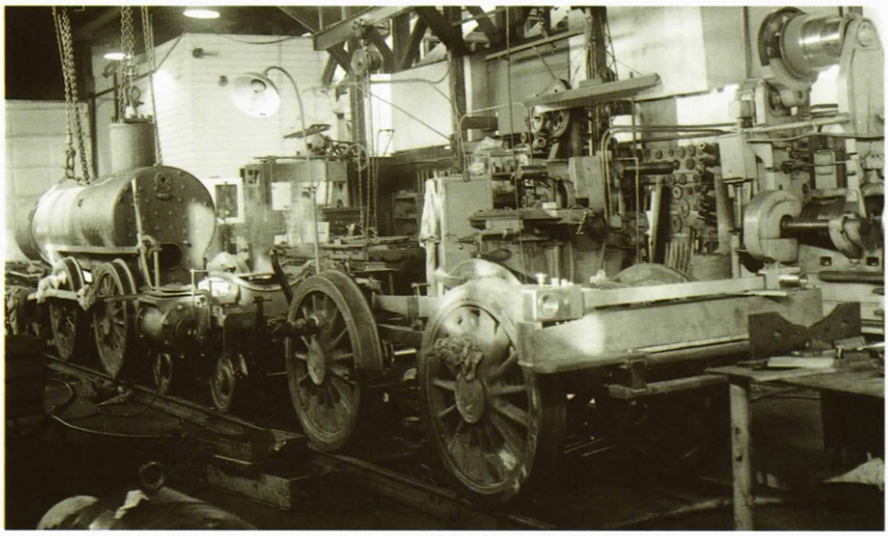


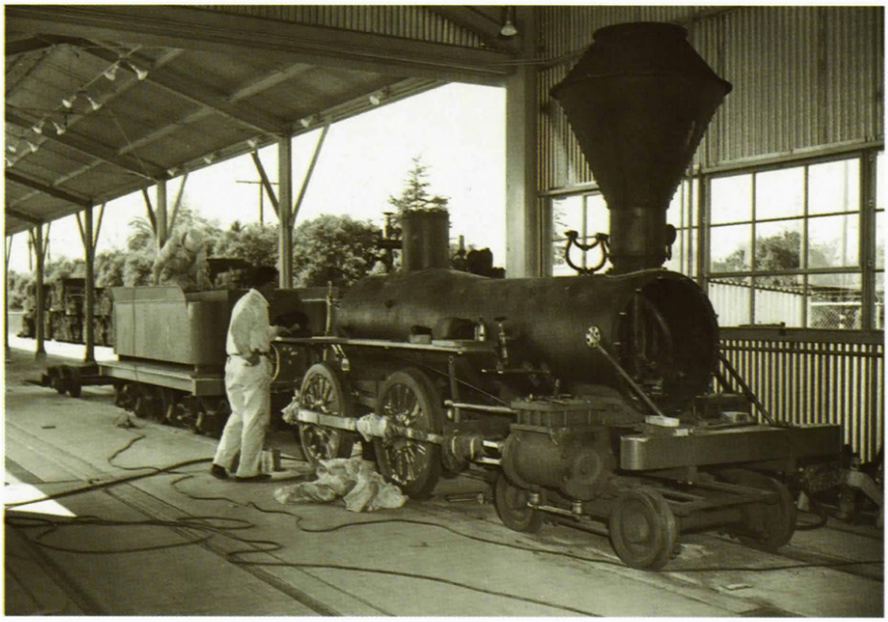
A Sense of Scale

WALT DISNEY'S SENSE of scale is evident throughout his Park. Much as storyboards were the standard procedure for planning an animated cartoon or a feature motion picture, Walt had every Disneyland attraction and building produced as an intricate miniature scale model before actual construction was begun.

The scale for each building was set by the art director in charge of the design, and approved by Walt in miniature form. He even used an optical device that performed as an inverted periscope so he could check the eye-level view of the miniature buildings.

In Walt's opinion, one major advantage Disneyland had over film production was that he had the option to change something after it was done. In a sense, Disneyland became Walt's never-ending story—it was always evolving.



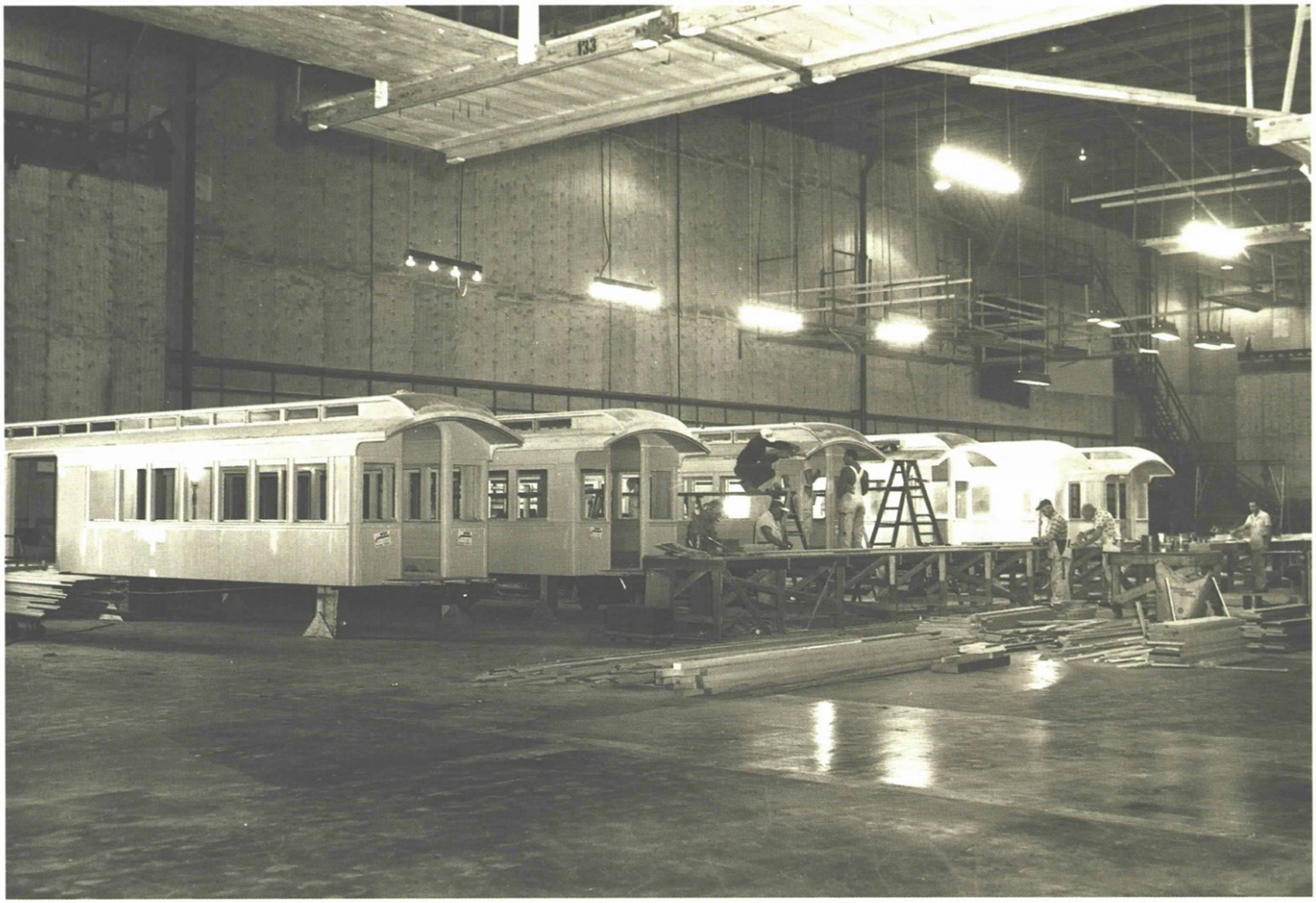


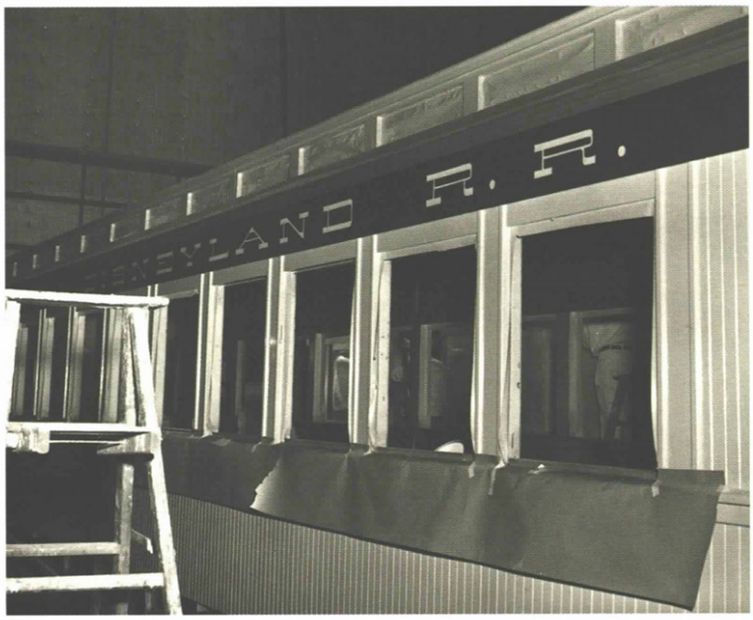
Top: Inside the Disneyland "Roundhouse" facility (actually a rectangular building), assembly of locomotives Nos. 1 and 2 is well along in early 1955. The Dixon-built boilers are going into place atop the Wilmington Iron frames; note the heavy duty machine tools at right, along the wall. CPHS collection, © Disney Enterprises, Inc.

Bottom: Disneyland engine No. 1 is approaching completion mechanically, although much cosmetic work remains along with addition of the cab and completion of the tender. After more than four decades, both of the Park's original locomotives remain in top operating condition. Ward Kimball collection, © Disney Enterprises, Inc.

Next, an outline of a steam engine was drawn on the blackboard, to 5/8ths scale. Looking at the shape and size, Walt said, "That's it. That's the right size for the Park." Roger suggested the cab be enlarged slightly to accommodate the engineer and fireman. Walt agreed, and it was increased to approximately 3/4ths of full size. Walt's choice for the size of the Disneyland railroad equipment underscored his natural ability to recognize proportion.

The gauge of the track for 5/8ths scale (based on standard gauge) turned out to be nominally 36 inches, the same as America's most common (full-sized) narrow track gauge. According to Ward Kimball—who, like Walt, has an acute sense of proportion—if one looks at a full-sized narrow-gauge locomotive, such as his Baldwin Mogul, on a three-foot track, the rail spacing appears narrow. But with 5/8ths scale and three-foot gauge tracks, the locomotives appear to be operating on standard-gauge tracks. The relative proportion of Disneyland's engines to their track gauge was therefore quite realistic.





Above: All six coaches for the Santa Fe and Disneyland Railroad's passenger train are under construction in one of the Burbank studio's huge sound stages. In this early 1955 view, wood superstructures are nearly completed on the steel-framed cars.
Gerald Best photo, Ward Kimball collection, © Disney Enterprises, Inc.

Left: Exterior painting has been completed on this coach circa April 1955; just to the right of the ladder (in left foreground), a painter works inside, with window openings masked to protect the car's bright yellow exterior. To the right (looking through the coach), workers on ladders are spraying a color coat on the next car's side.
Gerald Best photo, Ward Kimball collection, © Disney Enterprises, Inc.



Walt's favorite passenger car was the combination baggage-coach; it reminded him of his teen-age days in Missouri, when he served as a news butcher on the Missouri Pacific. In this 1960 view, Disneyland locomotive No. 2 E. P. Ripley *is seen "at speed" with the baggage-coach and the rest of "Retlaw 1" (the passenger train's designation among Park cast members) in tow.* Gerald Best photo, CPHS collection, © Disney Enterprises, Inc.

When Stanford Research Associates released its projection of attendance, it was clear that three trains would be needed to handle the expected passenger loads. Knowing that he was already substantially over his $11 million budget, Walt made two critical decisions: First, only two trains would be constructed initially; another could be built later, when more capital was available. Second, he would finance construction of the trains with money he could borrow on his personal Prudential life insurance policy.

Walt retained ownership of the railroad through WED, his private company, which became an operating lessee under Disneyland, Inc. Thus, WED became the owner and operator of the Santa Fe and Disneyland Railroad. (In 1960, Disneyland, Inc. became a wholly-owned subsidiary of Walt Disney Productions, when ABC Paramount and Western Publishing sold their interests in Disneyland to the Disney company.)

Overflow!

With the decision made to build the world's largest scale-model locomotives for his Park, Walt moved on to other projects while the machine shop turned into "Broggie's Iron Works." Construction began on the two engines and tenders. Work was also begun on a 5/8ths scale replica of an 1890s-era passenger train. Bob Gurr produced the design, and construction was performed inside Stage 3 at the studio.

The train consisted of four straightforward wooden coaches, named *Navajo Chief*, *Colorado Rockies*, *Land of Pueblos*, and *Painted Desert*. Also included was a car called a "combine," because it combined seating for 42 passengers with a Wells Fargo Express and baggage compartment. Walt was particularly interested in having this car on the line; it reminded him of the one he'd worked on during his news butcher stint on the Missouri Pacific. The final noteworthy piece of rolling stock was an open-platform observation car, named *Grand Canyon*, to bring up the rear of the train.

Construction plans for Disneyland's locomotives were adapted

Disneyland's Special Coach

MANY YEARS AFTER the Park's opening, management decided a VIP coach was needed for treating special guests to a private tour of Disneyland. Ken Kohler, then superintendent of transportation, suggested converting observation car *Grand Canyon* into a lavish parlor car. Such cars were typically referred to as "varnish"; often lavishly decorated with brass fixtures, fine woods, and ornate chandeliers, they were furnished to provide luxurious accommodations for railroad executives and wealthy businessmen.

Bill Cottrell, Retlaw's president, liked the idea; work was begun in July 1974 to completely renovate the coach. The interior mahogany paneling was sanded and varnished, and Victorian gold-leaf designs were stenciled onto the curved ceiling panels. Under Cottrell's personal direc-

Following retirement of the original Disneyland passenger train, Retlaw 1, in July 1974, the coaches were stored in the roundhouse facility. Soon after, refurbishment work was undertaken on former observation car Grand Canyon*; it emerged as Disneyland Railroad VIP parlor car* Lilly Belle. *Here, it brings up the rear of a train departing Main Street Station on September 1, 1976—appropriately attired for the nation's bicentennial.* Scott Rhodes photo, used by permission of Disney Enterprises, Inc.





The interior of parlor car Lilly Belle *features varnished woodwork, plush furnishings, and a custom-woven wool rug. The ornate car regularly trails excursion trains, but special rides are restricted to lucky Park guests.* CPHS collection, © Disney Enterprises, Inc.

tion, claret-colored plush velour was selected for curtains and seats, and a custom-woven floral wool rug was installed. Historical items—such as samples of Carolwood Pacific Railroad stationery and tickets—were framed and hung, along with pictures from the personal Disney family album. Highlight of the displayed items was Walt's prized yellow, 1/8th scale caboose.

The exterior of the coach was repainted, and the coach was renamed *Lilly Belle* in honor of Mrs. Walt Disney. Red, white, and blue bunting was applied to the exterior for America's bicentennial celebration. The first VIP guests were Japanese Emperor Hirohito and his wife—on an official visit to the United States during its 200th anniversary.

Mrs. Disney ordered a private printing of special tickets so her friends could ride in the luxurious parlor car. Otherwise, the *Lilly Belle* was locked to protect its valuable displays. The ornate car can still be found on the Disneyland Railroad, trailing behind regular excursion trains to provide special rides for lucky guests. Walt's prized caboose, however, is now displayed in Disneyland's Main Street Station.

directly from the drawings Eddie Sargeant had done for Walt's 1/8th scale *Lilly Belle*. (Sargeant's drawings, of course, had themselves been adapted from the original blueprints for Central Pacific Railroad 4-4-0 No. 173.) Disneyland's engine No. 1 would be identical to the smaller *Lilly Belle*, except for the addition of a Westinghouse air compressor to supply braking. For sharp-eyed trivia fans, another minor difference could be found in the 19th century oil paintings—one of a bull elk, the other of Yosemite Valley—on the side panels of the ornate headlamp. Although the images are identical to the miniature, the sides upon which they appear are reversed on the Park's engine No. 1. The color scheme also was altered, and the wood cab (left natural on the miniature) was painted bright red on No. 1.

While No. 1 was similar to the *Lilly Belle*, there was considerable effort to make No. 2 distinctive, even though it was mechanically identical. Walt wanted it to depict a later period than the woodburners of No. 1's late-19th century era. Railroad historian Jerry Best, who had become good friends with Walt and Roger, was asked to recommend a typical turn-of-the-century coal-burning locomotive. Drawing upon his collection of 80,000 steam locomotive photographs, Jerry suggested Baltimore & Ohio Railroad No. 774, built in 1887 by the Rogers Locomotive and Machine Works of Paterson, New Jersey.

The design featured a straight "cap stack" (with coal, there were no flaming wooden embers to be concerned about); rounded domes; a green-and-black color scheme; and a light gray smokebox in front of a polished, blued-steel boiler jacket. The roof of the cab was rounded (No. 1's had a peaked roof), and the pilot on No. 2 was a stubby type designed for use with a railroad coupler (No. 1's was a pointy affair, designed for use with a drawbar). The headlamp on No. 2 was round, and No. 1's was rectangular.

Eventually running out of working space, the machine shop overflowed onto the huge motion picture sound stages with its projects. For a while, railroad freight and passenger cars shared space with film production. All was not cozy and friendly between the studio departments and the Imagineers, however: The production people complained that Disneyland projects were interfering with filming.

Pressure mounted until the company rented space for film production on nearby Warner and Universal studio lots. As soon as each backstage utility building was finished at the Park site in Anaheim, it became a warehouse for railroad cars, ride mechanisms, Autopia automobiles, vintage Main Street vehicles, and an endless array of odds and ends for the Magic Kingdom.

Railroad Builders

While locomotive construction continued at the studio, contracts were established with two suppliers to produce key components: Dixon Boiler Works to construct the boilers, and Wilmington Iron Works to cast the wheels and frames. All other parts could be—and were—fashioned in the new studio machine shop.

When Dixon's general manager reported that the boilers were ready for installation on the frames, Wilmington's management notified

WED that the boilers could not be brought into its union shop. Learning this, Roger Broggie called Joe Fowler, administrator of Park construction, and told him that the roundhouse building would be needed earlier than expected.

In one week, Fowler's crew had the foundation poured, work track laid, and the building's shell up and ready to receive parts for the engines—from not only the two suppliers, but also the studio. For the retired admiral, who had commanded the cutting of a jungle airstrip in a matter of hours or the installation of a major bridge in one night, knocking out the roundhouse building was a rather easy task. Walt's uncanny ability to put the right person in the right position was exemplified by his selection of Joe Fowler.

By the time construction was completed on the two locomotives,



The Admiral

DISNEY LEGEND JOE FOWLER, a 32-year veteran of U.S. Navy service, was commander of a Seabees unit during World War II. At the peak of wartime construction efforts, his unit completed a new warship every two days. Rear Admiral Fowler retired from the navy in 1948.

Joe was enticed out of retirement with Walt's offer to build Disneyland. What was originally to be a temporary construction assignment in 1954, however, turned into a distinguished 18-year career. He stayed on as vice-president of Disneyland operations, then was later assigned to Walt Disney World, where he held three positions: vice-president of engineering and construction for Walt Disney Productions, WED Enterprises chairman of the board, and director of construction for Disney's Buena Vista Construction Company. He retired in 1972, and died in 1994 at the age of 99.

At the 1990 Legends of Disney awards ceremony, Roy E. Disney recounted this popular story about "The Admiral":

"Lacking enough money to complete Tomorrowland, Walt decided to install a display of the giant squid and some of the elaborate set pieces and miniatures used in producing 20,000 Leagues Under the Sea.

"Through his connections with the navy, Joe was able to obtain a large model of the brand-new nuclear submarine *Nautilus*. Two uniformed sailors were assigned to stand watch at the display, to make sure it wasn't damaged and to add a touch of official navy status to the presentation.

"One afternoon, Joe happened to walk by and spotted the two sailors leaning against the background wall of the display with their hats cocked back, smoking cigarettes and talking to two female Park guests. He headed straight for the friendly little group. 'Sailors,' he barked. 'You're supposed to be standing guard duty. Put out those cigarettes and get back to your station!'

"Looking at the older civilian, one of them said, 'Who the hell are you, Pops?'

"Straightening up, Joe said, 'Hold that thought, Sailor.' He quickly turned and headed straight for his office in the backstage area behind Tomorrowland.

"A few minutes later Joe returned to the display, having changed into his full dress admiral's uniform. Standing within a noselength of the trembling young sailor with the quick mouth, Joe asked, 'Does this answer your question as to who I am, Mister?'

"'Yes, Sir!' snapped back the reply combined with a smartly executed salute.

"The two sailors were outstanding examples of the U.S. Navy for the remainder of their duty at Disneyland."

six passenger cars, the freight cars, and the caboose, total costs were $240,065. The locomotives had cost $40,511 each, and their tenders, $5,010 each. The passenger train's six coaches totaled $93,332, and the freight train, $55,691.

While building railroad rolling stock was a major project, building a reliable railway to run it on was quite another feat. It had been learned at Carolwood that a variety of specialized skills were required to lay railroad trackage. Fortunately, a veteran railroader read an article appearing in the Los Angeles Times in spring 1954; it mentioned Walt's plan to run a steam railroad around Disneyland. The railroader—Earl Vilmer, a quiet, mild-tempered railroad veteran with a yearning for adventure—thought there might be an opportunity to help out, at least during the line's construction phase.

Vilmer placed a call to the studio, asking for Walt Disney. One of Walt's secretaries listened to him explain his interests and qualifications, then routed the call to Roger Broggie. After a brief introduction, Roger invited Earl to lunch.

At a restaurant near the studio, Vilmer described his 20 years as a foreman for the Kansas City Southern Railroad. He told how he'd been given a direct commission as a captain in the Army Corps of Engineers in 1943. His assignment was to command a steam and diesel railroad battalion that shipped 10 million tons of war supplies and building materials from the Persian Gulf to the Russian Front, where the Allies were battling the Nazis. "We hauled the stuff to Tehran, where the Russians took over," recounted Vilmer of his Trans-Iranian Railroad experience.

After the war, Vilmer spent a year in France, helping sort out that country's heavily damaged rail lines. He then was hired by United States Steel Corporation to build a railroad through the jungles of Venezuela, accessing the company's important postwar mining operations. Following completion of construction, he stayed on as assistant mechanical and electrical superintendent. After three years, he returned to California for an extended vacation. He had been back in Los Angeles only a few weeks when the Disneyland newspaper article prompted him to call Disney Studios.

Roger was impressed with Vilmer's background, and with his quick answers to technical questions regarding the intricacies of track installation and railroad operations. By the time the waiter brought the check, Roger had decided to hire Earl. Within a month of giving notice to U.S. Steel, Earl was working in a trailer at the Park site, designing the track layout and roundhouse operations and preparing construction plans for the two locomotive tenders.



Disney Legend Joe Fowler—seen here testing the soon-to-open Disneyland-Alweg Monorail's guideway in spring 1959—was a guiding force behind Disneyland's remarkable 11-month completion.
Roger Broggie photo, CPHS collection,
© Disney Enterprises, Inc.

The First Trip

Final assembly of the locomotives was done under Earl Vilmer's supervision at Disneyland by Harley Ilgen, Lloyd Ainsworth, Dick Bagley, and a small crew of skilled technicians.

On Friday, June 17, 1955, while Walt was visiting the roundhouse, Earl informed him, "We'll have No. 2 steamed up tomorrow morning around eight o'clock if you're ready to try her out."

Walt quickly replied, "I'll be here."



Frames, springs, brake shoes and rigging components, and wheelsets are being assembled into trucks at the Disney studios, circa early 1955. Soon, they will be completed and installed under the passenger coaches, themselves under construction in a nearby sound stage. Roger Broggie photo, Ward Kimball collection, © Disney Enterprises, Inc.



Left: Construction of trackage for the Main Street Horse-Drawn Streetcars is under way in spring 1955 at Disneyland; here, the teardrop loop at Main Street Station is being assembled. In the foreground, a worker applies muscle power to a rail-bending device, straightening out a kink in the curve prior to spiking the rails in place on the wood crossties. Roger Broggie photo, © Disney Enterprises, Inc.

Below: The loop is nearly complete as opening day approaches. Earl Vilmer checks the track gauge with a measuring tape as a welder and his apprentice install the spring-loaded switch mechanism. When completed, the switch will automatically direct horse-drawn streetcars to the right as they approach, keeping traffic flowing in the proper counter-clockwise direction here at the main entrance to Disneyland. © Disney Enterprises, Inc.



On its first run with a consist of coaches—just a few days prior to July 4, 1955—locomotive No. 2 (soon to become the E. P. Ripley*) lacks completion of much decorative trim work, painting, striping, and lettering.* CPHS collection, © Disney Enterprises, Inc.



Shortly thereafter, the E. P. Ripley*'s lettering is nearly complete, and the boiler jacketing and all brass brightwork are receiving a thorough polishing in front of the roundhouse facility.* CPHS collection, © Disney Enterprises, Inc.

Following a three-hour steamup procedure begun by Earl and his crew at five o'clock the next morning, Walt climbed into the cab, moved the Johnson bar forward, tugged twice on the steam whistle, and pulled open the throttle. With Harley Ilgen in the fireman's seat and this book's author (as a wide-eyed 12 year old) sitting on the tender, Walt eased No. 2 from the roundhouse into the bright California sun and onto the main line. Harley, a 30-year veteran of railroading, was designated Disneyland's Chief Engineer (unless, of course, Walt was in the cab).

During the maiden run, Walt stopped for a series of publicity photographs taken with a three-foot-tall Mickey Mouse doll dressed in a railroad engineer's overalls and cap, a red bandana, and a blue-and-white checkered shirt identical to Walt's. (The ever-alert publicity staff had planned for the photo shoot to coincide with the roll-out of the first steam engine, and provided the shirt for Walt to wear. Few probably noticed that Walt's and Mickey's shirts matched, but it was typical of the attention to small details elevating Disney's operations above its competitors.)

The lamp still hadn't been installed in the locomotive's headlight housing, but no one seemed to notice. As Walt piloted the smooth-running steam engine around what was finished of the track that Saturday in mid-June, it was obvious that many areas of the Park needed a great deal of work to be ready in one month for the grand opening. By comparison, adding the headlamp was a very minor detail.

For a few hours though, Walt put aside his concerns over what remained to be completed. He thoroughly enjoyed running his new engine; it was fully five times bigger than the *Lilly Belle*. Later that afternoon, when Harley Ilgen's shift ended, this book's author assumed the position of fireman and received his first lesson in steam engine operation. Walt commented, "At least we'll have the



On Saturday, June 18, 1955, Walt poses with Mickey Mouse for pre-opening publicity photos at Disneyland; behind him is author Michael Broggie, age 12. Roger Broggie photo, © Disney Enterprises, Inc.

railroad operating on opening day."

Soon thereafter, Walt hosted an Independence Day party for the studio's employees and their families. The main attraction was riding the new trains part way around the Park. Walt ran locomotive No. 2 while Ward Kimball was engineer on No. 1. The Firehouse Five Plus Two provided rousing renditions of Dixieland music; it was a wonderful day of fun, food, and entertainment.

Perhaps the only guest who wasn't completely thrilled with how the day started was Ward Kimball's wife, Betty. She had been told by her husband that everyone would be dressed in 1900s-period costumes; as it turned out, only the Kimballs showed up in elaborate turn-of-the-century attire. Betty was furious and embarrassed, thinking that Ward had played a trick on her because he liked to dress in outlandish costumes. She ended up going all the way home to change.

Later that night, for the first time, fireworks appeared in the skies over the construction site. Eventually, the pyrotechnic show would became a nightly tradition at the "Happiest Place on Earth."

The first complete trip around the track didn't occur until July 10. The track was complete, except for one section where heavy trucks had



Walt Disney and Ward Kimball share Santa Fe and Disneyland Railroad operating duties on July 4, 1955, during a pre-opening party thrown for Disney studio employees.
Roger Broggie photo, CPHS collection, © Disney Enterprises, Inc.

to haul their loads into the Park. When the last load was delivered, the section crew completed the 6,357 feet of track.

An "E" Ticket Ride

Earl Vilmer's rather complex railroad operating plan called for each train to do a complete, non-stop tour around the Park and return to its own station (there were two: Frontierland and Main Street). This required one train to pass on a siding while the other was loading and unloading its passengers.

Engine No. 1, styled after wood-burning locomotives of the 1880s, would call only at Frontierland, and would haul the freight train's three livestock cars, two gondolas, and caboose. The Main Street Station would be served by engine No. 2, since its styling matched turn-of-the-century Main Street. It would haul the passenger consist (a railroad term for the cars in a train), consisting of the 1890s-era wood, clerestory-roofed combination baggage-passenger car, four coaches, and observation coach *Grand Canyon*.

Earl figured that it would be exciting for passengers to watch as one train passed within inches of the other, going 10 miles an hour. Walt



liked the idea too, since the trains would provide a complete trip around the Magic Kingdom without stopping, assuring Park guests a thorough introduction to all themed areas. He also liked the realism: Park guests could watch as the brakemen worked the system of manual switches, opening and closing them to divert one train onto the siding in order to pass the other train, standing in its station.

The railway fare was 50 cents for an adult and 35 cents for a child. When the Park opened, general admission was one dollar for adults and 50 cents for children. There were no separate "junior" prices—nor were there ticket books. Each attraction required a separate ticket, purchased for cash at ticket booths located throughout the Park. (In the



Cattle Cars

DURING A MORNING BREAK from animation drawing at the studio, Ward Kimball decided to take a walk and visit the temporary construction site on Stage 3 where the railroad cars were being assembled for Disneyland. He was admiring the fine woodwork being built on steel frames and modern suspension systems when he spotted one of the livestock cars. Ward commented to the workers who were installing the wood siding that the horizontal slats should be further apart so the passengers could see out better.

"How far apart?" one worker asked.

"Well, I'd make it 'bout 12 inches," Ward advised.

Later that same afternoon, the telephone rang in Ward's office. "What in the hell are you doin' giving orders on the construction of the cattle cars?" questioned an angry Walt.

"Those cars are for people to ride in," Ward said. "They won't be able to see much because the openings between the slats are too small."

The space was actually four inches, exactly the same as a real stock car. "We didn't reduce the space even though the car is 5/8ths of full scale," Walt pointed out.

"The space should be at least 12 inches," Ward countered. "You want 'em to see the Park, don't you?" he asked rhetorically.

Walt was silent for a moment. "I want people to know how it feels to be a cow or a sheep riding in those cars," he said flatly.

After the Park opened, the guests complained about the stock cars. "It's bad enough we have to stand in line, but this makes us feel like a bunch of cows," was a common remark.

Without acknowledging Ward's suggestion, Walt called Roger Broggie. "Let's improve the visibility of the cattle cars."

"We could take out all of the horizontal slats above four feet," Roger recommended. Then he added, "I know that Ward had some ideas, too."

"Yeah, I know. Ward's usually right, but he doesn't have to know every time it happens," Walt replied. "Let's do it the way you've suggested."



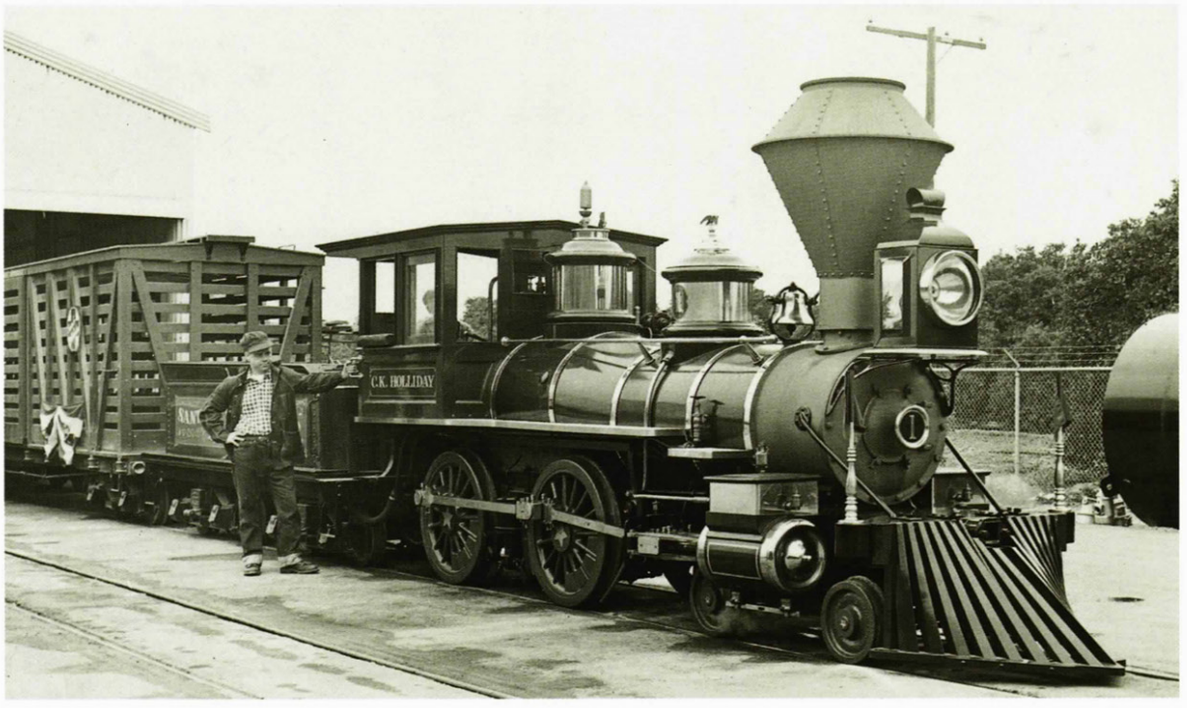
early days, Cash Control would weigh the change to determine daily coin receipts.) By popular demand, the first ticket book was introduced in October 1955; its top value was a "C" ticket. A junior admission was introduced in the second season of operation, along with the "D" ticket. The famous "E" ticket finally appeared in June 1959. The Santa Fe and Disneyland Railroad was always among the highest-priced rides in the Park, regardless of whether cash or a C, D, or E ticket was used.

As with a number of the Park's initial operations, planning was superior to execution. Within the first week of Disneyland's opening to the public on July 18, 1955, a young brakeman got overly anxious and missed his timing while closing the switch to the Main Street passing track. The passenger train was standing at the Main Street Station when engine No. 1 approached on the main line pulling the freight train. The manual switch was set in the "open" position to divert the freight train onto the passing track so it could go around the passenger train.

For some unknown reason, however, the brakeman closed the switch before the rear truck of the caboose had cleared. While the caboose's front truck followed the rest of the train onto the siding, the rear truck started down the main line, toward the passenger train. As a result the five-ton car went sideways, with its rear end swinging out over the crowded walkway passing through the tunnel below the train station. Fortunately, there was an ample concrete slab to stop it from

Opposite and left: Prized among Disney Railroad collectibles is an original ticket with all of its detachable parts in place. The first ticket was the yellow version with a conductor's check and six stubs designed to introduce guests to the many themed areas. Later, the green ticket showed the actual depot stops at Main Street, Frontierland, and Fantasyland, prior to construction of Tomorrowland's depot. After this station opened, the railroad stopped issuing special tickets. Pat Renfro collection, © Disney Enterprises, Inc.

On July 2, 1955, Ward Kimball inspects locomotive No. 1 C. K. Holliday *at the roundhouse. Two days later, he would serve as engineer aboard No. 1 during the studio employees' party.* Richard Jackson photo, Ward Kimball collection, © Disney Enterprises, Inc.





Locomotive No. 1 steams quietly between runs at the Frontierland Station, during the studio employees' party on July 4, 1955. Roger Broggie photo, © Disney Enterprises, Inc.



By 1958, when this photo was taken, the two-train-two station operating pattern had been replaced by the one still in use today. Instead, trains (three locomotives and three trainsets were now available) all ran in a clockwise direction around Disneyland, avoiding the need for sidings. Roger Broggie photo, © Disney Enterprises, Inc.

going any further, but the caboose derailed upon impact.

As the ride supervisor rushed to call the roundhouse to report the incident, general commotion ensued. During the excitement, the young brakeman seized the opportunity to avoid trouble by going to his locker, picking up his clothes, and leaving the Park. He was never seen again. A guest who had been riding up in the cupola (the observation box on top of the caboose) remarked as he left the station, "That's one thrilling ride you've got here!"

The train operation was shut down for the balance of the day. That night, a large crane was moved in from the backstage construction area and used to lift the caboose back onto the track. Except for a few scrapes on the concrete, no damage was done. A valuable lesson was learned by all the remaining brakemen and conductors, however.

Reliable Performers

By spring 1958, with the addition of engine No. 3 *Fred Gurley* and the Tomorrowland Station next to the Richfield Autopia ride, the two-train-two station leapfrog operation became a footnote in Disneyland's history. The circular railroad line was divided into 11 "blocks" (electronically protected track zones); signals at the beginning of each block told locomotive engineers if the next zone of trackage was clear. A series of red and green lights were the indicators: A red light meant the engineer was required to stop, until a green light indicated clear track ahead.

According to Jim Cashen, who began as a Junior Engineer the day the Park opened, there has never been a collision on the main line during all the railroad's years of operation. With the reliability of steam power, the trains have had the least mechanical failure-down time of all the Park's attractions. As well, more visitors ride the trains than any other Disneyland attraction.



Locomotive C. K. Holliday *and the freight train rest between runs at the July 4, 1955, pre-opening studio employees' party. Upon Disneyland's opening two weeks later, the freight and passenger trains were run using a complex plan requiring one train to pass while the other was standing at its station. The freight train stopped at Frontierland to load and unload passengers, while the passenger train called only at Main Street Station.* Roger Broggie photo, CPHS collection, © Disney Enterprises, Inc.







Above left: The Santa Fe and Disneyland freight train's caboose was a favorite with kids, particularly those lucky enough to find a seat in the raised cupola.

Above right: Engineer Harley Ilgin stands to the left of locomotive No. 2 while guests board the passenger train at Main Street Station.

Left: Here, we see Harley in a close-up. Three photos, Gerald Best, CPHS collection, © Disney Enterprises, Inc.



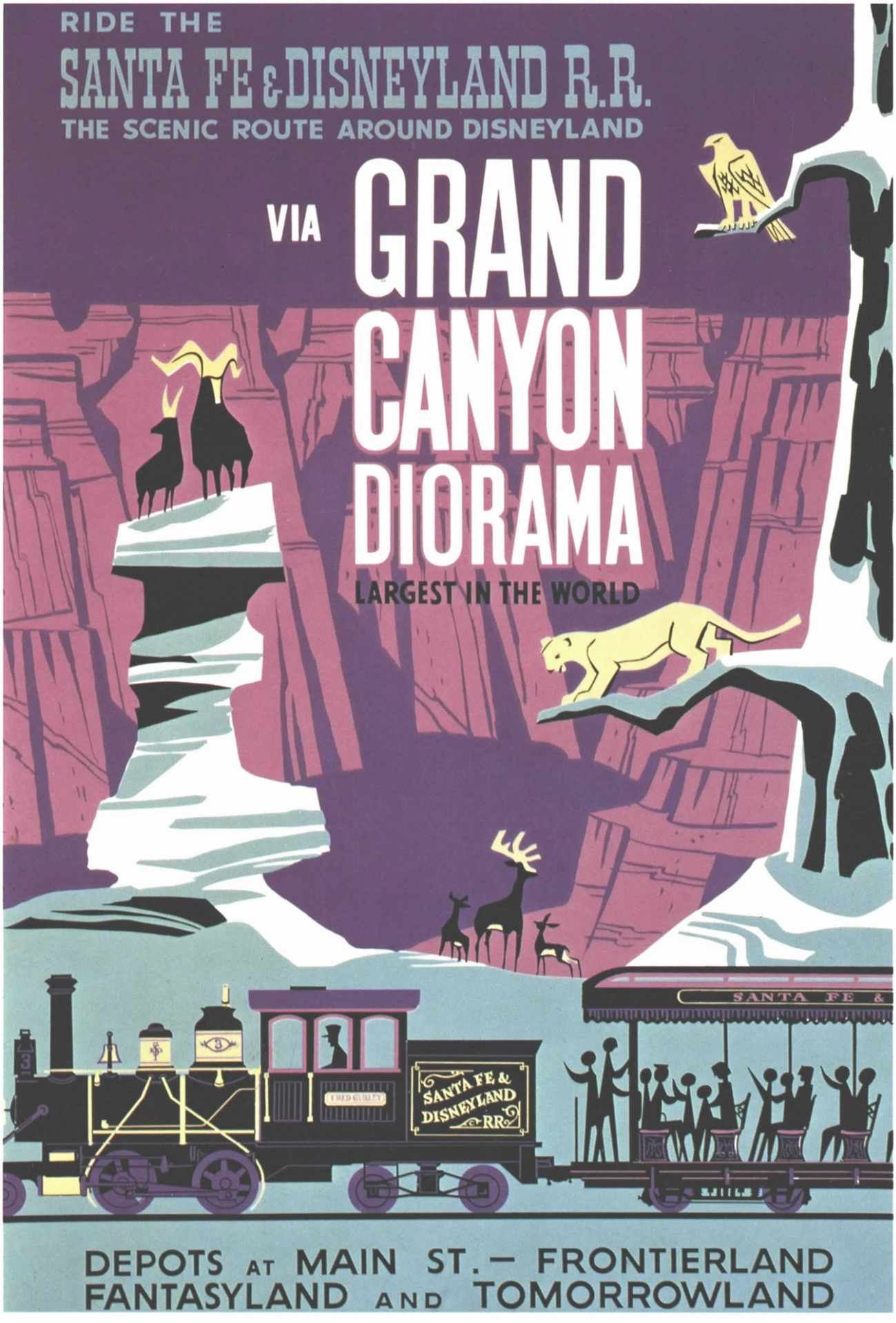
Hazardous Duty

ACCORDING TO KEN KOHLER (one of the conductors on the Santa Fe and Disneyland Railroad during its first operating season), besides the obvious dangers inherent in operating heavy moving equipment like a train, the crew faced another hazard no one was trained to handle.

Chief Engineer Harley Ilgin chewed tobacco. For an unlucky conductor riding the step of the car behind the engine, there was the ever-present chance that his clothing—vest, hat, shirt—or even his face might end up with brown spots from Harley's rather disgusting habit of spitting chew while the train was in motion. The crew began to complain to WED management about Harley.

Harley maintained that he had permission directly from Walt to chew. Most likely he did because management never did anything about the complaints. In fact, whenever one of the more vocal complainers was on the conductor's platform—while the train was moving at its maximum speed of 12 miles per hour—Harley would launch a wad into the air that was destined to find its unwary target.

Harley's good aim and bad attitude made for a dangerous combination, Ken recalls. Even so, he was the best engineer the line had.


RIDE THE
SANTA FE & DISNEYLAND R.R.
THE SCENIC ROUTE AROUND DISNEYLAND
VIA GRAND CANYON DIORAMA
LARGEST IN THE WORLD
SANTA FE &
SANTA FE & DISNEYLAND RR
DEPOTS AT MAIN ST. — FRONTIERLAND
FANTASYLAND AND TOMORROWLAND



Expansion

Fantasy, if it is really convincing, can't become dated, for the simple reason that it represents a flight into a dimension that lies beyond the reach of time.

—Walt Disney

Because of the tremendous success of Disneyland—drawing three million guests and producing $10 million in revenues its first year—it quickly became apparent that the Park's railroad was woefully under-equipped to handle the demanding passenger load. In its first year, the line carried 775,495 passengers; by year two, the count rose to 1,329,553. In 1958, the figure was an astonishing 2,206,158 passengers.

By the end of the second year, as crowds flocked to Disneyland, Walt became convinced that he needed another train to handle the passenger load—and he thought of an inexpensive solution. He had noticed a picture of Ward Kimball's Hawaiian plantation locomotive, *Chloe*, on Roger Broggie's bench in the machine shop. (Roger had built some parts for the locomotive and, as a token of appreciation, Ward had given him the photo.)

Ward fondly refers to this episode in his relationship with Walt as "The Great Train Robbery." During a telephone call that got Kimball out of bed early on a Sunday morning, Walt suggested that if Ward would loan his engine to Disneyland, he could come down to the Park on Mondays or Tuesdays (when the Park was closed) and run it all he wanted. Ward protested that *Chloe* was a wood burner, and would pose a fire hazard in the Park. Walt responded that this wasn't a problem: "We'll convert it to burn oil just like No. 1 and No. 2."

Ward held his ground, telling Walt that he wasn't interested in moving either of his prized locomotives to Disneyland. "You can

This poster promoted rides aboard the Santa Fe and Disneyland Railroad's "Scenic Route Around Disneyland Via Grand Canyon Diorama." Opened in 1958, the diorama—billed as the world's largest—added interest to an otherwise-lackluster portion of trackage between Tomorrowland and Main Street U.S.A. Brett Thompson collection, © Disney Enterprises, Inc.

find another engine—there's plenty of them sitting around the country," he responded. According to Ward, Walt didn't speak to him for several weeks after he refused the offer. But Walt did follow Ward's advice; he asked Roger Broggie to begin looking for another locomotive among whatever vintage narrow-gauge stock had survived the scrappers' cutting torch.

An Ugly Duckling

Again, Roger turned to Jerry Best for help. "We need to add another engine to the Park," he told the renowned railroad historian. "Instead of building one from scratch, Walt thinks we can save money by buying an old narrow-gauge steamer and restoring it like Kimball did with his two old Baldwins."



Jerry Best and Roger Broggie meet with the Witbeck brothers early in 1957 to inspect one of their vintage 0-4-4T plantation steam locomotives. CPHS collection.

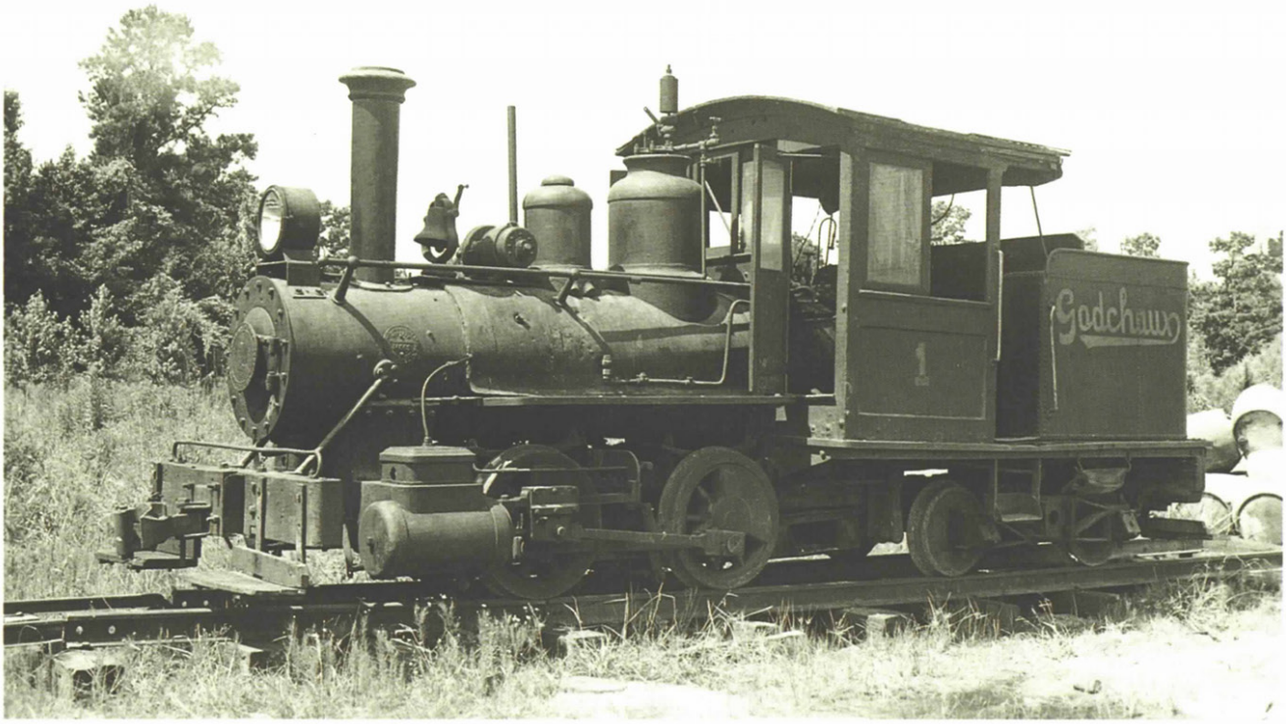
Jerry agreed with Walt, and recommended contacting C. W. Witbeck in Hammond, Louisiana. He knew Witbeck as a fellow railroad photographer who also bought and sold old puffers. Additionally, Jerry had learned that C. W. and his brother owned several little engines once used to haul sugar cane from three Louisiana plantations to the shipping docks in New Orleans. The 24-mile line they'd operated on had been known as the Lafourche, Raceland & Longport Railway.

In a few days, Jerry called Roger back with good news. The Witbecks had several locomotives to look at, including one built by Baldwin in 1894 that was in good condition. So, Roger and Jerry flew to New Orleans to check things out. On the way there, they decided it would be easier to keep the selling price reasonable by not mentioning they were from Disney. Jerry would introduce Roger as a client who wanted to do a restoration project.

Prior to the trip, Jerry discovered that the 1894 Baldwin locomotive had spent its first 15 years on the sugar run, making two 48-mile round trips to New Orleans every day. Then, in 1910, it had been converted to a yard switcher at the Godchaux Sugar Company's mill in Reserve, Louisiana. Part of its conversion equipment included a boiler-mounted pump and hoses, used to wash sugar from its wheels and undercarriage. The locomotive continued to operate as a switcher for the next 46 years until its sale, as scrap metal, to C. W. Witbeck in 1956. Compared to Disneyland locomotives Nos. 1 and 2—which were 35 feet long even though they'd been built to 5/8ths scale—this engine was smaller. At 25 feet, four inches, it would fit nicely into the Park.

When they arrived in New Orleans, Roger and Jerry rented a car and drove 35 miles north to Hammond and the Witbecks' yard. Upon arrival they were shown the engine, which was sitting alone in a field of weeds, exposed to the Louisiana weather. The metal was deeply rusted, and the wood had rotted.

After a closer inspection that took most of an hour, Jerry pronounced that all running gear on the "Forney"-style Baldwin 0-4-4T (the "T" indicates the engine was a "saddle-tanker," with water and fuel storage on the main locomotive boiler and frame, rather than on a separate tender) appeared to be intact—albeit hidden under years of neglect. The boiler was shot, and the water tank's copper bottom had completely corroded. Even so, the locomotive's frame, wheels, rods,



For decades, hard-working little steamers such as Godchaux Sugar Company No. 1 switched yards at sugar processing mills in Louisiana, and hauled processed sugar and sugar cane byproducts to nearby railroad interchanges for forwarding. Following their retirement in the 1950s and 1960s, most were scrapped—save a few sold to brokers and private individuals. This one was lucky; it wound up with a new career at Disneyland after its purchase by Roger Broggie. Gerald Best photo, CPHS collection.

cylinders, and domes appeared sound, along with the valves and levers on the boiler's backhead (inside the cab). Jerry tried the industrial engine's bell, and it rang true even though it was caked with road grime and coal soot. He then wiped away the dirt covering the solid brass builder's plate, which read: Baldwin Locomotive Works-Philadelphia-1894-No. 14065.

"Heck, with a little elbow grease and some paint, it'll be a fine little puffer for the Park," Jerry said reassuringly.

"If this is what they call 'good' condition, it would be interesting to see what they would sell as 'fair,'" Roger retorted. "They'd probably have to hand it to us in a gunny sack."

Returning to Burbank, Roger met with Walt and Mickey Clark, vice president of WED. Based on Jerry's field inspection, Roger suggested that he and Clark return to purchase the engine. The following week they met with the Witbecks and made an initial offer of $1,000; the brothers countered for $1,500. Negotiations ended by settling at $1,200, with the understanding that the Witbecks would arrange for rail transportation to California for an additional $300. The deal was sealed with a handshake and a check for half the amount. The balance was due upon delivery to Los Angeles.

Elbow Grease and Canvas

In July 1957, the engine arrived on a flatcar at Southern Pacific's Taylor Yard, south of Glendale. Roger arranged for a large truck to haul it to the studio. It was being unloaded at the back lot, near the machine shop, when Walt showed up to see his new prize.

The sorry little engine, with its faded and peeling switching-yard



Above: The tattered little 0-4-4T is unloaded at the Burbank studio's backlot, near the machine shop, in 1957. Roger Broggie photo, CPHS collection.



Right: After the cab, boiler, and various fittings were removed, the locomotive's frame was found to be structurally sound. At the studio, it is moved onto temporary "tracks" made of railroad ties. Roger Broggie photo, CPHS collection.

yellow paint and dark rust everywhere, didn't make a very positive first impression on Walt. Anticipating his reaction, Jerry Best had provided a large drawing of how it had looked when new, and Roger taped it to the side of the tender. "It doesn't look much like the drawing, Broggie." Walt said. "But, for $1,200, it is sure a lot cheaper than the $100,000 we spent building the first two."

The locomotive was soon moved into the studio's machine shop. There, it was completely disassembled down to the last bolt under the direction of the shop's foreman, Arnold Lindberg.

The frame and all metal parts were sandblasted to remove rust and greasy residue. The old wooden cab was discarded; a new one, with curved windows, was designed and built of fine hardwood. The bell, whistle, stack cap, and grab bars were replated in brass. New brass boiler straps and collars for the steam dome and sand dome added more brightwork to the once-drab exterior. Dixon Boiler Works constructed a new boiler, while the machine shop built a pony (leading) truck—changing the wheel configuration to 2-4-4T—and added a coupler and pilot to the locomotive's front. The firebox was converted to burn atomized No. 2 distillate fuel instead of coal. Jerry Best's transcendent research turned up a drawing for an authentic headlamp; this was used to scratch-build one out of brass in the machine shop.

Final assembly was completed February 9, 1958. No. 3 was then loaded on a flatbed hauler and moved to Disneyland, where its dark green paint, blued-steel boiler jacket, and gold striping were applied. On March 27, it was test run for the first time around the Park.



Getting Things Done

THE EARLY OPERATIONS of the studio's machine shop are reflected in this account provided by Arnold Lindberg, who retired in 1994 after nearly four decades with the Disney company:

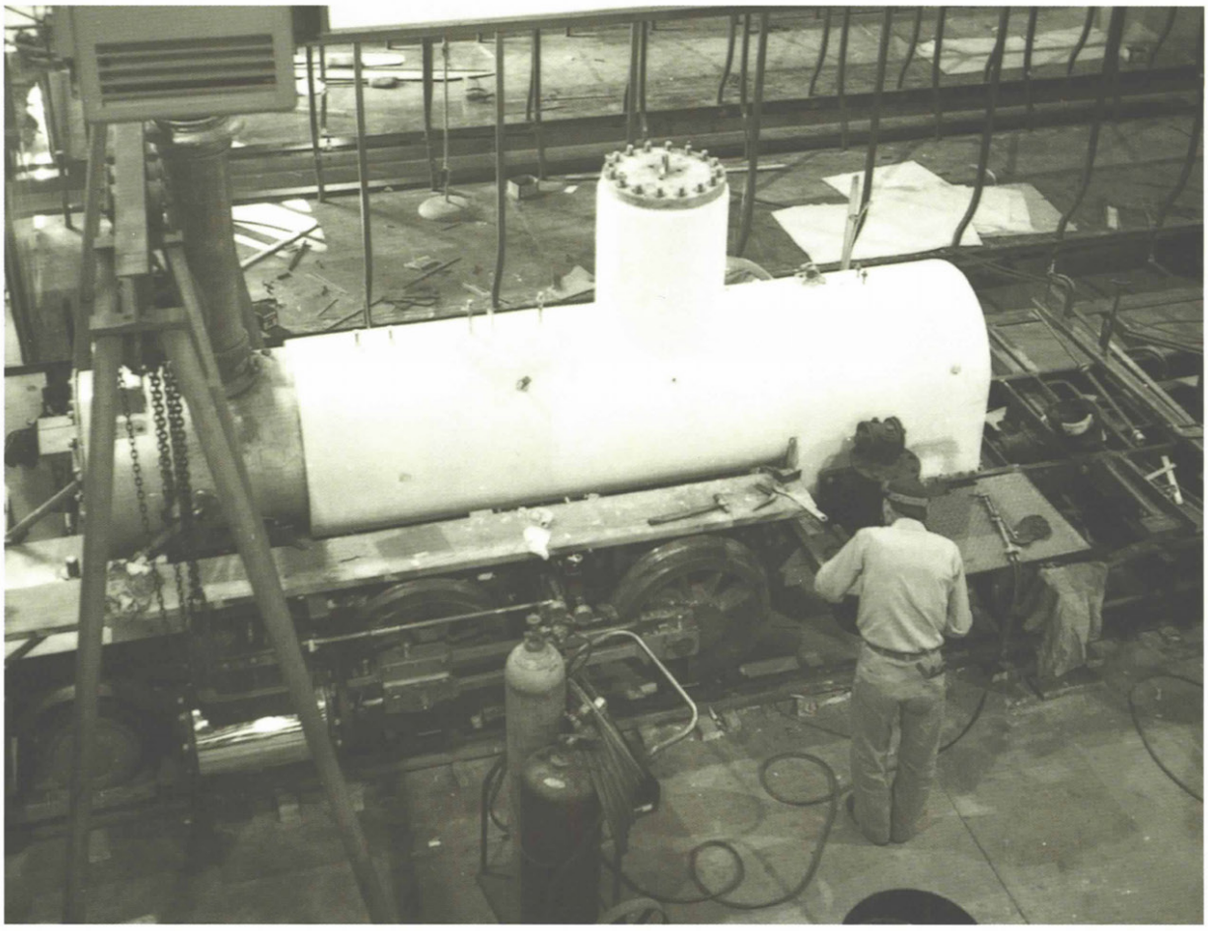
"When we were getting started building engine No. 3 for the Park, Roger Broggie gave three new apprentices the job of cutting up the engine's discarded pieces and scrapping them, which they did on their own time on Saturdays. They were Lee Biggens; Roger Broggie Jr.; and Al De Rosa. Roger Sr. gave the boiler and the water tank to the three young men so they could cut [these] up for a company that bought scrap metal. Instead of being paid by the hour for their labor, they were able to earn much more by sharing what the junk dealer paid them for the scrap.

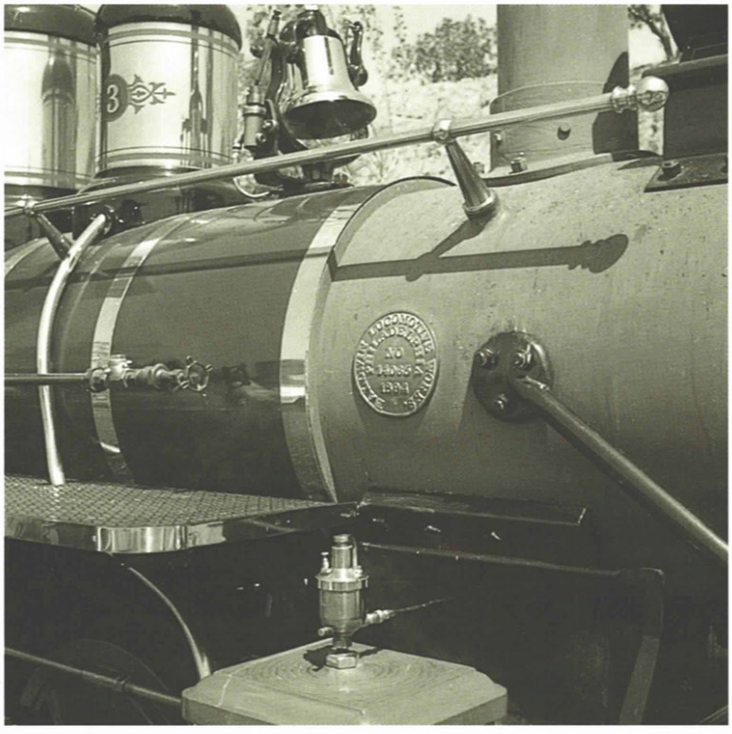
"The renovation of the engine was just beginning, and the remaining parts that weren't scrapped were laying all over the shop's floor. So, one afternoon, when I was the swing shift boss, I had just come in and was standing in the middle of all these engine parts. Roger came up and handed to me a green book: BALDWIN LOCOMOTIVES. He asked me if I had ever built a locomotive. I said, 'No,' looking around at the pieces. Typical of Roger's style of communicating, he said, 'Well, here's the book—do it.'

"Those were my marching orders. We didn't have thousands of work orders and everyone and his grandmother involved in approvals. Hell no, the studio wasn't run like that in the early days. We just did what we had to do to get the job done."



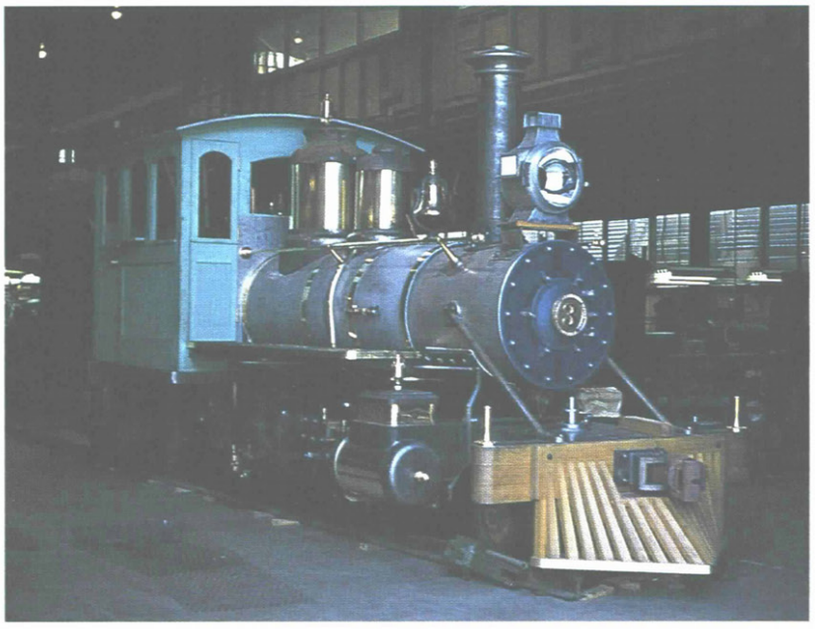
The cylinders, cylinder saddle, and frame of the future Fred Gurley *are sandblasted to remove 60 years of accumulated paint, rust, and grime.* Roger Broggie photo, CPHS collection.





Above: The locomotive's new boiler—already mounted on the frame—is being fitted at the studio with lagging (insulating material) prior to installation of metal jacketing. Just above the engine, a new trainset of Narragansett-style cross-bench coaches is being constructed for the Santa Fe and Disneyland Railroad. Roger Broggie photo, CPHS collection.

Left: The builder's plate on Fred Gurley*'s smokebox gives away the locomotive's vintage Philadelphia origins.* CPHS collection, © Disney Enterprises, Inc.





Above: The Fred Gurley *is nearly complete in this late February 1958 view, taken inside the studio's machine shop. Soon, it will be loaded aboard a flatbed trailer and hauled off to Disneyland, where it will receive a fresh coat of paint before entering service.* Gerald Best photo, CPHS collection, © Disney Enterprises, Inc.

Above right: In March 1959, Jerry Best snapped this view of the nearly completed Fred Gurley *inside the studio's machine shop, along with many of those who helped rebuild the engine. From left to right, those known are Bob Booth, Sr.; "Sputnick" (his nickname);__; Chester Hickey; John Gaynor (in tender); John Mamulski; __; Parker Burryson; Arnold Lindberg (in cab); __; Neil Gallagher; Knud Westergaard; Horace DeVille; Salvatore Cursincero; and Marty (last name unknown).* CPHS collection.

Named *Fred Gurley* after Walt's friend and chairman of the Atchison, Topeka & Santa Fe Railway Company, the "ugly duckling" Forney became operational for the public on March 28, 1958. Total cost for the engine and attached tender: $37,061.

The first official "duty" for the *Fred Gurley* was inaugurating the new Grand Canyon Diorama, which Walt created as a show element for his prized railroad system. Artists applied 300 gallons of paint in 14 colors, depicting the terrain and sky of the famous natural wonder, to the world's longest seamless hand-woven canvas. It measured 306 feet long and 34 feet wide.

A wooden tunnel was built linking Tomorrowland and Main Street U.S.A., and a display of life-like animals in their native habitats was installed. As the train passed through the diorama, guests saw an entire day—beginning with the first colors of sunrise followed by an afternoon thunderstorm with a glorious sunset—accompanied by the music of Ferde Grofé's "Grand Canyon Suite." Total staff time to create the attraction topped 80,000 hours; the cost was $367,814 plus another $2,374 for sound reproducers on the trains.

In honor of the diorama's première, a 96-year-old Hopi Indian—Chief Nevangnewa—performed a ritual blessing of the exhibition. At the ceremony's conclusion, Walt piloted the *Fred Gurley* through the diorama and on around the Park, pulling the excursion train. He was accompanied in the cab by Fred G. Gurley himself.

This was a particularly proud day for Walt: he had the opportunity to return the favor of special treatment to the man who had been responsible for Walt and Ward Kimball's 1948 *Super Chief* trip to Chicago. His guest, Fred Gurley, was also the chief executive who had approved the Santa Fe's participation in Disneyland. It was a





Above: Freshly painted and ready to be "steamed up," locomotive No. 3 Fred Gurley *poses in front of the Disneyland roundhouse facility in late March 1958.* Gerald Best photo, CPHS collection, © Disney Enterprises, Inc.

Left: As Fred Gurley *prepares for a full day's operation on a September 1962 morning, it takes its first few "chuffs" with the cylinder cocks open, allowing potentially harmful condensation (water that builds up in the cylinders when the engine stands for any length of time) to be vented along with the "spent" steam.* Roger Broggie photo, © Disney Enterprises, Inc.



Centennial Celebration

ON AUGUST 15, 1994, *Fred Gurley* marked its 100th year as an operating steam locomotive. A celebration was held at Disneyland that morning, with invited guests joining Ward Kimball, Ollie Johnston, other VIPs, a host of Disney characters, and the Disneyland Band for a special ceremony. Ron Dominguez, in his last official function as the Park's executive vice president, served as master of ceremonies. (Ron had the distinction of being born and raised on the orchard property that became Disneyland. One of the Park's original cast members, he climbed the ranks through the years to become its executive V.P.)

Mickey Mouse, dressed in engineer's overalls, was at the throttle to "highball" the honored puffer into the Main Street Station. (Highball is a railroad term for "proceed." It derives from an early signal system utilizing a rope—on which a ball was threaded—and a pulley. When the ball was raised, the train could go on.) A permanent commemorative plaque was unveiled on the side of the engine, then guests were given a collector's badge and invited aboard for a ceremonial centennial trip around the Park.

Thanks to an excellent maintenance program, the *Fred Gurley* will likely chuff around the Park for another 100 years.



Ron Dominguez and Ward Kimball point to the just-unveiled 100th anniversary plaque on Fred Gurley. © Disney Enterprises, Inc.





rewarding relationship for both companies.

Joining the freight and passenger trains in 1958 was a Narragansett-style excursion train, designed by Bob Gurr. Built in the machine shop, the cars featured open-air, front-facing bench seating to ease loading and unloading, with a maximum capacity of 325 passengers. Construction of the five open-sided excursion cars cost $93,516. (Entering and exiting the original wooden passenger train—known as Retlaw 1—was tedious since each coach had only front and rear doors. Its passenger capacity was 268.)

That same year, the three cattle cars and two gondolas on the freight train were redesigned. Seating was modified, with all benches facing inward—toward the Park—ideal for viewing Walt's new diorama attraction. The transformation was accomplished by altering the walls and ceilings, placing elevated seats lengthwise, and installing red-and-white striped canopies on each car. A third modified gondola car was added as well, joined by a fourth in 1959. When completed, the 218-foot-long Holiday Red train had a consist of seven cars plus the caboose, and a capacity of 264 passengers.

Above left: Patterned after open-air "Narragansett"-type cross-bench excursion equipment once used by New England trolley and railroad operators, the five cars of the Santa Fe and Disneyland Railroad's third trainset—known as the Excursion Train to cast members—trail Fred Gurley *in late 1958 as it pulls into the Fantasyland Station.* Roger Broggie photo, © Disney Enterprises, Inc.

Above right: The interior of Walt's original Disneyland passenger train coaches is seen here circa mid-1955. Although pleasant and functional, these cars unfortunately were slow to load and unload at the Park's busy train stations because of their single end doorways. The passenger train was used only sparingly after the mid-1960s and finally retired in June 1974. Roger Broggie photo, © Disney Enterprises, Inc.

Lost Locomotive

Still needing more passenger capacity as Park attendance grew—and additional back-up motive power to allow for routine maintenance—Roger Broggie began looking for another locomotive. Having enjoyed such good results with engine No. 3, Walt agreed that purchasing another vintage Baldwin locomotive was much more economical than building one from scratch. In addition, the historical aspects of early locomotives appealed to Walt's interest in preserving America's steam railroad heritage.

However, additional excursion-train cars could not be acquired in the same manner. Although Walt wanted this equipment to appear "vintage," he also needed it durable enough to withstand large crowds

and daily operation. Modern engineering made steel frames, safer suspensions, and lighter weights possible. This, when combined with the 5/8ths scale of the cars, required they be custom-built.

In his search for another Baldwin, Roger once again contacted C. W. Witbeck and was disappointed to learn that the other sugar cane locomotives had been sold. Not long afterward, Roger was in his office one morning skimming through a copy of RAILROAD magazine when he spotted an advertisement—placed by a New Jersey railfan, Jay L. Wulfson—offering to sell an old narrow-gauge steam locomotive. He called the seller and requested the name and construction number listed on the builder's plate. Roger gave this information to Jerry Best, who once again provided help.

Searching through his vast and efficient file of information, Jerry was able to find some background on the engine's pedigree. The locomotive's construction number, 58867 (which served more or less as its builder's serial number), confirmed that it had been built by the Baldwin Locomotive Works of Philadelphia in April 1925. The original owner, Raritan River Sand Company of central New Jersey, supplied sand to builders in the Northeast, and had used the little 0-4-0T locomotive to haul gondola loads of sand from the river to a receiving yard outside the small town of Raritan.

After 25 years of service, a fleet of trucks replaced the steam engine. According to Andrew Morrison, who has been affiliated with the Pine Creek railroad since 1954, Jay Wulfson bought the engine for $400 and moved it to his private railroad park near Freehold, New Jersey. It ran for several years before developing serious leaks in the saddle tank that straddled its boiler. (To create more energy efficiency, heat radiating from the boiler would preheat the water in the saddle tank before it entered the boiler chamber.)

The saddle tank was removed and replaced by a tender equipped with a 250-gallon water tank that was adapted from a domestic heating oil tank hidden within a sheet metal compartment behind the coal com-



The locomotive that eventually became Santa Fe and Disneyland Railroad No. 4 had humble origins. Beginning life as a saddle-tanked sand hauler in New Jersey, it later served at a Garden State park lettered "Pine Creek" and designated No. "1." William S. Young photo, CPHS collection.

partment. The tender was constructed at Pine Creek using the wheels and frame from a side-dump sand car. A deck and superstructure made of wood covered the sheet metal.

After several years operating at Pine Creek, Wulfson moved the engine to a regional amusement park called Cowboy City, under development near Farmingdale, New Jersey. There it was used as a construction engine and would have served as a back up to another engine, an H.K. Porter, purchased as the regular passenger locomotive. Unfortunately, the little engine failed to pass its state boiler inspection and Wulfson decided to sell it.

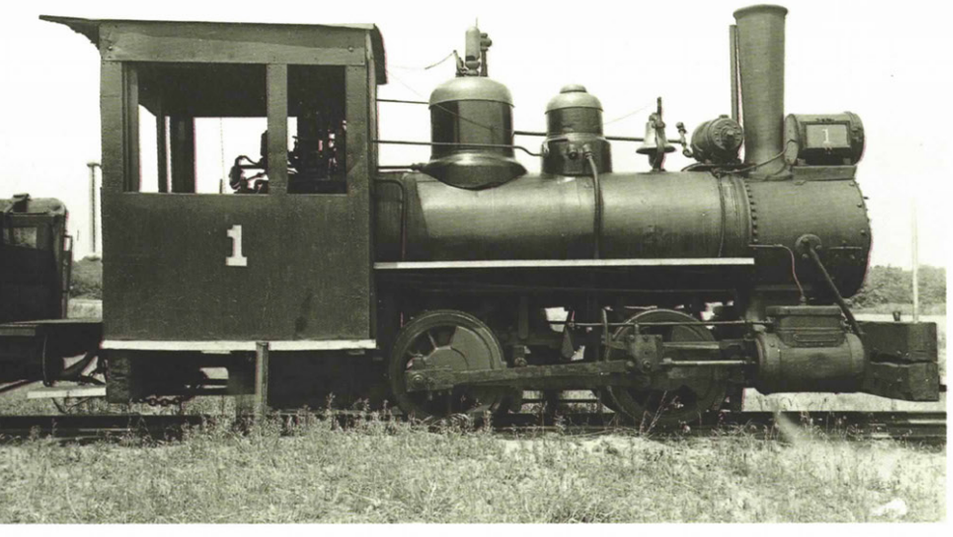
Roger arranged for a plane flight, again taking Jerry Best along as his railroading expert. Landing at New York's La Guardia Airport, the two drove to Cowboy City. Even though their "find" was in considerably better condition than No. 3 had been, it still needed nearly everything refurbished or replaced. The engine, known as a "four coupled" switcher, had all of its weight on the driving wheels. It had been designed for light industrial work, shuffling cars around in yards and terminals.

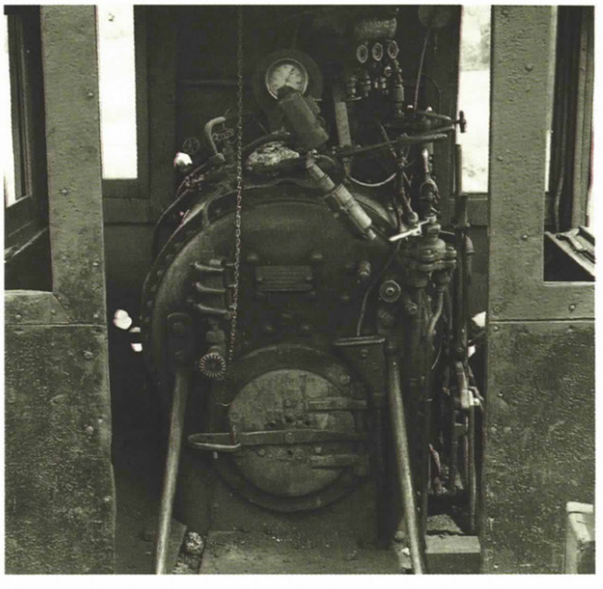
With its short wheelbase, the engine could operate on curves with as little a radius as 50 feet. It was powerful for its size, having a tractive effort rating of 5,160 pounds; No. 3's was slightly less, at 4,810 pounds. (Tractive effort is the amount of energy exerted by an engine's driving wheels; ratings are developed taking into account cylinder size, driver diameter, and weight on drivers [quite often, this is less than the total engine weight]. In short, it's the amount of power that's available to pull a train.)

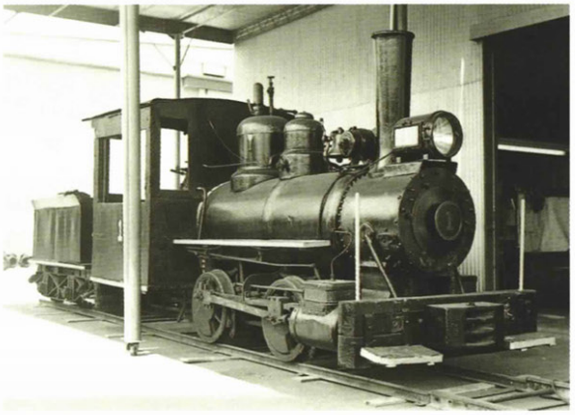
A deal was quickly made to purchase the engine for $2,000. Roger made arrangements to transport it inside a Santa Fe automobile hauler, to avoid any vandalism in transit (some had been experienced with No. 3). Instructions were given for it to travel via the Baltimore & Ohio Railroad and Southern Railway to New Orleans, thence via the Southern Pacific Railroad to Los Angeles. However, Walt received a telegram advising it had been hauled by mistake on the Pennsylvania

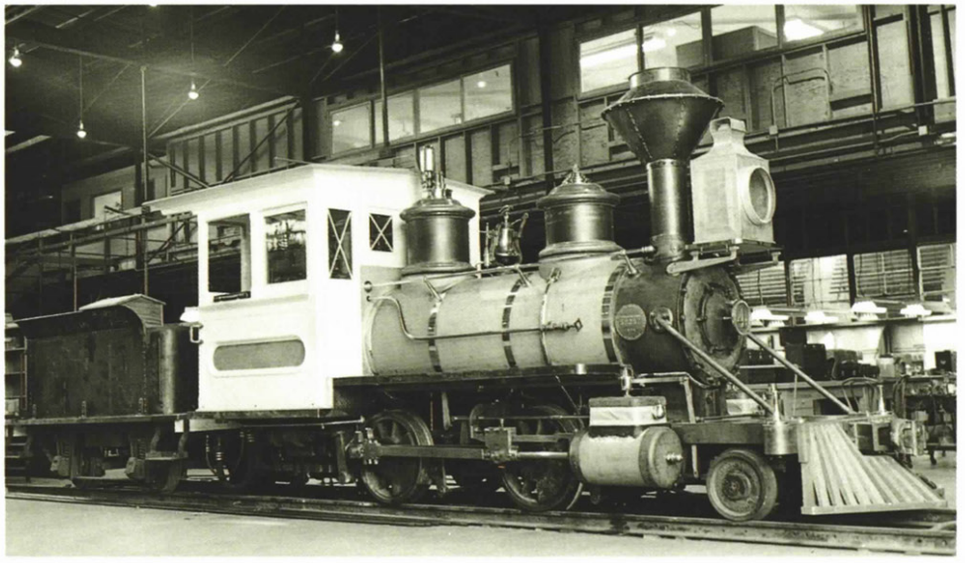
Below left: An interesting side note brought to the author's attention by reader Andrew Morrison: When the Pine Creek engine was rebuilt by Disney and the tender (only a portion seen here) discarded, the wheels and frame were given to Ward Kimball who used them to build the open "3rd Class Passenger Car" of his Grizzly Flats Railroad. The frame of the car is just like a narrow gauge dump car, not a passenger car, which is evident in the LGB garden gauge model of Kimball's train set. Gerald Best photo, CPHS collection.

Below: This view looks into little No. 1's cab from the "tender." The engineer's seat is to the right; the fireman sits to the left. The business end of the boiler, known as the "backhead," clearly shows the firedoor and the many gauges and levers for monitoring the engine's functions. Gerald Best photo, CPHS collection.









Above: This view was taken as the future Santa Fe & Disneyland Railroad locomotive No. 4 arrived at the studio in 1958. The little 0-4-0 would soon be converted to a 2-4-0 wheel arrangement by WED's talented staff. Gerald Best photo, CPHS collection.

Above right: Drawing on the talents of Ward Kimball for its design, Bob Gurr for the Imagineering concepts, and a team of WED craftsmen for execution, locomotive No. 4 Ernest S. Marsh *is seen at the studio in March 1959. The little 2-4-0 is ready for its trip to Disneyland, where it will be finish painted and lettered prior to entering service.* Gerald Best photo, CPHS collection, © Disney Enterprises, Inc.

Railroad to somewhere in Pennsylvania!

The car was traced by the Santa Fe, which found it in a switching yard outside Pittsburgh. Walt got really angry (as he could on rare occasions) and called the president of the Santa Fe, Ernest S. Marsh, for help. Marsh contacted his peer at the Pennsylvania Railroad and had the car hauled all the way back to Newark. From there, it traveled the B&O to Philadelphia, continuing on—as planned—to New Orleans then Los Angeles. It finally arrived on June 19, 1958, without any new scratches.

The Importance of Ernest

With this newest acquisition moved into the studio's machine shop, Jerry Best spent every spare moment covering the progress of its renovation. Ward Kimball and Jerry met with Bob Gurr and Roger to discuss the design. Ward recommended that No. 4 be made to look like the old *Montezuma*, the first locomotive built for the legendary Denver & Rio Grande Railway. The original *Montezuma*, a 2-4-0 with a four-wheel tender, had been built by Baldwin in 1871.

Roger thought such a reconfiguration would be relatively easy, but he'd need the original blueprints. Jerry contacted a friend at Baldwin; a set was sent out the following week. After a review of the plans with Bob Gurr and Ward, Roger drafted a proposal to Walt—including a picture of the original *Montezuma* from Jerry's file.

Walt liked the design, and gave it his approval with a note that said, "spend whatever it takes to do it first class." He knew that he'd already saved money by buying the old locomotive rather than building one from scratch.



Walt Disney shows his delight in railroading as he pilots the Ernest S. Marsh *around Disneyland. This fourth Santa Fe and Disneyland Railroad locomotive entered service in July 1959.*
© Disney Enterprises, Inc.

What followed was nearly a year of cleaning, fabricating, plating, and assembling. Jerry was there nearly every day, with his Nikon camera and black-and-white film, recording the progress of Arnold Lindberg and his crew. As with No. 3, the frame and major propulsion components could be salvaged, but the boiler was worthless and the smokebox was rusted clear through. Everything was completely redone: Fleming Metal Fabricators was contracted to build a new four-wheel tender; a new boiler was supplied by Dixon Boiler Works; a new cab was built of hardwood; and the domes, headlamp, and smokestack were modified to look like those on the original *Montezuma*. Commending the quality of the work, Jerry Best remarked, "When it was done, it was in better condition than when it was [new] at Baldwin." Total cost for the purchase and restoration was $57,070.

On March 1, 1959, this fourth and newest Disneyland locomotive was moved by truck on the Santa Ana Freeway to the Park's new roundhouse for final painting (bright red with gold trim). Walt decided to name the engine for Ernest Marsh, then-president of the Santa Fe; the railway had just agreed to the first five-year renewal of its participation in the Santa Fe and Disneyland Railroad.

The *Ernest S. Marsh* went into service July 25, 1959, completing the Park's collection of four steam locomotives. Together, these workhorses have traveled the equivalent of 200 times around the world—in complete safety.



Scripted Magic

DISNEY ACTOR AND long-time studio employee Pierre "Pete" Renoudet's voice perfectly mimicked that of a droll station master's, announcing train arrivals: "Your attention, please. The Santa Fe and Disneyland deluxe passenger train now arriving from a trip around Walt Disney's Magic Kingdom." Pete later recorded the familiar spiel that today remains in use on the Disneyland Railroad.

For a nostalgic view of Disneyland in the early 1960s, here—reproduced in its entirety—is the script used for narrating the tour on board the trains.

Santa Fe and Disneyland Railroad
Live Narration
Revised, December 21, 1962

Good (morning . . . afternoon . . . evening) ladies and gentlemen . . . Welcome aboard the Santa Fe and Disneyland (deluxe passenger . . . holiday special . . . excursion train). This train is typical of the celebrated pioneers of the rail which spanned our growing nation around the turn of the century. As we take you on a scenic round trip tour of the Magic Kingdom . . . we ask no smoking, remain seated, and please keep your hands and arms inside the train.

Beyond the embankment of tropical foliage lies Adventureland . . . where head hunters and vicious wild animals roam alongside the crocodile infested jungle rivers of the world. The Swiss Family Tree House rises 80 feet above the jungle, providing a spectacular view of Disneyland. Here too you may visit the exotic new Bazaar, the Big Game Shooting Gallery . . . Sunkist, Stouffer's fabulous Tahitian Terrace and coming soon, Walt Disney's Enchanted Tiki Room.

We are now rapidly approaching our first stop . . . Frontierland . . . Here Disneyland relives the Old West with such attractions as Slue Foot Sue's Golden Horseshoe, recently discovered Nature's Wonderland, exciting Tom Sawyer's Island, and a great new Aunt Jemima's Restaurant.

Continued development in this area will soon add a beautiful Old New Orleans section with its mysterious Haunted Mansion, the Blue Bayou Thieves Market, and authentic New Orleans Square.

Next stop Frontierland and Adventureland . . . Frontierland Station. As we leave the Frontierland Station and the old Santa Fe water tower . . . welcome aboard to those who joined us here . . . Remain seated while the train is in motion and no smoking please.

We leave the area of construction activity and travel through our first tunnel leading out into the wilderness.

Ahead, we pass by Disneyland's authentic Indian Village (when applicable) . . . where



Locomotive No. 4 Ernest S. Marsh *stops at Main Street Station with the cars of the "Holiday Red" train (as it was known to cast members) in tow circa the early 1960s. Originally built to resemble freight equipment, the train's gondolas and cattle cars in 1958 were modified to "river-style" seating (all seats facing inward, toward the Park) and joined by two additional gondolas. As modified, the new Holiday Red train could seat 264 persons aboard its gondolas, cattle cars, and caboose.*
© Disney Enterprises, Inc.



Little Ernest S. Marsh *exits the tunnel between Frontierland and Fantasyland in this fall 1960 view, with the Excursion Train consist in tow. In spite of its diminutive size, No. 4 has plenty of pulling power to keep Disneyland's trains rolling smartly along—even when fully loaded with happy guests.* Gerald Best photo, CPHS collection, © Disney Enterprises, Inc.

Indians of thirteen tribes perform ancient ritual dances. This is also the embarkation point for the Indian War Canoes which circle Tom Sawyer's Island.

There across the water is Fort Wilderness, the last outpost of civilization. Now we are heading into the true backwoods. Watch for Indians and wild animals along the riverbanks.

Some Indians are hostile, and across the river is proof . . . a settler's cabin afire. The pioneer lies in his front yard . . . victim of an Indian arrow.

Ahead is a friendly Indian village with the inhabitants active in their daily tribal chores.

Our train is rapidly approaching the newly explored Nature's Wonderland . . . an area of exciting true-life adventures in Beaver Valley, Bear Country, the great Living Desert and magnificent Rainbow Caverns.

Emerging from our next tunnel, we enter Fantasyland, the world of imagination, hopes, and dreams, dedicated to the young and the young at heart. Our landscaping artists are at present training plants for the future topiary garden of the gods in Fantasyland. And here you see examples of these shrubs grown in large wooden containers and shaped into beautiful animals and figures.

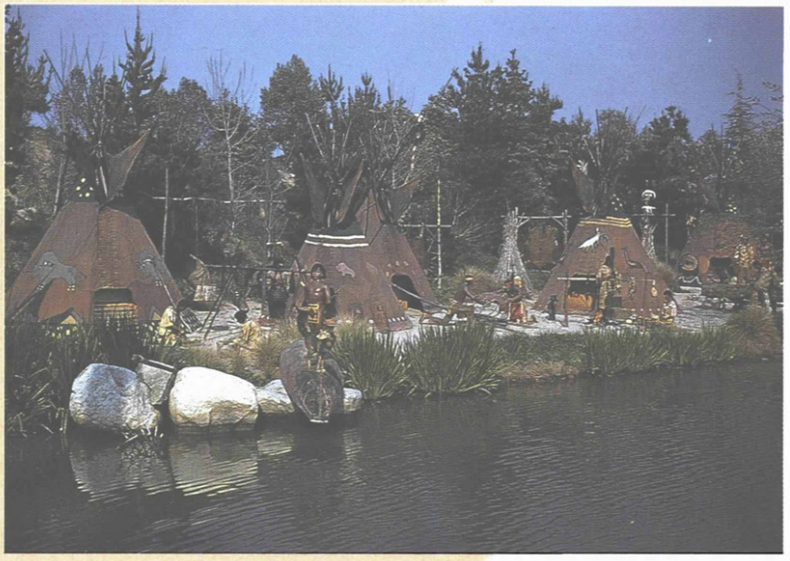
Please remain seated until the train comes to a complete stop and watch your step if you are disembarking. Fantasyland . . . Fantasyland Station.

We remind you to remain seated while the train is in motion. As we continue our tour you can see towering high above the Magic Kingdom the mighty Matterhorn Mountain with its racing Bobsleds. Running through the Matterhorn is the Disneyland Skyway.

Approaching Tomorrowland we step into the future and glance at new frontiers to come. The concrete beamway overhead carries the Disneyland-Alweg Monorail . . . the silent all-electric high speed transportation of the future . . . This is the first operating monorail system in America.

This highway in the sky extends through the parking lot to the Disneyland Hotel, and





Above left: A conductor throws a switch, enabling locomotive No. 1 to enter the main line of the Santa Fe and Disneyland Railroad. Gerald Best photo, CPHS collection, © Disney Enterprises, Inc.

Above: "Now we are heading into the true backwoods. Watch for Indians and wild animals along the riverbanks," cautioned the recorded narration aboard Disneyland's trains in the 1960s, as the train passed by colorful scenes such as this one along the Rivers of America. Roger Broggie photo, © Disney Enterprises, Inc.

back into Tomorrowland. The monorail trip offers an exciting aerial view of Disneyland.

Also in Tomorrowland is the fascinating underwater Submarine Voyage into the world of liquid space. Around this bend is the Autopia . . . Disneyland's freeway of the future where there's a smile in every mile. Poised and ready for blast-off from Tomorrowland is the towering Rocketship to the Moon.

Our next stop is Tomorrowland, gateway to the Grand Canyon. Tomorrowland . . . Tomorrowland Station.

(. . . . . punch [turn on] diorama tape)

(after tape) Ladies and gentlemen, the Grand Canyon at Disneyland is the largest diorama in the world.

Now we are approaching our Main Street Station. To those of you who are disembarking here, may we suggest a ride down Main Street on one of the many horseless or horsedrawn vehicles and a look at America during the last turn of the century. All Main Street vehicles lead to the central plaza and easy access to all the lands in the Magic Kingdom.

There are exits at either end of the platform; please use the one nearest you . . . Check your personal belongings . . . Watch your step and have a happy day (evening) in the Magic Kingdom.

Main Street . . . Main Street Station . . . Disneyland U. S. A.


Santa Fe
DISNEYLAND



Down by the Depot

Here you leave today and enter worlds of history, discovery, and ageless fantasy.

—Plaque on Main Street Station, Disneyland Paris

While Disneyland can be said to have two recognizable icons—Sleeping Beauty Castle and Main Street Station—it is the railroad one that first beckons guests. Crown of the Park's main entrance, the lofty Victorian structure greets visitors from atop a 20-foot earthen berm. On the parking lot side, a smiling Mickey Mouse face blooms on the hillside amidst colorful floral designs. Once inside the Park's entrance, guests venturing up the stairway to the train station's waiting room and platform are treated to one of the most outstanding views in all of Disneyland: a clear view up Main Street to the Park's central hub and its other iconic landmark, Sleeping Beauty Castle.

The Park's other railroad stations are much less imposing, but each has been created—in the Disney tradition—with form *and* function in mind. For the first time, the origins of all are described herein. Since stations have been added and removed over the years, and since some of the names have changed (as Disneyland itself continues to evolve), this chapter also serves as a history of the "towns" along the Santa Fe and Disneyland Railroad—today simply known as the Disneyland Railroad.

A newly poured concrete loading platform is installed at Main Street Station just a week prior to Disneyland's grand opening. Richard Jackson photo, © Disney Enterprises, Inc.

Main Street

Main Street Station uses an original design, intended to be reminiscent of the many stations dotting the countryside at the turn of the 20th century. The 270-foot-long station's exterior designer, Bill Martin, used forced perspective—various declining scales on the second- and









Left: From the staircase leading up to Main Street Station, Park guests are treated to this striking view of Main Street U.S.A., circa 1956. CPHS collection, © Disney Enterprises, Inc.

Top: The berm in front of Main Street Station is still being planted in this view taken in July 1955. Richard Jackson photo, Jim Jackson collection, © Disney Enterprises, Inc.

Above: In long-standing railroad tradition, the Main Street Station sign features the "town's" elevation and its ever-increasing "population" (total Park attendance). CPHS collection, © Disney Enterprises, Inc.





third-floor dormers—to create an illusion of height. The facia features brick and cut stone, with wooden framing around the doors and windows. Wrought-iron filigree accents the main building's roof line, and that of the platform wings; roofing shingles depict three different designs. Two huge clocks show their faces, one toward the tracks and the other toward Main Street.

On the building's south side is a long "Disneyland" station sign, listing the Park's ever-increasing population (total attendance) and elevation (138 feet above sea level). Two huge bay trees frame the structure, along with Chinese evergreen elms and India laurels.

The interior of the station has a capacity of 300, with bench seating inside and outside along the platform. Various displays have been installed and removed over the years. In 1968, Walt's miniature *Lilly Belle* locomotive was displayed in a wood-and-glass case. Over the case was a large sign that read: "Santa Fe. . . the railroad that built an empire—Lilly Belle . . . the train that started a Magic Kingdom."

In 1973 the model was moved to Walt Disney World, for display in the Walt Disney Story attraction on Main Street. It was returned to Retlaw Enterprises in 1981, when Walt's family finalized its settlement with the Disney company regarding ownership of certain properties (including the name "Walt Disney" itself). For over 10 years, *Lilly Belle* was displayed in the recreation room at Carolwood.

Daughters Diane and Sharon, however, favored having their dad's prized locomotive displayed again at Disneyland. Arrangements were subsequently made (through Retlaw Enterprises) to again exhibit the locomotive—this time joined by Walt's yellow caboose—at Main Street Station. To add interest to the display, the Park's attractions design staff assembled a complementary collection of vintage photographs. Many studio machine shop employees—who had contributed their talents to build the miniature railroad—were illustrated in this gallery.

Opposite above: Construction is well along on Main Street Station in this spring 1955 view. Roger Broggie photo, CPHS collection, © Disney Enterprises, Inc.

Opposite below: Main Street Station appears to be much taller than it actually is because of the use of "forced perspective" by its designer, Bill Martin. Roger Broggie photo, © Disney Enterprises, Inc.



Correct Time

A HUMOROUS STORY is told about Main Street Station's imposing clocks. It all started with guests complaining that the wrong time was displayed. In response, a maintenance worker went up and reset the clocks. However, soon more complaints were received, and again the clocks were reset. After several attempts were made to correct the problem, a management staff member accompanied the maintenance worker to the station, observing how the clocks were being set.

Following standard procedure—as he'd always done—the maintenance worker called the Park's telephone operator for the correct time. On a hunch, the manager decided to visit the telephone operator's office. He radioed the maintenance worker to again call for the correct time.

When the worker's call came in to the Park switchboard, the inquisitive manager watched as the operator looked out the window of her Main Street office. Her source of accurate time turned out to be the huge clock on the Main Street Station! The problem was quickly rectified.



Above: This genuine pump-style handcar has long been displayed on the siding in front of Main Street Station. CPHS collection, © Disney Enterprises, Inc.

Below left: This 1955 view of Frontierland Station shows the structure in its original location and before covered loading platforms had been built at both ends. CPHS collection, © Disney Enterprises, Inc.

Below right: Today, the New Orleans Square/ Frontierland Station and its water tower are located across the tracks from guests, who wait instead under a simple yet ornate wood "umbrella" structure. From the station agent's bay window, the once-familiar tappings of a telegraph key can be heard. © Disney Enterprises, Inc.

On the passing track outside the station is a genuine railway "pump"-style handcar, painted bright yellow with red striping. It was a gift to Walt from the Kalamazoo Manufacturing Company of Michigan.

Frontierland Station

When a depot was needed for the stop in Frontierland, the decision was easy: build the same ornate, Victorian-era wooden structure that Ward Kimball had designed for the 1949 Disney motion picture So Dear to My Heart. It was based upon a Lehigh Valley Railroad "flag stop depot" at Pottsville, New York; Ward had been inspired by reading an old book about railroad engineering and structures, dating from the late 1800s. In fact, Walt Disney had an even better idea: use the same structure that *was* in the film!

Struggling with his burden of financing the ever-increasing Park costs, Walt reluctantly asked Roger Broggie if he would approach Ward, to see if Kimball would be willing to return the depot that Walt had given to him for his backyard Grizzly Flats Railroad. Ward replied to Roger, "Hell no, that's not fair." Besides, Ward pointed out, he had completely rebuilt the station; it was now an actual building—not the original three-sided set piece.

Failing in that approach, Walt ordered the station built according to the same blueprints. The original, diminutive design was expanded to include double doors on the depot, covered loading platforms on both ends, and a separate freight office. "Just-right" Disney touches were added: a working set of weighing scales; vintage trunks and crates (one addressed to an uncle of Walt's who lived in Missouri); and an express wagon.

At the north end of the station stands a functioning wooden water tower, providing a source of replenishment for the locomotive tenders





From Movie Set to Train Set

"WALT DISNEY WAS VISITING my place in the late 1940s when the studio was shooting a film out in Porterville [California]," Ward Kimball remembers. "He told me, 'Your railroad needs a train station. Why don't you take the one we built for So Dear to My Heart—it'll just be stored away on the scene dock and probably never be used again.' Well, I thought this was a pretty good deal, a free train station. However, like most things in life, you usually get what you pay for."

A studio truck delivered the set to Ward's home in San Gabriel. When he and a friend tried to assemble it on a freshly poured concrete foundation, they had a devil of a time matching the pieces. "It was like assembling a three dimensional jigsaw puzzle. Without construction plans, we had to match the paint marks piece-by-piece. Then we brought in a big crane to hoist the roof. When it was set in place, the whole damned thing collapsed because there wasn't enough framing to support the weight of the oversized roof."

Since the depot had been built as a movie set, it had only three sides. Ward recalled, "We ended up taking the walls all apart and starting with a frame." About all Ward was able to salvage was the roof, the windows, and the doors. "It would have been easier to buy some lumber and just build it from scratch," he remarked.

Later, during a visit to Ward's house, Walt was walking toward the completed station and stopped. "Is that the set from Porterville? I can't believe I just *gave* that to you!," he exclaimed in amazement. Ward just looked at him. Thinking for a moment, he decided to say, "Yeah, that's the set. Thanks a lot."

It was a hard decision for Ward, but likely the wisest choice. As Ward continued walking toward his train barn, he turned and saw Walt still standing there admiring the Grizzly Flats Railroad depot. Ward never disclosed to his boss what a vexing challenge that station had been to rebuild.

Ward and Betty Kimball's Grizzly Flats depot became the prototype for Disneyland's Frontierland Station. Kimball collection.



(water must be added every few hours). At the opposite end of the 206-foot-long station is a genuine train-order signal from the early days of railroading. Donated by William White, chairman of the board of the Delaware & Hudson Railroad, the signal had been used to tell operating engineers if there were messages ("train orders") or mail to be picked up.

New Orleans Square/Frontierland Station

In 1962, Frontierland Station was moved across the tracks to make room for "coming attractions," including a completely new themed area based on the Crescent City. Even though the train station would now be adjacent to New Orleans Square and the Haunted Mansion, rather than Frontierland, no one—not even Walt—thought it needed to be renamed. In September 1996, Disneyland executives finally decided that, after 41 years, the name of the Frontierland Station should be modified to include New Orleans Square.

Park guests—while standing on the covered loading platform, across the tracks from the gingerbread-trimmed station—can hear the rhythmic clacking of a telegrapher's key. At the time this sound effect was installed, no one in Disneyland knew that Mrs. Walt Disney had trained as a telegraph operator (in her hometown of Lewiston, Idaho) before moving to Los Angeles in the early 1920s. When Walt first heard the sound, while walking through the area one morning, he casually mentioned Lilly's training to one of the conductors. Word quickly passed along to supervisors, who ordered the telegraphy message changed to excerpts from Walt's opening-day address—a more wholesome choice than the original, "adult-oriented" commentary.



Garden Railroading

A G-GAUGE (GARDEN RAILROADING) version of Ward and Betty Kimball's Grizzly Flats Railroad depot is available as PICO model (No. 62209). In addition, LGB offers a G-gauge model (No. 20130) of the Kimballs' 0-4-2T locomotive *Chloe*, as well as their home-built open-bench passenger cars and gondolas.

Garden railroading is currently the fastest growing among all rail hobbies. Combining two popular pastimes, gardening and model railroading, the G-gauge hobby represents nearly 15 percent of model railroading. Technology developed over the last decade allows all-weather operation of the 1/22.5 scale electric trains. Most layouts are permanent installations in backyards, with the 1-7/8 inch gauge tracks winding among plants, rocks, and ponds.

Walt Disney may have had the ultimate garden railroad, but with LGB rolling stock and an array of buildings and support structures from PICO and POLA, anyone can start his or her own mini-railroad. (And with the LGB/Lenz Multi-Train System, up to eight people can control eight trains on the same track.)

More information is available on the World Wide Web at http://www.lgb.com. LGB TELEGRAM, the official magazine of E. P. Lehmann Patentwerk, can be accessed at 73670.3673@compuserve.com. Also, a number of competitors have recently entered the G-scale marketplace, increasing its offerings.

33 Royal Street

WALT ENJOYED SHOWING off Disneyland to friends and visitors from countries throughout the world. But he could only entertain them in his small apartment above the Main Street Fire Station—the Park did not have a private lounge.

Thus when planning began for New Orleans Square—the first addition to the Park since its opening—Walt directed that it contain a private club. At one of the planning meetings, attended by WED Imagineers, Park management, and studio personnel, Walt announced his decision to allow liquor to be served in the club.

He explained that the club's primary purpose was to satisfy demands by Park lessees (now called participants) to have a nice private restaurant for entertaining their colleagues and business contacts. Various corporate representatives had been requesting such a site for several years. As the discussion progressed, Walt noticed that Dick Nunis, head of Park operations, was shaking his head "no." Walt asked him why he objected.

"There's a right time and place for liquor," he replied. "I don't think work is the right place."

Walt studied Dick for a moment then countered, "Well, I'm *always* working."

Pushing his neck out a bit further, Dick said, "*You're* not the problem."

Telling Dick that several of the lessees wanted to build their own private lounges, Walt asked rhetorically, "Would you want them to have lounges that we didn't control?" Understanding Dick's concern, Walt continued, saying that the private club wouldn't be an open bar and would serve only cocktails, beer, and wine. He concluded by promising Dick: " If it becomes a problem, you have my permission to shut it down."

The naming of the restaurant "Club 33," sparked various theories about its origin. Some said it was the designation for the first 33 companies that were lessees when the Park opened; others believed the membership was limited to 33; or, that there were 33 charter members who joined.

According to Imagineer John Hench, who was in charge of designing New Orleans Square, the number simply indicated the club's location on Royal Street.

What became of Dick Nunis, who is the last original Disneyland cast member still working for the Theme Parks? He became chairman of Walt Disney Attractions and a member of The Walt Disney Company's board of directors. He never did have to act on Walt's promise and shut down Club 33's liquor operation.



In 1996, the name of Frontierland Station was modified to include adjacent New Orleans Square. The new sign is located atop the covered waiting shed, across the tracks from the original depot building. CPHS collection, © Disney Enterprises, Inc.



Right and below: The "future" of train travel was supposedly reflected in the Tomorrowland Station's simplistic structure; instead, it will soon be relegated to the past. The structure is slated for replacement, along with most of Tomorrowland, in a total redevelopment scheduled for completion in 1998. © Disney Enterprises, Inc.

Bottom: The original Fantasyland Depot is seen in the background. Roger Broggie photo, CPHS collection, © Disney Enterprises, Inc.





Tomorrowland Station

Walt's television contract with ABC committed his company to the July 17, 1955, grand opening of Disneyland. However, since he was nearly out of money, Tomorrowland was the least developed of the Park's five main areas. To add color and motion to an otherwise bland area, Walt directed his Imagineers to decorate the few buildings with balloons and banners. Opening with the Autopia, Circarama, Rocket to the Moon, a 20,000 LEAGUES UNDER THE SEA exhibit, and a few corporate displays, Tomorrowland would have to wait for additions.

By 1956, there were sufficient earnings to add the Skyway and the Astro-Jets, but construction of the 202-foot-long Tomorrowland train station would wait until April 1958, when it was combined with the addition of the Grand Canyon Diorama. Spartan by comparison with the other stops, the structure was supposed to represent a futurist's view of a transport loading platform. In actuality, it was a simple concrete slab with an aluminum cover supported by tubular steel.

The station's very presence compensated for its lack of aesthetic design, at least somewhat. It continues to provide a visual obstruction for the vintage Disneyland Railroad trains as they stop "amidst the future."

Fantasyland Station

In 1958, with addition of the Grand Canyon Diorama and Tomorrowland Station, Fantasyland got its own station. This increased access to the railroad, giving it four stops—covering the points of the compass—around Disneyland.

The new Fantasyland Station was of Medieval design, consisting of a long platform topped by colorful, striped awnings with pennant fringes; tournament flags; and wrought-iron fencing. Fantasyland Station was removed when the former World's Fair attraction "It's a Small World" (accompanied by the world's most pervasive theme music) was installed in June 1966.





Two views above: The whimsical colors and shapes of Toontown are found as well on the theme area's train station. Unlike the water tower at New Orleans Square/ Frontierland Station, this one is for appearances only: Mickey's face and the "M" are all the water tower holds.
© Disney Enterprises, Inc.

Videopolis Train Station

With construction of an elaborate dance pavilion called "Videopolis" in June 1985, Fantasyland got a new train stop: Videopolis Train Station. The austere yet functional station consisted of a cement platform, sheltered by colorful canvas panels stretched over metal frames. Videopolis and its train station represented the first changes made to Disneyland under the new management team of Michael Eisner and Frank Wells.

Toontown

This cartoon building, added in 1993, replaced Videopolis Station. Constructed entirely of wood—with canted yellow walls, a heavy red shake roof, and fat yellow railings and turned posts—this station is a delightful depiction of Disney whimsy.

While the Toontown station's office is not accessible, covered loading platforms on both sides provide protection from the elements. Atop the station is a metal weather vane that would be prized by any railfan (even though it is somewhat cockeyed). Across the track from the station is a mock wooden water tower, with the face of Mickey Mouse and a large red "M" painted on its side.


Santa Fe
DISNEYLA
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LIMITED



The Disney and Santa Fe Connection

Everything here at Disneyland and the studio is a team effort.

—Walt Disney

As mentioned early in our story, the lifelong relationship between Walt Disney and the Atchison, Topeka & Santa Fe Railway was rooted in Walt's family history—through his brother Roy, his Uncle Mike, and his father, Elias. Drawing upon his observations of the major companies sponsoring exhibits at the 1948 Chicago Railroad Fair, Walt established early negotiations with the Santa Fe in planning for corporate participation at Disneyland.

After Walt's initial contact with his good friend Fred Gurley (chairman and president of the railway), negotiations continued under the supervision of Pete Clark, director of Disneyland's participant development. Walt initiated a national marketing effort to sell Park sponsorships, and eventually obtained commitments from TWA, Upjohn, Sunkist, Carnation, Monsanto, Coca-Cola, Pepsi Cola, Frito, Richfield, American Motors, and Bank of America, among others.

Desperately in need of capital to finish the Park, Disney required the sponsors to pay their first and last years' lease payments in advance. The leases were then assigned to Bankers Trust Company in New York as collateral to secure a loan of $4.4 million.

Over the years, a variety of "drumheads"—as the illuminated, circular sign at the rear of a passenger train is known—have adorned the tail cars on Disneyland's railroad. This 1955 view clearly shows the "team effort" of Disneyland and the Santa Fe Railway at work on observation coach Grand Canyon. Roger Broggie photo, © Disney Enterprises, Inc.

Important Questions

On March 29, 1955, the Atchison, Topeka & Santa Fe Railway became one of Disneyland's highest-paying charter lessees, at $50,000 per year under a five-year contract. In exchange, the Santa Fe name

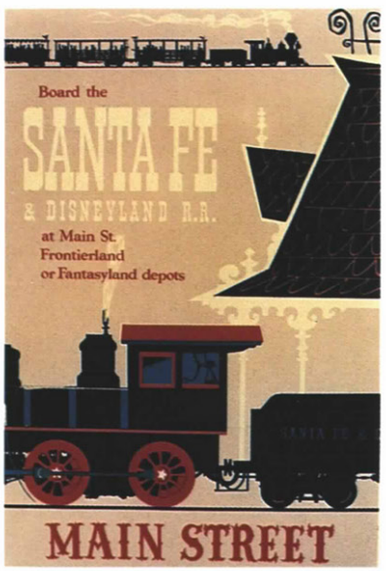




Above: The "SF&D" lettering is readily seen on the freight train's cattle cars, stopped at Frontierland Station early in the Park's history. © Disney Enterprises, Inc.

Above right: Afternoon shadows lengthen as the passenger consist is backed into the roundhouse facility at day's end. Note the bold "Santa Fe & Disneyland" lettering above the windows. © Disney Enterprises, Inc.

Below: "Santa Fe" enjoys the largest lettering on this early poster. Curiously, Fantasyland Station is mentioned, while the Tomorrowland Station is not—suggesting the poster dates from late 1957 or early 1958, just prior to opening of the Grand Canyon Diorama. Brett Thompson collection, © Disney Enterprises, Inc.



and logo were applied to Walt's trains and stations as the "Santa Fe and Disneyland Railroad." The Santa Fe name also appeared on the Frontierland water tank; on the railroad's trestles, tickets, posters, and lamppost signs; and on all Park literature mentioning the trains. Walt agreed to name engine No. 1 for Santa Fe founder Cyrus K. Holliday, and engine No. 2 after Edward P. Ripley, the line's first president when the company was reorganized in 1895.

The second five-year term of the agreement raised the fee to $75,000 for the first three years, then $100,000 for the fourth and fifth years. Two more extensions were signed, affirming the Santa Fe's participation through 1974. By that time, Santa Fe had eliminated all passenger travel from its operations, turning them over to the National Railroad Passenger Corporation (Amtrak) and concentrating instead on hauling freight. According to internal Santa Fe correspondence, questions were therefore raised by the railroad's middle management regarding the financial value and marketing relevance of Disneyland exposure.

A flurry of letters and internal memos were produced between July 1973 and the last day of the agreement, September 30, 1974. Some at Santa Fe were in support of continuing the relationship, such as George T. Grader, who wrote a July 10, 1973, memo to William C. Burk, Santa Fe's vice president of public relations: "I am inclined to recommend the continuation of a promotion that annually keeps the Santa Fe name paramount in the eyes of millions of visitors from all over the nation."

While Santa Fe officials wrestled with their dilemma of no longer serving the passenger industry but still being mindful of many stockholders and public opinion, Disney's Pete Clark was laying the groundwork for yet another increase in the annual fee. In a letter to the Santa Fe dated May 30, 1974, Pete noted, ". . . our costs have increased greatly over the past five years. As an example, our labor costs were up 46%, materials 52%, utilities 43%, and insurance 108%, since we signed our last agreement in 1969." He went on to point out that attendance had also increased, and that the sponsorship fee would have to be increased.

Burk solicited input from his Santa Fe colleagues to determine

All in the Family



BY PURE COINCIDENCE, E. P. Ripley was the grandfather of past Disney chairman Donn B. Tatum's wife. Tatum was an attorney with ABC and head of West Coast operations when Roy Disney negotiated the deal making the network a partner in the Park. Tatum liked the organization so well that he approached Roy for a position.

Roy was impressed with the young attorney and hired him to work in the corporate legal department. Eventually Donn rose through the organization to become president and, in 1968, its chairman of the board. His brother-in-law, E. P. Ripley's grandson, participated in the Park's opening ceremonies—as an official representative of the Santa Fe.

Santa Fe and Disneyland Railroad 4-4-0 No. 2 E. P. Ripley *pauses with the passenger train at Main Street Station, circa 1956.* Roger Broggie photo, © Disney Enterprises, Inc.





No. 1 C. K. Holliday *has the Holiday Red train (the former freight train equipment, remodeled) in tow circa 1959, approaching Fantasyland Station.* Roger Broggie photo, © Disney Enterprises, Inc.

whether the Santa Fe should renegotiate the agreement, and requested a series of Disneyland photographs showing the trains and Santa Fe's identification. After studying the pictures, a Santa Fe executive wrote, "I cannot imagine that any of the other western railroads would be interested or willing to pick up the tab for the current display at Disneyland and I would think that Disney would rather have $75,000 or $100,000 rather than no money at all." He concluded: "If we were to cancel the contract, it would be quite an expense for them to eradicate the current Santa Fe identification. Certainly, my recommendation is that the identification be continued if we can secure a new contract at a reasonable figure."

Progressive Failure

On September 5, 1974, a status and planning meeting was held at the Park between representatives of Santa Fe and Disneyland management. In its follow-up report, Santa Fe stressed the importance of incorporating a progressive image into the Santa Fe and Disneyland Railroad operation. An internal memo suggested a "Train of Tomorrow" display along the railroad's route; a photography display of present and future operations along the railway with public address announcements as "the train passes at slow speed"; a mock-up of a modern refrigerator car as a walk-through exhibit; and, "[building] a modern diesel unit to pull one of the trains that circle the Park."

WED Imagineer Marty Sklar, who was present at the meeting, was asked to develop several concepts that would appeal to the Santa Fe. The railroad company requested that WED's ideas be submitted by September 16, 1974. Unfortunately, it turned out to be a difficult if not impossible assignment—given that not only the Santa Fe's management had to be pleased, but also Disneyland's.

In a September 12 internal memo to Pete Clark, Marty made the following points: (1) The diesel locomotive concept would not be compatible with the Santa Fe and Disneyland Railroad; (2) A VIP car could be developed to carry influential guests, such as heads of state; (3) Photos of these personalities with the car could be used in Santa Fe publicity releases, and the Santa Fe could use the car for its special customers; (4) A new Tomorrowland train station could incorporate the look of a modern diesel train on its exterior, with Santa Fe exhibits and displays that Park guests would walk through to board the Santa Fe and Disneyland train. An alternative would use the old passenger coaches as shells for a walk-through exhibit at the siding in the New Orleans/Frontierland Station.

Pete Clark sent the memo with a cover letter to Bill Burk at the Santa Fe on September 16, proposing that the Santa Fe renew its sponsorship for two years at $112,500 per year. During this period, Disney would work with the Santa Fe to develop "short-term changes and submit ideas leading to design and construction estimates on ways to tell a complete Santa Fe story." The letter suggested that once this phase was completed, a longer-term agreement would be negotiated.

The proposal was not well received, however; the Santa Fe was plainly disappointed that Disney wanted a fee increase *before* solving



With the opening of the Grand Canyon Diorama in 1958, these street lamp posters were hung throughout the Park to remind guests of the new attraction. Downs Prior collection, © Disney Enterprises, Inc.

Retlaw One

BACK WHEN THEY WERE placed in operation, Disneyland's first trainsets were given offstage designations for use among Park staff. The passenger train was "Retlaw 1," the freight train, "Retlaw 2." The freight cars were subsequently modified into excursion-style equipment, but the passenger consist—slow to load and unload, with single doorways at the ends of each car—was not as easy to adapt.

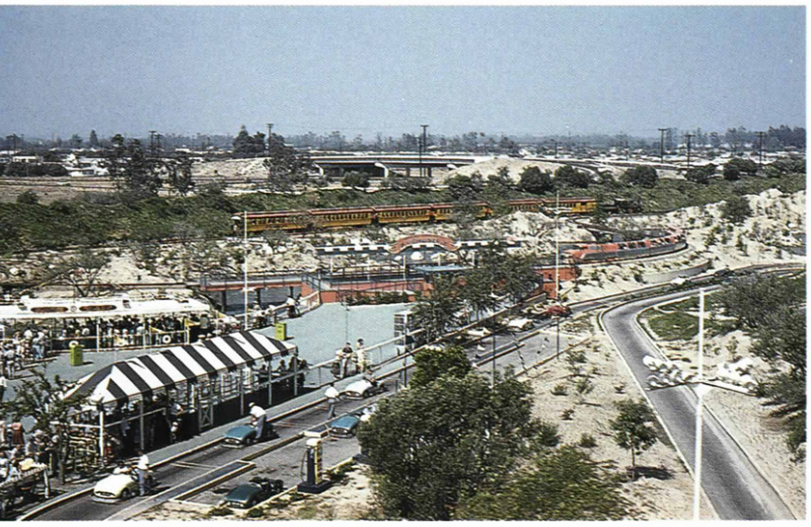
As early as 1965, however—according to Jim Cashen (a conductor on opening day who remained on the crew for 38 years—until 1993), Walt ordered Retlaw 1 replaced with the new Holiday Special trainset, allowing wide-open viewing of the Grand Canyon Diorama and its new extension, Primeval World (a Ford-sponsored attraction built for the New York World's Fair by Disney's Imagineers). Retlaw 1 was finally de-commissioned in 1974. The exception to de-commissioning was former observation coach *Grand Canyon*, which was later remodeled into the posh "presidential car" *Lilly Belle* and continues to provide special guests with VIP treatment. The remaining coaches—used only on rare occasions from 1965 to 1974—rested quietly in the back of the Disneyland Roundhouse facility, seemingly forgotten.

In 1992 Bill Norred, a well-known collector of narrow-gauge railroad equipment, inquired about the coaches. Negotiations were soon under way with Disney executives. Four years later, Norred received the five former Retlaw 1 coaches in exchange for a vintage steam locomotive. Originally built by the Davenport Locomotive Works as a Forney-style 0-4-2T, the diminutive puffer had been completely rebuilt for Norred at Shop Services of Mount Pleasant, Iowa. In the process, it became a 2-4-4T. Disneyland Railroad's maintenance staff hoped to add the locomotive to the Park fleet, allowing for major rebuilding (in a planned and unhurried fashion) of the other four locomotives.

As it turned out, this newest locomotive ended up going to the Magic Kingdom at Walt Disney World Resort. There, it substituted for No. 2 *Lilly Belle* while a complete overhaul and refurbishing was performed. Before going into service in Florida, Bill Norred's Forney was officially christened No. 5 *Ward Kimball*, thus recognizing this pioneering railfan and Disney animator.



This rare view shows the first run of the Magic Kingdom's passenger train on July 2, 1955. Landscaping along the Rivers of America has years of growth ahead before it becomes the lush forest Park guests experience today. Roger Broggie photo, CPHS collection, © Disney Enterprises, Inc.





Above left: This early 1958 view shows the Santa Fe and Disneyland's passenger consist passing through the sparse landscape of an early Tomorrowland. Within a year, transformation of the scene will be under way. Roger Broggie photo, © Disney Enterprises, Inc.

Above: The Ernest S. Marsh *sits quietly in front of the roundhouse facility in 1962, coupled to Retlaw 1. The close-up afforded the combination baggage-coach gives us a chance to admire the neat lettering on the "business end" of the car.* Roger Broggie photo, © Disney Enterprises, Inc.

the short-term issue of the railroad's modern image. After a quick internal survey of opinion, Santa Fe management decided to terminate this nearly 20-year relationship. An internal memo dated October 11, 1974, ordered Santa Fe executives to no longer provide complimentary Disneyland ticket books for friends and business associates.

Go West

As a final footnote to the relationship, Disneyland sent an estimate to the Santa Fe, on October 22, 1974, of the costs to remove all Santa Fe identification from trains, stations, public address tapes, the Monorail, water tank, etc. A terse November 4 reply stated in part, "You will note there is nothing in the [original] agreement or in the rules and regulations placing any obligation upon Santa Fe to bear the cost of removing such identification." The relationship had definitely chilled; management at Disney didn't pursue the issue of removal costs.

Some believed that, had Walt and Fred Gurley still been alive, they would have found a way to renew Santa Fe's participation. As it turned out, the corporate cultures of both parties had changed. Ultimately, this stiffened negotiating positions and doomed the Santa Fe-Disney relationship.

No railroad participant relationship has been negotiated for either domestic Disney Park since the Santa Fe pulled out of Disneyland over 20 years ago. Internationally, the situation is a bit different. The corporate logo of McDonald's Restaurants was affixed to Paris Disneyland's train stations in 1997 as part of a multi-year corporate relationship. And through an agreement with the Oriental Land Company (Disney's partner in Japan), Tomy—a Japanese toy company—has its emblem on the pilot flags of the Western River Railroad steam engines at Tokyo Disneyland. Among the products Tomy manufactures are accurate die-cast models of the Western River Railroad's locomotives.



The Fred Gurley *pauses at a newly opened Tomorrowland Station in fall 1958. Immediately following their departure, the train's passengers will be treated to the spectacle of Walt's Grand Canyon Diorama before arriving at Main Street Station.* Roger Broggie photo, © Disney Enterprises, Inc.



Locomotive No. 2 E. P. Ripley *pulls the Excursion Train under a canopy of trees in 1993.* CPHS collection, © Disney Enterprises, Inc.





Other Rail Attractions

I can never stand still. I must explore and experiment.

—Walt Disney

While the colorful excursion trains of the Disneyland Railroad are among the Park's best-known attractions, other rail-related rides have been popular features at Disneyland since its 1955 grand opening. From slow-paced Mine Trains and the fantasy-inspired Casey Jr. Circus Trains to sleek, modernistic Disneyland-Alweg Monorails, these "other" rail rides have been popular and continuing guest pleasers. Four attractions are described in this chapter—but no roller coasters are included, not even those of "Big Thunder Mountain Railway" (a railway in name and general appearance only, having been engineered to the same standards as other modern roller coasters).

Beginning in 1956, Disneyland's Mine Train Thru Rainbow Caverns operated through re-created scenery—such as the Living Desert, seen here—inspired by Walt Disney's True-Life Adventure film series. Park guests rode in colorful gondolas, pulled by tiny locomotives of the "Rainbow Mountain Mining & Exploration Co." Roger Broggie photo, © Disney Enterprises, Inc.

Main Street's Horse-Drawn Streetcars

As arriving guests pass under the tracks of the Disneyland Railroad, at the Park's front entrance, they are greeted by turn-of-the-century Main Street U.S.A. and its quaint conveyances. Paramount among these are the Horse-Drawn Streetcars, an attraction that has been in almost continuous service since Disneyland's 1955 opening.

The streetcars—Nos. 1 through 4, simple open affairs with cross-bench seating—were designed by WED and built in Burbank at the studio. Much more complex to maintain in top condition is the motive power: a stable of 16 horses is kept in the Park's backstage "Circle D Corral," assuring adequate horsepower. Each one-horsepower car is operated in time-honored fashion with a two-member crew (one directs the horse, the other collects fares). As with all of Main Street's





Above: Horse-Drawn Streetcar No. 1 pauses in front of Main Street Station (out of view, to left) circa 1960. All four of the original cars remain in service; except for a new roof on No. 3, the diminutive open-bench conveyances have needed only regular maintenance. CPHS collection, © Disney Enterprises, Inc.

Above right: "I can never stand still. I must explore and experiment," Walt once commented, and he was constantly pursuing ways to improve Disneyland. Here, he points to a sketch showing how the Mine Train attraction will be rebuilt, circa 1959. Mrs. Walt Disney collection, © Disney Enterprises, Inc.

wheeled passenger vehicles, rides aboard the streetcars were initially 10 cents, one way, or an "A" ticket was surrendered to the conductor.

With teardrop loops at both ends of Main Street, and a passing siding—known as a "switch section" to cast members—at the single-track line's midpoint, typical operations involve just two cars on a slow day (all four run on busier days). Two conductors are on duty, changing cars at the line's midpoint when four cars are running; this way, they are on hand at the end of the line to handle loading and unloading duties. On especially busy days, such as major holidays, the attraction does not operate because of pedestrian congestion along Main Street.

Cars load and unload passengers at opposite ends of the line, and then a car departs each terminal at the same time. Trundling along Main Street, the cars head directly for one another down a single track. Just when it seems (from a distance) that they're about to collide, each car veers to its right, guided by a spring-loaded switch. Passing each other, on the short passing track, they continue on their way; if one should somehow become delayed along the route, the other waits at the midpoint siding.

Casey Jr. Circus Train

Season after season since Disneyland's first, the miniature train "Casey Jr."—inspired by the "movie personality" of the same name from the 1941 animated feature DUMBO—has proven itself capable of the rhythmic mantra, "I think I can; I think I can." Hauling the Circus Special up and down the hilly rail line that tops a berm overlooking Storybook Land, within Fantasyland, the Casey Jr. Circus Train attraction is one of the few charter rides in Disneyland never to have undergone a major redesign.

Casey Jr.'s long tenure had a rather dubious beginning, however. On the train's July 14, 1955, test ride—just three days before Disneyland's nationally televised première—Roger Broggie was at the controls when the train approached its first steep hill. Halfway up, the engine began to tip backward on the 25 percent grade. Its forward motion propelled the train to the crest of the hill, and just as it looked as if the engine would



Disneyland's Casey Jr. Circus Train attraction, running atop and around a small hill in Fantasyland, remains a favorite of children and adults alike. Storybook Land is directly below in this 1993 view. CPHS collection, © Disney Enterprises, Inc.



"Casey Jr." and his little Circus Special were first seen in the 1941 animated feature DUMBO. *The train's caricature, created by animator Ward Kimball, was a natural for adaption as a Disneyland attraction; here, it is seen circa 1958.* Roger Broggie photo, © Disney Enterprises, Inc.

somersault backwards, a large construction worker grabbed the front end. He was able to counterbalance the weight of the small engine with his own bulk, and brought it back down to the tracks.

Roger thanked the construction worker who'd just saved him from serious injury, then sighed," *That* was too close." He went on to launch the first of a series of probes into mechanical ride problems that he called, "What Happened, and Why?"(Such analyses became an ongoing operational procedure.) To find the cause of Casey Jr.'s problem, the ride's design was revisited by the Disney team of Imagineers.

The circus train caricature had been created by animator Ward Kimball. Imagineer Bruce Bushman used Ward's character model sheet to develop the Park's circus train, and Arrow Development of Scotts Valley, California, built it. The styling was quite faithful to the cartoon; however, cartoon designs don't necessarily convert easily into usable, three-dimensional objects. (Bruce, the son of silent screen star Francis X. Bushman, was assigned by Walt to design many of Fantasyland's rides.)

How was the balancing problem cured in time for opening day? The front was held down by adding some lead weights to the pilot—and the engineer had to be careful not to lean back in his seat while going up the steep grades. That first day, Roger reported, "I ran the locomotive myself. I didn't want anyone else to risk getting hurt running it."

The next day, the ride was shut down for several weeks. A crew leveled off the hills somewhat, and reinstalled the railway. The lead weights remained in the locomotive pilots, but engineers no longer had to refrain from leaning back in their seats! Casey Jr. has continued to run faithfully ever since its reopening—on July 31, 1955—with regular mechanical overhauls and a complete track replacement in 1989.

Rainbow Caverns Mine Train

Opening July 2, 1956, at a cost of $400,000, the "Mine Train Thru Rainbow Caverns" attraction featured green, black, and steel-blue locomotives of the Rainbow Mountain Mining & Exploration Co. These



When it first opened in 1956, Disneyland's Rainbow Caverns Mine Train attraction featured trainsets painted dark green. Here, tiny locomotive No. 3 is seen pulling into the quaint "western" town of Rainbow Ridge, starting point for the scenic ride. Roger Broggie photo, © Disney Enterprises, Inc.

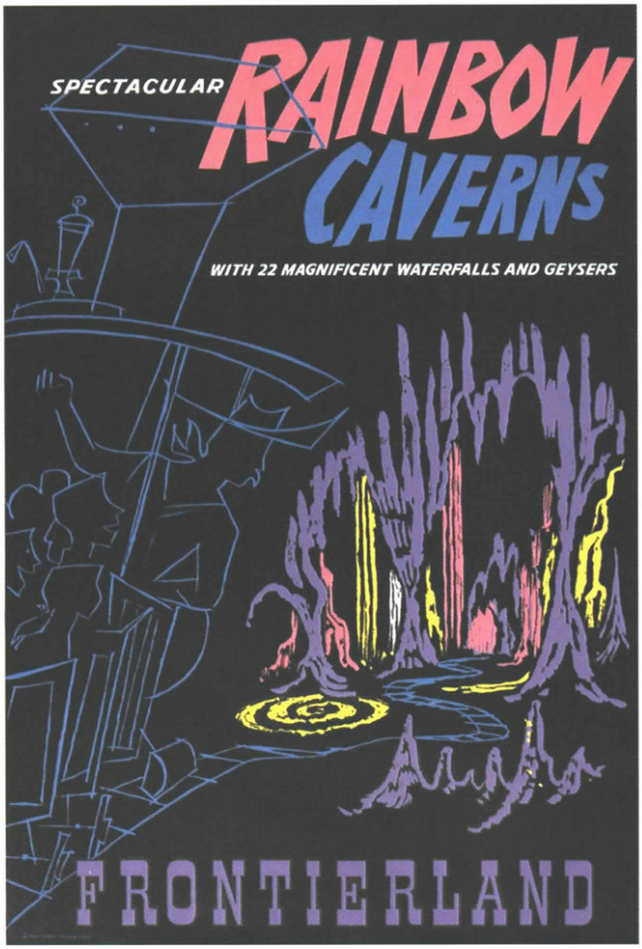
colorful locomotives hauled cargoes of Park guests in green gondolas, from the hillside town of Rainbow Ridge through scenic creations of arid, southwestern plains and buttes with cacti and teetering rock formations. The scenic creations were based on Disney's Academy Award-winning nature films, THE LIVING DESERT and THE VANISHING PRAIRIE.

Highlighting the ride was its final sequence, where guests entered the Rainbow Caverns mine to see a collection of 22 water sculptures, including a brightly illuminated cascading waterfall containing six colors of the rainbow (although a rainbow has seven colors, Imagineers decided upon six as easier to reproduce). The background music, featuring a choir of mystical voices, blended with the sights and sounds of falling water—creating a welcome cooling effect on hot summer days.

Guests had no idea that the water effects had posed perplexing problems for Imagineers, who first tried various lighting systems to obtain the desired colors. Nothing worked until Disney Legend and Imagineer Claude Coats discovered that fluorescent dyes in the water would respond dramatically to ultraviolet light. The next problem was preventing the water—running in six separate troughs within the waterfall—from splashing around, which, as one Imagineer predicted, would "turn [the waterfall] gray within a week."

Coats wanted the troughs to appear as a single waterfall, with six bands of color, but *how* to do this was a mystery. Walt had confidence that Claude would find the answer. "Well, Claude, it is kinda fun to do the impossible, isn't it?," he asked. Responding to Walt's challenge, Claude enlisted the help of John Hench, who contributed many Imagineering solutions throughout his ongoing career.

Within several weeks—experimenting with various screens, nets, and filters—the two men developed a process using multiple strands of a clear, hair-like fiber material, similar to fishing line. It captured water in the troughs without inhibiting flow, and practically eliminated splashing. Since the fibrous material was transparent, the lighting was unaffected. The result was another of the Park's many "How'd they do that?" illusions.





Above and opposite left: These three posters, hung throughout Disneyland to promote the Mine Train and nearby attractions, utilize a variety of graphic styles. Note how "Frontierland" appears at the bottom of each, helping visitors to locate the highlighted attractions. Three views, Brett Thompson collection, © Disney Enterprises, Inc.

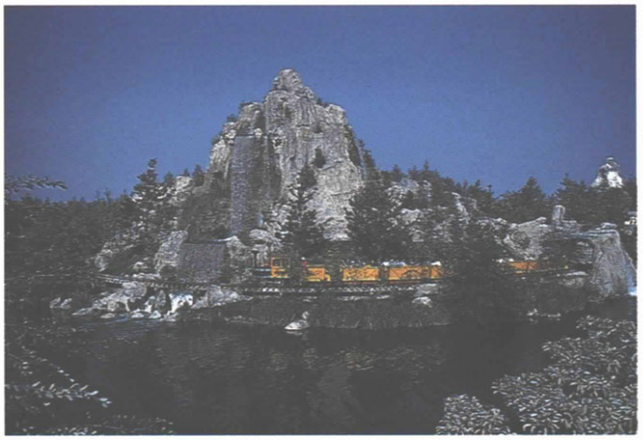
Mine Train Through Nature's Wonderland

Less than four years later, on June 12, 1960, Disneyland heralded the grand opening of its $1.8 million "Mine Train Through Nature's Wonderland." Expanded to seven acres, the new show featured early technology that eventually led to the development of the Audio-Animatronics process.

Imagineer Marc Davis—a Disney Legend who is counted among the Nine Old Men of Animation—designed scenes adapted from Disney's Academy Award-winning series of true-life adventures, including Beaver Valley, Olympic Elk, Bear Country, and The Living Desert. The scenes utilized 204 individually animated mammals, reptiles, and birds indigenous to the deserts, valleys, and mountains of the West. Delighted guests rode in brightly painted yellow gondolas, pulled by locomotives with black boilers, red trim, and colorful yellow cabs.

On those occasions when Walt was personally entertaining guests at the Park, he usually included Nature's Wonderland on his itinerary. Bob Beekman remembers the day (in 1963, when he was a rookie mine





Above: The expanded Mine Train Through Nature's Wonderland featured yellow-painted trainsets, waterfalls, improved "scenery," and animated animals. Here, one of the attraction's four trainsets rounds a curve at Rainbow Mountain, running briefly alongside the Rivers of America in fall 1960. Roger Broggie photo, © Disney Enterprises, Inc.

train cast member) that Walt came through the back of the queue line with some friends. As luck would have it, Walt boarded Bob's train. Although somewhat nervous about having Walt on board, Bob gave an excellent spiel—so good, in fact, that Bob became Walt's "cast member of choice" whenever he returned to the ride.

Whenever word would come (it spread quickly among cast members) that Walt was headed for Frontierland with guests, it usually meant that he first would stop to see Wally Boag, Betty Taylor, Fulton Burley, and the musical review at the Golden Horseshoe Saloon. His favorite box seats were just above one side of the stage. As soon as the party emerged from the show, however, Walt could be expected to turn north, toward Nature's Wonderland, where Bob was on standby to deliver his impeccable spiel. (It must have been good training—he later became a successful lawyer.)

Four trains, each with a capacity of 70 passengers, ran the nine-minute ride cycle on 1,307 feet of 30-inch gauge trackage (laid with 20-pound rail). The 0-4-0 engines were actually "dummies," pushed by an electrically-driven tender—with a motor between its wheels—powered



A train has just pulled into Rainbow Ridge, and passengers are disembarking in this 1960 view. The trainset at right is out of service. Roger Broggie photo, © Disney Enterprises, Inc.



Polished and ready, "N.W.R.R." (Nature's Wonderland Railroad) locomotives Nos. 3 and 1 are seen at Rainbow Ridge. The train at right has loaded its passengers and will soon be heading out to tour the scenic countryside. Roger Broggie photo, © Disney Enterprises, Inc.

by large, heavy-duty forklift batteries. Steam locomotive sounds were added to the ride's audio track, enhancing the attraction's railroading "feel."

This was not a conventional mine train. The trains represented neither caricatures nor replicas of actual pieces of equipment; their colors were not basic railroad ones (the red trim especially was unique); and their wheels were not a standard size. Roger Broggie recalled, "There are hundreds of books about railroad equipment. In this case, we took an industrial locomotive design and modified it. Then, we figured out a way to power it with electricity, which turned out to be both efficient and pollution-free."

Still Going Strong?

These batteries for the mine train locomotives eventually led to some interesting discussions between Roger and their manufacturer. The first set acquired for the mine trains had been guaranteed for a year, and they turned out to be excellent performers—so excellent, in fact, that the manufacturer probably wished the batteries were not quite as long-lasting.

About the middle of the second year following the revised Mine Train attraction's opening, Roger received a call from the battery company's salesman. The salesman asked, "Well, whose batteries are you using this year?" Roger replied that the same ones were still going strong.

A year later—third in the life of the batteries—the same salesman called again. "Well, what are you guys doing about batteries?" he asked. "You don't let me bid on them," he commented in exasperation.

Roger explained the original batteries were still going strong; no replacements had been necessary. The perplexed salesman responded that he would like to send his engineers over to find out what was going on.

The engineers discovered that indeed the batteries were still working quite well—all because of a simple operating procedure. Whenever a ride operator noticed his tender's battery needle registering "in



With the opening of Big Thunder Mountain Railway—a fast-paced roller coaster-train themed attraction sited atop the former Nature's Wonderland—in September 1979, the only visible reminder of the quaint little Mine Trains is this staged wreckage scene. Located along the shores of the Rivers of America, it can be viewed from passing river boats and Tom Sawyer's Island.
© Disney Enterprises, Inc.

the red," he was required to switch to another trainset. The low trainset would be plugged into the charging system.

This cycling process completely discharged the batteries during the operating day, and totally recharged them overnight. Since this practically eliminated deposits in the bottom of the cases (which would have eventually caused the batteries to short out), they could last almost indefinitely. The battery company's engineer remarked to Roger that he was never allowed to run tests like that; if his company built batteries lasting longer than the guarantee period, it would be in trouble!

(In another example of extreme use versus design, Roger ordered a large quantity of space-age devices to control airflow in the Flying Saucer attraction. The actuators he obtained had been designed for the Jupiter missile program; they provided pitch control once for five seconds during the missile's second stage firing. When Roger reported to the vendor that the actuators were beginning to fail, he was asked how many cycles they had performed. Roger's reply was, "seven million." The astonished vendor pointed out that the government had required just *one* million cycles for approval—and the actuators only had to work one time during a mission!)

Imagineers realized later that Disney parks had become "guinea pig" sites for certain equipment manufacturers. Roger Broggie noted, "I heard from a number of vendors that made equipment say, 'If it survived at Disneyland we could sell it to anybody, including the military.'" Disney wasn't testing anything; however, its parks were using equipment at levels some manufacturers had never considered. In many heavy-duty operations at Disneyland and Walt Disney World, these use factors caused vendors to rewrite their specification manuals.

Today, the only reminders of the mine trains are a derelict locomotive and several gondolas, visible from Tom Sawyer's Island and from watercraft plying the Rivers of America. The wrecked mining train appears to have been a victim of an old rock slide—and, perhaps, progress: The Big Thunder Mountain Railway roller coaster ride now occupies the approximate location of Nature's Wonderland.

Viewliner Train of Tomorrow

"A prototype interurban express train of the future . . . the only one of its kind in the world." These words were once used to describe a long-forgotten and little-noted conveyance that carried passengers over waterways and around the back areas of Tomorrowland and Fantasyland on a figure-8 track. As with the Park's steam trains, the short-lived Viewliner Train of Tomorrow was the property of Walt Disney's personal company, WED Enterprises. It began operation on June 10, 1957.

Built by WED at the studio in Burbank, the Viewliner consisted of two six-unit trains designated "Tomorrowland Viewliner" and "Fantasyland Viewliner." Tomorrowland cars were named for planets—Jupiter, Venus, Mercury, Mars, and Saturn—while Fantasyland cars were named for characters: Pinocchio, Cinderella, Bambi, Alice, and Tinkerbelle. (A studio wag also suggested naming a spare car Pluto, so it could be used on either train. However, technology won over wit: Viewliner trainsets were permanently coupled together, thus a spare car could not easily be added or removed.)

Power for each 1/2 scale train was supplied by a stock Chevrolet 327 V8 gasoline engine. Oldsmobile provided the windscreen, doors, and



Order of the Red Handkerchief

THE RELAXED AMBIANCE of Rainbow Ridge made the mining train one of Disneyland's most sought-after assignments. Plus, it was one of only two attractions in the Park to feature live spiels performed by ride operators—the other was The Jungle Cruise. As such, Mine Train and Jungle Cruise cast members were ranked among the Park's elite ride operators.

After the ride was expanded and reopened in 1960, a sort of "caste system" developed, between the "old-timers" (who'd worked on the original green trains) and those, hired later, who had operated only the yellow trains. As a symbol of their self-appointed and loftier status, the "green train" miners began wearing red handkerchiefs around their necks—similar to those worn by engineers on the Santa Fe and Disneyland Railroad. (Such activities were not uncommon among cast members, who would seize nearly any opportunity to break the monotonous routine of ride operations.)

The ride operations area supervisor was quick to point out that a red handkerchief was *not* one of the approved costume accouterments. Not to be deterred, the miners relocated their handkerchiefs to the left rear pockets of their Levis. Of course, it was *sine qua non* that the kerchief partially protrude as a kind of "red badge of status."

By 1964, no real distinction could be found between operators of the new yellow trains and the old green trains, noted Bob Beekman. Instead, the red handkerchief symbolized inclusion in a group recognized for its members' superior "on stage" performances, rather than a distinction between newcomers and old-timers.

In February 1964, 36 cast members drafted an "official certificate of membership in the Order of the Red Handkerchief." Charter members included Walt Disney, Dick Nunis, Ron Dominguez, Ray Van De Warker, Bob Penfield, Frank McNell, and Ray McHugh. Although more than 20 years have passed since the last train pulled out of the "little mining town of Rainbow Ridge," the 256 members of the Order of the Red Handkerchief (including this book's author) reunite occasionally to swap tall tales and anecdotes covering four decades of Park history.





Above: With the doors open to the cab, the Viewliner's 1955 Oldsmobile origins are evident. This view was taken at the studio's machine shop circa early 1957, as the two Viewliner trainsets were being readied. Roger Broggie photo, Retlaw Enterprises, Inc. collection. Used by permission from Disney Enterprises, Inc.

Above right: Unloading one of the Viewliner trainsets at Disneyland, circa spring 1957. The Santa Fe and Disneyland Railroad's Fantasyland depot is at right. Roger Broggie photo, Retlaw Enterprises, Inc. collection. Used by permission from Disney Enterprises, Inc.

Opposite: The "Fantasyland Viewliner" trainset passes the attraction's Tomorrowland loading platform. Each of the two trainsets had its own loading platform, one in Fantasyland, the other in Tomorrowland. In the middle background, the steam railroad's Tomorrowland station can be seen; a "Grand Canyon" banner just under the station sign indicates the picture was taken near the end of the Viewliner attraction's service. Retlaw Enterprises, Inc. collection. Used by permission from Disney Enterprises, Inc.

dashboard for each 5,000-pound locomotive, which measured 18 feet 4 inches in length. Power to its eight drive wheels was through a powerglide automatic transmission, drive shafts, and differentials—consisting of General Motors and Jeep parts.

Designed by Imagineer Bob Gurr, the train's coaches each measured 16 feet 10 inches in length and had a capacity of 32 passengers. Strikingly similar in appearance to the soon-to-be-completed Monorail cars (already in production back at the studio) and weighing in at 1,980 pounds, Viewliner carbodies were crafted from aircraft aluminum mounted on steel frames. The coach suspensions consisted of Hadco components. Each coach was equipped with two speedometers calibrated to the scale of the train: at an actual ground speed of 30 mph, the Viewliner speedometers registered 120.

The system utilized conventional steel, flanged railroad wheels, operating on 30-inch gauge trackage; 20-pound rails were laid in a simple figure-8 pattern. Rails were spiked atop plates into five-foot-long wooden ties, themselves treated with creosote and seated in rock ballast. As a safety feature, the track's block-signal system could apply the brakes electronically if a train ran through a red signal.

On September 30, 1958, the Viewliner Train of Tomorrow was permanently closed after 15 months' operation to make way for addition of the Matterhorn and its Bobsleds, the Submarine Voyage, and the Disneyland-Alweg Monorail System. During its operational life, the Viewliner attraction carried 1,430,683 "B"-ticketed passengers, and provided important research data and a technical basis for production of the new Monorail cars.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Above: The "Tomorrowland Viewliner," filled with guests, has just left its loading platform. Note the curious "Santa Fe and Disneyland R.R." lettering on the power unit, included because of the Disneyland-Santa Fe agreement specifying the railroad's name be included on all Magic Kingdom trains; note also the Santa Fe cross emblem on the bridge's Viewliner sign. Roger Broggie photo, Retlaw Enterprises, Inc. collection. Used by permission from Disney Enterprises, Inc.





Disneyland-Alweg Monorail System

Walt and Lilly Disney rode many different types of transportation whenever they traveled to Europe. One that caught Walt's interest in particular was a German monorail. Suspended from an overhead track, it ran smoothly on electric power. Lilly, however, didn't care for the way the monorail's cars swayed back and forth as they negotiated curves.

In October 1958, Walt sent Roger Broggie and Joe Fowler to Cologne, Germany, to visit the Alweg Corporation. Alweg had developed a revolutionary monorail system utilizing trains that rode atop a guideway beam made of steel-reinforced concrete. Walt and Lilly had seen these new trains in operation and thought they represented a tremendous improvement over the other designs.

Fowler and Broggie were equally impressed, and reported to Walt that Alweg's new system could be successfully operated at Disneyland. As soon as conceptual designs were under way at WED, however, Roger discovered an internal conflict had also developed.

"It was between engineering people who wanted [the monorail's tracks] to go in a straight line forever with no grades, and the art directors who wanted to draw tight turning radii and plot an interesting ride that climbed maximum grades in order to thrill the guests," he recalled. So, Roger worked out a delicate balance between the factions; the end result was weighted more in the direction of the "show" layout. After all, this appealed more to Walt—who reserved final approval over all elements of the Park.

Walt wanted the Monorail to be part of Disneyland's major redevelopment in summer 1959, giving Roger and Joe less than a year to complete the trains and their guideway. In late November, Roger and WED designer Bob Gurr flew back to Cologne, where they met with Alweg's engineers. Roger proposed that Alweg build the trains in Cologne in late November, for they needed to be running at Disneyland by the following July. The representatives said this time frame was impossible; they could build the cars in Cologne, but by the time they were shipped from Germany to Los Angeles (by way of the Panama Canal), they'd never make the schedule.

Roger then suggested that the Alweg representatives visit Disneyland. He later recalled, "During their visit they saw the Viewliner trainsets that we had built and said, 'If you can do that type of work then you can also build monorail cars in California.'" Alweg agreed to provide prints and consultants; the company also agreed to send advisors to show Joe Fowler's construction crew how to build and assemble the concrete beamway.

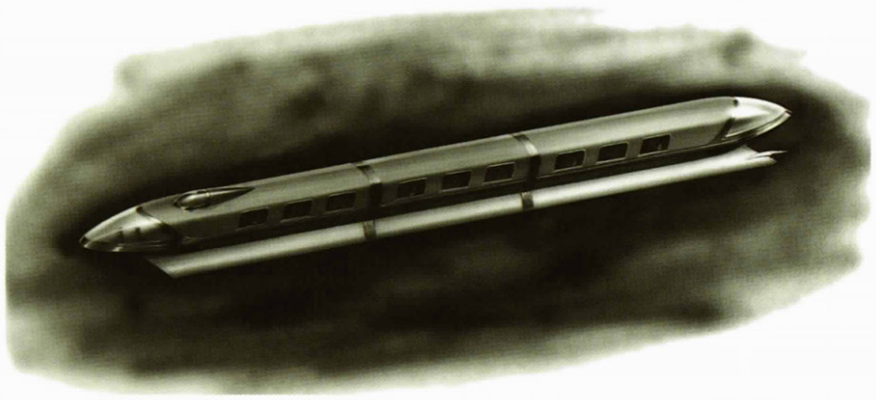
Before long, monorail construction was occupying most of huge Stage 3 at the studio. At the same time, the studio was filming BABES IN TOYLAND and storing numerous large props on the stage. As had happened earlier (during construction of the Disneyland steam trains), territorial skirmishes broke out almost daily, with each operation elbowing the other for space. (The situation was finally resolved in February 1962, when Walt moved WED to an industrial park on the corner of Flower and Sonora streets in Glendale, California.)



Imagineer John Hench designed this popular poster for the Disneyland-Alweg Monorail System, "First in America!" Brett Thompson collection, © Disney Enterprises, Inc.

Opposite lower left: Mary Broggie and Bob Gurr enjoy a futuristic ride aboard the Viewliner. Each car featured two speedometers—one of which is seen here—calibrated to register four times the train's actual speed. Roger Broggie photo, © Disney Enterprises, Inc.

Opposite lower right: Imagineer Bob Gurr, Viewliner designer, models the train's stylish engineer's uniform. Roger Broggie photo, © Disney Enterprises, Inc.





Above: This silver bullet, poised in space, is Bob Gurr's initial rendering of a monorail train for Disneyland. Retlaw Enterprises, Inc. collection.

Right: Walt, who was avidly interested in all forms of transportation, points to a futuristic, stylized image of monorails. © Disney Enterprises, Inc.

Highway in the Sky

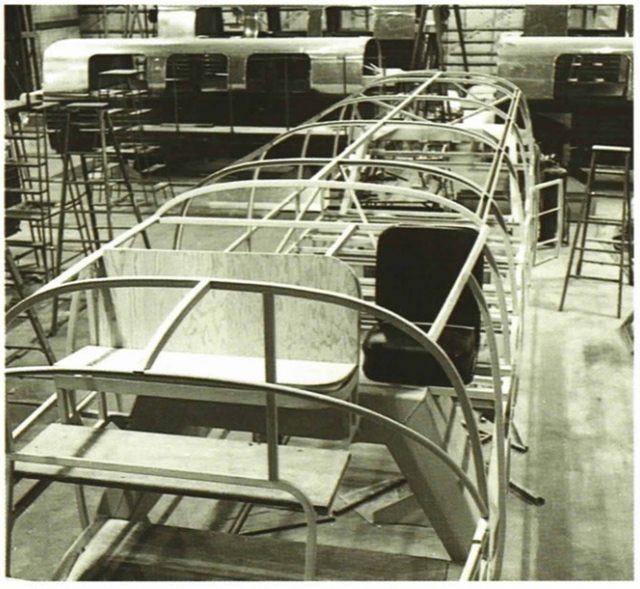
Two three-car trains were completed, trucked to Anaheim, and carefully hoisted by crane onto the "Highway in the Sky" by June 14, 1959, just in time for Vice President Richard Nixon and Walt Disney to cut the ribbon on opening day. The Disneyland-Alweg Monorail System routed its two sleek trains—one trimmed in blue, the other in red—over the Submarine Voyage's lagoon, around the mighty Matterhorn Mountain, and over the treetops of the Fantasyland Autopia, along 8/10ths mile of guideway.

Bob Gurr remembers the hard work required by many individuals to get the Monorail into operation. One was Disneyland Transportation Superintendent Earl Vilmer. Earl was from the "old school" of steam railroading, and didn't have much to say about the newfangled conveyance system. On the first night of operation, however—as the sleek blue-and-silver monorail train glided in near silence over the Submarine Lagoon—a voice came over the Monorail System's two-way radio: "Ah, that's a thing of beauty." Bob claims the unidentified person sounded a lot like the stoic Vilmer.

Two years later, in June 1961, the guideway was extended to a total passenger run of 2-1/2 miles, through the huge guest parking lot and across West Street, connecting the Park with the Disneyland Hotel. This extension established the Disneyland-Alweg Monorail System as the first in America to run adjacent to a major public roadway (Harbor Boulevard) and to cross a city street (West Street). With the extension, a gold train was added to the red and blue trains, increasing capacity by 50 percent.

Since the Disneyland-Alweg Monorail System first opened, the trainsets have progressively been replaced with more modern ones. The originals were known as the Mark I monorail trains; Mark V versions operate today. (Disneyland has seen a total of four trainset designs over the years; although the current ones are designated as the fifth version, the "Mark IV" trainsets [in this numerical progression] were developed exclusively for Orlando.)

Why do monorail trains have to be replaced more often than the







Park's durable steam railroad equipment? According to Roger Broggie, the monorail equipment is simply not heavy enough to withstand rigorous duty; the trains were constructed under severe weight restrictions—similar to those of aircraft. The weight-to-durability ratio is 1.5 to 1 for the monorail trains, and 8 to 1 for the steam trains. At some point in the future, a more rugged and lightweight material suitable for monorail construction will most likely be developed.

As new monorail trains have been introduced, the old ones have been taken out of service and scrapped. One survivor of the cutting torch, however, is the lead unit from "Old Red" (the red trainset in the Mark II series). When this train was decommissioned, Imagineers redesigned its head-end car into the "Mouse-O-Rail." The unique conveyance made its international debut in the 1976 Tournament of Roses Parade—hosted each year in Pasadena, California—and continues to serve as sort of a "Pope-mobile" for Mickey.

Top: Construction of the Mark II trainsets is under way at the studio. The construction techniques were similar to those utilized for aircraft, where a tubular, outer skeleton serves as the frame. © Disney Enterprises, Inc.

Above left: One of the Mark II Monorail trains is given finishing touches on the studio's backlot, near the Absent-Minded Professor's "home." © Disney Enterprises, Inc.

Above right: A Mark II coach is moved around on a dolly at the studio. © Disney Enterprises, Inc.



The Mark I trainsets inaugurated service on the Disneyland-Alweg Monorail System in 1959. Here, this early view shows one of the sleek conveyances passing over the Submarine Voyage's lagoon. © Disney Enterprises, Inc.



Monorail Techno-Trivia

BACK IN THE DESIGN PHASE of what would become the Disneyland-Alweg Monorail system, Disney Imagineers produced the following to describe the "how and why" of the monorail trains and their guideway. Although it gets a bit hard to follow at points—and is infinitely detailed overall—the technophile of Disneyland-Alweg Monorails will undoubtedly enjoy the following, reproduced here in its entirety.

Original Technical Data

Each of the three-car trains is driven by two 50 horsepower direct current traction motors. These motors have a capacity of sufficient energy to operate a four-car train. Power is supplied by two steel and copper bus bars which are installed on one side of the beamway, carrying 300 volts. This power is supplied from a 600 amp silicon diode rectifier to the bus bar system at five points along the main track. The bus bar is covered by a continuous aluminum shield for protection of maintenance personnel. The train tows two electrical power pickup carriages which roll on spring-loaded nylon wheels along the bus bars. The DC motors, with high torque and low rpm, in conjunction with the high friction value of rubber tires on a concrete surface, provide rapid acceleration. The power and drive equipment is standard type, readily obtainable equipment manufactured by the Westinghouse Electric Company, which had been perfected and proven reliable through many years of rapid transit operation.

The signal equipment employs the latest electronic techniques to provide an Automatic Block System for detecting the presence of a train in any designated section of track. Information produced by this system is obtained from the wayside by electronic means and displayed in the control compartment of the train by a cab signal system which indicates the manner in which the train must be operated. A speed control system enforces the proper observance by the operator of the cab signal indications and any special wayside speed restric-

tion that may be established.

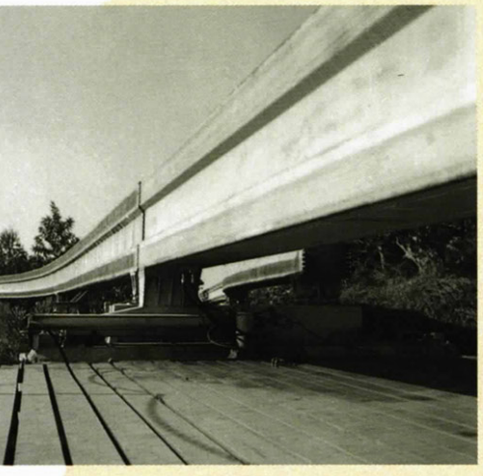
The beamway consists of 104 precast concrete beams, with maximum spans of 40 feet, and 104 precast concrete columns. The beamway has grades of 7 percent and curves of 120 foot minimum radius. It has a maximum super-elevation of 8-1/2 degrees to aid in resisting the centrifugal forces and to improve passenger comfort.

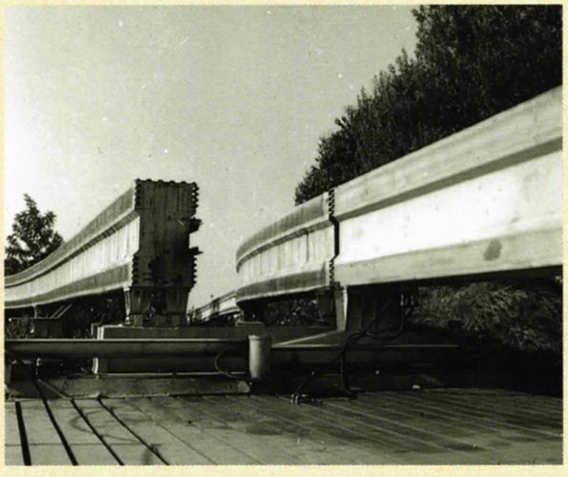
This super-elevation is approximately 50 percent of maximum theoretical super-elevation for the speed and curvatures used on this system. Full super-elevation is reached by means of intricate transition. Throughout the length of the transition curves the radius varies; thus, a passenger riding in a train traveling at a constant velocity is aware of a constant lateral acceleration.

The beams were designed as simple-span members. Torsional stresses due to the curvature of the beams, the centrifugal force, and other lateral forces are resisted entirely by a massive cage of reinforcing steel acting in conjunction with high strength concrete in each beam. High-strength steel castings and high-strength anchor bolts at the ends of each beam carry the torsional and vertical forces to the piers. Provisions were made in the steel castings for lateral and vertical adjustment as required by erection and fabrications tolerances. The piers were erected on large diameter anchor bolts which support leveling bolts and nuts. Further adjustment was obtained both vertically and laterally for the beamway by using over-sized sleeves for these anchor bolts. After erection the sleeves were grouted, and expanding grout was used in the area beneath the pier base. The concrete mix design resulted in concrete of exceptionally good quality. Twenty-eight day compression tests indicated minimum strengths of more than 5,000 lbs. per square inch. The use of 1/2 of 1 percent of calcium chloride in conjunction with steam to cure the beams and piers made it possible to remove them from the forms 24 hours after casting. At that time, control tests indicated minimum compressive strengths of 3,000 lbs. per square inch.

Structural analysis of the beamway design was verified by means of a full scale test conducted on a curved beam 35 feet in length. Static loads were applied simulating the maximum load conditions for movement and shear. The results verified the basic assumptions and indicated a factor of safety of approximately 3-1/2.

The modern speed ramps carry passengers up to and down from the loading platform. These rubber belts travel at a speed of 125 feet per minute and are driven by electric motors which have a variable speed drive. The entrance ramp is 30 inches wide and the exit ramp is 42 inches wide. The maximum capacity of these ramps is 6,000 persons per hour.





This moveable section of beamway, behind Tomorrowland, allows Monorail trains to be switched from the main line (left) to the "Roundhouse spur." Both, © Disney Enterprises, Inc.





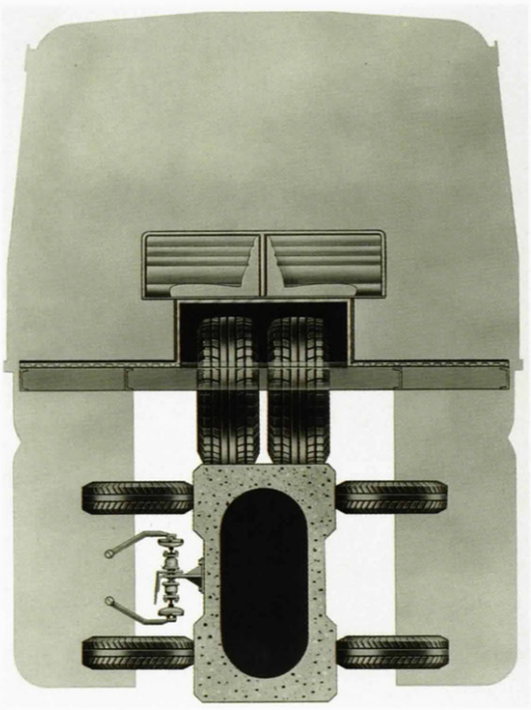
Top: This sign graces the combination monorail/steam train Roundhouse Facility in Disneyland's backstage area. CPHS collection, © Disney Enterprises, Inc.

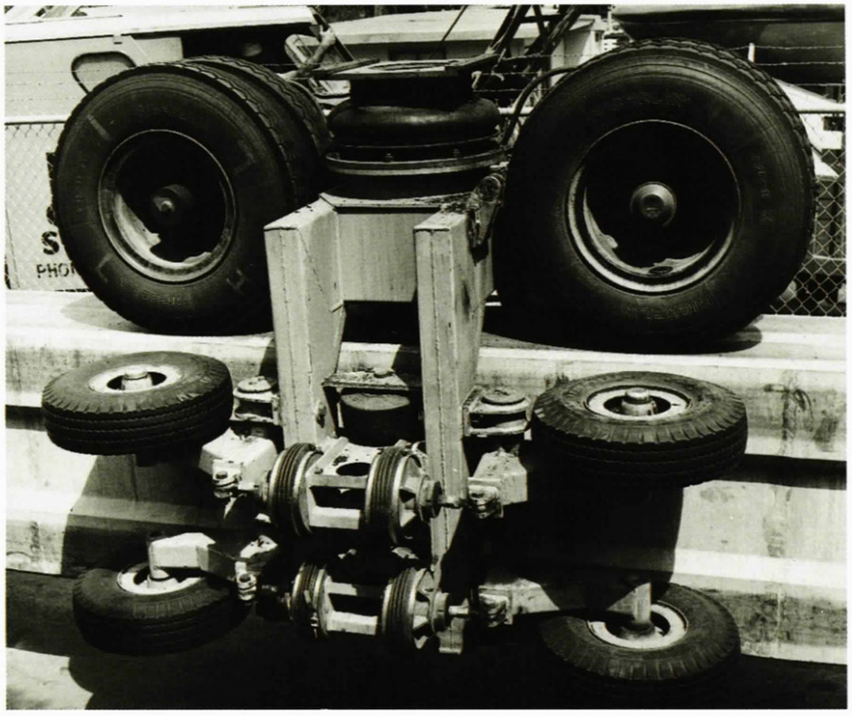
Above: Juxtaposition of old and new is a regular occurrence in the dual-purpose "Roundhouse." CPHS collection, © Disney Enterprises, Inc.

Right: A Matterhorn Bobsled races around the Park's newly opened "mountain" as a sleek Mark I trainset glides past in August 1959. © Disney Enterprises, Inc.









Two views above: This diagram and photo illustrate how the Monorail trains travel along their concrete beamway, silently propelled by two 50-h.p. electric motors drawing current from a 300-volt buss line installed to one side of the beam.
Roger Broggie photo, both illustrations
Retlaw Enterprises, Inc. collection.



Santa Fe Monorails?

WHEN OFFICIALS OF THE Atchison, Topeka & Santa Fe Railway learned about the Alweg monorail system's addition to the Park, they reminded Disney officials that their agreement would not permit another company's name to be applied to a rail system at Disneyland. A compromise was worked out, allowing the monorail to be called the Disneyland-Alweg Monorail System—but with the Santa Fe's familiar cross-within-a-circle logo applied to every monorail car. The logos were removed after the Santa Fe declined to renew its participation at Disneyland in 1974.





Above: Workers position Monorail coaches on the concrete beamway, in front of the roundhouse, during installation of America's first operating monorail system. Retlaw Enterprises, Inc. collection.

Left: In June 1961, Disneyland's Monorail beamway is being extended across the guest parking lot to the Disneyland Hotel. Total length of the completed system is 2-1/2 miles. Retlaw Enterprises, Inc. collection. Used by permission of Disney Enterprises, Inc.



Scene Four

A Magic Kingdom





Perchance to Dream

I don't believe that there's a challenge anywhere in the world that's more important to people everywhere than finding solutions to the problems of our cities.

—Walt Disney

In his later years—having finally achieved financial security for himself and his family—Walt Disney became deeply interested in the problems and challenges facing humanity. Concerned especially about the decline and decay of cities, Walt selected this for what was to become his final challenge.

Conveying Solutions

Efficient movement of people intrigued Walt from the time Disneyland was in its earliest planning stages. Nearly every attraction at the Park created a unique human transport challenge. Often, the conveyance solution was hidden behind the facade of the show. However, without an effective internal tranporter system, ride capacity and economical operation wouldn't have been feasible.

As his dreams expanded, Walt set out to address the problems created by personal transport conveyances (particularly automobiles) in cities. His futurist view is found in his original plans for EPCOT (Experimental Prototype Community Of Tomorrow). Using the proven technology of monorails for macro transportation, he planned to eliminate gasoline-powered vehicles from EPCOT's city core by using an electric People-Mover system developed by his WED/Mapo Imagineers. Instead of having each transporter unit powered by individual engines, the People-Mover system would be powered by numerous electric motors imbedded in its guideways.

As a result, Florida's Walt Disney World Resort today has one of the world's most effective transportation systems. Utilizing buses, trains,

Disney World is conceptualized in this illustration by Herb Ryman, who had a talent for capturing Walt's verbal descriptions.
Lucille Ryman Carroll collection. Used by permission of Disney Enterprises, Inc.



Above: Bathed in Florida sunlight, Welton Becket, Joe Fowler, Card Walker, and Dick Nunis collaborate on the layout for Walt's dream project. © Disney Enterprises, Inc.



Right: A series of plot plans were developed to determine the best use of 42 square miles in central Florida. This detail of an early version shows an Experimental Prototype Community Of Tomorrow (EPCOT), with a dome-covered core city and a large regional airport. © Disney Enterprises, Inc.

monorails, boats, and conveyances of all descriptions, the resort effortlessly moves millions of people throughout its vast property. It is a tribute to Walt and his Imagineers that—to the casual observer, who visits the resort to be entertained—these many conveyances are simply there and reliable. The stuff of dreams has become practical and efficient transportation.

Education was another interest of Walt's; he believed learning could be entertaining as well as instructive. In 1996, the Disney Institute opened at Walt Disney World, offering over 60 different workshops for older children and adults. Created as an innovative form of vacationing, the Institute follows a general plan Walt envisioned over 30 years earlier in his original concept for EPCOT.

Beyond transportation and education, Walt wanted to help improve housing, utilities, medicine, communications, and the envi-

ronment. Disney World was to be his "lifestyle laboratory." Transcending entertainment, his Experimental Prototype Community Of Tomorrow would be a place where technological advances could be introduced into actual living and working situations. Families residing in EPCOT would provide feedback on new products, services, and systems through a computerized network. Walt's vision was to share this feedback—and the resulting discoveries—with designers, futurists, companies, and governments.

Form and Function

As the dream took shape, so too did plans for its implementation. Thus—over a period of nearly four years beginning in the early 1960s, and with the efficiency of a commanding general—Walt Disney directed the acquisition of nearly 27,000 acres of central Florida. He even set up a "war room" (in a secured location near his office in the Animation Building) to monitor the campaign. Daily postings updated a huge "situation" map of central Florida, displaying a patchwork of property in various stages of purchase.

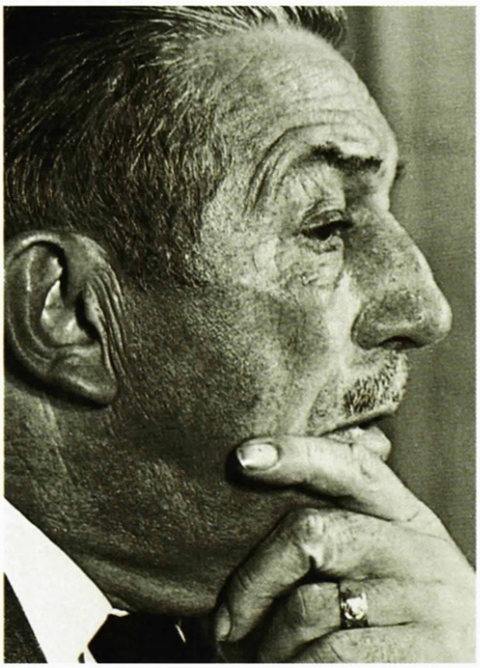
In late October 1965, the Orlando SENTINEL correctly identified the mystery buyer. Leading up to the paper's disclosure, the Disney organization had conducted secret field surveys, site selection junkets, property rights evaluations, and municipality research before settling on a vast expanse of dark-watered swamps, stands of cypress, and lodgepole pine occupying Orange and Osceola counties, south of Orlando.

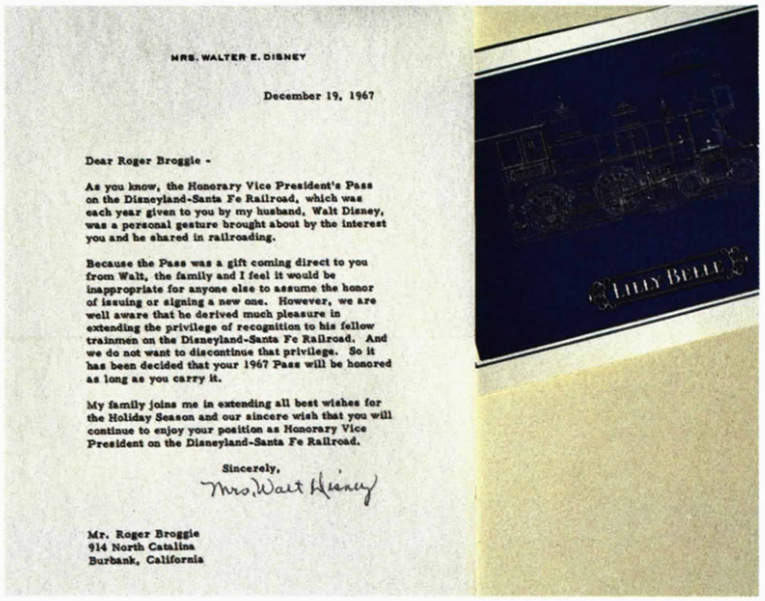
Much of the land was purchased through a phantom company called Compass East Corporation, set up simply to divert attention away from Disney. Compass East executive Bob Foster used his mother's home address in Kansas City as the company's, helping to conceal any connection to the West Coast and providing protection for his clandestine land-buying operation. By the time word finally leaked out, nearly 42 square miles had been acquired for $5 million. Although this sum seems large, it represented approximately 1/10th the cost-per-acre of the site in Anaheim, purchased 12 years earlier.

As a condition of locating the project in Florida, Walt also insisted on having "municipality powers" over the project, which was granted by the state's legislature and governor. With the unprecedented cooperation of the Florida government, Walt's new project had the authority to implement and alter its own municipal codes to meet the dynamics of technological change.

With the land under Disney ownership, and municipality rights granted to the company, planning began. WED designers submitted a series of plot plans to Walt, overlaid on large aerial photographs of the site. In particular, the 15th version of the plan showed a commercial airport, a prototype city of tomorrow, an industrial park, a residential area, and a new Magic Kingdom, linked together by an elevated monorail system. Basic to the new theme park's plan was the familiar triangular boundary, encircled by a steam-powered railway. A high earthen berm wouldn't be necessary in Florida, however, since the company controlled everything for miles around the site.

Within the Disney organization, there was debate over the merits





MRS. WALTER E. DISNEY

December 19, 1967

Dear Roger Broggie -

As you know, the Honorary Vice President's Pass on the Disneyland-Santa Fe Railroad, which was each year given to you by my husband, Walt Disney, was a personal gesture brought about by the interest you and he shared in railroading.

Because the Pass was a gift coming direct to you from Walt, the family and I feel it would be inappropriate for anyone else to assume the honor of issuing or signing a new one. However, we are well aware that he derived much pleasure in extending the privilege of recognition to his fellow trainmen on the Disneyland-Santa Fe Railroad. And we do not want to discontinue that privilege. So it has been decided that your 1967 Pass will be honored as long as you carry it.

My family joins me in extending all best wishes for the Holiday Season and our sincere wish that you will continue to enjoy your position as Honorary Vice President on the Disneyland-Santa Fe Railroad.

Sincerely,

Mrs. Walt Disney

Mr. Roger Broggie
914 North Catalina
Burbank, California



Above: At a time in life when most successful individuals consider retirement or at least added relaxation, Walt Disney launched the most ambitious project in the history of private development. Mrs. Walt Disney collection, © Disney Enterprises, Inc.

Above right: A year after Walt's death, Mrs. Disney sent letters to "honorary vice presidents" of the Disneyland-Santa Fe Railroad [sic], notifying them that their annual pass for 1967—the last issued by Walt—would be honored "as long as you carry it." CPHS collection.

Below right: For special friends and colleagues, Walt annually issued honorary vice president passes for the Santa Fe & Disneyland Railroad, good for "complimentary passage on any train of the S.F. & D.R.R." The fact that Walt personally signed each card made them particularly desirable.

of building another Disneyland. Some thought that the Park in Anaheim couldn't be improved upon, and that it therefore should be exactly duplicated. Others saw the opportunity to develop an entirely new concept, and recommended a complete departure from Disneyland's original layout and design.

In the end, Walt reasoned through a compromise with his talented staff: This new Park would utilize essentially the same layout as Disneyland, but Imagineers would have the opportunity to build it on a much grander scale—and use technology that was more than 10 years newer. None could dispute the success of Disneyland. It had proven over time to be the consummate demonstration of the design caveat, "form follows function."

Journey's End

As 1966 drew to a close, Walt's colleagues noticed that he had aged beyond his 64 years. Rumors began to spread that Walt's "polo injury" was much more serious. His omnipresent cough had deepened, and his familiar shuffle in the hallways was decidedly slower.



For more than six decades, Roy and Walt Disney worked together to lead and manage the Disney organization and its numerous undertakings. Upon his younger brother's 1966 death, Roy ably met the challenge of wearing the Disney mantle alone.
© Disney Enterprises, Inc.

The reality was that, during an October operation for calcified bone in his neck, X-rays had revealed a walnut-sized tumor on Walt's left lung. In November the lung was removed; when the surgeon emerged from the operation and met with Walt's family, he was grim. The cancer had metastasized, leaving the great showman with only a few months to live.

Lilly, Diane, and Sharon were shocked at first, but they resolved to make Walt's last days as pleasant as possible—while hoping and praying for a miracle. In two weeks Walt was ready to leave St. Joseph's Hospital, located directly across Buena Vista Street from the studio. He phoned his secretary, Tommie Wilck, to come and pick him up, and spent the remainder of the week catching up on projects. On November 21, he paid his last visit to WED's facility in Glendale. Marc Davis remembers that as Walt was leaving, he turned and said, "Good-bye, Marc." Walt had never said good-bye; he'd always left with, "See ya, later."

A few days after Thanksgiving, Walt re-entered the hospital. For the next two weeks, he held a series of meetings with family members and colleagues. At one point, he described his final thoughts about the Florida project to Roy. Using the one-foot square acoustical tiles on the

ceiling, Walt created an imaginary layout of the property.

The night of December 14, the brothers had a long talk. After Roy left, Walt looked across the street at the studio, where lights still shone in many offices as his team worked into the evening on the company's many exciting projects. One of the night nurses listened as he expressed his regret that he wouldn't be around to be sure everything got done right. Walt finished by telling her that he had the utmost confidence in Roy, who had promised to see Disney World completed.

The next morning at 9:35, Walt Disney died. An acute circulatory collapse, just 10 days after his 65th birthday, had ended his incredible journey. News reports headlined the sad tidings as people throughout the world joined the Disney family in mourning its loss.

Tribute for a Showman

A simple memorial service was conducted quietly at Forest Lawn Memorial Park in Glendale, attended only by members of the Disney family. To ensure privacy, the mortuary was directed not to issue its customary funeral notice to the newspapers. Following the service, Walt's remains were cremated, then held by Forest Lawn for nearly a year until arrangements were finalized for a family plot at the Glendale cemetery.

(The service's secrecy, Walt's subsequent cremation, and the delay in his burial generated outrageous and persistent rumors of his body being frozen for preservation; these still annoy the family. Likely, the fable was given support by those who simply couldn't accept that Walt was actually gone, and by others wanting to perpetuate the story for its morbid sensationalism.)

The next day, putting his own grief aside, Roy rallied Disney's management and Imagineering team with a rousing talk, encouraging them to continue Walt's legacy. Many who were present said it was the best speech Roy had ever delivered; with this address, he also solidified his position as the company's new leader.

Roy closed his eloquent and emotional address by announcing that Walt's first name would be added to the title of the Florida project. In this way, Walt Disney World would remain a permanent tribute to his beloved brother and lifelong business partner.





Fire Bulls of Yucatan

The way to get started is to quit talking and begin doing.

—Walt Disney

As it had at Disneyland, responsibility for the transportation systems at Walt Disney World (including steam trains) again fell under the direction of Roger Broggie. Roger had recently completed work on four New York World's Fair exhibits (produced by WED's Imagineers) for Pepsi Cola, The Illinois Commission, Ford Motor Company, and General Electric. Appointed vice president and general manager of Mapo, Inc.—the newly created research and manufacturing arm of Imagineering—Roger moved from the studio to WED headquarters in Glendale.

Roger first discovered that Florida wasn't as flat as it appeared. "We're going to deal with grades up to 2 percent," Roger reported to Roy Disney after surveying the Magic Kingdom's raw terrain. He suggested using larger steam engines than those at Disneyland. More power would also allow longer trains to be hauled and increase ride capacity.

"When we started talking about trains for Florida," Roger recalled, "I pointed out the fact that it would be better to find equipment in existence than to go through building everything from scratch." Roger's positive experiences acquiring and rebuilding two used locomotives for Disneyland (Nos. 3 and 4) undoubtedly played a part in his recommendation.

These brass bells, whistles, and other assorted fittings were among many items—including steam locomotives—brought to Florida for Walt Disney World's Magic Kingdom steam railroad. Crafted in the United States, all had spent their working lives in Yucatan, Mexico. Roger Broggie photo, CPHS collection.

Toros de Fuegos

Over the years, Roger had received phone calls and letters from various people, wanting to sell locomotives and cars to Disney because they knew Walt loved trains. One such fan, who lived in Chicago, wanted to sell his railroad equipment stored in Yucatan, Mexico.

"I got in touch with Jerry Best and asked him what this guy was talking about," said Roger. Jerry showed Roger a book he had recently written about Mexico's national railroads entitled MEXICAN NARROW GAUGE, in which all of the steam locomotives used on Yucatan railroads were listed by builder and number, accompanied by history, age, origins, and weight.

Carved by a massive asteroid strike 65 million years ago, Yucatan's peninsula juts into the the sea, dividing the Gulf of Mexico from the Caribbean. This ancient land was slowly formed by coral, building up over time, that metamorphosed into solid limestone. Laced with underground rivers, the area would have seemed a good agriculture base—except its soil was thin and sandy. In the western part of the peninsula, where the soil was more substantial, densely knotted jungles claimed the land, essentially isolating the state of Yucatan from the rest of Mexico.

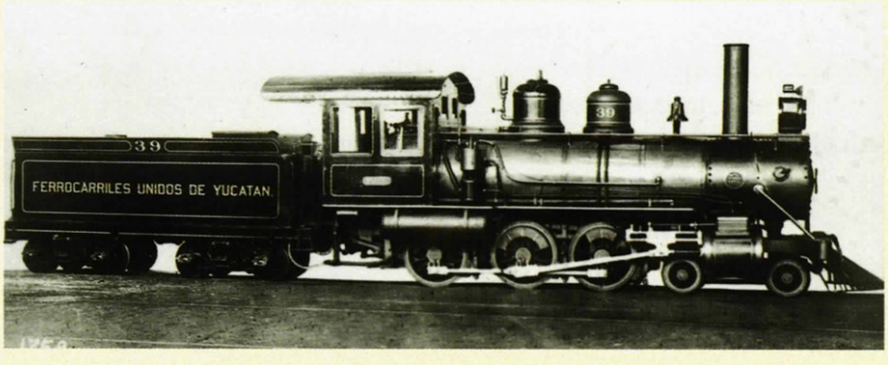
Steam engines first appeared on the peninsula in 1875, creating quite an impression on the Mayans. The sight of these puffers at night



Rope Trains

IN 1950, THE YUCATAN AND MEXICO were finally united by rail with completion of the standard-gauge Sureste Railway. It must have been exceedingly difficult to hand-carve the railway through 112 miles of heavy undergrowth and solid limestone. In places, ballast for the roadbed consisted of crushed rock obtained from Mayan ruins (a practice discontinued under pressure from preservationists). Uninterrupted rail service between Mexico City and the capital city of Merida was not possible for another 12 years, however, until the Mexican government finally completed a bridge at Coatzacoalcos.

To the south and west of Merida, the only commercial crop grown in any abundance was a plant called *Agave sisalense*, or sisal hemp. Its fiber was used in making high-quality hemp, which was then woven into some of the world's finest natural rope. Eventually—with over 400 plantations flourishing across the plain—468 miles of rail lines were installed to haul the crop to a large mill in Merida, where the fibrous material was separated and baled. Bales were then loaded into gondolas for the 22-mile run north to the port of Progreso, where they were shipped by international traders to countries throughout the world.



In its heyday, this locomotive was one of many powerful workhorses built in the United States for the United Railroads of Yucatan. Two nearly identical 4-6-0 type engines would eventually be selected for Walt Disney World's Magic Kingdom. Gerald Best photo, CPHS collection.

must have been incredible: a bright headlamp pierced the ink-black sky; fiery yellow plumes shot from the stack with each powerful chuff; and the firebox's bright glow danced beneath the locomotive's cab, as each iron behemoth thundered through the countryside, hauling a cacophony of rolling stock. The Indians had an appropriate name for the intruders: *Huakax-Kaak*. The Spanish translated the name as *Toro de Fuego*. In either language, the meaning was the same: Fire Bull.

Motive power for the peninsula's railways had been supplied primarily by Baldwin Locomotive Works of Philadelphia. Numerous fine examples of narrow-gauge Baldwin steamers were constructed and shipped—between 1886 and 1928—for use on the Yucatan's railways. While Jerry Best was doing research for his book, he visited Merida and penned this description:

> *The first time I saw the old engine terminal building a few blocks from the Merida station, I thought I was stepping back into the last century. Inside the massive walls of the long, rectangular building, into which the locomotives came and went through a tunnel-shaped door, was a turntable with radial tracks of varying lengths . . . the turntable opened to the sky to allow for light and ventilation. On these radial tracks were the active steam engines of both gauges, a few of them being under light repairs. Several long tracks extended back into the vast recesses of the ancient structure, to the section filled with machinery for heavy repairs. On one of these tracks were half a dozen partly dismantled engines, among them No. 16 [with its 4-4-2 high-wheel arrangement], with boiler jacket missing, no rods, no pilot, but the great bonnet stack still reaching almost to the rafters. Standing idle was one of the largest Corliss [stationary steam] engines I have ever seen, in perfect condition and able to start at a moment's notice. The old overhead shafting and belts [for powering machinery] were still in place, though all of the machinery in daily use had been converted to electric drive with individual motors. Among the engines stored on the radial tracks were two wood-burning 4-4-0s from the early days, with one of the postwar 4-4-0s in between. It was a veritable museum of early-day Mexican railroading, and worth going miles to see.*

As Roger began his search for vintage steam engines to be used at Florida's Magic Kingdom, the Mexican government—by fortunate coincidence—was stepping up its conversion to diesel-electric locomotives. One-by-one, the old steam locomotives were being retired to a railroad "boneyard" (outdoor storage yard) to await their uncertain fates.

At this same time, Earl Vilmer—Disney's expert railway builder—was still assigned to Disneyland, although plans called for transferring him to Florida to supervise building and operation of the new Park's railroad. Roger called Earl and informed him that he was going on a trip down to Merida to see some old Baldwins. Perhaps Earl could come along and help determine if they could be renovated for Walt Disney World?

Roger also wanted to bring along Tony Sepulveda from Disneyland's landscaping department; he thought Tony's bilingual abil-

ity could save the company many times the cost of his ticket. Unfortunately, tight budgets didn't allow for a third person on the junket, leading Roger to remark later, "It was false economics to not take Tony, but we learned a useful lesson for the Tokyo park; it pays to have the ability within your own team to communicate directly in the native language without an interpreter."

No Problem

Earl and Roger caught a plane from Los Angeles to Miami, and their connecting flight—crossing the Gulf of Mexico to Yucatan—took about an hour and 15 minutes. When the two men disembarked from the plane on May 6, 1969, they felt as if they had stepped into another world.

Merida, with a population of 190,000 people, was a picturesque city of contrasts: cobblestone streets interlaced with modern highways, quaint thatch-roofed adobe structures nestled among handsome new buildings, and Mayan Indians in bright white native wear mingled with executives in business suits. The ambiance was completely different from the bustling metropolis of Mexico City, or the tourist-oriented Tijuana. Many of the residents were direct descendants of the ancient Maya, and because of the extremely dense jungles on the western boundary of the peninsula, had not mixed with the marauding Spaniards as had the rest of Mexico.

Roger and Earl were met by *Ferrocarriles Unidos de Yucatan* (UdeY—United Railways of Yucatan) officials, and taken directly to the railway equipment boneyard. When Roger told his hosts that he and his *compadre* were looking for four locomotives, he learned that Mexican government regulations would not allow Disney to buy locomotives and remove them from Mexican soil. Fortunately, however, there was a legal loophole: American-made products—in this case, the Pennsylvania-built Baldwins—could be purchased from the government and taken back to the United States.

The first two locomotives selected by Roger and Earl, Nos. 274 and 275, were identical 4-6-0 "Ten Wheelers." Built at the same time by the Baldwin Locomotive Works, they'd been assigned consecutive construction numbers (58444 and 58445) and shipped to the Yucatan port of Progreso in May 1925. For more than 40 years, this pair had worked together on the narrow-gauge rails, hauling bales of sisal to the docks in Progreso. Often they'd pulled a mixture of rolling stock, including gondolas, boxcars, and passenger coaches. With an abundance of tropical hardwood available for fuel, the two locomotives had been ordered as wood-burners, with tender capacities of 2-1/2 cords of wood and 2,500 gallons of water. Both were in working order, and seemed to be in reasonably good condition—considering the rigorous use they'd seen in Yucatan's jungles.

The next choice was a long-coupled (the long wheelbase was necessary because the firebox was between the second and third drivers' axles) 2-6-0 "Mogul"-type. Built by Baldwin (construction number 60598) in September 1928, it was UdeY No. 260.

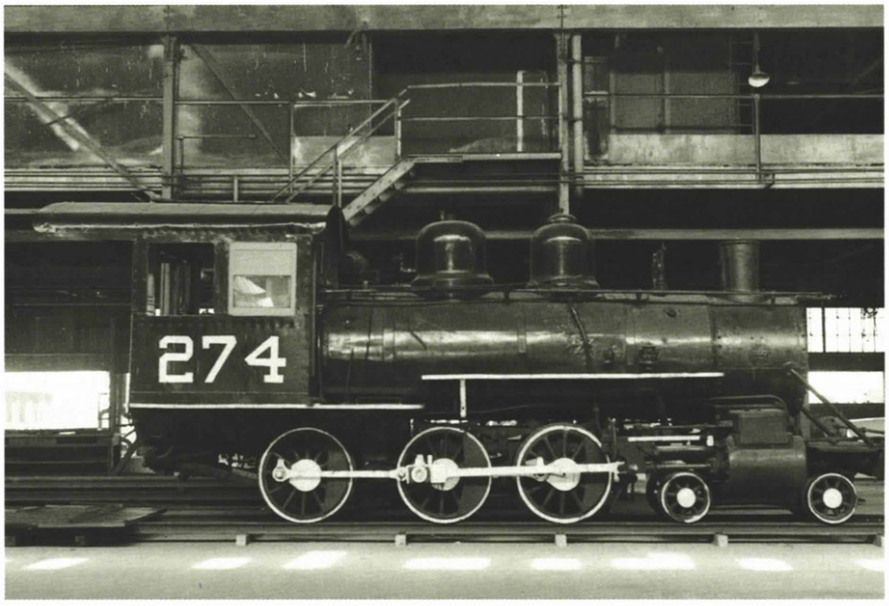
The fourth locomotive, a 4-4-0 "American"-type, carried Baldwin



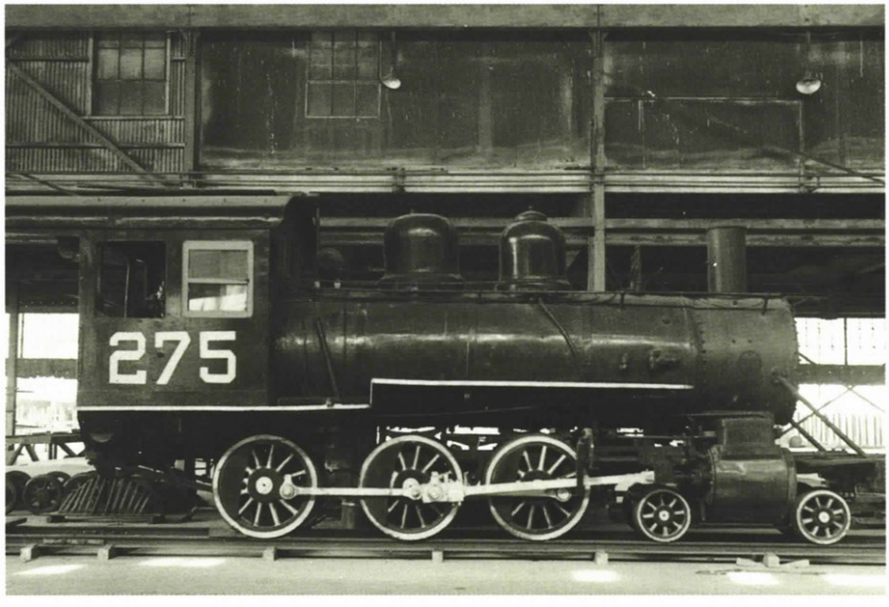
One of the locomotives selected for shipment to Florida was this 1928-vintage Baldwin 2-6-0 "Mogul" type. When refurbished, it became No. 2 Lilly Belle, *named in honor of Mrs. Walt Disney.* Roger Broggie photo, CPHS collection.



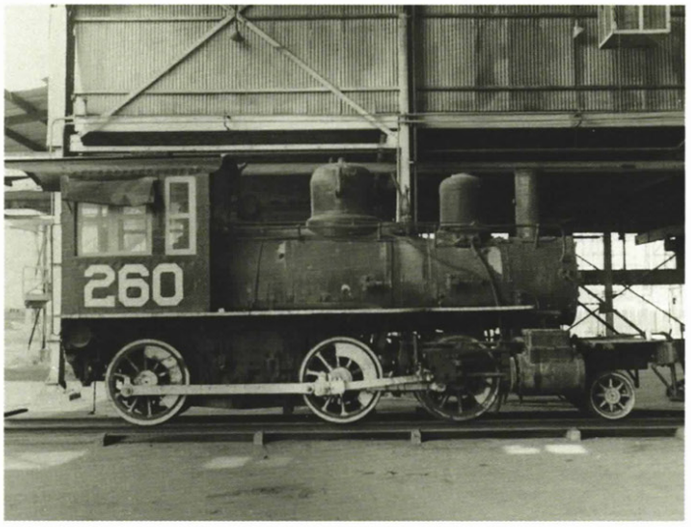
Above right: Tenders from four of the five selected UdeY locomotives arrive in Tampa. Roger Broggie photo, CPHS collection.



Right: UdeY locomotive No. 274, a 4-6-0 "Ten Wheeler"-type, was destined to become No. 1 Walter E. Disney *in Florida.* Roger Broggie photo, CPHS collection.



Lower right: No. 274's identical twin, the 275, would become Walt Disney World's No. 3 Roger E. Broggie. Roger Broggie photo, CPHS collection.





Above left: No. 260, the future Lilly Belle. *As with the others brought from Mexico, this locomotive at first appeared so drab and lifeless that restoration crews were given color pictures of Disneyland's operating steamers as inspiration.* Roger Broggie photo, CPHS collection.

Above right: UdeY 4-4-0 No. 251 is seen aboard a flatcar in Tampa. It would become No. 4 Roy O. Disney *in Florida.* Roger Broggie photo, CPHS collection.

construction number 42915 and had been completed in February 1916. (Even though Roger favored six drive wheels for more tractive effort, the Mexicans were still using this locomotive every day, and praised its stouthearted performance.) "We assumed that a running engine would be easier to restore," Roger said. "However, with this engine we were in for a little surprise."

The final "fire bull" selected was No. 52, a 2-6-0 Mogul built by Pittsburgh Locomotive Works in 1902. Preserved on a platform in a small park, across from the Merida train station where the UdeY offices were located, this locomotive was an afterthought of Roger's. "We had planned to buy just four, but then we saw this one on blocks in a park, a sort of monument, and it seemed to be in better shape than the others. So we arranged to buy it, too," recalled Earl. It was already agreed that the Mexican officials would accept $8,000 each for the four Baldwins. Roger asked how much the fifth locomotive would cost: $750 was the reply—if Disney would pay to have it removed.

A crew brought in lumber and rails to build a ramp. The idea was to ease the little Mogul off its park platform onto temporary rails, then ramp it down slowly, with a large bulldozer anchoring it from behind with a cable. Everything was going smoothly—until the cable broke loose: Bolts holding a crossmember on the back of the engine (where the cable was lashed) were rusted, and they sheered off under the 35,000 pound weight.

The engine rolled gently down the ramp, plowing itself into soft asphalt in the middle of the street. The busy traffic artery soon filled with buses, burros, and native women balancing large bundles; women and animals soon raised a ruckus in the midday heat. "We finally got [the locomotive] out of there with a lot of tugging and pushing and the Mexicans running around assuring us, 'no problem, no problem,'" said Earl.

Hecho en Mexico

The five engines and their tenders were assembled and prepared for shipping in a nearby yard. Roger and Earl made one last inspection of the boneyard to assure themselves nothing was missed. Noticing a pile



All five engines and tenders made their 2,000-plus mile journey from the Yucatan to Tampa without incident or vandalism. Apparently, no one bothered the locomotives out of respect for Walt Disney and his endeavors. Roger Broggie photo, CPHS collection.

of brass bells, whistles, light housings, and other fittings, Roger asked, "What are you planning to do with those?"

"No plans," was the reply. "Can you use them?"

Indeed they could; the Mexican officials told Roger and Earl they could take all they wanted. Assisted by a crew, the duo loaded half a boxcar with valuable brass fittings and other spare parts. "Those solid brass bells weighed 85 pounds each and were made by some of the finest craftsmen in our country," Roger reported later.

A Tampa company—Tampa Ship Repair & Dry Dock Company, Inc., at Hooker's Point—was selected for the restoration job, instead of WED; every effort was being made to give work to Florida businesses, to help strengthen Disney's relationship with the state. (Actually, it was the only yard in central Florida with space and heavy equipment sufficient to handle locomotives. The company specialized in converting large freighters to oil tankers; its owner, George Steinbrenner, also owned the New York Yankees baseball team).

Initially, the locomotives were to be floated on a huge Mississippi barge from the port town of Progreso to Tampa behind a couple of tugboats, over a direct sea route of 700 miles. However, Roger discovered a sea voyage would cost nearly three times that of a comparable rail journey. Even though the rail distance was greater—more than 2,000 miles—railroad equipment could be hauled at the lowest freight rate.

The next step almost caused an international incident: Roger informed the officials that he was recommending Disney hire a U.S. railroad company to bring its own flatcars down to Mexico. The senior official asked the interpreter to repeat Roger's comments, so that he could be sure of their meaning.

Having again heard correctly, the official and Roger stared at each other for a long moment. "Señor, do I correctly understand that you don't think our flatcars are good enough for your transportation?," he

asked indignantly.

Roger was taken aback by the question (the rail equipment he and Earl had seen *was* in rather shabby condition), but he managed to reply in his best diplomatic tone, "No, I thought it made sense to use American equipment to haul American locomotives."

"Nonsense!" the official snapped. "We have equipment built here in Mexico that's just as good as yours. Come back tomorrow; I'll show you."

The following morning, the Disney representatives returned to the yard. On a siding running through the yard were five new flatcars. It was clear that the Mexican official wanted to prove his point!

Earl noticed that each car featured a freshly painted emblem: an eagle's head inside a circle, with the words, *Hecho en Mexico*. "They must have put these on last night," he said. "The paint's still tacky. They want everyone to know that these flatcars were 'Made in Mexico.'"



These newly stencilled "Hecho en Mexico" emblems were still wet when Roger Broggie and Earl Vilmer first saw them. Mexican officials were eager to prove they had rolling stock just as good as anything found in the United States. Roger Broggie photo, CPHS collection.

Homeward Bound

Within 24 hours, the five engines and their tenders were mounted securely on the flatcars, ready for the long journey home (along with a boxcar full of railroad treasures). To protect the cargo, the UdeY provided two shotgun-armed guards to ride along as far as the border (over 1,200 miles away) at Matamoros, across the Rio Grande from Brownsville, Texas.

At Brownsville, the cargo was transferred to Missouri Pacific's rails. The MP carried the locomotives to New Orleans, then the Louisville & Nashville transported them to Tallahassee. The Atlantic Coast Line completed the last leg of the trip, down to Tampa.

Word of the train's journey and its precious cargo spread fast among railfans living within 100 miles of its route. When wire stories mentioned that these locomotives belonged to Disney, the aura of respect surrounding Walt and his endeavors protected this convoy from potential collectors of vintage steam equipment who might "loosen" pieces of passing trains to obtain souvenirs or artifacts.

Roger Broggie recalled that, all along the train's route, people came out to see the old steamers. No one bothered the engines, however, because of an apparent respect for Walt Disney. "Walt had quite an effect on people—there's no other explanation," Roger concluded.

Certainly, there is much truth in that simple statement.


BALDWIN LOCOMOTIVE WORKS
4
PHILADELPHIA



Weaving Railroad Magic

It's kind of fun to do the impossible.

—Walt Disney

With four old steam engines acquired, work had just begun. Now these tired machines needed to be transformed—into handsome Victorian-era showpieces worthy of Walt Disney World's Magic Kingdom. This would be a monumental task, particularly since less than two years remained before the Park's scheduled grand opening. Roger Broggie would need some of the best steam railroaders in the country to assure an admirable and timely completion.

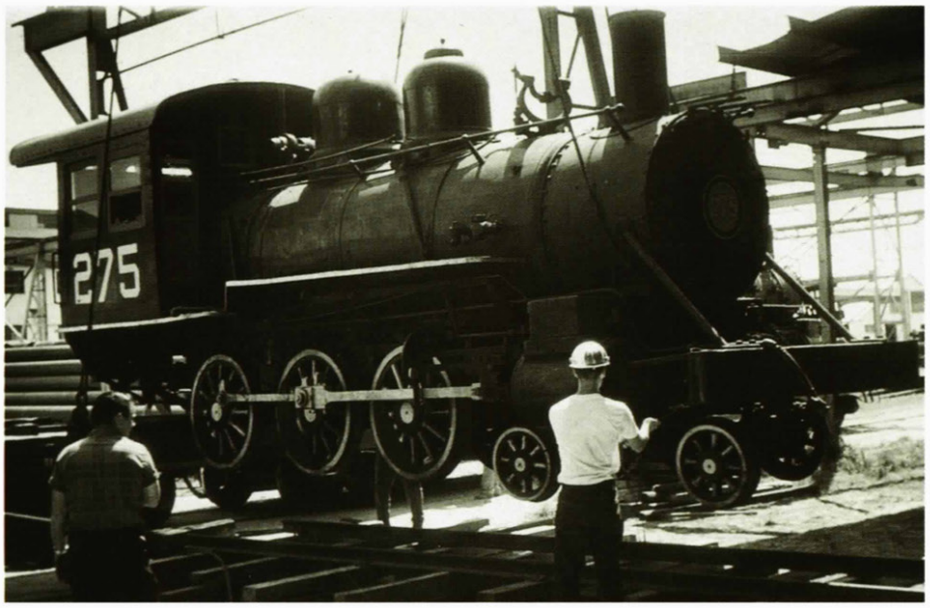
Rebuilding the Magic

Bob Harpur had stayed in touch with Roger over the years, from the time Bob was a young machinist working for Little Engines, a model live steam shop in Southern California, in the late 1940s. Roger hired him as the project engineer, reporting to Transportation Superintendent Earl Vilmer (who had relocated from Disneyland to Orlando for the project).

The first task was evaluating the resources available at Tampa Shipyard, where machines and equipment were designed to handle much heavier projects than the comparatively small locomotives. Fortunately, the existing shop machinery was adaptable. The real key to the project's success would be found in support personnel.

Earl and Bob met George Britton, who was in charge of the yard's machinists. "The first thing I told 'em was that I didn't know the first thing about railroad engines," George remembered. "But, I also told 'em I was willing to learn." George learned well during the restoration

As with locomotives 3 and 4 at Disneyland, the new arrivals in Florida would not only have to be refurbished mechanically, but also given shiny paint and plenty of well-polished brass. Many years later, Walt Disney World No. 4 Roy O. Disney *is seen at Florida's Magic Kingdom, still displaying its proud Philadelphia heritage.* CPHS collection, © Disney Enterprises, Inc.







Surgical Welder

A SURPRISE AWAITED the rebuilding crew when it tore down the 4-4-0 that would become No. 4. It turned out that the unfortunate engine's frame was broken in half!

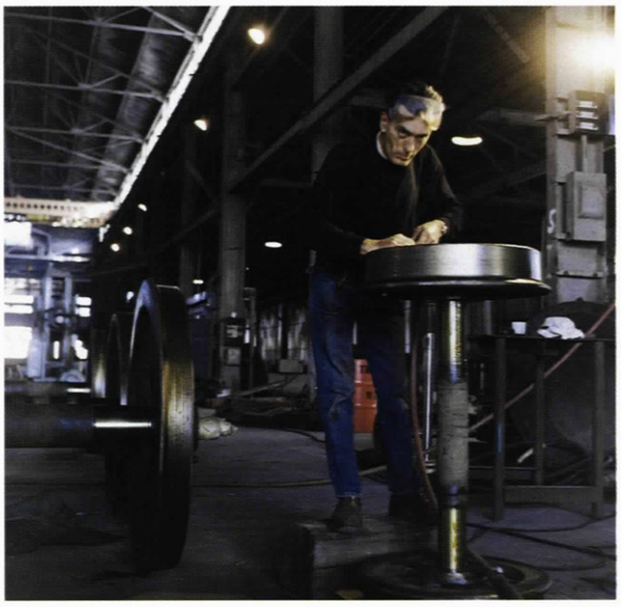
"I just about passed out," remembers Bob Harpur. "We had an old journeyman welder by the name of Willard Overstreet [who said], 'Bob, I can fix that.' I said, 'Well, I don't know.' But, he persisted and finally I told him that we'd give it a try."

Willard went right to work, grooving out the frame's break and carefully building it back up with weld metal, like a surgeon working on a patient. He was proud of the job and claimed that his welded joints were at least as strong as the frame itself.

There was a scare, however, when a large crane was brought in to lift the completed No. 4 onto the special tractor-trailer that would haul it to the Park. About the time the engine was lifted clear of the track, a loud "crack" was heard—like the sound of a shotgun blast.

Everyone thought the frame had again broken. Upon close inspection, however, it proved to be fine. Heating and cooling the metal had apparently tweaked the frame somewhat, and it was just resetting itself. (A quarter-century later, Willard Overstreet's repair was still holding.)





period, and his temporary job turned into a long-term relationship. Today, he remains roundhouse foreman at Walt Disney World.

The tenders were just buckets of rust. Bob Harpur recalled, "The only thing we used on the tenders were the trucks. Everything else was just discarded." The engines themselves were no better. They had to be torn down to their frames, and everything re-machined or replaced. The fifth locomotive—the one taken from its Yucatan park pedestal—was the oldest, and presented too many problems to rebuild. For a while it was stored in California, then later sold through a locomotive broker.

The boilers on the remaining four locomotives were replaced with new ones manufactured by Dixon Boiler Works of Los Angeles. (Over the years, Dixon boilers had established their reliability on Disneyland's steam locomotives and also on its *Mark Twain* sternwheel riverboat.) Since these new boilers were smaller than the originals—in conformance with locomotive designs of an earlier period—all boiler piping had to be refitted.

The wood and steel cabs were replaced with ones made of a carbon-resin material molded in the Park's fiberglass shop from designs created by Imagineers in Glendale. Most of the boiler domes and other accessories were salvaged, and the bells also were original equipment. The locomotives' fireboxes were reconfigured to burn low sulfur-reformulated diesel oil No. 2.

One of the most difficult jobs was rebuilding the cylinder pistons. "The only way we could get the pistons to fit the cylinders was to hand lap them," recalled Bob, recounting how a machinist had spent 40

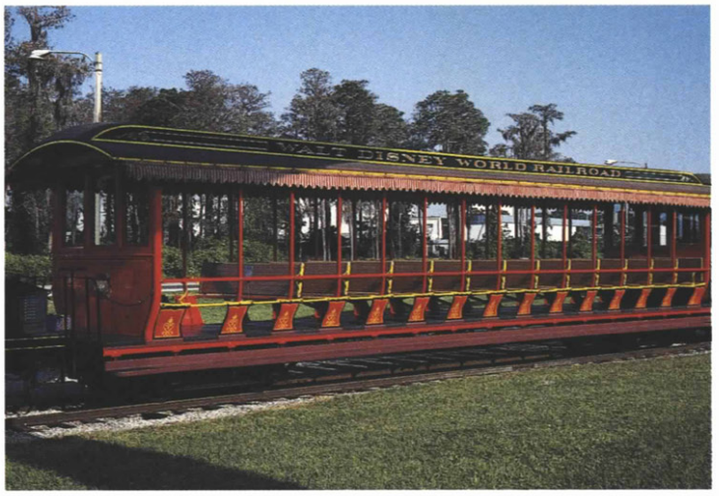
Opposite left: Former United Railways of Yucatan 4-6-0 No. 275 is lifted into place, on temporary "snap-track," at Tampa Ship Repair & Dry Dock Company. Within two years, it will proudly operate as No. 3 Roger E. Broggie *at Walt Disney World's Magic Kingdom.* Roger Broggie photo, CPHS collection.

Opposite right: George Britton, Roger Broggie, and Earl Vilmer discuss the task of transforming four rusted hulks into gleaming Disney locomotives. CPHS collection.

Two views above: Work progresses on refurbishment. Given the specialized nature of the project—and even disregarding the size of many components—much work had to be done, quite simply, by hand. Both, Roger Broggie photos, CPHS collection.


BALDWIN LOCOMOTIVE WORKS





hours doing so. The work paid off in the long run, however: "They have lasted for all these years and have not been redone," he said proudly.

According to George Britton, one of the most difficult quality control tasks was the "brightwork": All of the brass had to shine perfectly, without scratches or blemishes. "If we found a problem, we re-did it," George said. "That's the way it had to be. The locomotives had to look beautiful as well as function perfectly."

While developing the design for the passenger cars, Disney Imagineers remembered that the original passenger train at Disneyland—Retlaw 1—was difficult to load and unload because passengers had to file through the cars' end doorways. For Florida, therefore, Imagineers designed "excursion cars," where rows of varnished wooden seats run the width of the cars. Each seat holds six adults, and all passengers can enter or leave at the same time. Once again, Disney's quality caveat is evident as form follows function.

Twenty of these new cars were constructed, from the trucks up, at the shipyard. Along with rebuilding the engines and tenders, the entire project was completed by Earl Vilmer, Bob Harpur, lead mechanic George Britton, and a 15-member crew in less than two years—under budget and ahead of schedule!

A Promise Kept

Naming of the engines was undertaken by Imagineering with Roy Disney's suggestions and final approval. Locomotive No. 1 became the *Walter E. Disney*. It was one of the twin 4-6-0s (Ten-Wheelers), and tallest of the four locomotives at 11 feet 11 inches (the top of the roundhouse door is 12 feet). No. 2—the 2-6-0 Mogul-type—became the *Lilly Belle*, named for Mrs. Disney. It was first to be completed and delivered to the Park.

Opposite: Bob Harpur performs a "trial fit" of a brass number plate on one of the locomotives' smokeboxes. Note that no number is actually visible; the originals had been ground off, soon to be replaced. The cast-in-place "Baldwin Locomotive Works - Philadelphia U.S.A." lettering remains, however. Roger Broggie photo, © Disney Enterprises, Inc.

Above left: This concept drawing shows how Imagineers planned the look of the rolling stock at Florida's Magic Kingdom. The playful little "Auto-Train" logo humorously mimics another Florida train that was then—and is still today—a popular seasonal service running to Florida from the upper reaches of the eastern United States. Passengers take their automobiles along in special railroad cars that trail behind passenger coaches. © Disney Enterprises, Inc.

Above: As constructed, the coaches were just slightly longer than the concept drawing at left shows. The 40-foot cars feature 15 wooden benches and are capable of carrying 75 passengers. Their design closely follows the Narragansett-type coaches built earlier for Disneyland. CPHS collection, © Disney Enterprises, Inc.





Ringing Clear

DURING RENOVATION of the four Walt Disney World locomotives, Roger Broggie made frequent trips to Tampa, watching how things were progressing. On one of his visits, he remarked that the bell on No. 3 "sounded like a hammer hitting an old frying pan."

George Britton figured this was an opportunity to do the railroad operation a little favor: He knew the sweetest-sounding bell in the Park was on the *Mark Twain* sternwheeler, itself still under construction.

By virtue of an overnight swap, No. 3 ended up with the clearest-ringing locomotive bell at Walt Disney World. Roger never knew how it happened—nor was the matter ever discussed.





Opposite: Locomotive No. 2 Lilly Belle *stops at Mickey's Starland Station to load passengers in 1994. Behind is the Walt Disney World Railroad's only operating water tower. Approximate water usage is 200 gallons per hour, with about 25 gallons of fuel consumed in the same time period.* CPHS collection, © Disney Enterprises, Inc.

Above left: No. 1 Walter E. Disney *hauls a trainload of happy Park guests at Florida's Magic Kingdom. As with the Disneyland Railroad, Florida's steam trains are a perennial Park guest favorite.* CPHS collection, © Disney Enterprises, Inc.

Left: Chuffing along a stretch of track between Tomorrowland and Main Street Station, No. 3 Roger E. Broggie *pulls its train of open-bench cars past Space Mountain. Note how each locomotive and trainset sport different color combinations—all kept shiny and spotless of course.* CPHS collection, © Disney Enterprises, Inc.

No. 3, the other Ten-Wheeler, was designated *Roger E. Broggie*. It had been in the worst condition of the lot, but turned out to be one of the smoothest running when rebuilt. No. 4, the 4-4-0 "American"-type, was called *Roy O. Disney*—in honor of the man who'd kept his promise to his brother to finish Walt Disney World.

As had been the case at Anaheim, steam railroad trains were the first attraction completed for Florida's new Magic Kingdom. Performing admirably on opening day, October 1, 1971, they have continued steadfast in their duties ever since.


FORT WILDERNESS R.R.
3
RAIL
CROS



Fort Wilderness Folly

All the adversity I've had in my life, all my troubles and obstacles have strengthened me.

—Walt Disney

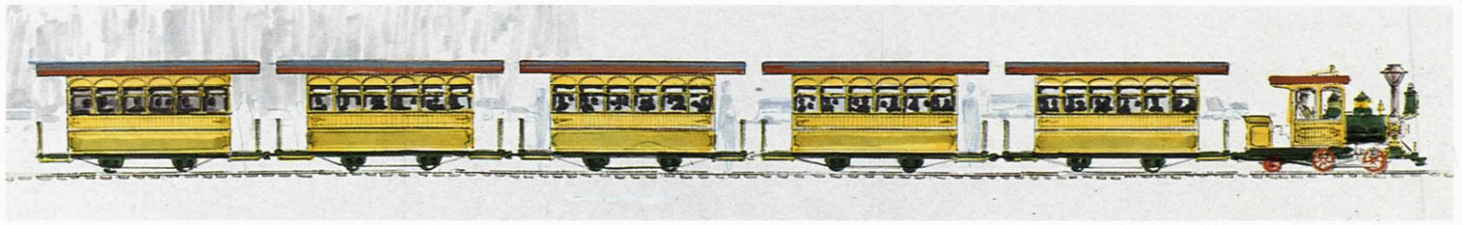
Built with the best of intentions, the Fort Wilderness Railroad serves as a prime example of a simple concept that turned into an operational nightmare. Four quaint, five-car steam trains were planned to operate over a 3-1/2 mile route, providing transportation through the Fort Wilderness campground area at Walt Disney World Resort. Considering the $1 million cost to build its locomotives and rolling stock, however, the line was hardly a cost-efficient operation—running for a relatively short period between 1973 and 1977.

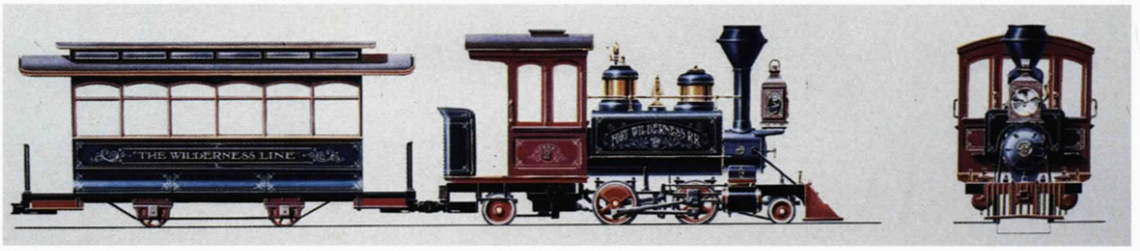
The Fort Wilderness Railroad locomotives were based on colorful narrow-gauge "plantation locomotives" that had once operated in Hawaii and elsewhere. (Ward Kimball and Jerry Best each had acquired a locomotive of this type, and refurbished them for operation.) Considered to be the workhorses of the islands, the dependable steamers had dutifully hauled sugar cane and pineapples from plantation fields to seaports. Baldwin Locomotive Works had built the vast majority of these plantation engines.

Imagineer Bob McDonnell, who had created the Fort Wilderness logo and poster, crafted the trains' exterior colors and striping. Walt Disney Imagineering (WED) handled the overall design work, while Mapo—WED's engineering and development arm—constructed the locomotives and rolling stock. Disney's Florida-based Buena Vista Construction took care of roadbed preparation and track construction.

As building of the four locomotives and rolling stock got under

Walt Disney World's short-lived Fort Wilderness Railroad featured these brightly painted steam locomotives and quaint coaches. CPHS collection, © Disney Enterprises, Inc.





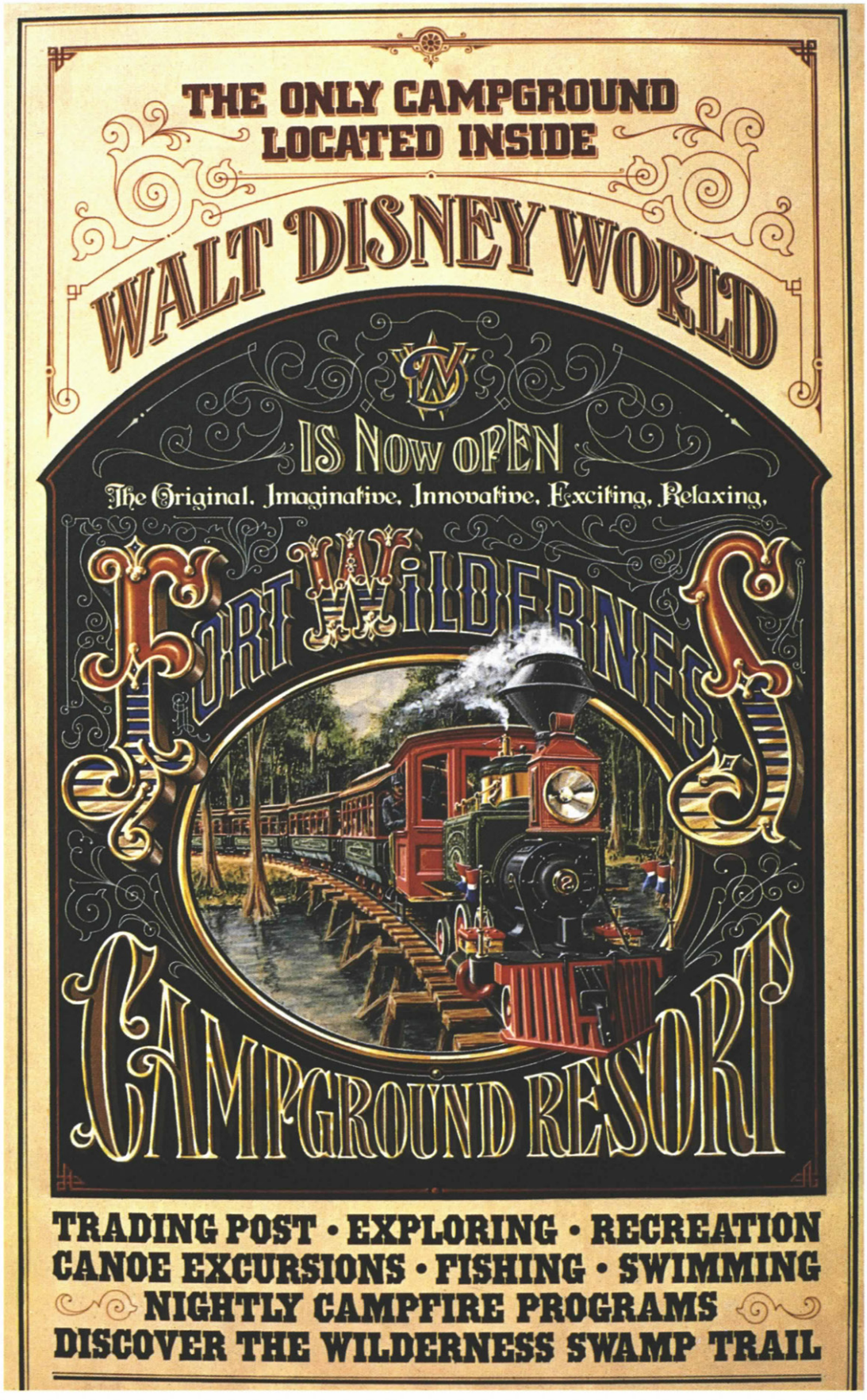
These drawings for the Fort Wilderness Railroad's locomotives and rolling stock show the initial concept (top) and final design (lower). In the earlier one, note how the locomotives appear even smaller than those ultimately built. Both, © Disney Enterprises, Inc.



Fort Wilderness Locomotives

Numbers: 1-4
Type: 2-4-2T
Builder: Mapo (Glendale, California)

Date built: 1972
Scale: 4/5ths
Gauge: 30″
Length: 18′ 3″
Weight: 22,700 pounds (including fuel and water)
Height: 9′ 3″
Width: 6′ 9″
Cylinder size: 7″ x 10″
Valve gear: Stephenson
Fuel: Low sulfur-reformulated diesel No. 2
Boiler pressure: 160 psi
Boiler diameter: 24″
Driver diameter: 24″
Pony wheel diameter: 15″
Trailing wheel diameter: 17″
Tank capacities: 225 gallons water, 175 gallons oil



Artist Bob McDonnell, designer of this intricate poster for the Fort Wilderness Campground Resort, was also responsible for exterior detailing on the railroad's train-sets. Bob McDonnell collection, © Disney Enterprises, Inc.

way at Mapo in 1972, construction began at Walt Disney World on the Fort Wilderness Railway trackage itself. By the time tracks were complete, the trains had arrived on flatbed trailers from California.

The four Fort Wilderness locomotives were painted in a rich forest green with red trim and gold striping. Built to 4/5ths scale, the new engines were even smaller than their diminutive Hawaiian originals. Their compact 2-4-2T design featured a "saddle tank" for water that wrapped around the boiler; fuel was carried in a small compartment at the rear. Unlike their woodburning Hawaiian predecessors, however, these used No. 2 diesel oil for fuel.

Each coach measured 19 feet 3 inches in length and weighed 7,220 pounds. Total train length (one locomotive and five cars) was therefore just under 115 feet; 90 passengers could be accomodated aboard each train.

The Problems Begin

The line's lengthy run turned out to be a factor contributing to its eventual demise. Even though the engines had adequate power—with tractive effort calculated at 3,120 pounds—the Fort Wilderness tracks were twice as long as those used by the full-sized, narrow-gauge trains operating around Florida's Magic Kingdom.

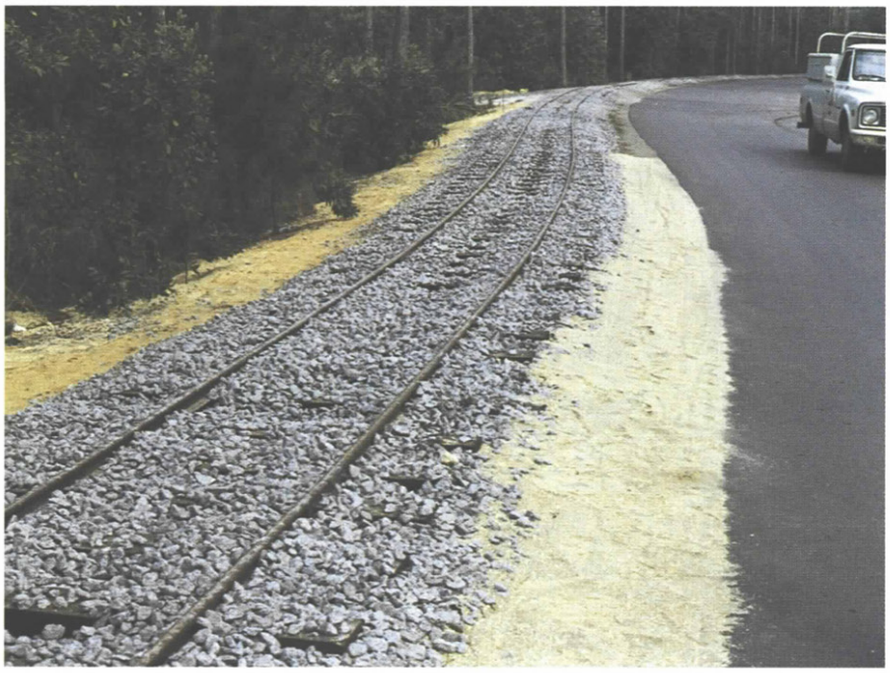
In non sequitur fashion, however, Fort Wilderness' saddle-tank engines held only 225 gallons of water and 175 gallons of fuel, compared to 1,837 gallons of water and 664 gallons of fuel for the larger Park locomotives. Frequent fueling and watering were thus required on the Fort Wilderness Railroad, and these important yet often-overlooked needs would cause numerous problems for the line's young and inexperienced operators.

An even more serious problem was the track. Rails were spiked directly to the wooden ties, without the use of metal "tie plates" in between (these standard track components help keep rails from abraiding ties, and aid spikes in keeping rails in gauge). Under the track's rock ballast, the roadbed's foundation was clay, causing ongoing track slippage as well.

Too, bending of the actual rails had not been done on precision rolling machines, as with the perimeter railroads of both Magic Kingdoms. Instead, the 20 pounds-per-yard rails were crudely bent to shape, as they were laid, by the construction crew. Numerous derailments resulted on the line's tight curves—especially at rail joints, where two rails would often be joined together under stresses that eventually forced the joint to "kink" outward.

"The money spent putting the track in was minimal," Bob Harpur recalled. "The roadbed wasn't properly prepared; we had trouble maintaining the track; the locomotives were sensitive; and, they had a difficult time making steam." Bob also noted the locomotives' air pumps (for building up air pressure to operate brake systems) didn't function well; their water capacity was a problem; and they had just enough tractive effort to pull a fully loaded passenger train up a couple of 1 percent grades. "Other than that, they ran fine," he laughed.

After several months of operation, Bob was called upon for help. With his expertise, it was hoped he could find solutions to the numer-





Above left: A major problem for the Fort Wilderness Railroad was its track. The clay subgrade was subject to slippage, and rails were spiked directly to ties without using metal tie plates, leading to increased maintenance and all-too-frequent derailments. Note how the ballast loosely covered the railway rather than being neatly tamped between the rails and ties. Roger Broggie photo, CPHS collection.

Left: Frequent fueling and watering were required for the Fort Wilderness Railroad locomotives. Unfortunately, these important needs were occasionally overlooked by operating personnel, causing stranded trains out on the line. CPHS collection, © Disney Enterprises, Inc.





Above: An all-too-often derailment has just been dealt with. Roger Broggie photo, CPHS collection, © Disney Enterprises, Inc.

Above right: A locomotive negotiates one of the modified switches after adjustments have been made. Roger Broggie photo, CPHS collection, © Disney Enterprises, Inc.

ous problems inherent in the design, installation, and operations of this blighted railroad. "We were having trouble with the engines binding as they negotiated one of the switches. Walt Disney World's management told us to not do anything because it was a WED job and they should handle any adjustments," Bob recalled.

To address the problem, Roger Broggie traveled to Florida, accompanied by Imagineer Bob Booth. After looking at the switch, Roger assigned Bob Harpur to find a solution. Roger then left for an appointment, returning two hours later to see if Bob had found an answer.

Bob thought he had; he'd removed the switch points (the tapered rails that move back and forth) and taken them to the shop, where he was having them bent slightly to improve their alignment with the main track. Hearing this, Roger commented that it was not standard practice to bend switch points.

Early the next morning, however, Roger returned to see Bob. In the interim, he had learned that Bob's solution was indeed acceptable. Roger brought out several books, opened them to marked places, and laid them on the hood of his rental car.

"He showed me that I was right, my idea *was* in the books," said Bob. I have no idea where Roger found those books overnight, but there was indeed a switch with a bent [point] called a 'California switch.'"

Roger and Bob then operated one of the locomotives through the modified switch; it made it without hesitation. "After our run, as he got off the locomotive, Roger turned around and shook my hand. The guys who were there couldn't believe what they had just witnessed. They had never seen him do anything that outgoing," recalled Bob.

In time, solutions could have been found to correct the other mechanical problems, However, the line's fate was ultimately sealed by something even more basic: the use of lower-paid ride operators, rather than more highly qualified railroad crews. Cast members assigned to



Tiny Fort Wilderness locomotives had just enough tractive effort to pull a fully loaded, five-car train up the line's 1 percent grades. CPHS collection, © Disney Enterprises, Inc.



Two former Fort Wilderness Railroad coaches were modified as Pleasure Island ticket booths, but saw only brief use before they were replaced with permanent buildings. Later, the two coaches were sold at auction to private individuals. CPHS collection, © Disney Enterprises, Inc.

the Fort Wilderness Railroad received training in the fundamentals of steam engine operations, of course, but running a railroad is much more complex than operating most amusement rides.

Many variables must be continually observed and attended to when operating steam trains; in the case of Fort Wilderness, they were not. Service was continually interrupted by derailments, and by stranded trains that had been allowed to run out of fuel and water.

New Careers?

As five years of operating headaches accumulated, Park management decided the line was more trouble that it was worth. The transportation department was ordered to shut the line down and remove its trains. The locomotives and cars were stored in a warehouse for several years until that space was needed.

Then, unceremoniously, the engines and cars were hauled to an open-air yard and stored under tarps. Following just a few years under Florida's unrelenting sun and wind, the heavy canvas covers rotted and ripped away. Fully exposed to the elements, paint faded and peeled, wood split from dry rot, and metal rusted.

However, the Fort Wilderness story ends on a positive note. Two coaches were refurbished as ticket booths at Walt Disney World's Pleasure Island. With exteriors brightly repainted, they were temporarily positioned at the island's entrance. Although replaced by permanent structures, the pair proved that serviceable life remains in the Fort Wilderness trains.

So, when street cars were needed for Main Street U.S.A. at Disneyland Paris, consideration was given to using several of the quaint coaches; but the idea never materialized. Someday, perhaps, the four little locomotives and remaining cars will be restored to operating condition. They may again delight guests of all ages—passengers who will undoubtedly love riding aboard a real steam-powered train.


28
MISSOURI



ウエスタンリバー鉄道

Steam Trains at Tokyo

My operations are based on experience, thoughtful observation and warm fellowship with my neighbors at home and around the world.

—Walt Disney

Unlike those at other Disney Parks, the steam trains at Tokyo Disneyland don't encircle the Magic Kingdom's boundary, nor do they provide transportation between various themed "lands" within the park. Instead, the 30-inch gauge Western River Railroad runs through a lavishly landscaped area of foliage and water, and over a series of trestles and bridges, encompassing Adventureland, Westernland, and Critter Country.

A Unique Departure

Early in the planning stages with Oriental Land Company (Disney's Tokyo partner), it was discovered that if tracks extended around the Park, the attraction would be classified as a public transportation system—falling under the same governmental jurisdiction and regulations as Japan's public railroads. The steam train operation would meet or exceed all safety standards of a public system, of course, but railroad regulatory fees would have made the operation economically unfeasible.

The resulting compromise provides a unique departure from the other Disney Parks' track design. Up to 180 guests can board one of the three-foot gauge line's trains at its single two-story station. On the station's lower level is the loading area for the Jungle Boat Cruise, and on its upper level, that of the Western River Railroad. From the 5/8ths scale railroad's elevated tracks, passengers are treated to marvelous views of Tokyo Disneyland.

Departing the station behind one of four steam locomotives, trains skirt the perimeter of Adventureland—with sightings of wild animals, lush jungles, and the famous *African Queen*-style cruise boats. As the

Locomotive Missouri *crosses a trestle along Tokyo Disneyland's Western River Railroad as Cinderella Castle towers above. Unlike those at the other Disney Parks, the trains here do not encircle the Magic Kingdom, nor do they provide transportation between its various themed "lands."* CPHS collection, © Disney Enterprises, Inc.



Above: As this map of Tokyo Disneyland illustrates, imaginative routing of the Western River Railroad allowed planners to endow the line with spectacular vista points. Park maps are a specialty of Disney Legend Sam McKim, whose illustrative talents were exhibited on the very first Disneyland map and the latest map of Disneyland Paris. © Disney Enterprises, Inc.



Right: The railroad's corporate sponsor, Tomy, manufactures toys and miniatures. The company's emblem proudly waves from the front of every Western River Railroad locomotive. © Disney Enterprises, Inc.

terrain becomes Westernland, trains continue through a dense forest, passing Indian settlements, Big Thunder Mountain, and the Rivers of America (where the familiar, graceful *Mark Twain* steamboat slowly paddles its way around Tom Sawyer Island).

Chuffing through Critter Country, trains offer guests views of Splash Mountain towering over its Alpine setting, with shops and restaurants all around. Tracks then make for a sharp S-shaped course around Big Thunder Mountain, head through a tunnel featuring the Primeval World of Dinosaurs, and return to the train station. The entire trip—completed in about 13 minutes—covers 5,283 feet of track. By comparison, the trackage around Disneyland is 6,357 feet; around Disneyland Paris, 7,150 feet; and around the Magic Kingdom in Orlando, 7,809 feet.

Besides the unusual routing, there are additional departures from other Disney railroad operations. Most notably, female cast members are the operating engineers. As well, the railroad has a corporate sponsor: Tomy Company, a respected Japanese manufacturer of toys and



Great Attention, Small Details

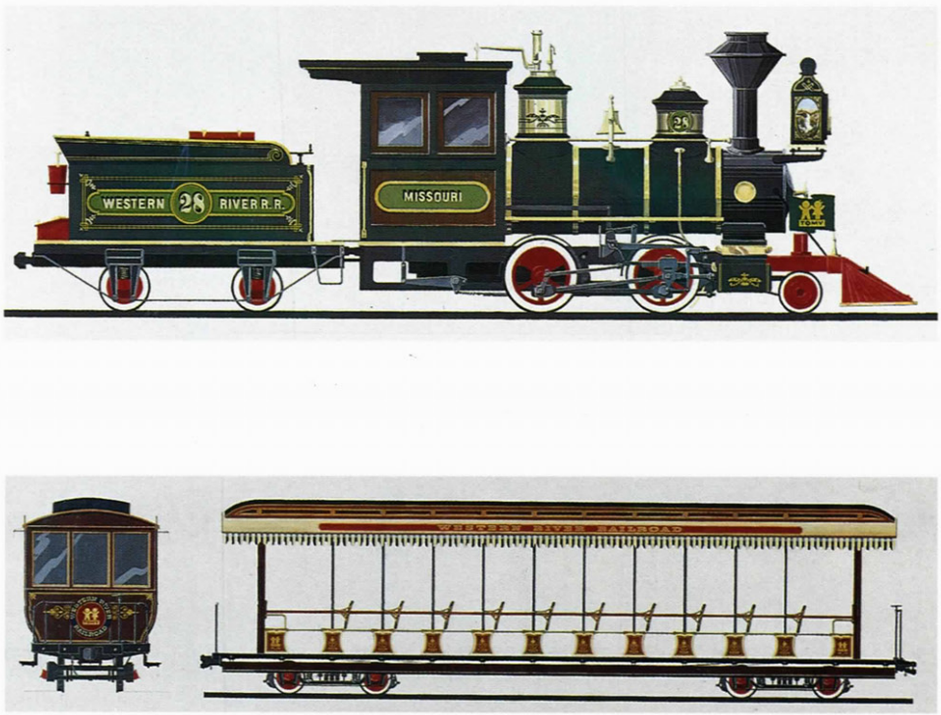
LOOKING BACK AT DEVELOPMENT of the Western River Railroad, Corky Wilds—a retired 27-year Imagineering veteran—was amazed that everything went so smoothly, considering the basic differences in language and culture. He noted, "Most importantly, the Japanese share with Disney very high standards for quality in everything they do. Particularly, they pay great attention to the smallest details—and that is exactly what Walt required at Imagineering."

For the Tokyo Park, Imagineers provided design assistance to the Oriental Land Company, which in turn contracted with Kyosan Kogyo of Fukushima, Japan, for construction of the cars and locomotives. Corky, who spent three years at Tokyo Disneyland managing ride manufacturing, recalled a smooth transition as Disney designers provided conceptual drawings, sketches, color samples, and photographs to Kyosan Kogyo. The builder, in turn, provided about 90 percent of the necessary engineering to construct the late-19th-century period locomotives and rolling stock.

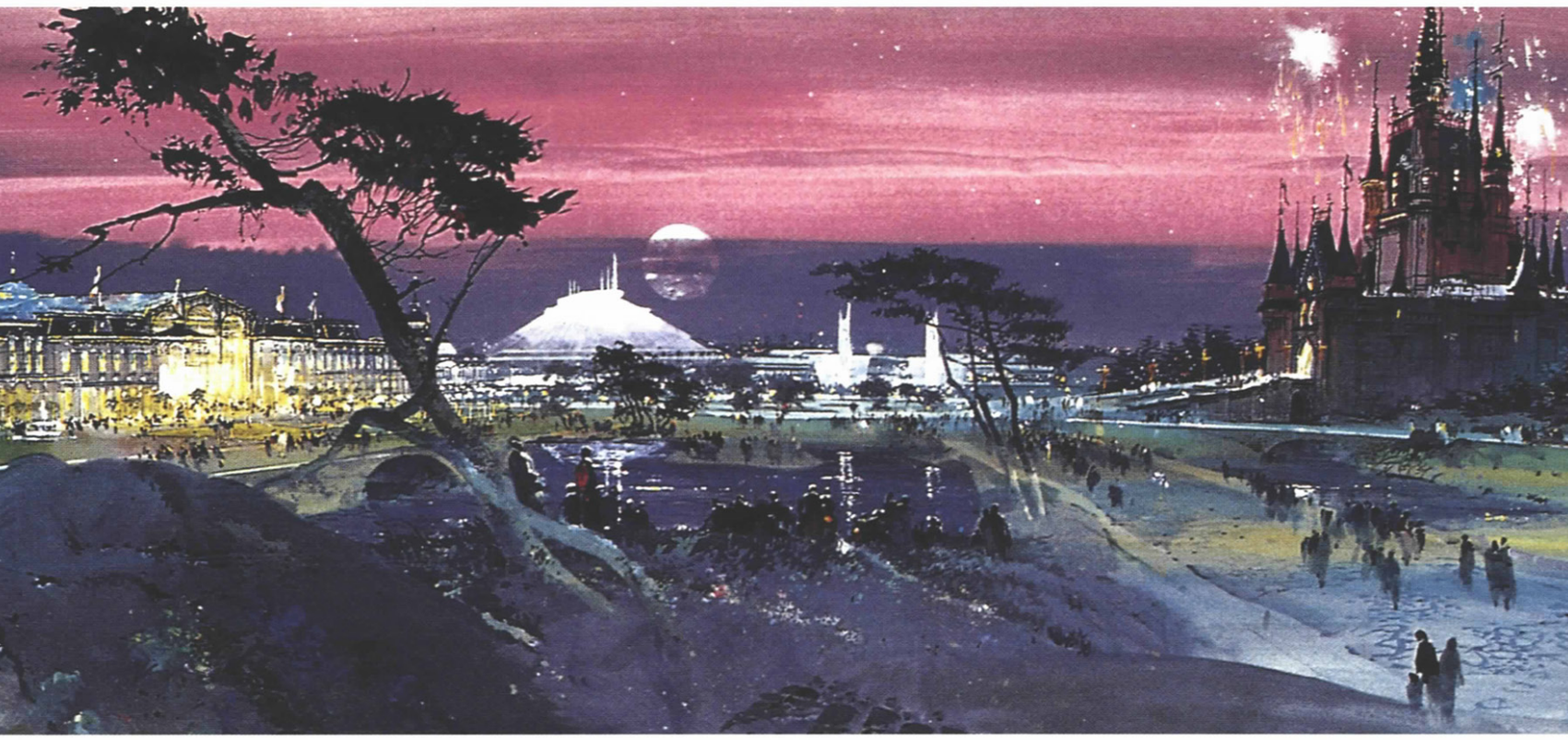
"They were very capable builders," Corky said. "We provided the audio sound systems and designed the drive wheels, but they did most of the work on their own using our documents for general reference." Imagineering's ride documents came in three classifications: photographs only, some drawings, and complete engineering documents. From these, Japanese designers and engineers were able to construct the Western River Railroad—and one of the most successful themed amusement parks in the world.

The only disagreement that arose had to do with the locomotives' fuel. Imagineers recommended use of a No. 2 distillate fuel oil, while the Japanese—who must import all petroleum products—preferred a more abundant, heavy oil. After more discussions centering on the cleaner-burning fuels used in Disney's domestic Parks, the No. 2 distillate was adopted for Tokyo Disneyland. This decision also affected the type of atomizers (spray nozzles, to distribute the fuel for proper burning) installed in each steam locomotive's firebox.

Corky remembers another steam-powered attraction at the Tokyo Park that didn't operate quite as planned. The steamboat that was to ply the Rivers of America was built with a small "flash" boiler (one that heated water only on demand), instead of the specified, larger constant-heating unit. Its inappropriate design quickly became evident: The ship's captain blew the steam whistle, and the boat promptly stopped for lack of steam pressure! A newer and larger boiler has worked fine ever since it was installed in 1981.

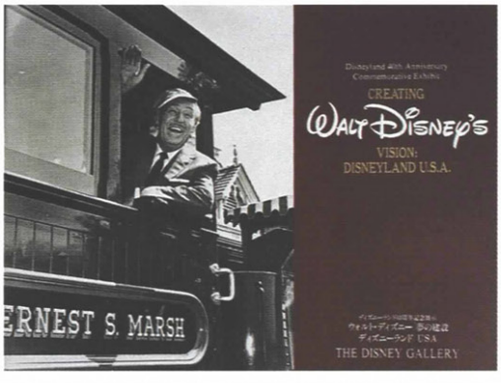


These three Disney Imagineering concept designs for the Western River Railroad's equipment were faithfully followed in producing the finished locomotives and coaches. Builder Kyosan Kogyo did all work in Fukushima, Japan. Three views, © Disney Enterprises, Inc.



Herb Ryman's conceptual rendering of Tokyo Disneyland shows this talented artist's imaginative style, evocative use of color, and attention to detail. © Disney Enterprises, Inc.





Top: Locomotive Colorado *steams upgrade past Big Thunder Mountain. As with the other Disney Parks, Tokyo Disneyland's railroad equipment is meticulously maintained and the attraction well-patronized.*

Above: On the occasion of Disneyland's 40th anniversary, Tokyo Disneyland's Disney Gallery celebrated with an outstanding, two-year display of Walt Disney's railroading history. The accompanying brochure's cover featured Walt in a familiar pose: leaning out the cab window of the Ernest S. Marsh. Both, © Disney Enterprises, Inc.

miniatures. The company's offerings include a line of scale-model Western River Railroad trains.

All four of Tokyo Disneyland's locomotives are mechanically fashioned after the Denver & Rio Grande Railway's little 2-4-0 *Montezuma*, designed and built by the Baldwin Locomotive Works in 1871. Individual paint schemes and exterior detailing in smokestack and headlamp design make each attractive locomotive cosmetically distinct. All were constructed in Fukushima, Japan, by noted locomotive builder Kyosan Kogyo Company, based on designs provided by Disney Imagineering. Names for the engines—*Mississippi*, *Rio Grande*, *Missouri*, and *Colorado*—honor four great American rivers.

Walt's Other Locomotive

In Japan, there is great interest in Walt Disney's personal history—and especially his development of the original Magic Kingdom in Anaheim. In celebration of Disneyland's 40th anniversary in 1995, Tokyo Disneyland's Disney Gallery (in the World Bazaar, a.k.a. Main Street) was redesigned. A major two-year-long exhibit was created, depicting Walt's railroading interests and how his hobby led to his vision of Disneyland. Centerpiece of the exhibit—which featured photographs, art directors' renderings, and scale models—was a miniature engine and tender that Roger Broggie began building for Walt in the early 1950s.

Work stopped on this second locomotive—an enlarged "Ten-Wheeler" (4-6-0) version of Walt's original 4-4-0 *Lilly Belle*—when Walt ceased operations on his Carolwood Pacific Railroad. Soon after, his full attention turned to developing Disneyland.

When Roger Broggie retired from the Disney company in 1973, Walt's family gave him the pieces of the locomotive; it had kept them intact following Walt's death. Slowly and meticulously, over the next 18 years, Roger machined many of the components, planning to present the finished locomotive to Mrs. Disney. However, before this work was completed, Roger died in 1991.

In 1994, representatives of Tokyo Disneyland inquired about obtaining Walt's original *Lilly Belle* for a special exhibit in their Disney Gallery: "Creating Walt Disney's Vision: Disneyland U.S.A." They soon learned—much to their disappointment—that the engine, its tender, and Walt's yellow caboose had already been committed by the Disney family to a multi-year display at Disneyland's Main Street Station.

A subsequent meeting with representatives of Retlaw Enterprises and Walt Disney Imagineering brought hope, however. It was suggested to Haruo Masuda of the Oriental Land Company that Walt's "second" locomotive—the one Roger Broggie had been building—could be finished by the following April, in time for the exhibit's opening. Best of all, it would look identical to the original *Lilly Belle*. (Although this second locomotive was to be a 4-6-0, the basic design was still that of Central Pacific Railroad 4-4-0 No. 173, *Lilly Belle*'s prototype. The frame had simply been lengthened, with an extra driving axle and longer siderods added; thus, modification back to a 4-4-0 was relatively easy.)

After agreement was reached with Walt's family (through Retlaw Enterprises), Roger Broggie, Jr., received the assignment to complete his

Crafting a Second Belle



WITH ABOUT NINE MONTHS to finish the job, Roger assembled a crew consisting of his wife, Marilyn; neighbor Jerry Joyner; his son Garry; and his grandsons Brian and David. When colors were needed for the exterior paint, Roger got help from Rudy Lord, a veteran Disney Imagineer and color expert. Rudy's wife, Debbie—also an Imagineer—pitched in with her skills in computer graphics, producing the images decorating the headlamp's casing and the intricate striping and decoration for the engine and tender.

Rudy also arranged for fellow Imagineers Matt McKim and Ron Esposito to provide the difficult and delicate woodgraining effect used on *Lilly Belle II*'s cast-aluminum cab. Another Imagineer, Ted Sebern, crafted the precision-cut, wood-framed glass windows for the cab. With the deadline looming ever closer, final touches were completed just in time to have the scale-model locomotive crated and air-freighted to Tokyo.

After the 12-hour flight, customs clearance, and ground transportation to the Park, only a half-hour remained before the scheduled VIP preview opening of the Gallery. Quickly and carefully, the engine and tender were unpacked and gingerly lifted into place on the display base, where they were coupled to one of the original wooden boxcars (restored at Walt Disney Imagineering by Ted Sebern) Walt had built for his Carolwood Pacific Railroad.

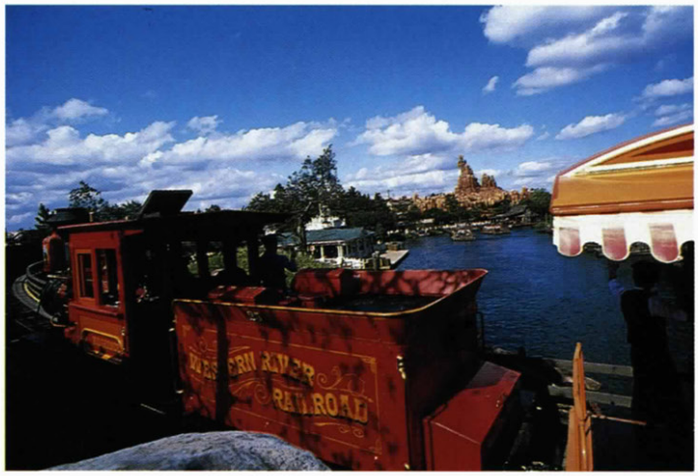


Part of Lilly Belle II*'s construction team, Imagineers Rudy and Debbie Lord, Jerry Joyner, and Roger Jr. and Marilyn Broggie, poses with the treasured locomotive just prior to its shipment to Tokyo.* Lillian Smith photo, © The Country Journal.

father's work. As a result, Roger Jr. *returned* to machining parts for the *Lilly Belle II*. Returned? Indeed. Thirty-seven years earlier—working as an apprentice for his father at Disney Studios—he had worked on these same parts. An interesting twist of history was about to take place: The second *Lilly Belle* would be completed by a second Broggie—in yet another example of Disney magic.

Nine months later, the job was finished. Spontaneous applause





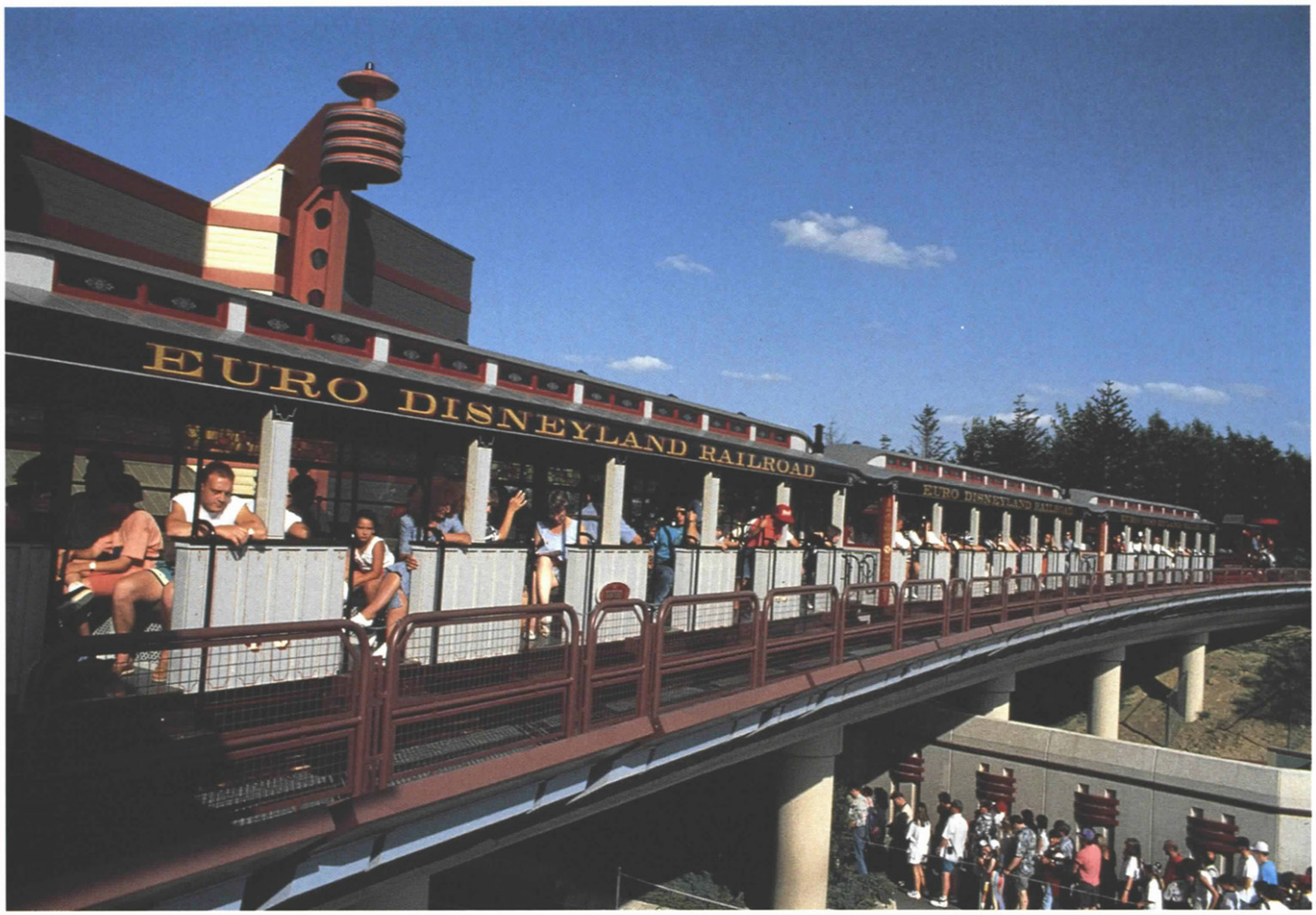
Above: Cinderella Castle provides a fairy-tale background for colorful locomotive Mississippi *and its trailing consist.* © Disney Enterprises, Inc.

Right: Locomotive Rio Grande *rounds the final curve before entering the Western River Railroad's elevated train station. The structure's lower level serves as docking point for the Jungle Boat Cruise attraction. Big Thunder Mountain is in the background.* © Disney Enterprises, Inc.

erupted when the beautiful scale model was ceremoniously uncovered during the exhibit's opening reception. After 45 years and four generations of Broggies, and with the essential support of family, friends, and Imagineers, the *Lilly Belle II* was finally finished. Walt's second locomotive—which he saw only in pieces during his lifetime—was finally accorded its rightful place of honor in Disney railroading history.



Walt Disney saw his second locomotive only in pieces during his lifetime. But 45 years after work was begun, the Lilly Belle II *was finished and placed on display at Tokyo Disneyland, where appreciative crowds marvel at the 1/8th scale live steamer's fine lines and meticulous detailing.* Tokyo Disneyland collection, © Disney Enterprises, Inc.


EURO DISNEYLAND RAILROAD



Le Train à vapeur de Disneyland Paris

Steam Trains for Disneyland Paris

Yes, in one way or another I have always loved trains.

—Walt Disney

Like many youngsters, Eddie Sotto wanted a train layout when he was growing up. Years later, working as a designer for Walt Disney Imagineering, Edward Sotto III was assigned to develop the concepts for Main Street U.S.A. at Disneyland Paris.

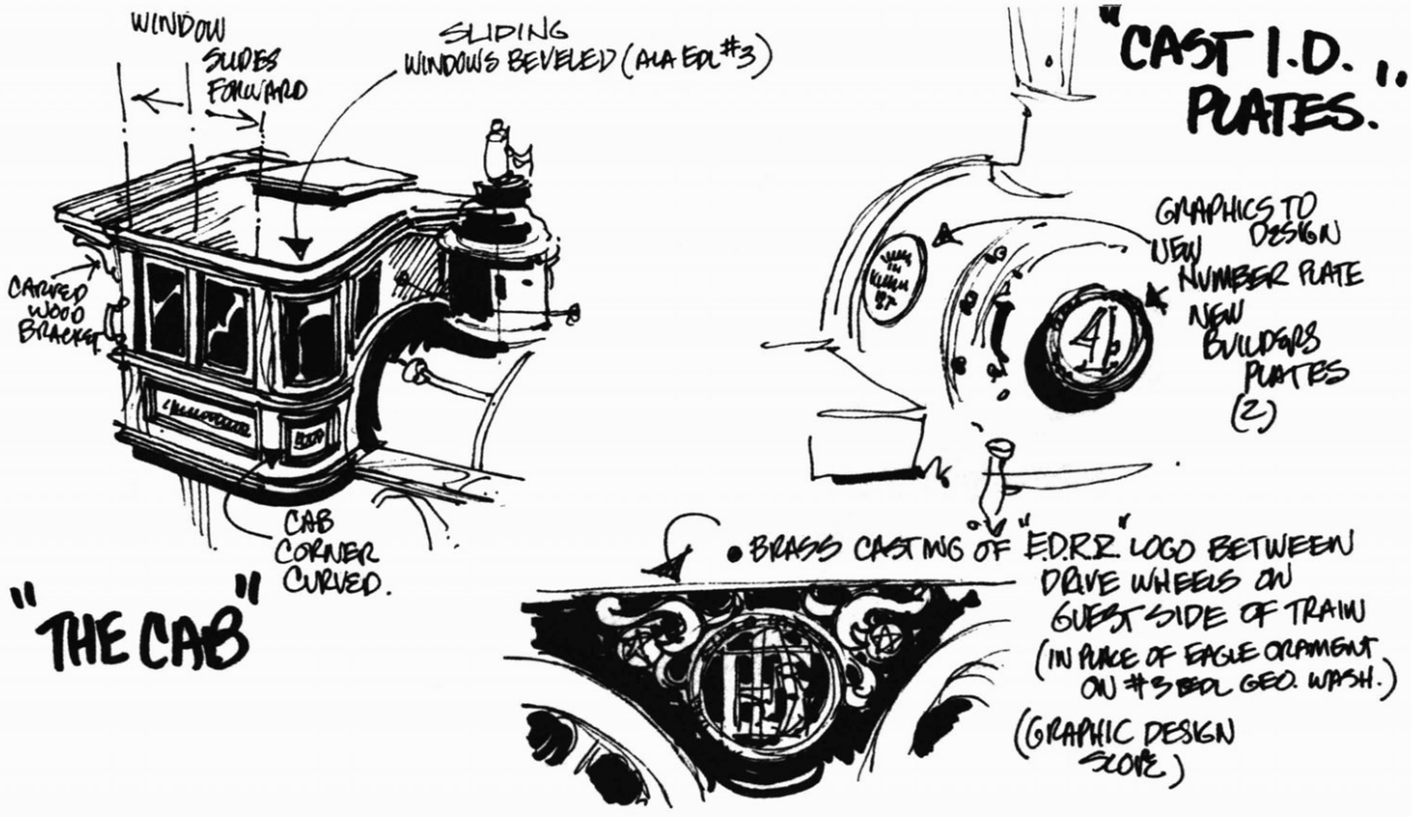
This was a major accomplishment for the young, self-taught Imagineer. Ed had made his mark as a brilliant conceptual artist, known for an uncanny ability to sketch ideas almost as quickly as he could describe them. Main Street would be fun—but designing the steam trains for this newest Magic Kingdom was what he was really thrilled about. "Finally, I got my train set!," he exclaimed.

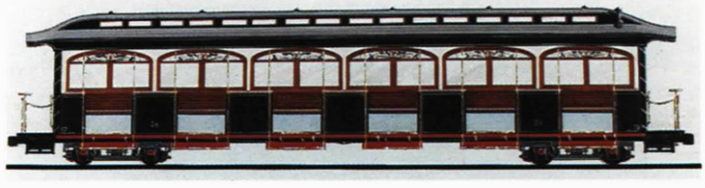
The steam trains at Disneyland Paris reflect the Park's original name on their letterboards and stations. Here, Euro Disneyland Railroad locomotive No. 4 Eureka *pulls its train of Golden State-inspired coaches* (San Francisco, Los Angeles, Monterey, San Diego, *and* Sacramento) *around the Park, high above guests waiting in line for another attraction. First opened on April 12, 1992, Euro Disneyland was officially renamed Disneyland Paris on October 1, 1994.* Ed Sotto photo, © Disney Enterprises, Inc.

Distinctly Different

Even though all four Disneyland Paris steam locomotives would be mechanical reproductions of Disneyland U.S.A.'s No. 1 *C. K. Holliday*, Ed wanted each to have its own distinct personality. So, to learn more about mid-to-late 19th century locomotive design, he visited several different locations. As it turned out, he followed Walt Disney's footsteps during this exploratory journey.

Ed visited the Henry Ford Museum and Greenfield Village in Dearborn, Michigan; the California State Railroad Museum in Old Sacramento; and the Travel Town Museum, in Los Angeles' Griffith Park. Each displayed locomotives from the period he was seeking, and


WINDOW SLIDES FORWARD
SLIDING WINDOWS BEVELED (ALA EDL #3)
CARVED WOOD BRACKET
CAB CORNER CURVED.
"THE CAB"
"CAST I.D. PLATES."
GRAPHICS TO DESIGN
NEW NUMBER PLATE
NEW BUILDERS PLATES (2)
• BRASS CASTING OF "E.D.R.R." LOGO BETWEEN DRIVE WHEELS ON GUEST SIDE OF TRAIN (IN PLACE OF EAGLE ORNAMENT ON #3 EDL GEO. WASH.)
(GRAPHIC DESIGN SCOPE)
"NEW ORNAMENT ROUGH CONCEPTS"
"ORNAMENT ABOVE DRIVE WHLS."
N.T.S.
MAY '92
NOT FOR CONSTRUCTION
FOR ILLUSTRATION PURPOSES ONLY.





after extensive research, Ed could visualize the various components for each of the four Disneyland Paris steamers.

Each Paris engine would feature differently shaped wooden pilots and smokestacks; all would sport an abundance of brass brightwork. Hand-carved detailing on the locomotive cabs would be joined by a host of individual highlights, accentuating each locomotive's namesake. The first three steamers would be constructed in Wales by the H. P. Phillips company, while the fourth—*Eureka*—would be built by Severn Lamb, in England.

The trains pulled by each locomotive would likewise be given individual identities and detailing, even though all coaches would be constructed from the same basic plans. Imagineer Tony Baxter had a unique idea for the seating arrangement: Unlike the benches seen at Disneyland or the Magic Kingdom at Walt Disney World Resort, Tony suggested U-shaped, restaurant booth-style seating. This arrangement proved ideal for viewing the dioramas and broad vistas found along the Park's railroad.

Ed's early conceptual designs were translated into visual presentations by Imagineer and graphics designer Tom Yorke. The first design was for the *G. Washington*. "We took the inspiration from American military trains we found in a Civil War book," Ed explained. "We found locomotives with elaborate cabs [and] oval windows, and created a high-class look with beveled glass and carved wood."

G. Washington is the most intricately decorated of Disneyland Paris' four locomotives. Featured are a golden eagle sculpture, above the drive wheels; an eagle ornament atop the steam dome; stars in the centers of its wheels; and rich, presidential colors. Hand-painted portraits of George Washington and the Marquis de Lafayette—an earlier American-French connection—appear on separate sides of the locomotive's headlight, in front of the large "balloon"-style stack.

The coaches to be pulled by locomotive *G. Washington* were given like treatment. Imagineer Katie Olson, a color stylist, worked with Ed to create the rich royal blue and dark red-trimmed cars. All are named for places and events associated with George Washington: *Mt. Vernon*,

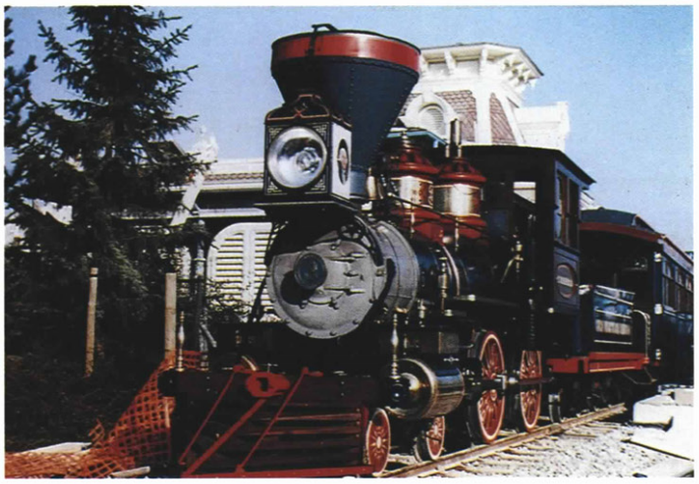


Opposite above: This conceptual sketch for locomotive Eureka *illustrates Ed Sotto's desire to give each Euro Disneyland locomotive a unique outward appearance, even though all four were mechanically identical. A host of individual highlights is specified.* © Disney Enterprises, Inc.

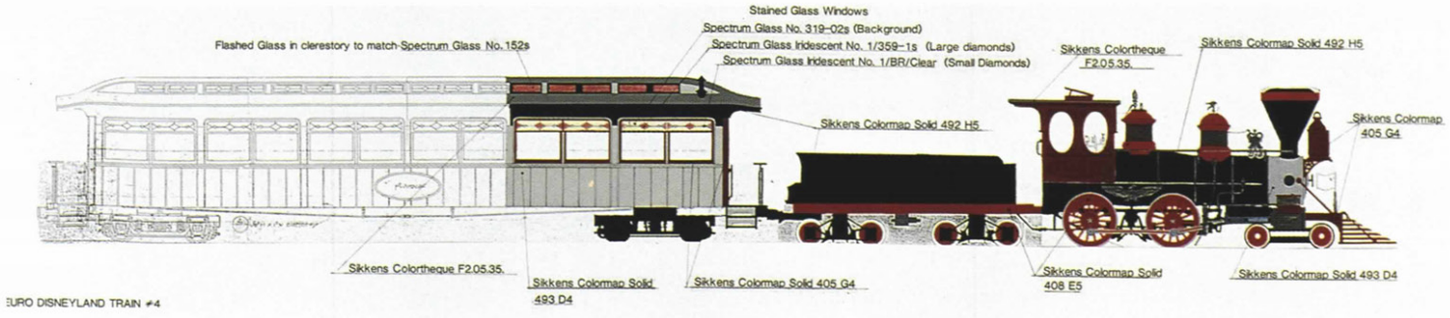
Opposite lower left: Locomotive G. Washington *pulls coaches painted royal blue with dark red trim. Stained-glass upper "lights" add to the ambiance. This view looks at the car from its entry side; all Disneyland Paris coaches feature a booth-like seating arrangement, unique to the Park.* © Disney Enterprises, Inc.

Opposite lower right: Disneyland Paris' locomotive C. K. Holliday*—styled similarly to its namesake at Disneyland U.S.A.—pulls coaches dressed with brass gas lamps and named for famed eastern U.S. resorts.* © Disney Enterprises, Inc.

Left: The coaches created to evoke the Wild West, pulled by locomotive No. 3 W. F. Cody, *bear a striking resemblance to Ward and Betty Kimball's 1881-vintage Grizzly Flats Railroad coach No. 5.* © Disney Enterprises, Inc.







Top left: Locomotive G. Washington *is the most intricately detailed of the four Disneyland Paris 4-4-0s. Its deep blue and red colors are typical of mid-19th century locomotive decoration.* © Disney Enterprises, Inc.

Top right: Paris' Main Street Station, designed by Ed Sotto, retains its intricate logos displaying the Park's original name, Euro Disneyland. Ed Sotto photo, © Disney Enterprises, Inc.

Above: Color, along with design and styling, plays an important role in creating the look of Disneyland Paris' locomotives and rolling stock. © Disney Enterprises, Inc.

Boston, *Philadelphia*, *Yorktown*, and *Valley Forge*. Above each pair of coach windows, stained-glass upper "lights" arch gracefully with a flowing leaf pattern—created under the direction of Suzanne Harpur (Bob Harpur's wife)—providing tasteful decor reminiscent of the era's passenger cars.

Intricate Requirements

According to Ed Sotto, the first train was the most difficult to design. After that, the others flowed more quickly. To complement Main Street's turn-of-the-century style, Ed wanted to create a train evoking the 1890s high-society lifestyle found on the eastern seaboard of the United States. The resulting locomotive, named for Santa Fe founder Cyrus Kurtz Holliday, pays homage to engine No. 1 at Disneyland, *C. K. Holliday*. It would haul cars painted in a light cream pastel trimmed with burgundy. Victorian touches such as brass gas lamps and leaded,



Developed by Tony Baxter of Disney Imagineering, the coaches' unique booth-style seating arrangement afford excellent views of the Park. © Disney Enterprises, Inc.

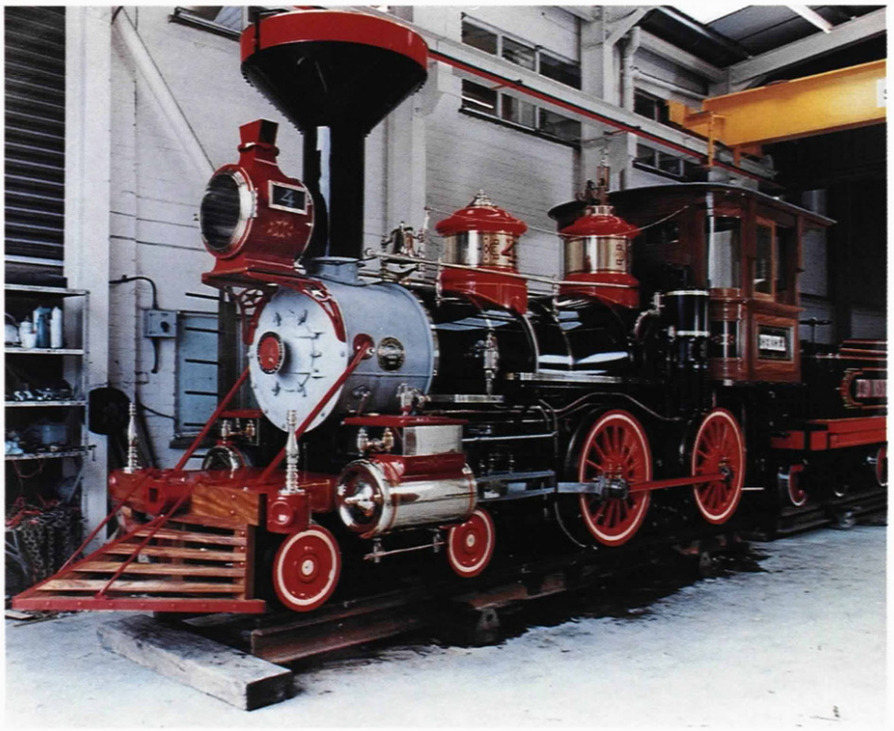
stained-glass clerestory windows add to the elegant ambiance. The names of the cars represent famed eastern U.S. resorts: *Coney Island*, *Atlantic City*, *Chesapeake*, *Long Island*, and *Niagara Falls*.

The third train's locomotive, the *W. F. Cody*, captures the rugged feel of the Old West. Deer antlers on the front of its headlamp and paintings of an elk on the lamp's sides honor the heritage of the pioneering western transcontinental, the Central Pacific Railroad. The locomotive draws from its famous namesake (also known as "Buffalo Bill"), adding frontier color and spirited lore to the Park's trains. *W. F. Cody*'s passenger cars feature finely detailed pinstriping and wood moldings. The yellow coaches, trimmed in green, are named *Silverton*, *Durango*, *Denver*, *Wichita*, and *Cheyenne*.

Eureka, the final Disneyland Paris engine to be built, was patterned after an 1853 Baldwin Locomotive Works product. Inspired by the color



Frontierland offers an appropriate setting for locomotive W. F. Cody*—named in honor of western frontiersman "Buffalo Bill"—and its train of colorful coaches.* Ed Sotto photo, © Disney Enterprises, Inc.



No. 4 Eureka *is the only one of Paris' four 4-4-0s constructed by Severn Lamb in England; the other three locomotives are products of H. P. Phillips, located in Wales. Here,* Eureka *is seen upon completion of final detailing.* Ed Sotto photo, © Disney Enterprises, Inc.

scheme Ed had seen on 1875-vintage North Pacific Coast Railroad locomotive *Sonoma* (displayed at the California State Railroad Museum), the *Eureka* features a tall "diamond"-style smokestack and black boiler, with a natural wood cab and bright red wheels. Like the *C. K. Holliday*, the *Eureka* represents the role railroads played in expanding the nation's frontier to the Pacific Ocean. Painted gray with red trim, *Eureka*'s complement of coaches wears the names of famous Golden State cities: *San Francisco*, *Los Angeles*, *Monterey*, *San Diego*, and *Sacramento*.

Veteran Imagineer Ed Johnson's 30 years of practical experience proved invaluable in translating Ed Sotto's elaborate designs into reality. In addition, Johnson spent countless hours with vendors to get the details right on Disneyland Paris' trains.

"The battles were always over the hand-made quality of the details," Ed Sotto recalled. "We would drive the vendors mad with intricate requirements." He had previously worked at Knott's Berry Farm (a themed amusement park located in Buena Park, California, near Disneyland), on restoration of the vintage 1880s coach *Durango*, so Ed already knew what "holiday beaded tongue-and-groove" siding was—and the correct wood dimensions. Under his direction, vendors prepared molds reflecting the appropriate details. "We wanted to add things like stenciling the railroad logo inside the cab . . . we were fanatics," he recalled.

Ed especially wanted "flashed" glass for the clerestory windows—

along the coach roofs' raised center portion—instead of stained glass. He'd seen it featured on old trolleys and streetcars while doing his research, and it had a special hand-made quality. Because of expected vibration levels, however, it was decided that stained glass would require less maintenance than the more brittle flashed glass.

The Euro Railroad

A playful activity for Ed was creating the voice tracks for the train stations. His memories prompted the whimsical pages heard by guests at Disneyland Paris: "I remember, while growing up in Southern California, going to Disneyland and hearing all these Jungle Cruise jokes they used to do in the queue. I felt we had lost some of the spirit of irreverent comedy and some of the fun of being at Disneyland—things became too serious. Hearing the station pages is one of the great things about being in New York's Grand Central Station."

When Disneyland Paris opened, guests sometimes had to wait up to two hours to ride the trains. To entertain those standing in line, Ed and his colleagues created station pages on a looped recording track. "We would page people, like: 'The man who lost a roll of 20 dollar bills wrapped in a blue rubber band, please come claim your blue rubber band.' Or, 'It is illegal to carry firearms and alcoholic beverages for other than medicinal purposes.' We always had amusing announcements to entertain the guests. In fact, one of the travel guides recommends that guests go and listen to the announcements!"

"All 'board!" Ed's familiar conductor call can be heard at Main Street Station, where an early 20th century marquee, lit with goose-neck-style lamps, reads: "Main Street U.S.A.—Disneyland Paris." The elegant Victorian-era station, richly adorned with Euro Disneyland Railroad logos cast into iron arches and railings, is just beyond the main entrance to the Park.



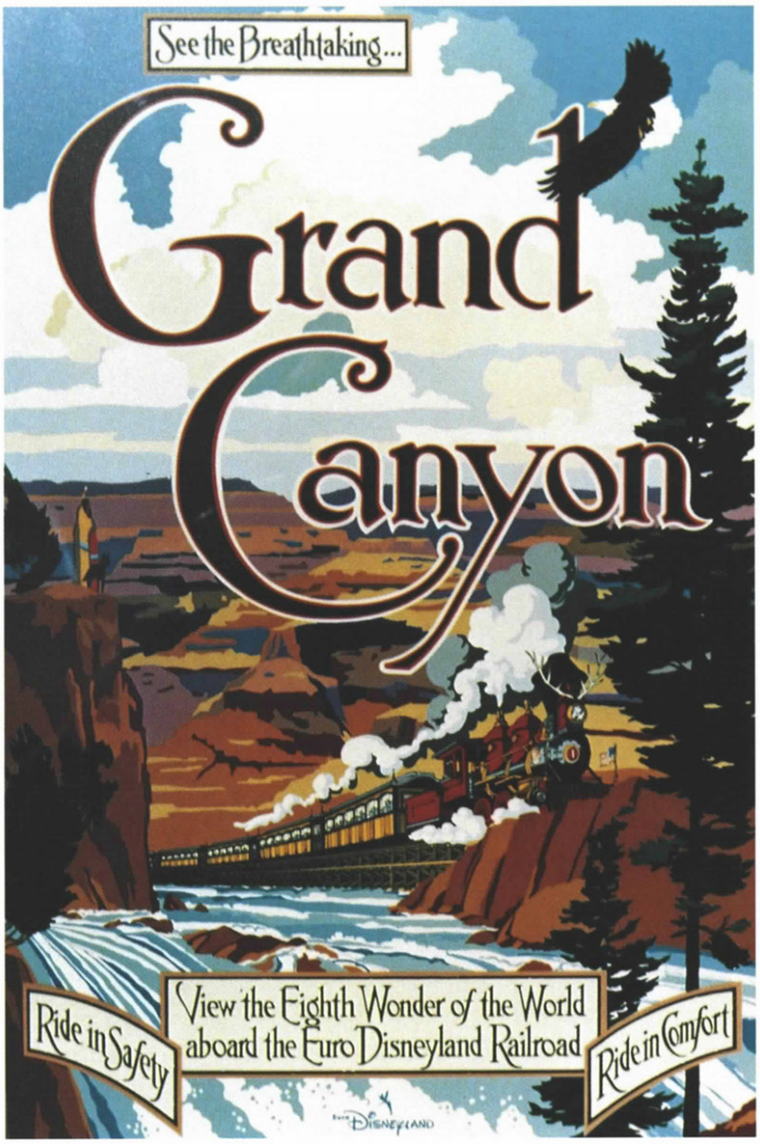
Intricate leaded glass highlights many of the Euro Disneyland Railroad's coaches, as well as Main Street Station, where this view was taken. The glasswork designs were created under the direction of Suzanne Harpur, wife of Bob Harpur. © Disney Enterprises, Inc.

Guests stroll through stone archways on the station's ground floor; these serve as the Park's public gateway. Six plaques affixed to the archways read, *"A partir d'ici, vous quittez le présent et entrez dans le monde de l'histoire, des découvertes et de la fantaisie éternelle."* (Here you leave today and enter worlds of history, discovery, and ageless fantasy.)

Proceeding up the exterior staircases, guests enter the train station on its upper level, where they gather on a covered loading platform. Beneath the open steel structure with its high, vaulted wooden ceilings, a central ticket booth provides information and currency exchange services. Nearby, old leather trunks plastered with travel stickers are piled beside a "Baggage Claim Area" sign. Spectacular views of the Park offer excellent photo opportunities for guests awaiting the next train. Trains arrive about every five minutes, with spirited mechanical band organ music announcing each arrival.

Guests then board, settling into their seats for "a complete trip around the Magic Kingdom." As the tour begins, in a clockwise direction, the train slowly passes through the Grand Canyon Diorama. There, passengers discover giant cliffs, wildlife, and foliage reminiscent of the great American West in one of the world's scenic wonders.

Next, the train enters Frontierland, passing Indian villages, Fort



This beautiful poster, itself based on early 1900s railroad promotional artwork, was created by Ed Sotto to promote Euro Disneyland Railroad's own Grand Canyon Diorama. © Disney Enterprises, Inc.

Comstock, and the colorful western town of Thunder Mesa. The Rivers of the Far West flow by, surrounding the majestic buttes of Big Thunder Mountain and inviting guests to experience the relaxed opulence of graceful Mississippi River steamboats. The train makes its first stop at the rustic Frontierland Depot.

Proceeding on, the train enters Adventureland and travels past three different settings within the Pirates of the Caribbean attraction, where dastardly seafarers ply their infamous trade. Next stop—Fantasyland Station—is the "happiest of them all." Just beyond is the colorful facade of It's a Small World, representing a collection of world-famous architectural landmarks. The train continues on, passing Discoveryland—with its unusual shapes and colors, reminiscent of H. G. Wells' and Jules Verne's creative fantasies.

Around the next curve, Main Street Station looms large on the horizon, with its high Victorian spirals and intricate grillework. As the train enters the station, the band organ pipes its lively greeting. The trip around Disneyland Paris is complete; a new crowd boards for the next journey.



Imagineers Joel Fritsche and Bob Harpur spent several years in France during planning and construction of the Euro Disneyland Railroad. Both are seen here at a October 12, 1991, press preview several months prior to the Park's opening. Joel Fritsche collection, © Disney Enterprises, Inc.

Feel the Rain

Along with Imagineers Bob Harpur and Joel Fritsche, who managed the mechanical end of the Paris trains project, Ed recalled the feeling of that rainy night in 1992 when the trio steamed up the first locomotive to arrive at the Park.

"After five years of working on the designs for Main Street and a full-sized railroad, it was a thrill to be there in the rain as we ran the *G. Washington* back and forth—watching the [flashes of light] coming out of the firebox [and] reflecting down on the track—that was an incredible rush. I didn't even feel the rain," he recounted.

For Ed Sotto, the Disneyland Paris Railroad was more than an Imagineering assignment. It was the fulfillment of a long-held dream to design and build his own train layout—a layout offering the opportunity of a lifetime in a place filled with magic.





Railroads and the American Dream

Smooth the road and make easy the way, and see how amazingly our exports will be increased and how amply we shall be compensated for the expense of effecting it.

—George Washington

Walt Disney was fascinated with history. Often he depended on colorful historical facts, lore, and anecdotes as he created scripts for his motion picture and television productions. Of equal importance and interest, Walt and his Imagineers drew heavily from America's colorful past as planning advanced for Disneyland's Main Street, Frontierland, and Santa Fe and Disneyland Railroad attractions.

As shared in earlier chapters, Walt's hometown of Marceline—with its traditional main street and the frequent comings and goings of Santa Fe trains—had a tremendous impact on his initial planning for the Park. But Disneyland had to be more than Walt's childhood re-created—to make the "show" work, he had to keep "universal appeal" in mind. As Walt himself remarked, "You don't build it for yourself. You know what the people want and you build it for them." Through the simple fact that Marceline was a small town, it represented thousands of communities scattered throughout the nation—as well as embodying a kind of idealized place for many large-city dwellers.

Steam trains, too, embodied an idealized American institution: the railroad. Yet by the 1950s—when Disneyland was under development—steam locomotives had largely disappeared from the railroading landscape. Even railroads themselves were being replaced in the public's mind. Freight trains still moved most goods and commodities, but

This scene inside the Walt Disney World roundhouse facility harks back to an earlier time in American railroading. CPHS collection, © Disney Enterprises, Inc.

the streamlined passenger train was being upstaged by automobiles; growth of the Interstate Highway network (signed into legislation by President Eisenhower); and commercial aircraft (especially the promise shown by jet airliners).

Yet Walt Disney's intuitions were correct: steam trains had achieved a hallowed place in America's "public memory." As the era of steam locomotion drew to a close in the 1950s, a whole class of enthusiasts sprang up. These "railfans," as they have come to be known, went trackside to personally experience, photograph, and otherwise record the sights, sounds, smells, and powerful allure of trains and those who ran them.

Today, an entire "railway preservation" industry thrives upon this memory, helping sustain it by offering rides aboard vintage railroad equipment and the chance to see and learn from history through images and artifacts. Undoubtedly, the ever-present trains at the Disney Parks have contributed immeasurably to the continued widespread appeal of steam trains in North America and elsewhere. But what are the roots of this appeal? Our answer can be found in examining the contributions of railroads to North America.



Breakneck Speed?

NOT EVERYONE WAS THRILLED with the development of railroads or the changes they might bring. The following letter dated January 31, 1829, was sent to President Andrew Jackson by then-Governor Martin Van Buren of New York:

Dear President Jackson:

The canal system of this county is being threatened by the spread of a new form of transportation known as "railroads." The federal government must preserve the canals for the following reasons:

First, if canal boats are supplanted by "railroads," serious unemployment will result. Captains, cooks, drivers and lock tenders will be left without means of livelihood.

Secondly, boat builders would suffer and towline, whip and harness makers would be left destitute.

Third, the canal boats are essential to the defense of the United States. In the event of trouble with England, the Erie Canal would be the only means by which we could move the supplies so vital to waging modern war.

As you know, Mr. President, "railroad" carriages are pulled at the enormous speed of 20 miles per hour by "engines" which, in addition to endangering life and limb of passengers, roar and snort their way through the countryside, setting fire to crops, scaring the livestock and frightening women and children. The Almighty certainly never intended that people should travel at such breakneck speed.

Martin Van Buren

Governor of New York

A Transportation Revolution

In history coursework throughout America, the Industrial Revolution remains an important theme. This "revolution," it is said, changed where we live and how we function as a society. Indeed, these points are true—but historians often forget to credit another revolution in North America's transformation. That revolution was the railroad, its trains propelled by the familiar icon of a puffing steam locomotive.

Canals, rivers, ocean-going shipping, horse-drawn conveyances, horseback, and—yes—feet had moved goods and people effectively (albeit not particularly fast) in pre-railroad America. In the years immediately following the Revolutionary War, faster and more efficient transportation was only one of many desired improvements for an agrarian America. Within just two decades, however, the beginnings of large-scale industrial development were at hand. Textile mills sprang up in New England, where water power and Yankee ingenuity were plentiful; southern plantations supplied the raw materials for these factories, while former farmers supplied the labor.

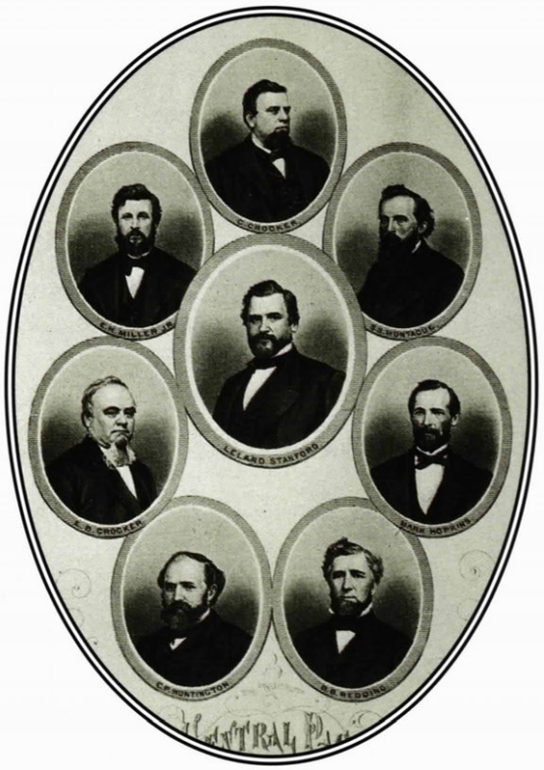
Though water was integral to the most efficient shipping methods at this time, its effectiveness was limited. For instance, rivers were not always navigable, and those that were offered plenty of navigation hazards—and they could freeze in winter. Too, mountains presented significant problems that could be overcome only at great cost and difficulty. As the nation's frontier moved westward—over the first of those mountains, and into the great Ohio and Mississippi river valleys—these limitations eventually led Americans to consider alternative forms of land transportation.

The city of Baltimore, Maryland, did so: it hoped to become a major seaport, but it needed a way to ship goods inland to the Ohio River—and there were significant mountains in the way. To go west, therefore, Baltimore staked its future prosperity on the unproven technology of a "rail road." And so it was that over 65,000 people gathered there on July 4, 1828, to celebrate turning the first spade of earth for the Baltimore & Ohio Railroad. The largest parade yet held in this new nation heralded this new pursuit of mobility. Fittingly, a man who had helped this fledgling nation pursue liberty held the ceremonial shovel—Charles Carroll, the last surviving signer of the Declaration of Independence.

Railroads were here to stay. The Industrial Revolution now had a powerful ally.

E Pluribus Unum

Nowhere on earth have such great changes been effected to such a large area, in so little time, as in the United States and much of Canada. Certainly, these transitions have often been costly for both humanity and nature; yet the North American continent has enjoyed unprecedented power and influence as a result. And the nation's transformation could not have been brought about without cheap, fast, reliable transportation. The national motto *E Pluribus Unum*—"from many, one"—might today have little meaning to Americans were it not for the unity made possible by railroads.



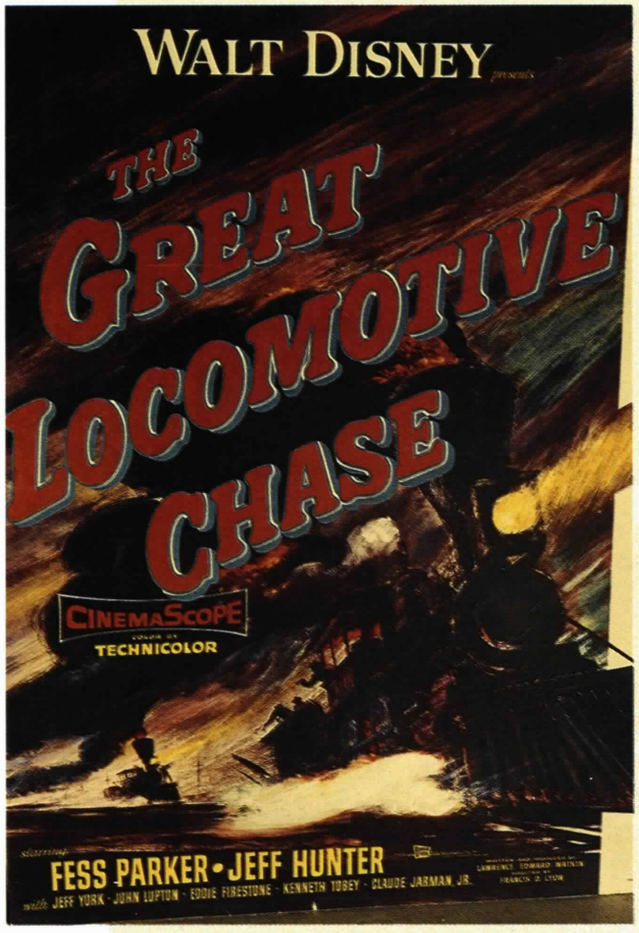
The history of the Far West is rich with the exploits of those who created and managed the Central Pacific (later Southern Pacific) Railroad. CPHS collection.

Old Puffers and Coonskin Hats

IN 1956, WALT DISNEY PRODUCED a feature motion picture of the daring Civil War raid led by James Andrews: THE GREAT LOCOMOTIVE CHASE. When the production crew traveled to Clayton, Georgia, to film the climatic chase sequence, Walt did too. There, he delighted in running the vintage steam engines between shooting scenes. (Although both the *General* and the *Texas*—the original 4-4-0 locomotives that figured in the action—existed, neither was available for use in filming. Instead, through Walt's connections at the Baltimore & Ohio Railroad Museum, the studio had access to appropriately ancient locomotives. An 1856 4-4-0, the *William Mason*, for instance, was dressed up for a new role as the *General*.)

To portray Union leader James Andrews, Walt selected Fess Parker. Fess had become a national icon as Davy Crockett—and the first hero to be embraced by the television generation. For the Texas-born actor, this was also his first starring role in a theatrical feature film. Fess starred in a total of six highly successful features while under contract with Disney: DAVY CROCKETT, KING OF THE WILD FRONTIER (1955, made for TV); THE GREAT LOCOMOTIVE CHASE (1956); WESTWARD HO THE WAGONS! (1956); DAVY CROCKETT AND THE RIVER PIRATES (1956, made for TV); OLD YELLER (1957); and THE LIGHT IN THE FOREST (1958).

Seemingly forever typecast as a "buckskin hero," Parker eventually left Disney to seek



Left: © Disney Enterprises, Inc.

Below: Inyo, *a steam engine borrowed from Paramount Pictures, portrayed the Western & Atlantic's infamous locomotive* Texas *in the film.* © Disney Enterprises, Inc.

Opposite: In this scene Union Leader James Andrews (Fess Parker) leaps from the cab of the General *(a.k.a* William Mason*). Filmed on location in Georgia, this re-creation of the famous Andrews Raid was one of Walt Disney's favorite live-action productions because of the historic locomotives cast in lead roles.* © Disney Enterprises, Inc.



diverse acting assignments—but ended up in the title role of the popular NBC television series "Daniel Boone." Decades later, as the successful owner and operator of Fess Parker Winery & Vineyard in Los Olivos, California (near Santa Barbara), he maintained the buckskin hero identification by using a coonskin cap for his winery's logo.

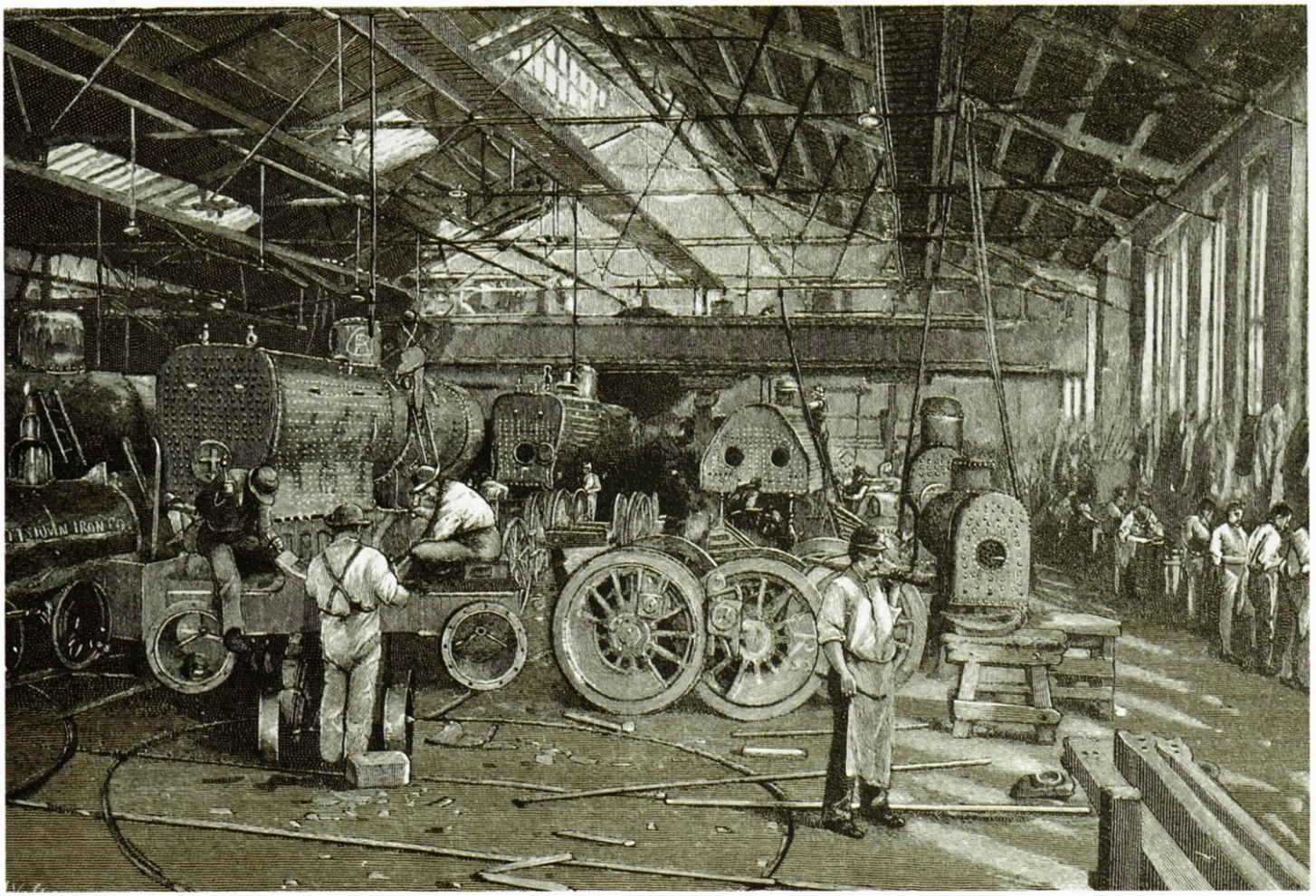
Looking back, the actor-turned-entrepreneur commented about the coincidental success of "Davy Crockett" and the opening of Disneyland: "You could have had all the watchmakers in the world and they could not have timed that event to be as convenient and helpful for Walt's larger project." Walt instinctively knew an opportunity when he saw it, and Davy Crockett became a national phenomenon—launched through the emerging power of television. Disneyland and Davy were a match made in marketing heaven, implemented by Walt's genius. Once again, he gave the people what they wanted.

Consistent with Disney's marketing and merchandising strategies, Frontierland initially had its shops well-stocked with Davy Crockett merchandise. In another move highlighting the character's popularity, Walt Disney invited Fess Parker to accompany him in Disneyland's grand-opening telecast—riding horses down Main Street to the frontier-themed area!





Below: Walt sports a Confederate hat as he takes a turn at the throttle of one of the vintage locomotives on THE GREAT LOCOMOTIVE CHASE*'s set. The Baltimore & Ohio Railroad Museum loaned much of the railroad equipment used in the movie.* © Disney Enterprises, Inc.



During the era of the steam locomotive, railroads became America's greatest employer. Coincident with their rise, railroads and their many suppliers developed modern management and production techniques, with craft specialization and massive industrial facilities put into place to handle vast amounts of maintenance and construction. CPHS collection.

The questions posed by railroad construction and operation were many, of course. As inventors, engineers, and craftsmen worked out the answers through trial and error, much of the acquired knowledge was passed on to other industries. A vast array of workers, facilities, machinery, and know-how had to be assembled; in the process, America's railroads also became its first "big business"—pioneering new concepts in management, financing, task specialization, and the like. Too, American citizens came to understand some fundamental physical concepts—for instance, that the human body could actually withstand travel at speeds in excess of 15 miles per hour (tops for all forms of travel prior to railroading's advent.)

From their beginnings in the late 1820s, American railroads grew rapidly. Although total mileage in 1830 was only about 100, this figure jumped to an astounding 3,300 in a decade. (This total roughly equaled the country's canal mileage, which by this time had reached its zenith.) By the 1850s, railroads reached across the Allegheny Mountains, connecting the eastern seaboard with "western" rivers—the Ohio and Mississippi—and what we today know as the Midwest. An all-rail route opened between New York and Chicago. With the Gold Rush under way, Congress even hired surveyors to determine plausible rail routes to far-off California.

The Civil War temporarily intervened in the ongoing expansion—but not because railroads were unimportant. Rather, it was because of their strategic significance that many railroad lines had to be rebuilt—some several times—after destruction by opposition forces. For the Union, railroads turned out to be a powerful ally; they moved troops and supplies in greater numbers than ever before, and proved decisive in more than one battle. Unfortunately, the Confederacy had a much-less effective railroad system and lacked the industrial capacity to build replacements for damaged locomotives.

The war years proved decisive in other ways, as well. In 1862, long before the Civil War's outcome could be predicted, Congress and President Lincoln took action to ensure California and the Far West's loyalty to the Union, passing the Pacific Railroad Act. The act authorized loans and land grants to be made to two different companies—one to build east from California, the other to build west from the Missouri River. Following several arduous years of construction, the "last spike" was driven on May 10, 1869. America celebrated wildly. The journey westward to the Golden State was now a matter of days, not weeks or months.

As the 1870s dawned, America was in the midst of Reconstruction. Railroad expansion continued feverishly, with additional transcontinental routes under construction. Steam locomotives grew larger and more powerful; steel rails began replacing more brittle iron ones; safety appliances (such as the air brake and the automatic coupler) were invented and improved; and the caboose became a familiar fixture on freight trains. At



A Safer Way

SERIOUS RAILWAY WRECKS were relatively rare prior to the Civil War. But as trains grew longer, were scheduled more frequently, and traveled faster, this changed. Public alarm was slow to catch hold, and legislators were of two minds about imposing government regulations on free-market businesses. But during the 1870s, several sensational wrecks—most notably the collapse of a high bridge near Ashtabula, Ohio, in which 80 people perished—gave rise to indignation. Although railroads remained safer than steamboat travel, the prevailing attitude was that train wrecks could invariably be traced to human error or (worse yet) corporate greed.

In terms of sheer casualty figures, railroad employment was far more risky than passenger travel, however. Hundreds lost their lives each year, with many being crushed between cars (during "link-and-pin" coupling movements, in which a brakeman had to position himself between cars, hold a "link" in position, and drop a "pin" in at the correct moment) or falling from swaying freight cars while tightening hand-operated brake wheels (found on each car's often-slippery roof) to stop trains. Though thousands survived these ordeals, it was often at the cost of a finger or two—or perhaps even a limb.

Invention in 1868 of the automatic "knuckle" coupler (which could be operated from the side of the car) and—within five years—the "automatic air brake," offered hope that railroad employee casualty figures would decline. But how fast would these improvements be adopted by railroads? Quickly, on passenger trains; public relations were at stake. However, it would take an act of Congress (in 1893) to force these improvements on freight trains. Not surprisingly, organized labor had its first real battles during this time.

the same time, however, the American public began questioning the railroads' apparent corporate greed and disregard for safety.

As railroad expansion continued, centered mostly in the Midwest and West, railroads advertised overseas for settlers. Between 1870 and 1900, more than eight million newcomers would journey to America. With railroads available to transport them throughout the country, these new Americans soon spread throughout the continent (in earlier decades, they likely would have settled in eastern cities). In a very real sense, the heat was turned up under the great American "melting pot."



Matthias Baldwin headed America's largest builder of steam locomotives, the Baldwin Locomotive Works of Philadelphia, Pennsylvania. Several Baldwin products operate today on the various Disney railroads. At the height of the company's production—during World War I—10 locomotives per day were turned out. CPHS collection.

Walt Disney's America

By the turn of the century, the United States had attained much of its present form. The citizenry was moving in ever-larger numbers to cities where commerce and industry continued growing. The continent could be crossed in less than a week; mail—traveling aboard trains, where it was sorted en route—reached its destination in a matter of hours or days. No longer did the frontier exist. The vast continent that had boggled the minds of Revolutionary War-era thinkers had been settled in only a few decades—thanks in large part to railroads.

Railroad travel was no longer an ordeal to be endured. Throughout the 1880s and 1890s, overnight sleeping cars, dining cars, and parlor-observation cars supplemented the common day coach for long-distance travel. The nation now worked, farmed, slept, and traveled on "Standard Railway Time"—the basis for our present-day time zones (first enacted cooperatively by the railroads in 1883, these were later adopted by Congress as the national standard).

Trains became so reliable that overnight business travel for next-day meetings was possible. Affordable leisure travel was available to all, with far-off destinations such as California, the American Southwest, or Yellowstone National Park no longer only playgrounds for the wealthy. And with the rise of motion pictures and the advent of the movie theater, railroads found their way into the hearts of millions.

Walt Disney's 1901 birth and his subsequent upbringing coincided with these heady times. Consider the many changes, and the pervasive effects of progress, that he and his peers would soon witness: Electricity would replace gas or kerosene for lighting, and prove useful in numerous other applications; trolley cars and interurban (intercity) electric railways would help cities solve their mass-transit problems; "flying machines" would make their debut; and the newfangled automobile would soon become available to everyone.

The peak year for American railroads was 1916. Total mileage reached 254,037, and employment, 1.7 million persons. Interestingly, railroad consolidations had effectively brought about two-thirds of this total under the control of just seven major interest groups. Similar to trends that Americans would witness in the 1980s and 1990s, this wave of consolidation was brought about to control costs.

Ironically, however, this high point was about to be drastically felled. The Progressive Movement and its national champion, President Theodore Roosevelt, were on the rise. The unintended result of its scrutiny of railroad regulation—first enacted in the 1880—was a precip-

itous decline in railroad investment. And so, on the eve of the First World War, America's railroad network was awash in a sea of contrasts: omnipresent railroads were the nation's number one transporter of goods and people—yet this vast network had mostly stopped the continual modernization that had been a hallmark of its first 75 years.

The inevitable result, with a transportation network unable to handle the soon-to-be heavy demands of wartime transport, was railroad nationalization in December 1917. Crises were thus averted—temporarily. Following their 1920 return to private control, however, railroads were no better prepared to face the future. A new era was dawning for transportation (long-distance motorized freight transport had been successfully undertaken during the war), and railroads seemed likely to play a diminishing role.

Depression and Rebirth

However, the arrogance of railroads—based on their past importance and collective sociological and economic power—was not diminished. Whatever their financial status and outlook for the future, railroads enjoyed their "classic years" beginning in the 1920s.
Mile-a-minute "name trains" swiftly transported businessmen and plea-



Community Centers

TODAY, THERE'S NOTHING quite like it. We have gathering spots of a sort—shopping malls, airports, trendy night clubs—yet no place in our communities compares to what the train station once represented. Whether a tiny country depot or an imposing, big-city neoclassical structure, the railroad station was also the center of nearly every community.

It was the gateway to the world; a ticket to most anywhere could be reserved here. It was the message center, where lightning-fast messages were sent and received via Western Union (and later, the telephone). A hot meal, shave, shower, and shoe shine were often available. And the comings and goings of the town could readily be witnessed by all.



In this 1939 scene taken at the farming community of Fresno, California, arrival of a train—in this case the Santa Fe Railway's sleek, streamlined Golden Gate*—was still an event of great civic proportion. Railroad tracks were often at the core of each city's business district.* Ira L. Swett photo, Pentrex collection.

sure-seekers throughout the nation, and record freight and passenger volumes were noted. Americans were the most mobile population on the face of the earth, and they enjoyed nationwide access to a wide variety of brand-name goods and merchandise.

Development of the steam locomotive continued unabated. Tracks were upgraded and improved. New signal systems were introduced to help make railroad travel ever safer. Railroads and railroaders were increasingly featured in silent movies and even in the new "talkies." And—harbinger of things to come—the first commercially-successful diesel-electric locomotive was introduced in 1925.

Unfortunately, the Roaring Twenties represented a time of upheaval. The nation's social fabric was changing greatly, and its economy was expanding rapidly—so rapidly, in fact, that it was far from secure. Investment in railroads and related facilities was up, and the stock market itself rose ever higher. Yet the optimism went far beyond the reality; the "money" was mostly based on rosy dreams. The inevitable result came about soon enough: the stock market crash of 1929.

The full impacts of the resulting Great Depression were not long in coming to the railroad industry. Passenger and freight traffic dropped precipitously, with the railroad industry's 1929 net income of nearly $1 billion dropping to a net loss of over $100 million just three years later. Nearly one-third of all railroad companies entered bankruptcy; more than two-fifths of the railroads' work force was furloughed or otherwise cut. Orders for new locomotives vanished, forcing major producers such as Baldwin to file for bankruptcy, or lay off thousands of workers—or both.

Railroads cut service on lightly used lines, and abandoned those



"Big Steam"

THE 1920S WERE a time when railroad companies were "spending money to make money." Steam locomotive design, turning out ever-larger engines, seemed ready for a quantum leap. Even though the basic principles of thermodynamics, power and adhesion, and combustion were well understood, locomotive designers were determined to create dramatically more powerful engines than ever.

As it turned out, they succeeded. Ohio's Lima Locomotive Works, the most notable design pioneer, developed its renowned "Super Power" locomotives, whose firebox capacity was increased far beyond what had previously been considered adequate for a given boiler. In the process, these new locomotives were capable of both greater horsepower and higher speeds. As the decade wore on, locomotive wheel arrangements increased proportionally.

In the eastern United States, the busy New York Central began construction of its famous "Hudson"-type 4-6-4 locomotives; these were eventually supplanted by larger locomotives with a 4-8-4 wheel arrangement. Elsewhere, smaller experimental "articulated" locomotives—employing two engines hinged (to negotiate curves) under a single boiler—led to the development of huge monsters such as the 4-6-6-4 "Challenger," 2-8-8-4 "Yellowstone," and 4-8-8-4 "Big Boy"-type wheel arrangements.

offering no hope for improvement. Yet even with its overall picture quite bleak, a few bright spots could be found on the railroading landscape. Stylish, streamlined internal combustion-powered trainsets were first introduced by the Burlington Route and the Union Pacific Railroad in 1934; these were forebears for their respective railroads' *Zephyr* and *City of . . .* streamliners, which would continue operations until the advent of Amtrak in 1971. Too, the Pennsylvania Railroad undertook the railroad industry's largest Depression-era capital improvement project by electrifying its heavily-used trackage between New York and Washington, D.C.

As economic recovery finally took hold in the mid-to-late 1930s, another round of railroad abandonments took place. Ironically, the recovery was at least partly responsible: through Works Progress Administration and a variety of other back-to-work projects, paved roads were rebuilt or newly constructed in remote areas—areas that had relied on railroads for their economic lifeline. With the increased competition offered by trucks and private automobiles, these little "short lines" were often worth more in scrap value than as operating entities.

Steam's Last Hurrah

As Europe's turmoil increased in the late 1930s, Americans were going back to work in ever-larger numbers. Railroads, too, prospered: traffic returned to the rails as war materiel, and other necessities, were produced and shipped overseas to aid America's allies. A "limited war emergency" announced in 1939 added to the activity. With Japan's December 1941 attack on Pearl Harbor, this activity increased to a frenzy. Whereas railroads in 1940 had handled over 375,000 ton-miles of freight (a ton-mile represents one ton of freight moved one mile), this figure nearly doubled by 1944.

Passenger traffic grew at an even more phenomenal rate. With military travel at an all-time high, and rationing imposed on civilian gasoline and tire purchases, passenger miles quadrupled. Even with travel restrictions in place (military travel had priority over non-essential civilian travel), railroads were carrying over 75 percent of all commercial travelers and nearly 100 percent of military ones—amounting to over 95,000 million passenger miles. Railroads, determined not to have a repeat of WWI's government control, took action early on to ensure national transportation priorities were met.

Interestingly—although the diesel locomotive had by the late 1930s proved its reliability and power—the onset of war actually delayed conversion from steam. Although many railroads wanted the new technology, the government's War Production Board established allotment criteria. Since production facilities were already in place, and the designs well-tested, new steam locomotives were built for many lines, rather than diesels. A few railroads with particular needs (because of operational limitations) were allocated diesels; many more were produced for use by various branches of the United States military.

A Brave Fight

The end of hostilities in 1945 signaled a "return to normalcy" for most of the nation, but railroads remained busy returning troops and



Diesels on the Santa Fe

THE ATCHISON, TOPEKA & SANTA FE Railway was one of the few railroads to be allocated new diesel locomotives during World War II. Not only was this railroad's route of particular importance—it ran to Los Angeles and San Diego, where the Pacific Fleet was headquartered—but the railroad was particularly power short. Perhaps most importantly, much of its operating territory—the arid Southwest—lacked on-line water supplies to replenish ever-thirsty steam locomotives.

Given these circumstances, and the railroad's prior investment in diesel refueling and servicing facilities, the War Production Board authorized delivery of dozens of new Electro-Motive freight units to the Santa Fe. These joined the line's fleet in 1944-1945, the busiest years for the railroad. The last steam locomotives ran on this proud southwestern U.S. rail pioneer in the late 1950s.

This prewar streamlined Santa Fe Railway diesel locomotive was a harbinger of things to come. By 1938, the railroad operated over a dozen streamlined, diesel-powered trains throughout its network of trackage in the Southwest. With delivery of additional modern diesel locomotives, by World War II's end, steam's swan song was being sung by the Santa Fe. Ira L. Swett photo, Pentrex collection.



moving other war supplies well into 1946. By the time railroad traffic usage began leveling off, locomotives, freight cars, and passenger equipment were worn out. Railroads, optimistic about their future, placed massive orders for new streamlined passenger trains and diesel locomotives. Eastern giant New York Central, for instance, ordered over 700 new passenger cars alone!

Unfortunately, airline passenger-miles as early as 1949 exceeded those reported by the Pullman Company (America's universal overnight rail sleeping car service provider). Although the railroads put up a brave fight through the 1950s, it was not one that could be won. The Interstate Highway System was under construction; personal automobile ownership was at an all-time high; the jet aircraft was on its way.

By the 1960s, most railroads were cutting passenger services and going freight-only on routes showing little hope for recovery. Even lightly used freight routes were being abandoned entirely. The Northeast would be especially hard-hit: following merger of the Pennsylvania and New York Central railroads (once fierce competitors), the entire merged company, known as Penn Central, collapsed. (Conrail was subsequently formed by Congress, adding in the once-mighty New York, New Haven & Hartford and Erie-Lackawanna systems.)

Nationwide, passenger trains were acknowledged to be a financial burden, whose losses could no longer be assumed by private corporations. In 1971, Congress created the National Railroad Passenger Corporation—Amtrak—to assume operation of nearly all the remaining services.

Beyond the Tracks

Today, the American dream reaches far beyond the country's railroad tracks. But in his inspired planning for Disneyland and Walt Disney World Resort, Walt Disney—the farmer's son from Marceline—understood well the lure of an earlier American dream. He gave the people what they wanted; he smoothed the road and made easy the way; and he surrounded it all with a train.



Epilogue: Leaving a Better World

To affect the quality of the day, that is the highest of arts.

—Henry David Thoreau

The Walt Disney I remember, and heard my father and our Disney associates discuss for over 45 years, was a complex man. He could be demanding, stubborn, suspicious, and occasionally profane. He was also tremendously creative and funny, loved to tease, was insatiably curious, and cared particularly about the welfare of children.

To be sure, Walt Disney was just one of billions of human beings who have passed this way, but along the way he shared an unsurpassed gift for storytelling and showmanship. Equally important, as an entrepreneur, Walt was willing to take major risks—rather than rest on past laurels. He encouraged his colleagues to constantly seek better solutions, find new ways to entertain, and expand into untried markets.

Perhaps by such a rural track as this (belonging to the Sierra Railway, operating out of California's Railtown 1897 State Historic Park), a boy named Walt waved to a caboose and its crew—and began dreaming the rail dream that led him to a Magic Kingdom. Joel Jensen photo.

Garnering Loyalty

Walt loved a challenge. He seemed to feed off the energy of surmounting the insurmountable, and of discovering solutions to problems transcending entertainment and amusement. Had he and automaker Henry Ford (creator of the Henry Ford Museum & Greenfield Village in Dearborn, Michigan) lived long enough to walk the streets of Walt Disney World, they would have seen the results of their mutual dream: a place to educate, enlighten, and entertain that honors the past while sharing the promise of the future.

Of the various skills Walt exhibited, perhaps his best was attracting and retaining one of the finest creative and technological teams in American industrial history. While Walt was generally acknowledged as the consummate salesman within the Disney organization, it was quite another accomplishment to provide bright people with inspired leadership and guidance that encouraged rather than suppressed—while fos-

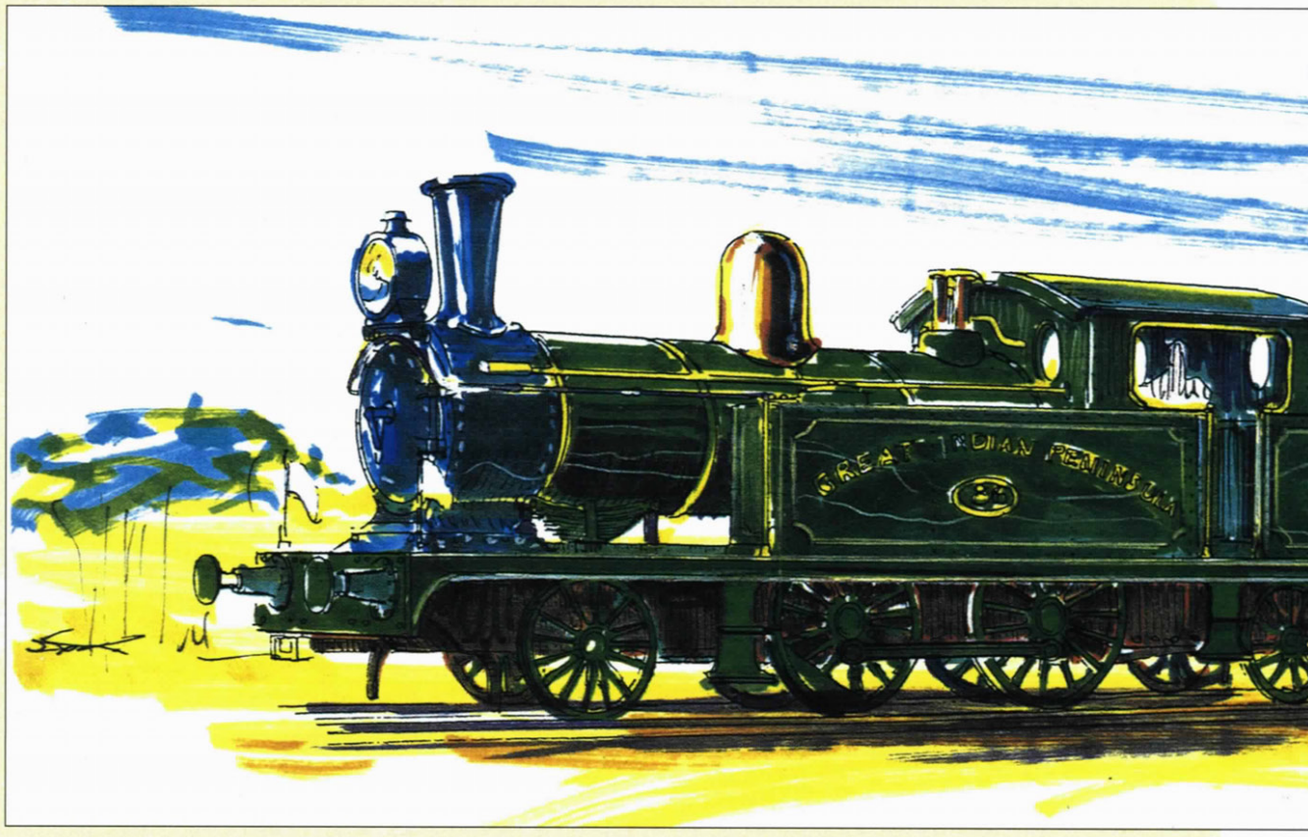
tering fierce loyalty. It wasn't unusual for Disney employees to stay 30 to 40 years, spending the majority of their working lives with the company. In fact, Imagineer and Disney Legend John Hench has remained for more than 55 years; he still works every day as executive vice president of Walt Disney Imagineering.

Though Walt garnered loyalty, according to Ward Kimball, he strongly disliked "yes men" who tried to win his favor by always agreeing with him; such types didn't last long. Instead, Walt surrounded himself with people whom he believed were more talented than he. This helps explain why he always expected the very best from his staff. He didn't mind hearing differing opinions (immediate reactions notwithstanding), and he respected those who could logically explain their points of view.



Out of Africa

A LITTLE-KNOWN FACT about Disneyland's Jungle Cruise: Walt Disney's original concept featured real animals living in their native habitats. However, during preliminary planning, Walt learned from animal behavior experts that many African animals are nocturnal. Always mindful of delivering show quality, he was concerned that there would be little to entertain Park guests during daytime cruises through Adventureland. As a result, a more manageable herd—with molded fiberglass bodies containing mechanical innards driven by pneumatic pressure—replaced Walt's wildlife. Too, cost was a factor—at that time, building and operating a zoo wasn't financially feasible.





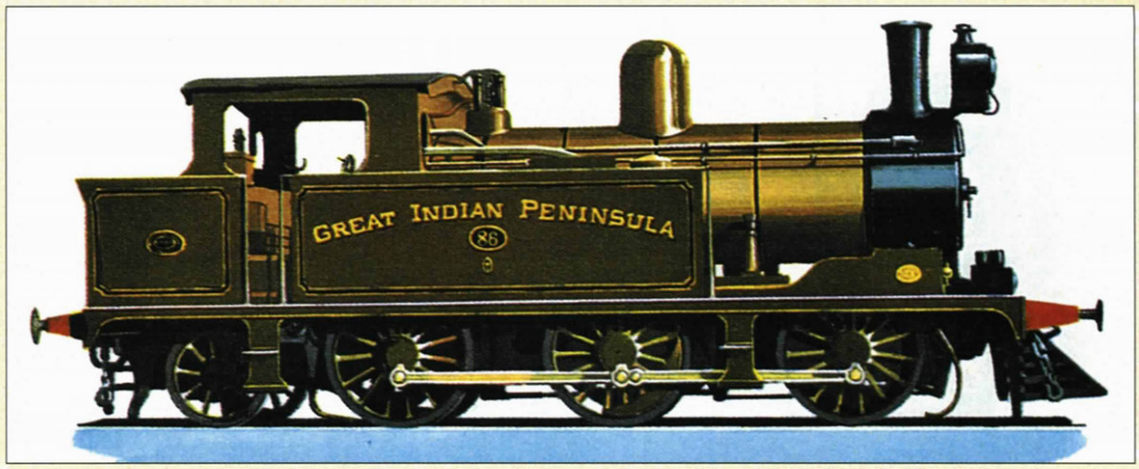


Above left: Joining the fun of being on a section gang, Imagineers John Olson, Bill Tyson, Bob Harpur, and Joel Fritsche help drive spikes on the Eastern Star Railway. © Disney Enterprises, Inc.

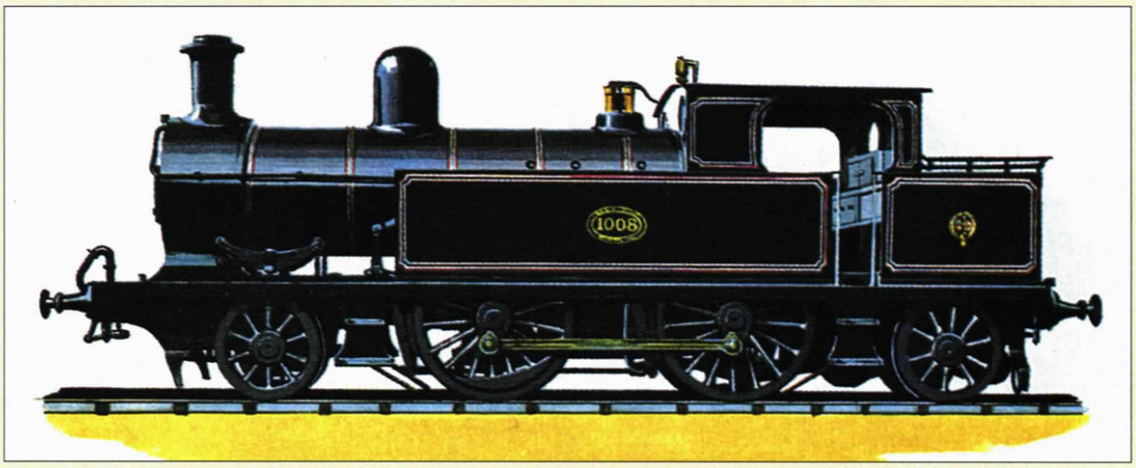
Above right: Work progresses on the thatched roof of Harambe Station at Disney's Animal Kingdom. Note the watering tower in the distance.
© Disney Enterprises, Inc.

Below: © Disney Enterprises, Inc.





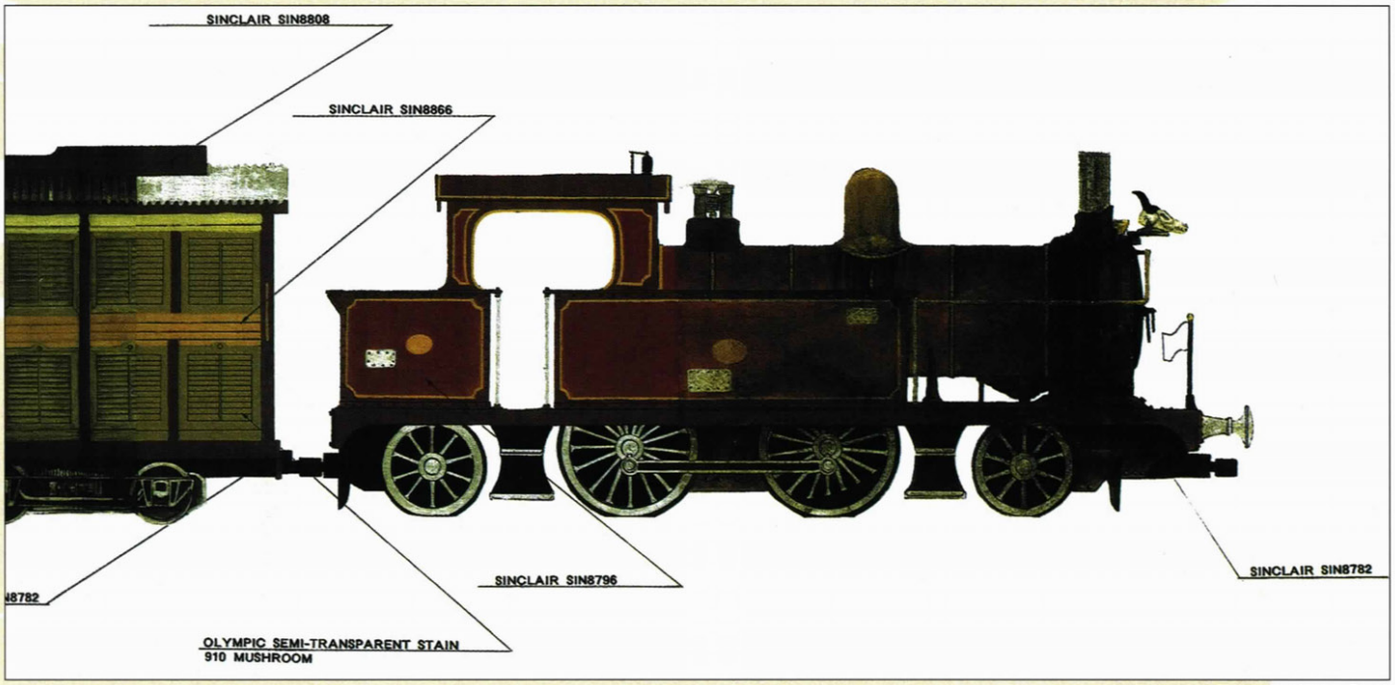
Courtesy of Walt Disney Imagineering.



Courtesy of Walt Disney Imagineering.

Fast-forward to spring 1998. After 43 years, Walt's dream of a living wildlife-themed attraction is finally being realized on a grand scale in Disney's Animal Kingdom at Walt Disney World. Covering 500 acres when all phases are completed, this largest themed area in Walt Disney World will feature three visions of animal life: the prehistoric past, current reality, and configured fantasy. Through the artful science of Audio-Animatronics, guests will explore the realm of dinosaurs and visit an enchanted land populated by mythical creatures. The saga of the Serengeti will be presented close-at-hand and—delivering on Walt's concept—real hippos, lions, giraffes, elephants and zebras, will be visible from the newest Disney railway system.

On its Wildlife Express run, snaking through African flora and fauna, the Eastern Star Railway will operate reproductions of the distinctive English steam-powered trains that transported passengers and cargo across the Dark Continent in the early 20th century. Veteran Imagineer George McGinnis came out of retirement to design the railroad equipment. Creating a whimsical theme, he dressed the trains with miscellaneous props, including an old bicycle tied to one of the locomotives (for use by the operating engineer). An automobile headlight is jury-rigged to replace a missing headlamp. A cylinder of sheet metal substitutes for a smokestack, and a water buffalo skull occupies the headlamp mounting. (The line's checkered history reveals that these pieces were broken off during an encounter with a stout tree branch.) Lashed atop the coaches is a mishmash of luggage and cargo.



© Disney Enterprises, Inc.

Supporting the illusion that these once-proud trains have been chuffing through the jungles and plains for a hundred years—with cleaning provided only by an occasional tropical downpour—are the faded paint scheme and lackluster trim. "We're creating a look for vehicles that would be seen today in Africa and Asia, long after their original use in Europe in the late 1800s," said Joe Rhode, vice president of creative for Disney's Animal Kingdom project.

Severn Lamb, Ltd. in England is constructing the rolling stock under the watchful direction of veteran Disney railroaders Bob Harpur and Joel Fritsche. Two trains of five 38-foot-long coaches will have the capacity to carry 250 guests on parallel stadium seating facing outward. The coaches will have closed wooden shuttered windows behind the passengers and open windows on the opposite side for viewing.

Motive power will be provided by 2-4-2 tank-type, class F1 locomotives equipped with Perkins diesel-hydraulic systems. Three of these 18.6-ton locomotives are being built, with one serving as back-up. By Disney standards, these will be large, hulking engines with 54-inch drive wheels that will haul their consists over a mile loop linking the African Harambe Station with the Conservation Station. In special recognition of his many years as a train builder of many scales, Bob Harpur's name will appear on one of the locomotives, with a distinctively East Indian flavor: "R. Baba Harpoor."

The railway's tracks will be 3-foot gauge, 40-pound rails nailed through French 1:20 tapered railplates to 6-foot-long, 6-by 6-inch ties resting in crushed granite ballast.

At night, guests will be treated to rare glimpses of nocturnal life in Africa's fabled wilds. Traveling through the dark silence of central Florida's transformed landscape, if visitors listen closely above the rhythmic rumble of the train, they might hear a sigh of satisfaction from a distant railfan who has had more than his share of dreams transformed into reality.



Since 1987, the Disney Legend Award has been presented annually to those individuals whose body of work has made a significant contribution to the Disney Legacy. Receiving his award in 1990, Roger Broggie is seen here with his wife, Mary, and Roy E. Disney. CPHS collection, © Disney Enterprises, Inc.

Beyond his self-imposed drive and impatience with mediocrity, Walt Disney loved his work and valued his staff. He prized loyalty and rewarded excellence. Because Walt viewed his employees as an extended family, he felt obliged to push for constant improvement—as do conscientious parents.

With an uncanny understanding of human nature, Walt taught his employees by example. An illustration of his practical, midwestern-bred insight is found in a story told by animator Ken Anderson.

Many years ago, when Ken was quite young, he was participating in a group story meeting with Walt, who had just taken out a fresh cigarette and was looking for a light. Ken had a new lighter in his pocket and eagerly produced it. Holding it in front of his boss, he flicked the flint wheel; the lighter flared, singeing Walt's mustache and burning his nose. "What the hell are you tryin' to do, burn me up?" Walt yelled as he quickly left the meeting.

Ken was deeply upset, and even thought he might have jeopardized his job. The studio staff didn't help matters, for, as word of the incident quickly spread, they avoided Ken. That night he was very distressed and couldn't sleep.

Having apparently learned of the treatment Ken was receiving, Walt called him the next morning: "Hi ya, Ken, whatcha doin' for lunch?" he asked pleasantly.

The two met in the studio commissary. Walt, who had shaved off his mustache, sat opposite Ken sharing lunch in front of the other employees. The lighter wasn't discussed. That afternoon, the others treated Ken as Walt had, as if the incident hadn't happened. The former farmboy had taught them a simple lesson in tolerance.

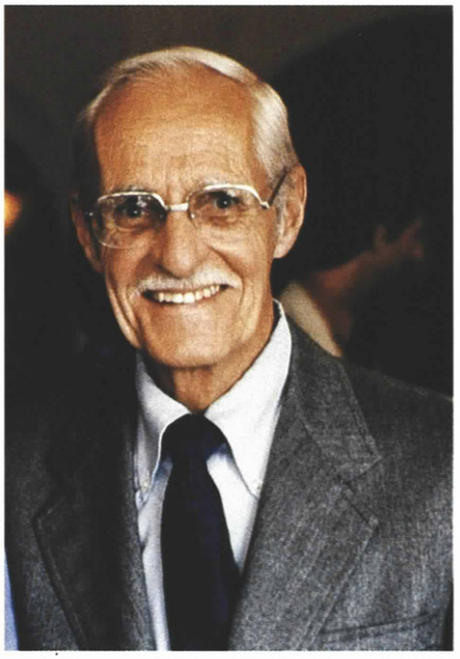
Reaching Beyond

Some rank-and-file employees chose to take lessons learned at Disney elsewhere, becoming vendors or competitors. Some left and ultimately returned. But, almost all who toiled in the Disney vineyards will attest that they received a tremendous education from a uniquely gifted teacher.

Walt's gifts were not appreciated by all, of course. Various New York-based critics attacked him, refusing to grant him artistic recognition. Seemingly, their disdain didn't concern Walt. "What I do was never supposed to be considered art. This is show business, and I'm a showman," he remarked.

Although his brother Roy is rightfully credited with astutely managing the finances of the Disney empire, Walt also proved sagacious in business affairs. Walt understood first, and perhaps best, the value of cross-merchandising everything his creative team could produce. It was the packaging of products that opened up an international network for sales; transferring designs from one medium (such as film) into multiple distribution channels.

Today, nearly every Disney character property has counterparts in merchandise, film, television, music, publishing, toys, and the like. Through this "total marketing concept," as Walt's marketing maven Card Walker termed it, the carefully crafted Disney name alone practically guarantees a profitable return on any merchandise alliance devel-



Gifted with mechanical genius, Roger Broggie epitomized the essence of Imagineering—"the blending of creative imagination and technical know-how." CPHS collection.

oped through rights licensing. At any given time, some 20,000 licensing agreements are in force.

Another thing most people don't know about Walt was that he didn't care about making money for its own sake. Instead, he was interested in the freedom that financial security could provide. For most of his life, he struggled to make ends meet; it was only during his last few years that he finally relaxed and enjoyed the fruits of his labor. "I've always been bored with just making money," he said. "I've wanted to do things, I wanted to build things. Get something *going*."

As motivation, Walt Disney drew upon an unfathomable reservoir of imagination, memory, and energy. He had the rare ability to recognize opportunity, and he knew when to encourage others to reach beyond their grasp—to turn opportunities into accomplishments and assets. When former President Eisenhower was serving as Chairman of the Valley Forge Foundation, he presented its highest honor, the George Washington medal, to Walt with the following citation: "Walt Disney, Ambassador of Freedom for the U.S.A. . . .

"For his unfailing professional devotion to the things which matter most—human dignity and personal responsibility.

"For masterful, creative leadership in communicating the hopes and aspirations of our free society to the far corners of the planet."

Highest of Artisans

If a lifetime spent creating happiness for others contributes to a better world, then we truly have benefitted from this unassuming carpenter's son passing this way. He has indeed affected the quality of many days for many people, and can be counted among the highest of artisans.

Although numerous writers have penned their definitions of Walt Disney's niche in history, perhaps the description of the legacy he would leave was best stated by Walt himself. He shared this simple observation with me on a pre-opening train trip around the Magic Kingdom: "If I leave this world a better place, then my time here will have been worthwhile."



Since, as Walt Disney said, "It all started with a mouse," it is fitting that our ride through his railroad story ends with a wave (a railroader's highball) from Disneyland's bronze sculpture "Partners." © Disney Enterprises, Inc.

Appendix I:
Roster of Disney Steam Locomotives

	Carolwood Pacific Railroad	**Disneyland Park**
Name	*Lilly Belle*	*C. K. Holliday*
Number	173	1
Wheel arr./type	4-4-0 American	4-4-0 American
Stack design	Diamond	Diamond
Builder	Walt Disney Productions, Burbank, California	WED, Burbank, California
In-service date	May 7, 1950	
Year	1950	1955
Construction number		12544
Original owner		Retlaw Enterprises
Park service date		July 17, 1955
Scale	1/8th	5/8ths
Gauge	7-1/4"	36"
Length	48"	35' 4"
Weight	260 lbs.	23,200
Height to top of stack	23"	
Fuel	Hard coal	Distillate #2 low-sulfur-reformulated
Boiler pressure	140 psi.	150 psi.
Boiler barrel diameter	6"	32"
Cylinder size	2-1/2" x 3"	10" x 16"
Valve gear	Stephenson	Stephenson
Driver diameter	7"	36"
Lead truck diameter	3-1/2"	18"
Tender capacity	6 gal. water / 10 lbs. coal	550 gal. water / 250 gal. oil
Colors	Natural wood cab/red wheels	Red cab/red wheels
Namesake	Lillian Bounds Disney (1899-1997) Devoted spouse and mother	Cyrus Kurtz Holliday (1826-1900) Founder of the Atchison & Topeka Railroad (Santa Fe's predecessor) in 1859

	Disneyland Park	Disneyland Park
Name	*E. P. Ripley*	*Fred Gurley*
Number	2	3
Wheel arr./type	4-4-0 American	(Original) 0-4-4T Forney, Converted to 2-4-4T
Stack design	Cap stack	Cap stack
Builder	WED, Burbank, California	Baldwin Locomotive Works, Philadelphia, Pennsylvania
In-service date	1955	August 1894
Construction number	12555	14065
Original owner	Retlaw Enterprises	Godchaux Sugar Company, LouiSiana, *No. 1*
Park service date	July 17, 1955	March 28, 1958
Scale	5/8ths	Full
Gauge	36"	36"
Length	34' 10"	25' 4 1/2"
Weight	22,500 lbs.	21,600 Ib, .
Fuel	Distillate #2 low-sulfur-reformulated	Distillate #2 low-sulfur-reformulated
Boiler pressure	150 psi.	150 psi.
Boiler barrel diameter	32"	32"
Cylinder size	10"x 16"	9" x 14"
Valve gear	Stephenson	Stephenson
Driver diameter	36"	30"
Lead truck diameter	18"	18"
Tender capacity	550 gal. water / 250 gal. oil	350 gal. water / 230 gal. oil
Colors	Green cab/red wheels	Green cab/red wheels
Namesake	Edward Payson Ripley (1845-1920) First president of the reorganized Atchison, Topeka & Santa Fe Railway in 1895	Fred G. Gurley (1889-1976) President of the Santa Fe Railway from 1944-1957, approved Santa Fe's participation in Disneyland

	Disneyland Park	The Magic Kingdom - Walt Disney World Resort
Name	*Ernest S. Marsh*	*Walter E. Disney*
Number	4	1
Wheel arr./type	(Original) 0-4-0 Switcher, Converted to 2-4-0	4-6-0 Ten-wheeler
Stack design	Diamond	Diamond
Builder	Baldwin Locomotive Works, Philadelphia, Pennsylvania	Baldwin Locomotive Works, Philadelphia, Pennsylvania
Date built	April 1925	May 1925
Construction number	58867	58444
Original owner	Raritan River Sand Company, New Jersey	United Railways of Yucatan *No. 274,* Merida, Mexico
Park service date	July 25, 1959	October 1, 1971
Scale	Full	Full
Gauge	36"	36"
Length	30' 10"	42' 2 1/2"
Weight	23,700 lbs.	67,500 lbs.
Fuel	Distillate #2 low-sulfur-reformulated	Distillate #2 low-sulfur-reformulated
Boiler pressure	150 psi.	160 psi.
Boiler barrel diameter	32"	50"
Cylinder size	9" x 14"	15" x 20"
Valve gear	Stephenson	Stephenson
Driver diameter	28"	44"
Lead truck diameter	18"	24"
Tender capacity	425 gal. water / 180 gal. oil	1,837 gal. water / 664 gal. fuel
Colors	Red cab/red wheels	Red cab/red wheels
Namesake	Ernest S. Marsh (1903-1975) President of the Santa Fe Railway from 1957-1966, a strong advocate of the Santa Fe and Disneyland relationship	Walter Elias Disney (1901-1966) Visionary railfan

The Magic Kingdom - Walt Disney World Resort

Name	*Lilly Belle*	*Roger E. Broggie*
Number	2	3
Wheel arr./type	2-6-0 Mogul	4-6-0 Ten-wheeler
Stack design	Diamond	Diamond
Builder	Baldwin Locomotive Works, Philadelphia, Pennsylvania	Baldwin Locomotive Works, Philadelphia, Pennsylvania
Date built	September 1928	May 1925
Construction number	60598	58445
Original owner	United Railways of Yucatan *No. 260,* Merida, Mexico	United Railways of Yucatan *No. 275,* Merida, Mexico
Park service date	October 1, 1971	October 1, 1971
Scale	Full	Full
Gauge	36"	36"
Length	37' 1-1/2"	42' 2 1/2"
Weight	61,000 lbs.	67,500 lbs.
Fuel	Distillate #2 low-sulfur-reformulated	Distillate #2 low-sulfur-reformulated
Boiler pressure	160 psi.	160 psi.
Boiler barrel diameter	50"	50"
Cylinder size	16" x 20"	15" x 20"
Valve gear	Stephenson	Stephenson
Driver diameter	44"	44"
Lead truck diameter	24"	24"
Tender capacity	1,837 gal. water / 664 gal. fuel	1,837 gal. water / 664 gal. fuel
Colors	Green cab/red wheels	Red cab/red wheels
Namesake	Lillian Bounds Disney (1899-1997) Devoted spouse and mother	Roger Edward Broggie (1908-1991) Legendary Imagineer

The Magic Kingdom - Walt Disney World Resort

Name	*Roy O. Disney*	*Ward Kimball*
Number	4	5
Wheel arr./type	4-4-0 American	2-4-4RT Forney
Stack design	Diamond	Diamond
Builder	Baldwin Locomotive Works, Philadelphia, Pennsylvania	Davenport Locomotive Works, Davenport, Iowa
Date built	February 1916	July 1927
Construction number	42915	N 2081
Original owner	United Railways of Yucatan *No. 251,* Merida, Mexico	N & S Coal Company, Pittsburgh, Nova Scotia
Park service date	December 1, 1971	March 1, 1997
Scale	Full	Full
Gauge	36"	36"
Length	41' 5 3/4"	30' 5"
Weight	51,000 lbs.	36,750 lbs. (dry) 48,439 lbs. (operational)
Fuel	Distillate #2 low-sulfur-reformulated	Distillate #2 low-sulfur-reformulated
Boiler pressure	160 psi.	165 psi.
Boiler barrel diameter	50"	42"
Cylinder size	13 1/2" x 18"	11" x 16"
Valve gear	Stephenson	Stephenson
Driver diameter	46"	28"
Lead truck diameter	26"	18"
Tender capacity	1,837 gal. water / 664 gal. fuel	675 gal. water / 300 gal. oil
Colors	Green cab/red wheels	Mahogany cab/black frame/red wheels
Namesake	Roy Oliver Disney (1893-1971) Brother and partner	Ward W. Kimball (1914-) Legendary artist, railroader, collector

	Tokyo Disneyland	Tokyo Disneyland
Name	*Rio Grande*	*Missouri*
Number	25	28
Wheel arr./type	2-4-0	2-4-0
Stack design	Diamond	Cap stack
Builder	Kyosan Sangyo Co., Ltd.; Fukushima, Japan	Kyosan Sangyo Co., Ltd.; Fukushima, Japan
Date built	1982	1982
Construction number	10094	10095
Park service date	April 15, 1983	April 15, 1983
Scale	5/8ths	5/8ths
Gauge	30"	30"
Length	20' 6"	20' 6"
Weight	22,046 lbs.	22,046 lbs.
Fuel	Oil	Oil
Boiler pressure	186 psi.	186 psi.
Boiler barrel diameter	31-1/2"	31-1/2"
Cylinder size	8.27" x 12.6"	8.27" x 12.6"
Valve gear	Stephenson	Stephenson
Driver diameter	27"	27"
Lead truck diameter	16"	16"
Tender capacity	475 gal. water / 264 gal. oil	475 gal. water / 264 gal. oil
Colors	Orange cab/red wheels	Green cab/red wheels
Namesake	The Rio Grande Called the Rio Bravo del Norte in Mexico, the river forms part of the international boundary between the United States and Mexico.	The Missouri River With the Mississippi River, this longest river in the United States forms the major shipping network for mid-America.

	Tokyo Disneyland	Tokyo Disneyland
Name	*Colorado*	*Mississippi*
Number	53	20
Wheel arr./type	2-4-0	2-4-0
Stack design	Cap stack	Cap stack
Builder	Kyosan Kogyo Co., Ltd.; Fukushima, Japan	Kyosan Kogyo Co., Ltd.; Fukushima, Japan
Date built	1982	1991
Construction number	10096	10100
Park service date	April 15, 1983	October 8, 1991
Scale	5/8ths	5/8ths
Gauge	30"	30"
Length	20' 6"	20' 6"
Weight	22,046 lbs.	22,046 lbs.
Fuel	Oil	Oil
Boiler pressure	186 psi.	186 psi.
Boiler barrel diameter	31-1/2"	31-1/2"
Cylinder size	8.27" x 12.6"	8.27" x 12.6"
Valve gear	Stephenson	Stephenson
Driver diameter	27"	27"
Lead truck diameter	16"	16"
Tender capacity	475 gal. water / 264 gal. oil	475 gal. water / 264 gal. oil
Colors	Green cab/red wheels	Blue cab/red wheels
Namesake	The Colorado River One of the oldest rivers in the Western Hemisphere, the Colorado River forms the boundary between Arizona and California and terminates in the Gulf of California.	The Mississippi River Known as the "Father of Waters," the mighty Mississippi divides the United States into east and west. As primary transportation systems, the Mississippi and the railroads were used to develop rural America.

	Disneyland Paris	Disneyland Paris
Name	*W. F. Cody*	*C. K. Holliday*
Number	1	2
Wheel arr./type	4-4-0 American	4-4-0 American
Stack design	Cap stack	Cap stack
Builder	H. P. Phillips, Wales, United Kingdom	H. P. Phillips, Wales, United Kingdom
Date built	1991-92	1991-92
Construction number	40137	40135
Park service date	April 1992	April 1992
Scale	5/8ths	5/8ths
Gauge	36"	36"
Length	25' 3"	25' 8"
Weight	32,700 lbs.	32,736 lbs.
Fuel	No. 2 diesel oil	No. 2 diesel oil
Boiler pressure	150 psi.	150 psi.
Boiler barrel diameter	32-1/2"	34"
Cylinder size	10" x 16"	10" x 18"
Valve gear	Stephenson	Stephenson
Driver diameter	36"	36"
Lead truck diameter	16"	16"
Tender capacity	597 gal. water / 204 gal. oil	597 gal. water / 204 gal. oil
Colors	Natural wood cab/red wheels	Natural wood cab/red wheels
Namesake	William Frederick Cody (1846-1917) "Buffalo Bill" dispatched more than 4,000 bison in less than two years to supply meat for railroad crews (Union Pacific and others) building railways across the Plains.	Cyrus Kurtz Holliday (1826-1900)

	Disneyland Paris	Disneyland Paris
Name	*G. Washington*	*Eureka*
Number	3	4
Wheel arr./type	4-4-0 American	4-4-0 American
Stack design	Bell	Diamond
Builder	H. P. Phillips, Wales, United Kingdom	Severn Lamb, England
Date built	1991-92	1993
Construction number	40136	14358
Park service date	April 1992	May 1993
Scale	5/8ths	5/8ths
Gauge	36"	36"
Length	20' 6"	25' 6"
Weight	32,900 lbs.	37,500 lbs.
Fuel	No. 2 diesel	No. 2 diesel oil
Boiler pressure	150 psi.	150 psi.
Boiler barrel diameter	32-1/2"	32-1/2"
Cylinder size	10" x 18"	10" x 16"
Valve gear	Stephenson	Stephenson
Driver diameter	36"	36"
Lead truck diameter	16"	16"
Tender capacity	589 gal. water / 204 gal. oil	597 gal. water / 204 gal. oil
Colors	Natural wood cab/red wheels	Natural wood cab/red wheels
Namesake	George Washington (1732-1799) National father figure	State motto of California

Appendix II:
How a Steam Engine Works

Kyle K. Wyatt

Steam locomotion is generated as follows:

1. Coal and water are carried behind the locomotive in the tender and either piped (water) or shoveled (coal) into the boiler and smokebox respectively.

2. Once in the firebox, the coal, wood, or oil is burned to produce hot gases.

3. These gases are then drawn through tubes in the boiler surrounded by the boiler's water that is heated by its contact with the tubes.

4. When this water boils, steam begins to collect in the boiler's steam dome where the throttle is located. With the throttle opened, steam passes into the dry pipe, and travels down to the cylinders.

5. At the base of the dry pipe, the valve controls the direction the locomotive will travel by regulating when and to which side of the piston the steam is admitted.

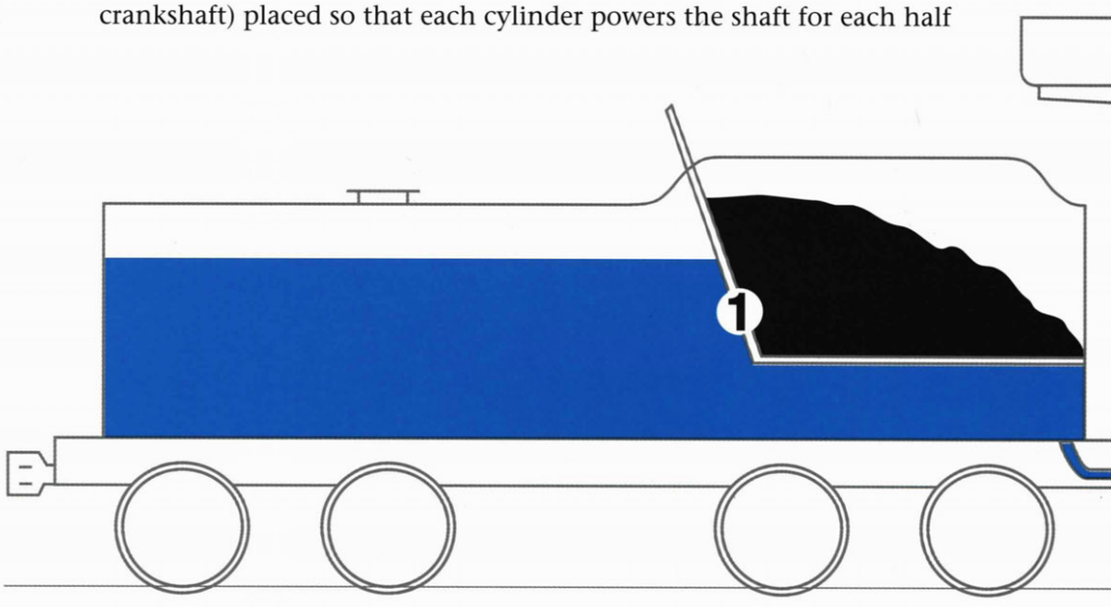
6. Each time new steam pushes the piston in one direction, exhaust steam is forced out of the cylinder on the opposite side of the piston.

7. As the exhaust steam is forced out of the cylinder and passes through the smokebox, it creates an updraft, drawing the hot gases and smoke through the tubes. This helps the fire burn more thoroughly and keeps the boiler hot while directing the smoke skyward above the locomotive cab.
Diagram by Dean Sauvola.

The engine of a steam locomotive performs a function similar to that of a gasoline engine in a car, but there are significant differences. First, the locomotive's engine is an external combustion type where steam is produced in a boiler (like a large tea kettle). Burning fuel (the stove top) turns water to steam which is then injected into the cylinders to move the pistons. In a car's internal combustion gasoline engine, the fuel is burned directly (exploded) inside the cylinders to move the pistons.

In both types of engines, valves open to allow the steam or fuel to enter the cylinders and the used steam (or exhaust) to exit. While car pistons are powered in one direction only—typically down—a steam engine's pistons are powered in two directions. Steam is admitted alternately at the front and the back of the piston in each cylinder, making a two-cylinder steam engine similar to a four-cylinder gas engine.

With both engines, the back and forth (up and down) motion of the pistons has to be converted into circular motion to turn the wheels. The pistons of a four-cylinder gas engine are connected to a crankshaft with offset eccentrics (round cranks offset from the centerline of the crankshaft) placed so that each cylinder powers the shaft for each half

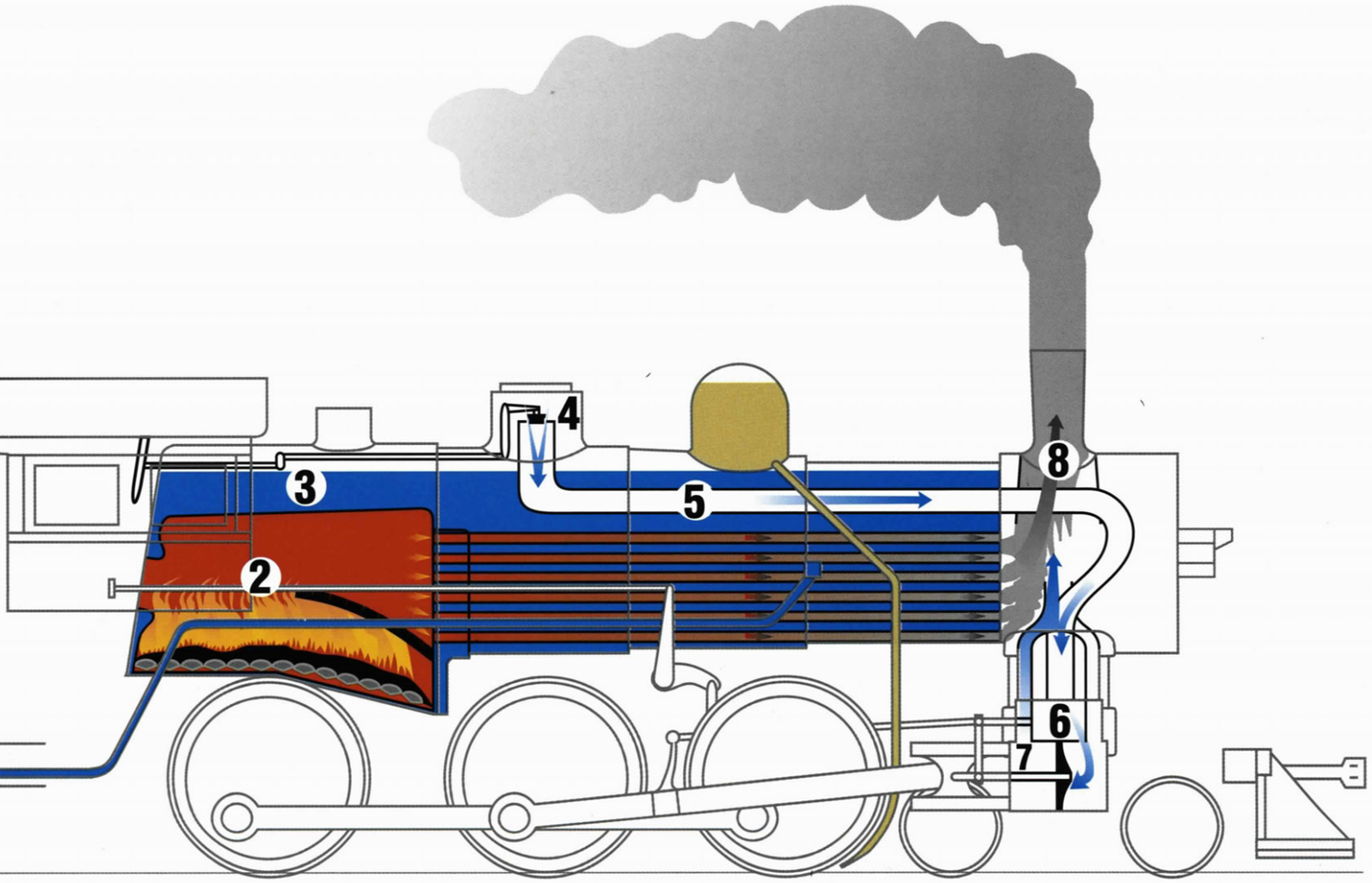


turn, a quarter of the complete engine cycle. The valves and ignition control the firing of each cylinder, typically in a 1-3-2-4 sequence.

On a steam locomotive, the cranks are placed directly on the outside of the drive wheels, with the crank pins offset a quarter turn between the right and left driver. Steam is admitted into the cylinders at the right front, left front, right rear, and left rear in order, again with four power strokes for each wheel revolution (the crankshaft's counterpart).

Valve motion timing in each type of engine is taken from the crankshaft or drive wheels so that it remains synchronized with engine motion and speed. It must be reconverted from the drive shaft's circular motion to the back and forth (up and down) motion needed for the valves. On a gas engine, valve motion either comes from rocker arms running off separate eccentrics on the main crankshaft, or directly from eccentrics on a separate camshaft connected through gears or a chain to the main crankshaft.

Most steam locomotives use valve gear connected to the drive wheels or axles to control valve motion. Over the years, several gear types were developed, though most functioned similarly. In the 19th century, the most commonly used was the Stephenson or link-motion type. Located under the boiler between the frames, it was driven off eccentrics on the



main driver axle. As locomotives grew larger around the turn of the century, the Stephenson parts became very heavy. Lighter valve gears were adopted, most commonly the Walscharts, which took its motion from a crank attached to the crank pin on the driver's side.

One major difference between a steam locomotive and an automobile is the use of a separate transmission to control direction and power. In a car, a gas engine runs in one direction. A locomotive's steam engine has to run in both. (Some gas engines must operate in both directions, particularly ship engines, but we'll stick with the car comparison.) The locomotive engineer controls the valves to reverse the order of steam admission into the cylinders, and thus reverse the direction of travel. The engineer's reverse lever is nicknamed the "Johnson bar."

There is a trade-off between power and fuel efficiency in both a gas engine and a steam engine, but the mechanism is different. In a car, you press on the gas pedal to increase engine speed. Shifting to a higher transmission gear allows the engine to turn at a slower speed (fewer revolutions per minute [rpm]) for a given road speed (mph), giving more miles per gallon of gas (mpg). But when driving up a steep hill, you need to use more gas or shift to a lower gear to get more power, thus reducing your mpg.

In a locomotive engine, steam can work in two ways. First, the steam pressure from the boiler can push the piston directly. Second, though not as powerful as the compressed steam in the boiler itself, the steam expands when injected into the cylinder. This less-pressurized steam can also do work though not as much as the full-pressurized steam in the boiler. On a steam locomotive, the engineer can not only control the steam from the boiler with the throttle (the equivalent of the gas pedal), but also control the cut-off—how long the valve to the cylinder remains open and thus how much steam is being injected into the cylinder. By reducing the cut-off, less steam is injected and a greater proportional use is made of the steam's expansive power, extracting more power from a given volume of boiler steam. But when more power is needed—for example, when that hill must be climbed—the cut-off is increased, injecting more of the high-pressure steam from the boiler, but wasting some of the expansive power of the steam.

Both the cut-off and reversing of a steam locomotive are controlled by the Johnson bar. With Stephenson valve gear, such as used on Central Pacific No. 173, the motion controlling the two valve sets for the two cylinders is driven off four eccentrics on the main driving axle. The high points of the two eccentrics are offset from each other—although not at 180 degrees—because of other design elements increasing the use of the steam's expansive power. Attached to each eccentric is a rod or blade, and a crescent link is connected top and bottom to the ends of the two blades. As the drivers turn, the movement of the two eccentrics, pivoting around the center of the link, rocks the ends of the link. The link can be moved up and down through a connection with the Johnson bar.

A block is attached to the link so that the link can slide along it, and the block in turn is connected to the cylinder valve, commonly

using a bell crank arrangement to transfer the motion from inside the frame to the cylinders. As the block's position is adjusted by moving the link with the Johnson bar, the block picks up the rocking motion from the link and translates it into a backward and forward motion. This movement is transmitted to the valve in the cylinder, controlling the steam's injection and exhaust.

When the block is at the top of the link, there is a longer backward and forward motion causing the valve to be open longer, allowing more steam to enter the cylinder. As the block moves toward the center, this motion is reduced (reduced cut-off). At the center of the link, the block does not move; but as it is placed lower still (as the link is raised), the motion is reversed, turning the motion of the valve and thus reversing the direction of the locomotive.

Understanding how a steam locomotive works is much easier to grasp if you can look at the locomotive while the parts are moving.

Appendix III:
Firing and Operating Procedures

Disneyland Oil Burning Locomotives

For every attraction at the Disney Parks—including the rail rides—authenticity and safety are integral elements in presenting "the show." Illustrating this operational tenet, the following list of instructions—printed verbatim as followed by Disney engineers—delineates the nuts and bolts (or steam and pistons) behind the delight and nostalgia of a Disney puffer ride.

1. In starting a fire, the usual precautions must be taken to see that the boiler is properly filled with water. This should be determined from the level of the water glass. The firebox crown sheet must be covered with water.

2. In starting a fire in a locomotive, care should first be taken to see that the bottom of the firebox in front of the burner is free from carbon, loose firebrick, or any other obstruction that would tend to interfere with the free passage of the oil from the burner to the flash wall.

   Next, open the blower valve just enough to create the necessary draft; open the atomizer valve long enough to blow out any water which may have been condensed in the steam pipe or burner.

   Close the atomizer valve and throw a small piece of lighted waste one foot in front of the burner. *Close the firedoor.*

   Open the atomizer sufficiently to carry oil to the burning waste. This can be determined by observation through the peep-hole on the fire door.

   After the oil is ignited, regulate the atomizer and oil valve carefully, to be sure that all the oil passing through the burner is consumed.

3. Before lighting a fire, the blower should always be used to clear the firebox and smoke-box of explosive gases; particularly so,

when a second attempt to light is necessary, *or when re-lighting soon after a fire has been extinguished.*

4. In the event of the fire going out, or being put out, it should be re-lighted by using a piece of firing waste.

   After throwing ignited waste in the firebox, close the firedoor before opening the firing valve.

   No attempt should be made to re-light the fire from the heated bricks. The practice of so doing is *STRICTLY PROHIBITED*. It is almost certain to cause an explosion, which will damage the brick work and perhaps severely injure the person attempting it.

5. When changing from external air supply for initial firing, extinguish the fire and re-light it as before, after the steam to the atomizer and blower has been turned on from the locomotive boiler.

   When changing from air supply to steam, care must be taken to open the main fountain valve slowly, to allow for gradual expansion of the steam turret and piping.

   Care must also be taken to supply the oil gradually, when re-lighting. If too much is suddenly supplied, an explosion may ensue, with possible danger to the equipment and the operator.

   Make certain the fire does not go out while firing up. This will cause oil to run down into the pit or on the floor, and is liable to take fire and thus endanger the engine, Roundhouse, or other property.

6. The throttle should not be opened to move the engine, until there is a reliable flow of oil, and the burner is performing satisfactorily.

   When moving an engine, care should be taken not to slip the drivers, or produce in any manner a strong exhaust, which may cause the fire to be put out.

   When engines are standing under steam, care should be taken to see that the fire does not go out with the fuel valve open, and thus allow the oil to flow in the draft pan and to the ground, with danger of ignition and consequent fire risks to surrounding inflammable objects.

7. The condition of the fire should be observed by means of the peep-hole in the fire-door. A fire having a bright, clear color denotes proper combustion. A fire burning with a dark, smoky flame indicates the reverse.

Under no conditions must the fire-door be opened while the fire is burning.

8. Black smoke should at all times be avoided.

   The production of a highly colored smoke is an evidence of *improper firing*. The soot formed by smoke is a non-conductor of heat, and will quickly make an oil-burning engine fail for steam.

   An accurate adjustment of the oil and steam together with the sir supply is necessary for thorough combustion.

   Especial care must be exercised to prevent black smoke at starting and stopping. At such times, the fireman should work in harmony with the engineer.

   Increasing the fire must immediately precede the opening of the throttle, while reducing the fire should immediately follow the closing of the throttle, in order to prevent cold air being drawn through the flues, in either case.

9. The fire must be regulated to meet the requirements of the work the engine is performing, and to protect against any possibility of the fire being drawn out by the exhaust.

   Forcing the fire of an oil-burning locomotive is liable to injure the firebox sheets and tubes, and should therefore be avoided.

   In the event of an emergency, making necessary the forcing of the fire, unusual care should be taken to provide sufficient water on the crown sheet at all times.

   In view of the ease with which an extravagant waste of fuel can be effected in burning oil, it is especially urged that every effort be exerted to properly handle the engine, the burner and its accessories, in order to obtain economical combustion and to guard against injury to boiler and firebox.

10. The cylinder cocks must be opened when a locomotive stands idle for any length of time, to expel condensation formed in the cylinders. Broken cylinder heads and pistons may result, if the engine is moved with water in the cylinders.

    The Engineer must make sure the throttle is closed, the reverse lever on center, the cylinder cocks and valve chamber relief valves are open, when leaving the locomotive in the Roundhouse at the end of the shift.

Boiler water must be maintained at the proper level at all times. If, for any reason, a low water condition exists, and cannot be corrected by the injectors, the fire must be extinguished immediately and the train placed on the side track until cause of feed water failure is determined and repaired. Never allow a fire to remain in the fire box without *sufficient and visible signs of water.*

In an emergency, when loss of air, stuck throttle, or brake failure occurs, control of the train can be obtained by moving the reverse lever on center, or in the opposite motion to which the train is traveling, and gradual use of steam in bringing the train to a stop. *The cause of trouble must be located and remedied before proceeding.*

In bringing a train, or locomotive, to a stop, care must be exercised to avoid sliding the wheels. This will cause flat spots on the drivers and necessitate costly repairs.

Engine men must know the proper function of all parts and accessories of the locomotive, and if any doubt is experienced, proper instruction must be requested before continued operation of the locomotive, or train.

Damage to equipment, where negligence, or lack of understanding is determined, is grounds for dismissal.

Appendix IV:
The Disney Legends

The Disney Legends Award is presented annually by The Walt Disney Company to individuals whose body of work has made a significant contribution to the Disney Legacy. Many of those listed below have been key players in the Walt Disney railroad story.

1987
Fred McMurray

1989
Les Clark
Marc Davis
Ollie Johnston
Milt Kahl
Ward Kimball
Eric Larson
John Lounsbery
Wolfgang Reitherman
Frank Thomas
Ub Iwerks

1990
Roger Broggie
Joseph Fowler
John Hench
Richard Irvine
Herb Ryman
Richard Sherman
Robert Sherman

1991
Ken Anderson
Julie Andrews
Carl Barks
Mary Blair
Claude Coats
Don DaGradi
Sterling Holloway
Fess Parker
Bill Walsh

1992
Jimmie Dodd
Bill Evans
Annette Funicello
Joe Grant
Jack Hannah
Winston Hibler
Ken O'Connor
Roy Williams

1993
Pinto Colvig
Buddy Ebsen
Peter Ellenshaw
Blaine Gibson
Harper Goff
Irving Ludwig
Jimmy Macdonald
Clarence Nash
Donn Tatum
Card Walker

1994
Adriana Caselotti
Bill Cottrell
Marvin Davis
Van France
David Hand
Jack Lindquist
Bill Martin
Paul Smith
Frank Wells

1995
Wally Boag
Fulton Burley
Dean Jones
Angela Lansbury
Edward Meck
Fred Moore
Thurl Ravenscroft
Wathel Rogers
Betty Taylor

1996
Bob Allen
Rex Allen
X Atencio
Betty Lou Gerson
Bill Justice
Bob Matheison
Sam McKim
Bob Moore
Bill Peet
Joe Potter

Glossary of Railroad Terms

Adhesive weight: On a locomotive, the portion of the total weight that is resting on the driving wheels.

Air brake: A braking system that operates using the action of compressed air.

Alternating current (AC): An electric current that reverses its direction of flow at regular intervals, called cycles.

Articulated locomotive: A steam locomotive that uses a single boiler mounted on a chassis that is (usually) composed of two sets of driving mechanisms and cylinders connected by a pivot, so each mechanism can function and swivel independently from the other but under single control. A compound articulated (Mallet) uses exhaust steam from one set of high-pressure cylinders to drive the larger low-pressure cylinders on the other mechanism. A simple articulated uses direct boiler steam at high pressure to drive all cylinders.

Auto rack: A flatcar with fixed steel racks for shipping automobiles. Racks have two or three levels and are equipped with tie-down devices. The racks are typically fitted with metal screens on the sides, and sometimes with roofs, to protect the vehicles from vandals.

Backhead: The rear surface of a steam locomotive boiler, on which are mounted the controls, valves, and gauges necessary for the operation of the locomotive.

Ballast: The granular material, usually crushed rock, that supports the trackage on the roadbed. The ballast allows for quick drainage of rainwater away from the cross ties (sleepers) and provides a method of easily resetting the level or alignment of the track.

Bogie: The British and Australian term for a truck, the set of wheels and suspension components that supports a railroad car.

Boiler: That portion of a steam locomotive, usually a horizontal cylinder, in which the steam is produced. Boilers may also be installed in diesel or electric locomotives to produce steam for passenger-car heating systems.

Boxcar: A rectangular, fully enclosed freight car with side and/or end doors, designed for hauling general merchandise.

Brakeman: Crew member who was originally responsible for clambering over car roofs to apply hand brakes. Also responsible for throwing switches and "flagging," the practice of carrying a red lantern or flag to a point far enough from the rear, or head end, of a stopped

train to warn an approaching train.

Broad gauge: Trackage spaced farther apart than the standard gauge of 4 feet 8 1/2 inches.

Buffers: A primarily British term for shock-absorbing devices located on the ends of railway carriages that help minimize bumping between cars. Also, an end-of-track protection device—a bumper.

Cab forward: A steam locomotive type extensively used by the Southern Pacific. In response to problems with smoke accumulation in the lengthy tunnels and snowsheds of the Sierra Nevadas, the SP arranged an articulated locomotive with the tender coupled at the smoke-box end of the boiler. The controls in the cab were reversed, and a new flat front, with appropriate lights, whistle, and bell, was applied to the former rear of the cab. This left the stack (and its smoke) behind the crew, who had fresh air to breath. This reversal was made possible only because the SP used fuel oil, rather than coal, in their fireboxes.

Caboose: A car in which the conductor has an office and, in the early days, living quarters. The caboose marked the traditional end of a train, but has fallen into disuse in recent years, as modern electronic communication has reduced the need in many countries.

Cab-unit: Also called a cowl-unit, a diesel locomotive on which the body is flush with the outside of the frame, and there are no exterior walkways, access to the engine compartment being from the interior of the locomotive cab.

Carriage: An early term for a passenger coach, which continued in use for a much longer time in Britain than elsewhere.

Catenary: The supporting wire and structure for an overhead cable used to provide electricity to electric locomotives.

Chimney: British term for the exhaust stack of a steam locomotive.

Class 1 railroad: In the United States, a railroad of sufficient traffic density to earn revenues in excess of a figure set by the Interstate Commerce Commission [now the Surface Transportation Board]. In 1991, that figure was $93.5 million and there were thirteen Class 1 systems, plus Amtrak. See also **Regional railroads.**

Compound locomotive: A steam locomotive in which exhaust steam is directed to additional, larger cylinders that are designed to operate at lower pressure. This is a method of increasing steam locomotive efficiency.

Conductor: In the United States, the official in charge of a train. Once called captain, this person was responsible for receiving train orders, keeping paperwork on freights, and collecting fares on passenger trains.

Consist: The composition—cars, loads, locomotives, and so on—of a train.

Container on flatcar (COFC): A system that allows closed containers, usually compatible with maritime requirements, to be carried on a flatcar.

Continuously welded rail (CWR): Steel rail was tradi-

tionally rolled in 39-foot (11.8m) lengths so that it could be loaded into the common 40-foot (12.1m)-long cars of the day. The wheels rolling over the resultant bolted joints produced the rhythmic "clickety-clack." Most of today's main-line rail is factory-welded into lengths of a quarter mile (0.4 km) and transported on trains of specially rigged flatcars that hold the rail, but allow it to flex around curves.

Covered hopper: Similar to an open hopper, a covered hopper has sloped ends that direct granular material toward discharge chutes in the car bottom and a weatherproof roof with hatches for loading.

Cow and calf: A diesel locomotive set made up of a regular cab-equipped control unit (cow) that is semipermanently coupled to a cabless booster unit (calf) and usually used for yard switching.

Crew change: The crew from point A leaves the train at point B and turns it over to a rested crew who takes the train to point C; the process continues until the train arrives at its destination. Crew-change points are normally at terminals where the relieved crew lives, or spends the night at railroad expense.

Crown sheet: The roof over the firebox of a steam boiler. Most steam is generated from the water directly over this spot, and failure to keep the water level over the crown sheet was the most common cause of boiler explosions.

Cylinder: The bore in which a piston moves. The piston could be powered by steam or internal combustion (as in a diesel) to produce power, or be driven by air to apply brakes.

Direct current (DC): An electric current that flows continuously in one direction.

Doghouse: A telephone booth-sized enclosure mounted on the top rear of a steam locomotive tender, that provided shelter for the head brakeman.

Doodlebug: A motor car, usually passenger-carrying, powered by an internal-combustion engine that provided service on lightly traveled lines where a full train was not justified. These began as converted passenger coaches but evolved into sophisticated machines like the Budd RDC and the McKeen Car.

Doubleheading: The practice of using two locomotives (traditionally steam powered) with separate crews on the head end of a train.

Double-stack car: A recent development in intermodal technology that uses specially designed well-hole flatcars that are semi-permanently coupled in articulated sets and carry standard marine containers stacked two high.

Draft gear: The energy-absorbing component, usually rubber, of the coupling, friction, or hydraulic systems that reduces jerking or bumping shocks during coupling or slack action. These shocks can be severe enough to damage lading, and thus must be dampened.

Drumhead: A sign, usually illuminated, mounted on the rear of a passenger train that provides a graphic image advertising the name of the train or railroad.

Dynamic braking: A method of train braking wherein the truck-mounted

traction motors of diesel electric locomotives are reversed so the wheels actually turn the motors on a downhill run. The motors then act as generators, and the resultant electrical current is directed to a bank of resistor grids, where it is converted into heat and dissipated into the air. This process absorbs a tremendous amount of energy, slowing the train while saving wear and tear on the braking system.

EMD: The Electro-Motive Division of General Motors, once the largest American diesel-electric locomotive builder.

Engineer: The operator of a locomotive. In some countries this person is called the engine driver.

Exhaust pipe: A vertical pipe attached to the cylinders of a steam locomotive that directs the exhaust steam toward the stack, creating a vacuum that draws the combustion products from the firebox through the boiler tubes so all is propelled out through the stack, producing the unique steam-locomotive "smoke."

Feedwater heater: A device on a steam locomotive that uses exhaust steam to preheat the incoming boiler water, thus improving efficiency.

Firebox: The portion of the steam locomotive, normally at the rear of the boiler, in the cab, where the fuel is burned.

Fireman: Originally, the member of the locomotive crew that fed the fuel into the fire. This was a training position for engineer. On diesels and electrics, the fireman is responsible for assisting the engineer and minor maintenance.

Flange: The projecting lip on a railroad wheel that rides (typically) inside the rails and guides the wheel set along the track.

Flatcar A freight car that has only a flat deck, with no sides. Used for bulky or unwieldy loads that are difficult to maneuver through a boxcar door.

Flat wheel: Description of a car, one or more of whose wheels have developed a flat spot caused by sliding along the rail, frequently from a sticking brake or emergency-brake application.

Foreign car: Any car not belonging to the railroad on which it is currently running.

Four-stroke cycle: The operating cycle of an internal-combustion (as in diesel) engine that produces a power stroke for every two revolutions of the crankshaft. Four-style engines were used by all major American builders (except the GM/EMD family) and many European builders.

Frame: The foundation or chassis on which a locomotive or car is built.

Frog: A track component, used in switches or crossings, that allows one set of running rails to cross another.

Fusee: A railroader's red flare, used for night signaling or as a warning of a stopped train.

Gauge: The distance between the inside faces of the running rails of the track. Also, a visual recorder of information, such as air or steam pressure.

Generator: A device for changing mechanical energy into electrical energy. On a diesel-electric locomotive, the diesel engine powers the generator, which supplies

electricity to the motors that turn the wheels.

Glad hand: The metal coupling device at the end of each air hose. They are coupled by hand, with a twisting motion that locks the coupling and seals it against air leakage; they unlock and snap apart automatically when the cars uncouple and move apart.

Gondola car: An open car, similar to a flatcar but with low sides to handle bulky or granular products that need not be protected from the weather.

Ground relay: A device that protects the crew and equipment in case of a short circuit or ground in the electrical equipment.

Guard: A British term for a crew position, similar to a conductor or brakeman.

High green: A green signal showing a "proceed" indication, meaning that the section of track ahead is unoccupied, allowing the train to continue at the recommended speed.

Hi-rail vehicle: A highway vehicle (car or truck) that has been fitted with rail wheels for operation on tracks. Modern-day hi-railers have their rail wheels fitted so they can be lowered into position for rail travel, or raised so the vehicle can operate on the highway.

Hood: The removable sectional covering over the engine compartment of a road-switcher or yard-switcher diesel locomotive.

Hopper car: An open car, with the ends sloped to direct granular loads to discharge chutes in the bottom. Used to transport coal, coke, gravel, sand, and similar weather-resistant granular material.

Hostler: An engine servicer, from the days of horse transportation.

Hump yard: A variation of the classification yard where freight cars to be sorted for various destinations are pushed to the summit of a grade (called a hump) and released individually to allow gravity to propel them down the grade. Remote-controlled devices called retarders keep the speed in check by intermittently "pinching" the wheels, while a series of switches direct the cars into various tracks for assembly into trains.

Idler: An empty car, normally a flatcar or gondola, used as a spacer while switching or to accommodate a load overhanging the end of another car.

Intermodal: Describes the practice of combining rail with another form of transport, such as ships, trucks, or barges. See also **Piggyback.**

Interurban: An electrically powered passenger-carrying vehicle, much like a streetcar or trolley, that ran between urban areas on a private right-of-way.

Journal: The part of an axle or shaft that is supported by a bearing. On a freight-car truck, the journal box is on the truck frame, at the end of the axle.

Main line: The major route or trunk line of a railroad, usually used by the fastest long-haul trains. A railroad may have more than one main line on its map. Also, when a route has multiple tracks, the main line is the highest-quality trackage rated

for the maximum speed and may be paralleled by trackage of a lower classification, or secondary track.

Mars light: A warning light on the front of a locomotive, usually installed in addition to a headlight, that provided a moving shaft of bright light, rotating in an axial or figure-eight pattern.

Monorail: A railway on which the train runs on a single rail.

Multiple unit: Two or more locomotives coupled together under the control of one engineer; usually applies to diesel or electric locomotives. Controls on the individual locomotives are interconnected via electric cables **(mu cables)** or hoses so they act in concert with the single control.

Narrow gauge: Track that is spaced less than the standard gauge of 4 feet 8 1/2 inches.

Navvies: Short for navigators. Refers to the itinerant crews of construction workers, often Irish, who roamed (navigated) from job to job while building railways around the world.

Ore car: Similar to a hopper car, but usually shorter and of lower volume, reflecting the high density of the ores usually carried.

Pantograph: A device mounted to the roof of an electric locomotive that is spring loaded to maintain contact with the overhead wire and transmit the power to the motors.

Pendular suspension: A suspension system that allows passenger cars to tilt on curves, affording greater speed and comfort.

Piggyback (or pig): A truck trailer loaded "piggyback" style on a flatcar. Also called TOFC, for "trailers on flat cars." A train of all TOFC or COFC cars is a "pig," or "piggyback" train.

Prime mover: In a diesel electric locomotive, the diesel engine produces the initial (prime) energy that is then used to turn the generator that creates electrical current for powering the traction motors that turn the wheels.

Pull the pin: To uncouple a car by raising the coupling pin.

Railcar: A self-propelled rail vehicle, usually for passengers.

Rail weight: In the United States and Canada, rail is specified in pounds per linear yard. Heavy main-line trackage would use 130-pounds (64.6-kg/m) rail—branch lines and spurs might be as light as 90 pounds (44.5 kg/m).

Refrigerator car: A rectangular enclosed freight car that is insulated and contains ice bunkers or mechanical refrigeration devices to keep the contents either cool or frozen. Used to transport meat, fruit, produce, and frozen foods.

Regenerative braking: A technique used on mountainous electrically powered railroads wherein a train moving downhill can reverse its circuitry so the traction motors can act as generators. The load created by electricity production slows the train as it transmits this power back into the overhead cable. That newly produced electricity can be used by another train climbing a nearby grade, resulting in more efficiency. Otherwise, the electricity is dissipated as heat. See also **Dynamic braking.**

Regional railroads: In the United States, a classification set by the Interstate Commerce Commission [now the Surface Transportation Board] based on size. There were thirty-one regionals, formerly called Class 2, in 1991, and they each earned between $40 million and $92 million and/or operated on more than 350 miles (560 km) of track. See also **Class 1 railroad.**

Rip track: From "repair in place," a track or tracks used exclusively for minor repairs of railroad cars, usually adjacent to the yard. Often misidentified as a place to demolish cars.

Rolling stock: The locomotives, freight, and passenger cars—virtually all equipment that rolls on wheels—of a railroad.

Rotary dumper: A device used primarily at ports and power plants that can clamp onto an open car and rotate it (and the track it sits on) upside down to quickly dump the load.

Running gear: All of the components that support the movement of rail vehicles, including wheels, axles, bearings, springs, and frames.

Sand box: A receptacle on a locomotive for storing sand that is pneumatically delivered through piping to the rails, directly in front of the driving wheels. The sand provides increased grip for the wheels to prevent slipping. On steam locomotives, the sand box was located on top of the boiler, so the heat would keep the sand dry for easy flow. On today's diesels, the sand box is usually positioned along the frame, below the running board.

Skyline casing: A sheet-metal shroud along the length of the boiler top that encased the stacks, domes, whistle, and pop valves in a smooth streamlined covering.

Sleeper: The European term for cross tie. It is also a passenger car set up with sleeping facilities (a sleeping car).

Slip coach: Unique to British railways, a passenger coach—loaded with passengers who wished to detrain at a station where their train was not scheduled to stop—attached to the rear of the train. At the approach to the station, the slip coach was uncoupled and allowed to coast to the platform under the control of a guard with a handbrake and warning horn. This practice was much reduced following World War II but continued on the Great Western for some years.

Smoke box The portion of a steam-locomotive boiler, usually at the front, that contains the ends of the flues, the steam pipes to the cylinders, exhaust pipe, and stack.

Smoke lifters: Also called "elephant ears," they were sheet-metal attachments mounted to the smoke box to funnel moving air up toward the stack, forcing the exhaust smoke and steam to rise away from the cab, improving visibility and air quality for the crew.

Stock car: A closed car, similar to a boxcar but with open-slatted sides, that transports cattle, sheep, or hogs to market.

Superheater: A device for raising the temperature and volume of the steam by applying additional heat to the steam as it passes between the boiler and the cylinders.

Tank car: A car designed for carrying liquids or compressed gases, normally in the form of a horizontal cylinder, that loads through a fixture on the top and unloads through valves on the bottom.

Tender: The car attached to the rear of a steam locomotive that carries the fuel and water. Popularly called a "coal car."

Third rail: A non-running "rail" mounted between or beside the running rails, used for the supply of current to an electric locomotive through a pickup "shoe."

Tie (or cross tie): Wood, concrete, or metal slats placed perpendicular to the rail to support the rail, hold it in gauge, and distribute the load to the roadbed.

Torpedo: An explosive device with two moldable tabs that can be attached to the top of the rail. A wheel contacting the torpedo will set off a loud explosive report, warning the engineer of a track obstruction immediately ahead.

Tractive effort: The measurement of the energy exerted by a locomotive at the point where the wheel tread meets the rail.

Trailer on flatcar (TOFC): A system of intermodal transport that uses highway trailers carried on flatcars for part of the journey.

Turbine: A rotary engine in which the power is derived from the force of expanding gases applied against blades or fans that turn a central shaft.

Two-stroke cycle: The operating cycle of an internal combustion (as in a diesel locomotive) in which there is one power stroke during each revolution of the crankshaft.

Unit train: A freight train made up entirely of a single type of car and carrying a single commodity, usually coal or grain. The trains normally operate from shipper to unloading point in a continuous round-trip cycle.

Valve gear: On a steam engine, the mechanism that controls the operation of the valves that coordinate the intake or exhaust steam with the positions of the piston in the cylinder.

Valves: The devices that allow the intake of fuel or the expulsion of exhaust in an engine—steam in a steam engine or fuel in a diesel.

Van (or brake van): The terminology for caboose often used in Britain, Canada, and Australia.

Wagon: Also called a "goods wagon," the British term for freight car.

Yard: A network of parallel tracks, connected by switches on at least one end, arranged so trains can be disassembled and the cars rearranged into new trains. Sometimes called a classification yard or a marshaling yard, it allows the trains to be "shuffled" so each car gets to its proper destination. A storage yard holds cars until they are needed.

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For Further Information

The following list of sources is provided to aid readers seeking additional information regarding model and live steam railroading, railway preservation and history, Disney history, and Disneyana collecting.

Walt Disney's railroad history:
Carolwood Pacific
Historical Society
1560-1 Newbury Road #173
Newbury Park, CA 91320-3448
http://www.carolwood.com

Railroad history:
The Railway & Locomotive
Historical Society, Inc.
P.O. Box 193552M
San Francisco, CA 94119

Railroad museum news:
RAILWAY MUSEUM QUARTERLY
Association of Railway Museums
P.O. Box 3311
City of Industry, CA 91744

Tourist railroad news:
TRAINLINE
Tourist Railway Association, Inc.
P.O. Box 28077
Denver, CO 80228

Rail excursions:
National Railway Historical Society
P.O. Box 58153-A
Philadelphia, PA 19102

Santa Fe Railway research:
Kansas State Historical Society
6425 SW Sixth Avenue
Topeka, KS 66615-1099

Southern Pacific Railroad research:
California State Railroad Museum
111 "I" Street
Sacramento, CA 95814

Garden railroad hobby:
LGB of America
6444 Nancy Ridge Drive
San Diego, CA 92121-2296

G scale railroad news:
LGB TELEGRAM
Buffington Publishing
1573 Landvater Road
Hummelstown, PA 17036-8915

HO scale railroad hobby:
International Hobby Corporation
413 East Allegheny Avenue
Philadelphia, PA 19134

O, HO, and N scale railroad news:
MODEL RAILROADER
Kalmbach Publishing Co.
P.O. Box 1612
Waukesha, WI 53187

Live steam model hobby:
Los Angeles Live Steamers
P.O. Box 2156
Toluca Lake, CA 91610

Live steam news:
LIVE STEAM
2779 Aero Park Drive
Traverse City, MI 49684

MODELTEC
P.O. Box 1226
St. Cloud, MN 56302

Model train shows nationwide:
Great American Train Show
P.O. Box 1745
Lombard, IL 60148

Disneyana collecting news:
THE IMAGINATION GUILD
P.O. Box 907
Boulder Creek, CA 95006

Disneyana collectors:
National Fantasy Fan Club
P.O. Box 19212
Irvine, CA 92713-9212

Disneyana collecting:
TOMART'S DISNEYANA UPDATE
3300 Encrete Lane
Dayton, OH 45439-1944

Disney research:
The Walt Disney Archives
500 South Buena Vista Street
Burbank, CA 91521-1200

Disneyland history:
THE "E" TICKET
P.O. Box 800880
Santa Clarita, CA 91380-0880

Disney history:
PERSISTENCE OF VISION
3136 South 3200 West
Salt Lake City, UT 84119

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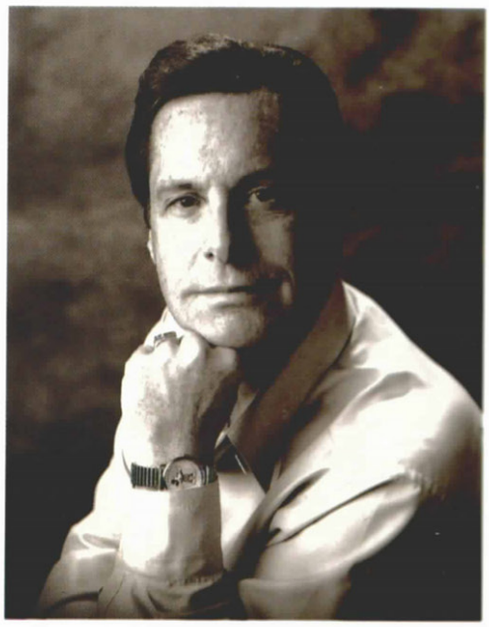

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MICHAEL BROGGIE WAS FIRST transported by Disney magic on "Uncle Walt's" backyard Carolwood Pacific Railroad. He test-drove Disneyland's Autopia prototype cars as a 12 year old in 1954, served as an Autopia cast member in 1960, and worked as a writer in the studio marketing department after college graduation.

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