The Denver Museum of Nature & Science inspires curiosity and excites minds of all ages through scientific discovery and the presentation and preservation of the world's unique treasures.

Our vision is to create a community of critical thinkers who understand the lessons of the past and act as responsible stewards of the future.
DENVER'S NATURAL HISTORY MUSEUM: A History

EDITORS
Kirk Johnson, Betsy Armstrong, Chip Colwell-Chanthaphonh, Frances Kruger, Kristine A. Haglund, and Frank-T. Krell
The DENVER MUSEUM OF NATURE & SCIENCE ANNALS is an open-access, peer-reviewed scientific journal publishing original papers in the fields of anthropology, geology, paleontology, botany, zoology, space and planetary sciences, and health sciences. Papers are either authored by DMNS staff, associates, or volunteers, deal with DMNS specimens or holdings, or have a regional focus on the Rocky Mountains/Great Plains ecoregions.

The journal is available online free of charge at www.dmns.org/science/museum-publications. Paper copies are exchanged via the DMNS Library exchange program (brent.wagner@dmns.org) or are available for purchase from our print-on-demand publisher Lulu (www.lulu.com). DMNS owns the copyright of the works published in the Annals, which are published under the Creative Commons Attribution Non-Commercial license. For commercial use of published material contact the Alfred M. Bailey Library & Archives at archives@dmns.org.
Contents

Preface .............................................................................. 5
   George Sparks

FOREWORD The Museum of Wonder and the Wonder of Museums ...... 7
   Patricia Nelson Limerick

CHAPTER 1 “A MUSEUM HERE FOUNDED” A Summative History ...... 11
   Chip Colwell-Chanthaphonh, Kristine A. Haglund,
   Richard K. Stucky, and Pamela Wineman

CHAPTER 2: EXHIBITS An Evolution........................................ 65
   Frances Kruger, Liz Clancy, and Kristine A. Haglund

CHAPTER 3: EDUCATION Informal Science Learning for the Public ...... 105
   Carol Cochran, Polly Andrews, Liz Davis,
   and Rebecca Smith

CHAPTER 4: ZOOLOGY Exploring the Biodiversity of Colorado
   and the World .................................................................. 137
   Jeffrey T. Stephenson, Paula E. Cushing, John R.
   Demboski, and Frank-T. Krell

CHAPTER 5: GEOLOGY: Exploration of Colorado’s Deepest Roots ...... 179
   Logan D. Ivy and James W. Hagadorn

CHAPTER 6: PALEONTOLOGY Discovering the Ancient History
   of the American West .......................................................... 231
   Kirk Johnson and Richard K. Stucky

CHAPTER 7: ANTHROPOLOGY Unearthing the Human Experience ...... 283
   Chip Colwell-Chanthaphonh, Stephen E. Nash,
   Steven R. Holen, and Marc N. Levine

CHAPTER 8: SPACE SCIENCES Our Place in the Universe .............. 337
   Carol Cochran, Kim Evans, David Grinspoon,
   Dimitri Klebe, Steve Lee, Marta Lindsay,
   Dan Neafus, and Ka Chun Yu

CHAPTER 9: HEALTH SCIENCES A Newcomer and a Pioneer ........ 363
   Carol Cochran, Bridget Coughlin, and Nicole Garneau

APPENDICES
   Board Members ............................................................... 383
   Curators ........................................................................ 389
   Directors and Presidents/CEOs ......................................... 395
   Museum Publications ...................................................... 396
   Temporary Exhibits .......................................................... 409
Preface

As we work diligently to create a museum for the 21st century, it is all too easy to forget our past. Yet as a museum established more than century ago by the very community in which it thrives, it is essential that we stay connected to our deep roots. We must remember our dreams, commitments, and values. We must learn from our mistakes and our successes. We must honor both our prehistoric and historic ancestors.

This history—the first comprehensive volume written about the Museum’s core areas of education, exhibits, and scientific research and collections—will help ensure that as the Denver Museum of Nature & Science continues to grow and expand, we will stay connected to what came before.

Several themes in this compelling history resonate with me. For one, although this story is basically about things and ideas, it is really about people. The Museum was made from the sweat and tears, passions and convictions of the thousands of workers who have committed countless hours to furthering the Museum’s mission. Their joy and zeal is rivaled only by members of the public who have visited by the millions and by the stream of donors who have helped create one of our country’s leading museums. Without such enthusiasm, the Museum could not have survived the Great Depression a generation ago or the Great Recession today. In most every way, this Museum belongs to the people who have made it their own.

A second observation is that in reading this history, you will learn how the Museum has constantly and tremendously changed, yet has not really changed at all. The building today looks nothing like it did in 1908, when it opened to the public. Only a small wall of the original structure exists, in the basement below the IMAX Theater. And still, amid a century of astounding change, the Museum’s core mission has not veered from its course. We have adapted to a changing city, changing technology, changing societal values, changing sciences—but the belief in the power of a natural history museum to collect, study, interpret, inspire, and speak to the wonders of our universe has not changed at all.

A third theme is that this institution has balanced the goals of world-class collections, education, exhibitions, and research. This is much harder than it sounds. There is inevitably the tension among those who individually advocate using constrained resources for caring for specimens, educating the public, building more exhibits to attract visitors, or conducting research to advance science. Despite potential conflict, the Museum’s leaders have unwaveringly understood that these goals are not distinct but complementary. These aims work together to make a place that values the objects of science, the need to share and inspire, and the authority and knowledge that arrives with original scientific exploration.
When we developed a strategic plan for a new century, we embarked on a multimillion dollar project to build the Education and Collections Facility to feature state-of-the-art collections preservation, education classrooms with technology for today’s learners, and a new exhibition gallery. Why make this ambitious investment?

The answer to this question lies within these pages. Once you read about our exceptional science collections, you will understand why we need world-class storage and places to study. Once you read about our innovative education programs that have reached millions of children and adults, you’ll understand why we need more room to inspire the next generation of scientists. Once you read about the dioramas and exhibitions that have inspired generations of Rocky Mountain residents, you’ll understand why we must build another great exhibition hall.

In other words, once you read this volume, you’ll better understand the Museum’s great past and you’ll also understand our vision for the years ahead as we continue to serve our community and strive to nurture the inherent curiosity of everyone who walks through our doors.

George Sparks
President and CEO
Denver Museum of Nature & Science
December 10, 2013
Foreword

The Museum of Wonder and the Wonder of Museums

Patricia Nelson Limerick
Center of the American West, University of Colorado

In the early 1970s, I went to see a memorable play called The Emergence. In one scene, several characters were exploring a cave when their lantern went out. In darkness, they wandered into the theater’s aisles where they paused, lit matches, and gazed in wonder at the audience. “Look,” the explorers said. “Stalagmites! They’ve been here for thousands of years!”

It was wonderful to see actors take the abstract idea of “a fresh point of view” and demonstrate it as a direct action. It was also wonderful to be mistaken for a stalagmite, and wonderful to contemplate the longevity that these explorers attributed to me and my fellow theatergoers. After I saw this scene, it was hard to think of the world in conventional, predictable, taken-for-granted ways.

Reading this history of the Denver Museum of Nature & Science delivered a booster shot that measurably renewed my sense of wonder. It is true that if a person wanted to help a friend sunk in ennui and tedium, that helpful person would not instantly think to prescribe an institutional history as a way to reignite vigor and delight. But, as this book makes clear, there is much to lift the spirit in the story of the creation of an institution that has stimulated and enriched the minds and souls of millions.

More than a century ago, some people, who had plenty of other things to do with their time, decided to prepare an enormous gift for representatives of posterity, humans who would be born long after the founders had themselves died. This was a wonderful project for these people of the past to undertake, since those distant members of posterity (that would be us) were not at that point even a twinkle in anyone’s eye. And there was no guarantee of success in this enterprise, since a skeptic of the time could (and probably did) find the ambitions of the founders to be implausible and impractical.

Several chapters in this book end with an entirely appropriate expression of wonder over the fact that the Museum realized its creators’ hopes. As Kristine A. Haglund writes at the end of chapter 1, “The Museum had clearly, unquestionably, become everything its founders dreamed it would one day become.” Describing the traveling exhibition Imperial Tombs of China, chapter 2 offers a thought-provoking characterization of some people from a very different place and time (and social class!): “Early Chinese emperors spent much of their lives getting ready for their deaths.” Although these would not be precisely the words to describe the conduct of Denver’s civic leaders a century ago, the people who gave the Denver Museum of Nature & Science its existence did “get ready for their deaths” by purposefully creating an organization that would outlive them. For all its generosity, this legacy also puts us on the spot, asking us the tough question “If our predecessors did this for us, what comparable gift are we preparing for our successors?”

When it comes to inspiration, it is an unquestionable advantage that the people who created, built, expanded, and protected this Museum and its collections were not saints. We do not, in other words, have to intimidate ourselves with the idea that our predecessors were so superhuman that we dare not attempt to
live up to their example. On the contrary, a few pages into the book, an imaginative reader may be tempted to begin designing lively dioramas that would portray some of the episodes in this book that feature human complexity. Consider the diorama-design opportunities presented by a passage like this: “Soon after Jesse D. Figgins was named director of the Museum in 1910, he locked horns with William Ward [who had the enviable title of “curator of mineralogy and art”], whom he considered to be incompetent, intransigent, unprofessional, and lazy.” Or consider the wild scene in 1971, at “the U.S. premiere of a much-touted Planetarium show called The Beginning and the End of the World,” a title that would seem to have given fair warning to all involved. When the early computer technology malfunctioned on the preview night, Museum Director Roy Earl Coy “stopped the show” (or, from another point of view, began a different, but still riveting show!), cleared out the audience, and “fired at least three employees on the spot.” But then the trustees soon reversed the situation, firing Coy and rehiring the fired employees. If fiscal arrangements had made it possible to provide, years ago, for the appointment of a curator of the human ego and a collections manager for interpersonal sensitivities, the Museum’s history might have been smoother, but also much less inspirational. The fact that the principal figures in the Museum’s history were, unmistakably, real human beings, and not particularly promising candidates for beatification, actually increases their power to inspire their fellow mortals. These people worked hard at building an institution that would anchor their community and endow its future, and every now and then they took a break from this high-minded undertaking and walloped each other (metaphorically speaking). This episodic feistiness did not jeopardize the existence of the Museum, but it unmistakably adds to the interest of this book.

Inevitably, a few passages of an institutional history must submit to the literary model of the biblical interludes of “begats,” with a sequence of names of the people who held particular offices and jobs. But readers should realize that these texts are, in their every syllable, gestures of respect to people who worked hard, persisted in spite of obstacles and dilemmas (and personality conflicts!), and assembled achievements that, when mobilized in common cause, made a lasting difference to thousands of visitors.

In truth, some of the most enjoyable tidbits in this book allow readers who have never been behind the scenes in a museum to glimpse the distinctiveness of that world. In their essence, these are stories in which the Museum appears almost as its own ecosystem, a place of feedback loops, symbiosis, and interdependence. Consider, as one telling example, the popcorn policy for the IMAX Theater: “Offering popcorn was debated but finally decided against because of needed precautions.” It is tempting to interrupt the quotation at this point and ask, “Needed precautions against what?” The trivialization of serious science by the snack most associated with light popular entertainment? The much-lamented national epidemic of obesity? The possible, inadvertent acquisition of genetically engineered corn? The actual concern was down-to-earth and beyond debate: the popcorn policy was a “needed precaution against insect infestations that might threaten the zoological collections below the theater.”

This same complication of interconnected space amplified the discomfort of a memorable episode in which “volunteer vertebrate preparators made a mistake while dissecting a striped skunk in the prep lab.” Here was the problem in spatial relations: “Unfortunately, at this time the Zoology Department sat right next to the T-Rex Cafe, the Museum’s eatery, and directly below the IMAX Theater.” Very soon after this misfortune in dissecting, “many complaints were lodged,” providing a rich data set to support the idea of the Museum as almost its own organism—a smaller, but at the time of the skunk incident, very compelling manifestation of
the GAIA hypothesis (by which the earth itself is conceived of as an organism). And yet my favorite example of the analogy of the Museum as interconnected ecosystem involves more physics than biology: “In 1926 the Museum’s woodworking shop was ‘reconditioned because of excessive vibration’ that caused objects in the Art Gallery to walk off their shelves.” Here, surely, is a compelling demonstration that no man (whether carpenter or exhibit curator) is an island, and no art object on a shelf is in any meaningful way separate from the saws and hammers that make possible the structure for that object’s display.

If we think of the Museum as an ecosystem, then the volunteer is its keystone species. All of the chapters offer striking testimony to the crucial contribution of these good souls to the well-being of the Museum, from the bravely named HAGS (“Honorary Association of Guide Services”) to the even more bravely named Galaxy Guides. The tributes to the volunteer bring us back to wonder. The fact that so many people have donated their limited time on this planet to the project of stimulating and responding to the curiosity of their fellow human beings is wonder enough. As this book tells us, “The Museum as a whole could not function the way it does without its 1,800-plus volunteers.”

But the history of the volunteers also offers a tale of causality and connection over the vast reaches of time that knocked me for a loop (i.e., sent me into a feedback loop, or maybe just rendered me “loopy”). “In 1987–1988,” readers of this book will learn, “the Museum hosted its first major blockbuster exhibition, Ramses II: The Great Pharaoh and His Time.” Ramses II was on the planet 3,300 years ago; one would not expect him to be much of a benefactor of the Denver Museum of Nature & Science. But this assessment underestimates the factor of wonder at work in the history of this Museum. When Ramses II came to Denver in 1987–1988, the numbers of visitors and scale of revenue climbed, but most striking was the impact of the show on volunteerism: “More than 1,000 new volunteers were recruited” for Ramses, and “The volunteer program burgeoned.” So here we have a fellow who, despite the handicap of having been dead over the very long haul, excels in the biggest way as a recruiter of volunteers. The passage of time has a way of fragmenting the human community and making us strangers to each other, but Ramses II still got to work recruiting volunteers like a house afire.

Repeatedly, this book leads us deep into the mysterious workings of time. In its exhibits and programs, the Denver Museum of Nature & Science studies and interprets the passage of time, in areas ranging from the origins of the universe to the strata of geology, from paleontology to the evolution of the human organism. But the Museum must itself navigate through time. Museums live at the intersection of tradition and innovation. No traffic light, no stop sign, and not even a caution sign regulate traffic flow through that intersection, and an institution situated at such a site is not in a restful position. “Times change, expectations change, demographics change, and opportunities change,” the authors of chapter 2 on exhibits tell us, and a museum must change “to remain relevant.” “The Museum staff” must constantly work “to blend respect for tradition . . . with the latest exhibition techniques and educational philosophies.” Or, to quote from chapter 8 on space sciences, “The successful present will not likely lead to a complacent future” as the Museum pursues its really quite breathtaking mission to “decipher and convey past and present planetary processes.”

And this brings us to the meteorites. I found it wonderful to learn that the Museum “became the first institution in the United States to espouse collection and study of meteorites.” This gave the Denver Museum of Nature & Science a big advantage. Meteorites may well be the most effective material objects for teaching human beings that there is a world far beyond our familiar boundaries, a world we can learn of but never master. If meteorites are relentlessly “other” instructors that reach us after an astounding journey through
space, fossils—“messages from past worlds,” as Kirk Johnson and Richard Stucky characterize them—perform as excellent team-teachers with meteorites. If we become complacent, if we lose sight of our place in a vast universe, if we turn the setting down of our sense of wonder, the meteorites and the fossils—and the multitudes of artifacts and objects in the Denver Museum of Nature & Science—are there to reawaken us.

Let’s say the soul and the mind are susceptible to the equivalent ordeal of a body weakened by a nutritional deficit. The debilitating deficit for a soul and a mind is a shortage of wonder. Even under desperate circumstances, wonder acts as an antidote for cynicism. In the soul and the mind, wonder pits itself against indifference, fatalism, and drift, awakening curiosity even in people who seemed to be fully and lastingly bogged in inattention.

To return to the play in which I made my debut as a stalagmite with a wonderful duration, the energy of discovery and fresh perspective is the name of the game at the Denver Museum of Nature & Science. At the “Museum’s opening exercises on July 1, 1908,” John F. Campion said that “a museum of natural history is never finished.” Consider these definitions of what it means to say that an institution or person is “finished”: “Having no more use, value, or potential” (American Heritage Dictionary of the English Language; “without further hope of success or continuation” (Collins English Dictionary).

The Denver Museum of Nature & Science is never going to be “finished.”

This is a source of wonder in itself.
Museum Origins, 1897–1910

In 1893 the city of Chicago hosted the World’s Columbian Exposition, a celebration inspired by the 400th anniversary of Columbus’s arrival in the Americas. The fair attracted global attention and inspired a generation to rethink architecture, science, industry, the arts, and city planning. Even the severe economic depression that started that year would not dampen the enthusiasm awakened by the exposition’s displays, performances, buildings, and demonstrations.

Spurred in part by the exposition, Denver’s most prominent citizens visited Edwin Carter in his mountain home in Breckenridge, Colorado (Fig. 1.1). Headed by Governor John L. Routt, the Denver entourage knew Carter held a magnificent collection of Colorado wildlife. Carter (Fig. 1.2) had come to Colorado during the 1859 Pikes Peak gold rush and had had modest success. He retired several years later, settled in a tiny cabin in Breckenridge in 1868, and pursued his passion for natural history, particularly the study of birds and mammals. Carter was a wholehearted collector, as one historian has written:

Edwin Carter found such joy in collecting that he too structured his life and work around it. The prospecting and tanning that filled his summers played second fiddle to the wintertime pleasures of tramping through the woods, observing, tracking, and taking game. Accompanied by a burro and his dog, Bismark, who pulled a small sled with food and supplies, the tall, thin miner roamed the hills in snowshoes, watching the small movements of the birds in trees and the way the snow dropped from the branches.
when brushed by scurrying animals. Carter could scan the horizon for hours, looking for any sudden motion in the trees or grass. Once he located an animal or bird, he watched even more closely. Each spring, for weeks on end, he would take his field glasses and lie in the sage studying the strutting of sage-grouse on parade, to memorize their movements.\(^1\)

Carter had amassed a collection of more than 3,000 specimens, and the Denver group wanted to see if he would agree to sell it. Colorado’s business and political leaders believed that the assembly of birds and mammals should be moved to Denver, where it could be seen and enjoyed by more people. Carter, too, wanted to guarantee the future of his life’s work. A museum in the state’s capital seemed the culmination of a dream for Carter. “As Denver is destined to be among the great cities of the Continent,” Carter predicted, “so will a museum here founded . . . grow up to be one of the great entertaining and educational institutions of the country.”\(^2\)

The World’s Columbian Exposition inspired Denver’s leaders to contemplate not only Carter’s collection and a museum but also a new approach to city planning. The City Beautiful movement was a philosophy of urban planning reform that focused on the monumental magnificence and beautification of cities. As demonstrated in Chicago, a city shaped with Greek Revival architecture, parks, gardens, and public art could rouse civic virtue and enhance the quality of life of all citizens.

One visitor to the exposition was Robert W. Speer, then working as the Denver city auditor. Stirred by the vision of Chicago’s “White City,” Speer encouraged Denver to incorporate the City Beautiful movement into its planning when he became mayor in 1904. Mayor Speer was instrumental in Denver’s development and was a great proponent of the new natural history museum in its early, uncertain days. Upon Speer’s death in 1918, the Museum’s annual report relayed, “Though not on our Board except in an official capacity, Mayor Robert W. Speer was ever the Museum’s unfailing friend, whose goodwill and backing so greatly helped to complete the building and maintain our work.”

The City Beautiful movement would come to directly shape the setting of Denver’s natural history museum. City Park, the Museum’s future home, was formally founded in 1882. The area was first considered to be a “tree-less wasteland,” but it was gradually landscaped and filled with trees, fed by water from City Ditch. The City Beautiful movement further shaped the park’s layout, impressive monuments, and the Greek Revival-style museum that was built on a hill at the park’s eastern edge. Over the course of the 20th century, City Park became the crown jewel of Denver’s park system, prominent as a place for socializing and play in all seasons. There were sports and picnics in the summer, skating and sledding in the winter. Music and
dance were featured at the bandstand, placed next to one of the country’s first electric fountains, with its dramatic light and dancing water display. The natural history museum would come to be seen as part of this lively mix of social and cultural events.

**A New Museum**

In 1892, following the Colorado dignitaries’ visit to his museum, Carter agreed to sell his collection to help found a museum in Denver. But years of delay followed. Carter’s last conditions for sale required that he receive a one-time payment of $10,000 for his collection as well as a monthly salary of $150 for a lifetime appointment as curator. He also wanted a corporation to be formed and, always fearful of fire destroying his collection, he demanded a fireproof building be erected. Sadly, Carter would not live to see his collection installed in the new museum: He died in February 1900, probably the result of arsenic poisoning, a lamentable occupational hazard for taxidermists at the time.

The Museum’s first minutes were recorded in 1897 and building plans were drawn the next year. But an agreement was not reached until December 18, 1899, when a group of Denver businessmen formally met for the fourth time to discuss how to establish a museum and library of natural history. The Museum’s incorporators were 15 men of high standing in Colorado: Junius F. Brown, John F. Campion, William Church, Governor James B. Grant, Charles J. Hughes Jr., William H. James, Charles B. Kountze, Elmer W. Merritt, William Byrd Page, Thomas M. Patterson, Henry M. Porter, Albert E. Reynolds, Frank M. Taylor, Joseph A. Thatcher, and Charles S. Thomas. On December 6, 1900, the Colorado Museum of Natural History was formally incorporated. John F. Campion (Fig. 1.3) became the Museum’s first Board president, a position he held until his death in 1916.

Campion was the man most responsible for getting the Museum started during Denver’s exciting time of city growth and civic pride. Campion had done well with hard rock mines in the Rockies and, after 1900, had a second successful career growing sugar beets. He had an impressive gold collection, but his main role in the Museum’s founding was as its major champion. He led negotiations with Carter for obtaining the wildlife collection. Campion knew everybody who was anybody, such as Margaret “Molly” Brown and J. J. Brown, who were friends and professional associates through mining. The Museum became a reality in large part because of Campion’s perseverance and untiring efforts, particularly after Carter’s untimely death.

The Museum’s founding in 1900 coincided with the signing of a contract with the City of Denver that would provide a building site and funding toward construction. The Museum pledged to raise an additional $25,000 or more from personal contributions. A Board of Trustees was created and empowered to establish a museum worthy of the state, which
was only 24 years old at the time. The new corporation’s purpose was clear: “To establish, erect, and maintain in the City of Denver, a Museum of Natural History to encourage and aid the study of Natural Science, [and] to advance the general knowledge of kindred subjects.”

In February 1901 the Trustees appointed John T. Mason as volunteer manager for the Museum (Fig. 1.4). Originally from England, Mason made his money as a department store magnate in Texas before coming to Denver. He was a collector of butterflies and had promised his singular collection to the Museum (it was finally formally donated in 1918). In its first years, the Museum had no funds to compensate a professional director; Mason’s wealth allowed him to be the Museum’s unpaid overseer from 1901 until 1907. Mason became the de facto curator, fundraiser, construction and building manager, and human resources director all rolled into one, ensuring that the building went up, exhibits were constructed, new collections were acquired, and the employees were paid and content.

Mason was soon joined by taxidermist Rudolph Borcherdt and his son, Victor, who were employed to arrange and prepare the Carter Collection (Fig. 1.5). Later, Victor would construct the first naturalistic habitat of its kind in North America, Bear Mountain, at the Denver Zoo after becoming the zoo’s director. It is likely that Victor used his experiences constructing natural history exhibits for mounted animals to create naturalized displays for live animals. Victor’s work at the Denver Zoo drew the attention of the Saint Louis Zoo, which hired him to create natural habitat exhibits there.

In the autumn of 1901, the Museum’s present site in City Park was selected. The building’s first portion, called the east wing, was finished in July 1903. The east wing was not immediately open to the public; it housed a workshop and heating plant. Beginning in 1908, an art gallery would occupy its top floor (Fig. 1.6). The central wing was completed next; it was used to present the first natural history exhibits. At the time, the Museum was a single structure in treeless City Park on the edge of town (Fig. 1.7). Ranchers drove their cattle to market down Colorado Boulevard, which was then a dirt road. Among only a few established neighbors, the Museum was surrounded by hay and oat farms (Fig. 1.8).

The Museum opened its doors to the public on July 1, 1908—a rushed
opening, before all of the exhibits were ready—to coincide with the Democratic National Convention held a week later at the Denver Arena Auditorium. The Museum debuted with exhibits of more than 400 natural history specimens out of a collection of some 3,400 mammals, birds, rocks, and minerals (Fig. 1.9). The exhibits were habitat groups and birds, a geology exhibit, and a hall of European and American fine art. One highlight of the early exhibits was “Tom’s Baby,” a large piece of gold discovered near Breckenridge in 1887. It was donated as part of the Campion crystallized gold collection, most of which has been on continuous display since the Museum’s opening.

Another highlight was the art exhibit. The Denver Artists Club, predecessor to the Denver Art Museum, had no regular place to display the work of its members. In 1903, the club made a deal with the Museum’s Board to use the east wing’s top floor for art displays. The club eventually grew weary of the endless delays to open the wing and pulled out of the deal. Nevertheless, led by Campion, the Museum still used the space to display artwork owned by its Board members and other prominent citizens, such as Margaret “Molly” Brown. It is possible that Brown was bringing back art pieces from Europe for the Museum on her fateful Titanic voyage. The Art Gallery remained in place until 1932.

The Museum’s early years were deeply influenced by New York’s American Museum of Natural History. As with Denver’s Museum, the American was founded by businessmen, and the two institutions even shared similar bylaws. The early exhibit cases in Denver were modeled on those at the American. Additionally, several of the Museum’s early influential employees came from New York. One of the Museum’s first taxidermists,
Albert C. Rogers, worked for the American before coming to Denver. The Museum’s first professional director, Jesse D. Figgins, was hired away from the American, where he served as the head of exhibit preparations. Robert J. Niedrach, who began his career at the Museum in 1913 as a taxidermist, was a protégé of the American Museum’s Frank Chapman. Over the years Niedrach would have lasting influence on the Museum’s dioramas and educational programs.

Expeditions in the field, mainly for exhibition-quality specimens and building the collection, were an early part of the Museum’s efforts. In 1909 ornithologist Alexander Wetmore collected birds for the Museum’s collections (Fig. 1.10). Wetmore would go on to become the secretary of the Smithsonian Institution. Ornithologist L. J. Hersey, geologist William S. Ward, and exhibitor Rudolph Borcherdt all collected in Colorado for the Museum. It would not be until 1916 that the Museum would begin to conduct expeditions outside the state.

By the time the Museum had opened its doors, it had come a long way from the seed planted by the World’s Columbian Exposition and the need to find a home for Edwin Carter’s collection. But despite its success in getting to the point of having a beautiful building in a burgeoning park, the first years were difficult ones. During the first year of public operations, the Museum suffered troublesome financial problems. Staff members were laid off; the Board even recommended closing the Museum after only three months. More than once Mayor Speer intervened, asking the bank to allow overdrafts by the fledgling institution.

The Figgins Years, 1910–1936

The Museum’s fate was in part sealed on August 17, 1867, when Jesse Dade Figgins was born in Jefferson, Maryland. Although as a young man his career path was directed to the Methodist ministry, his insatiable curiosity in ornithology, mammalogy, and herpetology led him to collect specimens throughout the Atlantic Seaboard. His collections and studies gained him recognition and landed Figgins his first museum job at the U.S. National Museum, then the Smithsonian’s prime institution of anthropology, art, geology, history, and natural history.

During his sixth and seventh expeditions to Greenland, in 1896–1897, Commander Robert Edwin Peary hired Figgins as the expedition’s ornithologist and mammalogist. Among the purposes of these expeditions was the removal of a 36-plus-ton meteorite near Cape York, Greenland, to the American Museum of Natural History. According to one report, Figgins for his part “accompanied the expedition as collector and taxidermist, and his energy and hard work were successful in preserving over 200 birds and nearly 100 eggs, besides numerous other specimens” (Anonymous 1897).
CHAPTER 1 — “A MUSEUM HERE FOUNDED” A Summative History

After the Peary expedition, Figgins joined the American to prepare a series of exhibits about Greenland and its native peoples, of whom he had made a series of life casts. In 1902 Figgins became head of the American Museum’s Department of Preparation and Exhibition and began the construction of large habitat groups with painted backgrounds. In addition to his duties creating exhibits, from 1897 to 1902 he conducted field studies in Florida, Nova Scotia, Alaska, Massachusetts, and Washington.

In 1910 the Trustees decided that the Museum needed a full-time director. From 1900–1907, John T. Mason had been serving in this role pro bono, but new paid leadership was needed. Frank M. Taylor, Board treasurer, was authorized to search for the director. He sought assistance from colleagues at the American Museum. Jesse D. Figgins was recommended, and so at the age of 42, Figgins was hired as the first formal director of the Colorado Museum of Natural History (Fig. 1.11). His skills as an administrator and exhibit preparator, and his professional connections were the chief reasons for the offer (Fig. 1.12). Figgins would come to have a profound influence on the young Museum, establishing it as an important local and national institution.

In his tenure at the Museum, Figgins would launch its core exhibit spaces and its enduring commitment to engaging the general public in science and the natural world. Figgins was an innovator. He created the Museum’s first publication series, erected new buildings, established school programs and the Museum’s first classroom, offered staff lectures and tours, greatly expanded the collections, and was the first scientist in the Museum to document fieldwork with a movie camera. Although Figgins was a respected naturalist and museum executive, he would become most well-known for his contribution to the understanding of the New World’s ancient human history because of the discovery of the Folsom point in 1927. As Hannah Marie Wormington, the Museum’s first curator of archaeology, wrote, because of his recognition of the importance of the early archaeological find and his “unremitting efforts to have this site properly authenticated … the chronological horizon for man in North America was pushed back many centuries.” Wormington concluded, without hyperbole, that “without Mr. Figgins, knowledge of the antiquity of man in America might not have come for many years” (Wormington 1946: 75–76).
Museum on the Rise

Figgins, of course, did not accomplish this work alone. By the time the first shots of World War I were fired, he had increased the Museum’s paid staff to 23 people (Fig. 1.13).

One key person behind the design and construction of the habitat groups was Robert J. Niedrach (Fig. 1.14). Hired in 1913 as a bird taxidermist, he supervised construction of the diorama foregrounds, participated in fieldwork, shot still and motion picture film, and coauthored Birds of Colorado (1965) before his retirement in 1970. Niedrach’s coauthor was Alfred M. Bailey, the Museum’s director from 1936 to 1969, who was originally hired in 1921 to undertake fieldwork in Alaska. In his role as curator of birds and mammals, Bailey and naturalist Russell W. Hendee lived for 15 months in the Arctic, collecting specimens ranging from polar bear to caribou. Bailey stayed with the Museum as a curator until 1926, when Wilfred Osgood of Chicago’s Field Museum hired him away to carry out fieldwork in Ethiopia. Frederick C. Lincoln helped conduct the Museum’s ornithological survey of Colorado and went on to become assistant director of the U.S. Fish and Wildlife Service. By 1938 the Museum’s bird collection numbered more than 18,000 specimens.

Frederic Walter “Walt” Miller was hired in 1921 as a small mammal taxidermist and was later promoted to curator of biology and mammals. He conducted fieldwork in South America in 1925–1926 and 1928 (Fig. 1.15). Miller married Figgins’s daughter Barbara and went on in 1935 to become the first director of the Dallas Museum of Natural History.

Figgins had help on other fronts as well. Luman J. and L. Ray Hersey were entomologists who collected locally. Museum trustee William C. Bradbury entered retirement and took up the hobby of collecting bird eggs and nests (Fig. 1.16). He did fieldwork with Niedrach and Bailey—in fact, Bradbury provided the car. In 1916 he purchased the Museum’s first Aepyornis egg (an elephant bird egg from a large, extinct flightless bird of Madagascar) for $1,000; it was the first Aepyornis egg specimen to reach America. In 1913
Philip Reinheimer joined the Museum as a “stationary fireman” to stoke coal in the furnace. Because extra help was needed with the growing paleontology collections, Figgins trained Reinheimer to chip fossils from matrix. Reinheimer became the chief preparator of fossils (Fig. 1.17). Having worked in Pittsburgh with Carnegie Steel, he developed a method for mounting large dinosaur and mammal fossils using welded and specially cast steel mounts.

After just his first year on the job, Figgins had balanced the budget and established the foundation for a comprehensive program of fieldwork, education, exhibition, and publication. In 1912 the Museum’s annual attendance soared to over 105,000—equal to almost half of Denver’s population. During the Figgins administration, the Museum was literally built up with new additions: more than 60,000 square feet was added with the Standley wing on the north in 1918 and the James wing on the south in 1928. Significantly, with the space provided by these additions, the subject areas for the exhibits were extended beyond Colorado’s borders to such places as Florida, South Carolina, Louisiana, Alaska, the Bahamas, and South America. Although he had many administrative duties, Figgins was in every sense a hands-on leader. As Museum trustee Charles H. Hanington recounted, “Besides personally painting the backgrounds that are employed in the Museum’s habitat groups, Mr. Figgins retains a keen interest in every item of preparation.”

In the fall of 1917 the Trustees passed a resolution to thank Mrs. Ellen M. Standley, who had “most generously and munificently offered to provide and pay for the erection of the north wing extension of the museum.
building” in memory of her husband, Joseph M. Standley, who had helped operate the Hidden Treasure Mine in Central City, Colorado (Hanington 1938: 23). In 1922, upon her death, Mrs. Standley left the Museum another $240,000 (more than $3.3 million in 2013 dollars) for the general good of the Museum. The new wing cost $66,000 and was formally opened in 1919 (Fig. 1.18); it was outfitted with electric lighting, vacuum cleaning tubes, and steam pipes and radiators, all of which were considered to be “splendidly adapted for exhibition purposes.”

However, a new boiler plant, at a cost of some $10,000, had to be constructed because the original boiler could not keep up with the addition of the new space. The new boiler was located outside the main building as a precaution.

The exhibits in the new building included fossils and prehistoric animal reconstructions on the first floor (often referred to as the basement), the North American Mammal Hall on the second floor, and North American (non-Colorado) birds and the John T. Mason collection of butterflies and moths on the third floor. Also included on the main floor were an office and lab space for the Department of Geology and Mineralogy. In 1926 the Museum’s woodworking shop was “reconditioned because of excessive vibration” that caused objects in the Art Gallery to walk off their shelves, “and new tools with individual motors were installed” (Hanington 1938: 23).

Soon after the Standley wing opened, the Board of Trustees received the commitment of a substantial financial gift from Harry C. James (Fig. 1.19) and his sister Elsie James Lemen. They wanted to build a new wing that complemented the Standley addition to honor their father, William H. James, one of the Museum’s incorporators. A pioneer settler, James made his fortune through mining in Colorado’s Central City, Georgetown, and Leadville areas. The James wing finally broke ground in 1927 and was completed the next year (Fig 1.20).

Figgins was willing to try some wild experiments with exhibit spaces. In 1912 he placed live fish on exhibit; however, they were high maintenance, so live animals were left to the Denver Zoo, a stone’s throw across City Park. More successful efforts included construction of the Nebraska mammoth display (1932), the installation of large Colorado mammal habitat groups (1933), and the exhibit of *Anatosaurus*, now known as *Edmontosaurus*, completed in 1936. Figgins and his staff also regularly exchanged materials with museums around the country in order to acquire exhibit-worthy materials for Denver and share the Museum’s collections. In 1929 the State Historical...
and Natural History Society of Colorado transferred most of its natural history materials and related books to the Museum. In 1935 the Museum received, in exchange for bison and rhino specimens, a Diplodocus skeleton from the Carnegie Museum of Natural History. The bones arrived at the Museum still surrounded by their rock matrix from the Jurassic strata of Dinosaur National Monument, Utah. Philip Reinheimer, along with other staff members and Works Progress Administration workers, prepared and articulated the 75-foot-long skeleton over two years.

In 1932, the Museum’s art collection was returned to its lenders with remaining items transferred to the Denver Art Museum downtown. In 1930 a nature-related artwork, the iconic The Grizzly’s Last Stand, a bronze statue of a grizzly bear protecting her cubs by Louis Paul Jonas, was placed prominently in front of the Museum thanks to the generosity of Museum trustee John A. McGuire (Fig. 1.21).

In addition to his focus on exhibits, Figgins oversaw the implementation of numerous educational programs. Many of these methods, developed nearly a century ago, continue to be the hallmark of the Museum’s outreach efforts today. There were special tours for children, and loan kits of objects were sent out to schools starting in the 1910s. There were lecture programs by Museum staff, and movie photography was introduced in 1918 to document the Museum’s fieldwork. There was the development of a library of books, a library of film, and an “education series,” a collection of specimens for students to access and handle. Figgins established the Museum’s publication series (the Proceedings) in 1915 (Fig. 1.22), and by 1920 he had begun to produce an illustrated catalog of the Museum’s exhibits, which was sold to the public. In 1929 the Museum created space in the building for a classroom for schoolchildren, and it redoubled its efforts to work with the Denver Public School district by formally establishing the Museum School Service.

A Time for Discoveries

Under Figgins, the Museum’s collections greatly expanded. Figgins added paleontology as a priority to the Museum’s research, collecting, and exhibits work, and eventually, though somewhat unintentionally, laid the groundwork for the addition of archaeology.
Fossils of invertebrates were in the collections as early as 1908, but large fossil vertebrates were not acquired until years later. In 1915 the Museum undertook its first excavation of fossils. A Museum team traveled to Florissant, Colorado, to investigate deposits containing fossil fish, insects, and leaves; more than 800 specimens were collected and returned with the team to the Museum. Later that year, a man named Dall DeWeese told the Museum about an important find near Cañon City, Colorado, and the next year excavators recovered a partial Diplodocus skeleton. The skull was missing but the find was deemed “of exceptional importance because of the character of its preservation, its rarity in Colorado, and the fact that an equal amount of such a skeleton is seldom found intact” (Fig. 1.23).7

About this time, Museum scientists also came in contact with Harold Cook and his father, James H. Cook, regarding a fossil quarry near Agate Springs, Nebraska, where the Museum would undertake numerous excavations. Harold himself was a paleontologist and geologist, and would later become the Museum’s honorary curator of paleontology (1925–1927) and curator of paleontology (1928–1930). The Museum also sent a team to the Hat Creek Valley of Nebraska and Wyoming. The expedition resulted in the excavation of turtles and part of the skeleton of a Titanotherium (a large American Eocene mammal related to the rhinoceros), among other specimens. This considerable progress led to the formal establishment of the Department of Paleontology in 1916.

Beginning in 1919, the Museum sent staff to a fossil quarry in Weld County, Colorado, where they ultimately found many valuable fossil mammals, including more Titanotherium as well as Archaecotherium (giant piglike animal) and Trigonias (an extinct genus of rhinoceros). Although the Museum kept some of these finds for its own collections, curators soon realized the value of the quarry as a rich source of exchange material. Over the next two decades exchanges with some of the country’s most important museums would broaden the Museum’s paleontological collections and provide it with some of its best fossil specimens (for example, specimens from the La Brea Tar Pits in Los Angeles).

The Museum also worked to expand its zoological collecting during this busy period. Once the construction began on the Standley wing in 1917, Figgins had the opportunity to expand the Museum's intellectual breadth by focusing on habitat groups outside of Colorado. As Figgins justified it, “To
continue purely local exhibits for an indefinite time would not only exhaust the field, but would reduce their interest and importance in direct ratio—a condition that would be fatal to the primary objects and purposes of the museum. The new wing offers the space for growth and broadening of activities to include all of North America—the step necessary for the Colorado Museum of Natural History in order to retain the high place it occupies in the museum world.  

Figgins led fieldwork in South Carolina to create the Atlantic shorebird group and in Florida to create the heron rookery group. 

To further build up the Standley wing, in 1918 Museum trustee Harry C. James took his son William H. James, John A. McGuire (founder of *Outdoor Life* magazine), and Museum taxidermist Albert C. Rogers to Alaska and the Yukon to collect animals. They obtained specimens of moose, Dall’s sheep, caribou, and goats for the Museum’s new North American Mammal Hall, but were disappointed not to have acquired groups of black and grizzly bears and a moose calf. Following on the heels of this earlier effort, in 1921–1922 Alfred M. Bailey and Russell Hendee went to Alaska for more collecting. The specimens from this fieldwork were used for exchange with other institutions and to create the Alaska dioramas that are still on view today in the Museum. Still more collecting for habitat groups was undertaken: in the Bahamas (1923), Canada’s Bonaventure Island (1924), South America (1925–1926, 1928), and Central America (1935), although Figgins was strongly opposed to the Central America trip, and this seems to have factored into his resignation. 

However, long before he resigned, Figgins would serve as a central figure in one of the Museum’s most important scientific discoveries to date. In 1924 Figgins hired H. D. Boyes, a local rancher, to salvage ancient bison bones eroding out of a bank along Lone Wolf Creek in Texas. After the bones had been placed in casts and were being prepared for transport to the Museum, three projectile points were found. This tantalizing find was significant because it had the potential to answer the debate about whether early humans had arrived in the Americas several thousand years ago or earlier, at the end of the last Ice Age. Figgins asked Harold Cook to investigate; he found more late Pleistocene fauna and made a stratigraphic map of the site. This find was not accepted by the scientific community, largely because it was not made by a professional researcher and because the points were not documented in context. 

Two years later Figgins was told about another ancient bison site, this one near Folsom, New Mexico (Fig. 1.24). Following preliminary excavations, a stone point was unearthed, but once again it was not left in place. During the next field season, in August 1927, with strict orders from Figgins to dig carefully and leave discoveries in place, collectors finally found a spear point in situ between the ribs of an extinct bison species. The discovery was confirmed by a string of prominent archaeologists from the American Museum of Natural
History, Smithsonian Institution, and Carnegie Institution of Washington. The visiting scientists concurred that the bones and stone tools were contemporaneous. This revolutionary discovery conclusively demonstrated that early man had lived in North America for at least 10,000 years. In 2000 Discovering Archaeology magazine named Folsom as one of the 20th century’s 10 greatest archaeological discoveries.

In 1932 Figgins had an opportunity to continue his archaeological work with another major find. In Weld County, Colorado, at a site discovered by Frank Garner, Father Conrad Bilgery and students of Regis College in Denver unearthed mammoth bones and spear points. Bilgery generously turned over the excavations at the Dent Site, as it was called, to Figgins, whose research was funded by U.S. Senator Lawrence C. Phipps. In the summer of 1933, a Museum archaeologist named B. F. Howarter found the first point in situ. Figgins, Bilgery, Robert J. Niedrach, and F. Walter Miller hurried to the site and took still and moving pictures of the artifact as it was exposed. Sure proof of authenticity! The Dent Site was older than the Folsom Site by about 2,000 years and involved a new kind of spear point. However, since Figgins did not publish this find in a major journal, it was soon upstaged by work on a similar mammoth site near Clovis, New Mexico.

Riding high on these discoveries, in January 1935 Figgins was sent human remains found eight miles east of Folsom, reportedly 13 feet deep along a riverbank. Unlike his more rigorous approach, now Figgins simply compared the skull’s morphology with Paleolithic examples from Europe. He pronounced the remains a new human species, dubbed Homo novusmundus (Fig. 1.25). His claim was met with disdain, and years later the remains were found to be only about 3,000 years old, and all ancient human remains in North America are considered to this day to be of the same species: Homo sapiens sapiens.

Despite the poor decisions surrounding Homo novusmundus, Figgins made a better choice that year in hiring a young woman freshly minted from the University of Denver, H. Marie Wormington. She would serve the Museum for 33 years, make important discoveries of her own, and become
an internationally recognized scientist. The Department of Archaeology, which Wormington headed, was formed in 1936.

Another area of expanding scientific scope for the Museum during this period was the development of a meteorite collection. In 1923 the Museum became the repository for the Colorado Scientific Society’s collection, which included 22 meteorites. The next year, nine specimens joined the meteorite collection thanks to an exchange with the U.S. National Museum. Also in 1924, the Museum began to try to recover meteorites from reported falls, one in Weld County and another in the western part of Colorado. To oversee and increase this collection, Figgins hired Harvey H. Nininger (Fig. 1.26). Today considered by many to be the father of modern meteoritics, he was often introduced in his own time as the man who had found more meteorites than any other man in history. In 1930 Nininger, then 43 years old, left his job as a teacher at McPherson College in Kansas to become the Museum’s curator for the Division of Meteorites, a position no other museum had yet created.

Nininger added to the Museum’s collections with purchases (often with money obtained by selling parts of some specimens), donations, exchanges, and field collecting. He also added to his personal collection while collecting for the Museum. Nininger spent a lot of time giving presentations in rural areas, where residents kept their eyes on the ground and helped him locate new specimens. In 1933 he acquired the Museum’s single largest meteorite piece, weighing more than 1,400 pounds. Focused collecting, including through excavation, allowed the Museum to boast in 1937, “The combined collections [Museum and Nininger] exhibited in the museum now include representatives of 435 of the approximately 1100 meteorite falls which are exhibited in the museums of the world.” Of the 180 falls discovered in North America between 1930 and 1940, 130 were discovered by Nininger. Unfortunately, despite Nininger’s success, the onset of World War II in 1942 put a halt to his work for the Museum, and in 1946 he moved his personal collection from the Museum to the rim of the Canyon Diablo meteor crater near Winslow, Arizona, where he started the American Meteorite Museum.

“A Museum of International Rank”

In 1935 a disagreement between Figgins and the Museum Board led to a full rupture. The dispute reportedly centered on an expedition to Central America. However, the story is not fully documented and for reasons remaining unclear, at the beginning of 1934, the Board placed its president, Charles H. Hanington, in a newly created paid position of business manager in charge of day-to-day operations. On November 21, 1935, Figgins resigned “saying he was dissatisfied with the present methods of carrying on the
work of the Museum.” His resignation was accepted by the Board at a special meeting called five days later. The *Denver Post* publicized the loss: “Dr. Figgins during his quarter century as head of the museum has built the institution up from a modest collection of stuffed animals and birds in ancient display cases to a museum of international rank. While its collection of birds and animals of both North and South America is among the finest in the country, its specimens of ancient animal fossils, collected in Colorado and the west, is world famous.” Since the 1912 attendance count in the early days of the Figgins administration, the Museum’s attendance had more than doubled to 241,000 annual visitors.

After Figgins departed from Denver, he went to assist his son-in-law F. Walter Miller, former Museum curator and new director of the Dallas Museum of Natural History. Before Figgins left Denver, he had been assisting Isaac W. Bernheim, founder of the Bernheim Foundation, with developing a new museum in Kentucky. After a stint in Dallas, Figgins went to Kentucky to help Bernheim. But the Depression and the beginning of World War II brought an end to those plans. Figgins’s last position was with the University of Kentucky. He died in the Bluegrass State in 1944; his ashes were spread in the Kentucky hills.

The Bailey Years, 1936–1970

The Museum’s future director of more than three decades chose his life’s work at a young age. Born on February 18, 1894, in Iowa City, Iowa, Alfred M. Bailey came from the town that then had one of the country’s leading museum training courses, at the University of Iowa. A story, perhaps apocryphal, goes that a professor and taxidermist at the University of Iowa Museum, Homer R. Dill, once saw a nine-year-old Al Bailey coming from the Iowa River, hauling behind him an enormous carp.

“What are you going to do with that fish?” the professor asked.

“Stuff it,” Bailey, the aspiring taxidermist, replied simply.

Although his role at the Denver Museum would lie many years ahead, Bailey (Fig. 1.27) was among the institution’s first visitors. Bailey visited the Museum in 1908, when it first opened its doors to the public, taking a “nickel tour” from Iowa on a “huge bus.”

While still in high school Bailey focused on his taxidermy skills, and when he was just 18 years old, Bailey, with Dill’s help, secured a place as camp cook on the U.S. Biological Survey’s 1912–1913 expedition to Laysan Island, Hawaii, to rid the island of invasive rabbits (Fig. 1.28). One newspaper gushed, “Appointment as a member of the party was a great honor and speaks well for the skill of Mr. Bailey, who has come to be recognized all over the country as a taxidermist of the first order.” Bailey entered the University of Iowa and concentrated his energy on studying under Dill. He collected birds for the
university’s museum, some of which were later donated to the Denver Museum and included in its dioramas. Bailey graduated with a bachelor’s degree in 1916.

After graduation Bailey was hired as curator of birds and mammals at the Louisiana State Museum in New Orleans to start a natural history collection. While in Louisiana, “Bailey visited the islands of the Gulf of Mexico and began trading sea bird specimens with J. D. Figgins, director at that time of the Colorado Museum of Natural History. It was his first professional contact with Denver.” Figgins was clearly impressed with Bailey. In 1919 Figgins offered Bailey the position of curator of birds and mammals, but Bailey was also tendered the opportunity to become the first representative of the U.S. Fish and Wildlife Service in Alaska, to be based in Juneau. Bailey accepted the challenge in Alaska.

Just two years later, in 1921, Figgins was able to hire Bailey to head the Museum’s Alaska expedition (Fig. 1.29). Over 15 months Bailey collected specimens for the Museum’s planned habitat groups. One highlight of this work was a 750-mile trip by dogsled from Wainwright down the coast to Cape Prince of Wales on the Bering Strait to collect walruses. During the journey the temperature “hovered around 25 below for most of the 25-day trip, with a strong wind blowing in the faces of Bailey and his companion, an Eskimo named Upiksom.”

Bailey’s reputation as a field man was advanced further during an expedition to the Ethiopian empire of Abyssinia. Led by the Field Museum, the 1926–1927 expedition focused on collecting specimens and taking photographs. During the trip Bailey traveled 2,000 miles by mule. He also learned to use a movie camera, a gift from a Chicago philanthropist. Years later Bailey recalled some of the trip’s adventures. Once, a leopard leapt out of the bush at Bailey, but Bailey shot him with just inches to spare. Another time, Bailey remembered, “We wanted to collect a specimen of the Abyssinian ibex, a form of antelope. They live on high cliffs. We were out on a narrow trail with the cliff above us, and a 2,000-foot drop below. I was in the lead with a gun-bearer following when I spotted the ibex I wanted on the
cliff above. I got the gun and shot, and the ibex plunged down. He missed me by about two feet and went on down the cliff. I came that close to going to eternity with him.”

After this expedition Bailey became director of the Chicago Academy of Sciences. Nearly a decade of experience there left Bailey ready for a new challenge. As Figgins exited the Museum’s doors, the opportunity for Bailey arrived. In May 1936, at the age of 41, Bailey became the director of the Colorado Museum of Natural History. He would become the Museum’s longest-serving director to date.

During his tenure Bailey headed the renovation of the habitat groups into curved and domed diorama shells with internal electric lighting. He oversaw four major building additions (five if you count the 1968 north-west and southwest wings separately). He oversaw significant international expeditions to many corners of the globe, including Australia, New Zealand, Labrador, the Galápagos Islands, and Botswana. He published impressive works of science, such as *Birds of Colorado* (1965), coauthored with Robert J. Niedrach. Over his lifetime Bailey received many honors, but among the most prestigious were honorary doctorates from Norwich University and the University of Denver, the Malcolm Glenn Wyer Award for distinguished service in the field of adult education (1961), and the Regis College Civis Princeps award (1967). In 1971 the Alfred M. Bailey Bird Nesting Area, a special management area for birds, was dedicated in Arapaho National Forest (today named White River National Forest). And various parts of the Museum have been named for him, most recently, in 2003, the Museum’s library and archives, in recognition of his efforts to expand the Museum’s publications program and his contributions to these special collections.

After 33 years of service to the Museum, Bailey retired in 1969 at the age of 75. He died on February 25, 1978. Bailey was remembered for his dedication to museums generally, his transformation of the Denver Museum in particular, and his passion for fieldwork and for birds. As one obituarist reminisced, “His credo was that fieldwork is the lifeblood of natural history museums, and he himself was a leading field man. He traveled over much of the world. He was one of the early popularizers of ornithology in *Natural History*, *American Forests*, sporting journals, *National Geographic*, and others, and devoted much of his time in the field to making pictures and films of excellent quality, besides keeping a daily journal. He lectured widely each year … The Denver Museum of Natural History was modernized and its halls, exhibits, and study collections greatly expanded under his direction” (Phillips 1981: 173–175). Bailey’s legacy to the Museum was ensuring that it secured its place in the Denver community and gained a national reputation for quality exhibits and important research, placing it among the top natural history museums in the country.
CHAPTER 1 — “A MUSEUM HERE FOUNDED” A Summative History

Building Buildings

One of Bailey’s chief accomplishments was his expansion of the Museum’s footprint. His first building project was also arguably his most significant. Dedicated on January 11, 1940, Phipps Auditorium was completed at a cost of approximately $250,000 (more than $4 million in 2013 dollars) with a Public Works Administration grant and a donation from Senator Lawrence C. Phipps and his wife, Margaret Rogers Phipps (Figs. 1.30, 1.31).

Previously, lectures were presented in the old Art Gallery and the exhibit halls. Phipps Auditorium could seat nearly 1,000 guests and offered a stage large enough to accommodate a 70-piece orchestra. It became home for an extremely popular Saturday-morning lecture program for school-aged children (Fig. 1.32). The basement housed laboratories, photographic darkrooms, and collections storage. The auditorium was equipped to present 16mm and 35mm films, with sound. Administrators took advantage of this capacity to create the Museum’s first membership program, an exclusive film-lecture series. Lectures consisted of presentations by staff, including Niedrach and Bailey, and other nationally known speakers who could show their films on a large screen. In 1983, when the auditorium was remade into an IMAX movie theater, the film-lecture series moved to South High School, where it continued until 1995. Phipps Auditorium not only provided a successful venue for Museum programs but also created a revenue stream through space rentals to other organizations.

In 1949 the Museum completed a less glamorous but just as necessary construction project with an infill at the back of the 1908 wing. This work, constructed at a cost of $52,000, created new laboratory and taxidermy space, modern restrooms, a new office for Bailey, meeting rooms, and space for the library. The third floor also became the Museum’s first temporary exhibits gallery (today this is the Naturalist’s Nook), a relatively small hall but one that established a means for the Museum to present new exhibits throughout the year.

The third major building addition was completed under Bailey in 1953. Dreamed of since 1939, the west wing began to change the Museum’s outward appearance; this new visual mode was often described as “modern” (Fig. 1.33). The first tangible step toward expanding the building was...
a bond election in 1947, which approved $350,000 for construction. However, steel and copper were difficult to acquire after World War II, and by the time materials were available and government approvals for construction were acquired, costs of construction had skyrocketed. The Museum cut back on some items that could be added later but still needed to raise an additional $185,000. Unfortunately, in 1951 Denver voters did not approve another bond election. Instead, the Boettcher Foundation gave $100,000; the Carl A. Norgren Foundation paid to furnish the scenic lounge; the Lawrence C. Phipps Foundation donated $30,000; the City of Denver’s administration gave $25,000 to construct exhibit cases and finish floors and ceilings; and Edwin S. Kassler Sr. gave $10,000 to construct one of the alcoves in the Hall of Man. The wing’s total construction cost was $537,973.

The west wing provided a new main ground floor entrance to the Museum and its elevator. The grand steps and portico were removed, and some of the old windows, which had been bricked in to create the diorama halls, were covered by the new addition. The wing’s first floor was used for a sales desk (at one time the sales desk was located in the old Dinosaur Hall) and the Hall of Man, a permanent archaeology exhibition space completed in 1956. The wing’s second floor housed the Pacific and Australia exhibits and a scenic lounge (named for Bailey in 1970), and the third floor presented large ecological displays of South America.

Beginning in 1954, in space freed up in the existing building by the construction of the west wing, Denver’s Botanical Gardens Foundation made the Museum its headquarters with its own special entrance on the south side of the building. In turn, landscape architects associated with the botanical gardens reshaped the landscaping surrounding the building, including the Robert E. More Pinetum to the building’s south, a box canyon to the southwest, and an extensive rose garden and lilac lane to the west (Fig. 1.34).24

Situated in the west wing’s third floor, in 1955 the Museum opened the Planetarium, adding another field of science to the Museum’s list of academic specialties (Fig. 1.35). Erected in collaboration with the Denver
Astronomical Society, the first projector was a Spitz Model A-1, projecting onto a 20-foot metal and fabric dome. The Planetarium was set up just in time for the Christmas holidays; the first demonstrations were for the Museum trustees and invited guests to see the show Star of Bethlehem, which illustrated the skies over Bethlehem at the time of Jesus’s birth.\(^{25}\) In 1958 a new plaster dome was built in the Planetarium. Predicting the odyssey of the Apollo missions just over a decade later, A Trip to the Moon was the first show in the refurbished theater. This program took the audience on a simulated space trip to the moon, during which the Planetarium “rocket ship” made a landing in a lunar crater. The Planetarium’s original seating capacity was 80 visitors; by the end of Bailey’s tenure as director, the annual attendance was well over 90,000.

Bailey’s last building episode would also be the Museum’s grandest, most expensive venture up until that time. By 1965 the Museum had secured $2,652,000 (more than $19.6 million in 2013 dollars) for the new additions. Major sources of funding included gifts from the Boettcher Foundation ($1 million), Gates Foundation ($250,000), and Phipps Foundation ($200,000), and also grants from the City of Denver ($800,000).\(^{26}\) These additions completed the modernization of the building’s exterior.

The new southwest wing held a bigger and better Planetarium on the first floor (now named for Museum trustee Charles C. Gates and funded by the Gates Family Foundation of Denver). Seating up to 250 visitors, this new
space was also connected to a roof-mounted 22-inch telescope for night sky viewing, with images projected on the 50-foot Planetarium dome via closed-circuit television.27 (Denver’s increasing air and light pollution later resulted in the telescope’s removal.) The second floor plans included dioramas, four connected “halls showing in orderly sequence the most extensive series of big game and small mammals of North America to be exhibited in any museum.”28

Finally, the top floor was planned for dioramas of the African continent. Covering more than 15,000 square feet, the Helen and Arthur E. Johnson Botswana Africa Hall was crafted to illustrate Africa’s wildlife and a select few human communities (Fig. 1.36).29

The new northwest wing was a second priority, as Museum administrators felt it important to first get the new Planetarium up and running. However, in 1966 initial plans were made for a Hall of the North American Indian, to be situated adjacent to the Hall of Man.30 This idea planted the seed that would become the Mary W. A. and Francis V. Crane American Indian Hall, completed in 1978. In the meantime, this wing would include a smaller auditorium (seating 250) for smaller presentations and for the meetings of local groups such as the Denver Field Ornithologists, among many others.
Education and Exhibits
As far back as the 1910s, Museum officials had trained Denver Public Schools (DPS) teachers in the educational use of birds and mammals from the collections. Throughout the years similar efforts had been made; however, in 1954, the Museum formalized this strategy and partnered with DPS to place teacher Robert Thibodeau in the Museum as an onsite educator. Thibodeau successfully designed novel educational programs for DPS schoolchildren using the Museum’s unique resources to teach a range of natural history subjects.

In 1968, with the new northwest wing, the Museum now had dedicated classrooms, offices, and a library for an education staff. The increase in the number of children who could be reached with these facilities, as well as the facilities’ potential use for adult programs, led to the formal creation of the Education Department in 1969. Planetarium staff members were appointed curator and assistant curator of the new department, and another staff position was added to serve the expanding audience of young people. In 1970 the Museum hosted 789 tours to 23,864 visitors—a 28 percent increase in attendance over 1969.

Figure 1.36. A portion of the Savuti Waterhole diorama in the Helen K. and Arthur E. Johnson Botswana Africa Hall.
To reach even more people during this period, the Museum experimented with the new medium of television. In 1954 the Museum created a series of eight programs presented on Channel 2 on Saturday evenings at 6:30. In black and white, Bailey lectured on the Museum’s field expeditions in Colorado, the Pacific, Mexico, and Australia. The Museum reported the experiment a success: “If the numerous letters received by the sponsor are indicative, the programs were viewed by a surprisingly large audience.”

The Bailey era was also a time of expanding and improving the exhibits. In 1936 the Museum undertook a construction project to revamp the dioramas. Previously more akin to set pieces, the new dioramas were built with curved backgrounds and domed ceilings, realistically painted to create a more lifelike tableau. A Works Progress Administration (WPA) grant made possible the bricking in of 20 windows to eliminate natural light from the gallery that was to be converted into a diorama hall. WPA also supplied employees to work on diorama construction, such as women to produce the “accessories,” or foreground materials, which were fashioned from celluloid or wax (Fig. 1.37). In 1936 alone, WPA workers produced 56,031 leaves and 5,200 blades and flowering stalks. The glass separating the viewer and diorama was now slanted to reduce light reflection, another subtle but significant technique to create a more convincing effect. On the third floor of the 1908 building, which previously housed exhibits of birds, the first refurbished dioramas appeared. This new style of exhibition housed the Colorado life zones (still on display today as Explore Colorado). This area was dedicated in 1944 as the Walter C. Mead Ecological Hall. In 1949 the first of three trips were made in preparation for the 1953 wing that would house the Australia and South Pacific dioramas.

Between 1936 and 1940 paleontology displays also became more prominent with the mounting of skeletons of *Edmontosaurus* (Fig. 1.38), *Diplodocus*, *Stegosaurus*, and the plesiosaur *Thalassomedon*. In 1942 the new Hall of Fossil Mammals made its debut. The Museum’s annual report exclaimed, with a touch of hyperbole, “The opening of the remodeled Hall of Fossil Mammals marks the culmination of a quarter of a century of achievement probably unequaled by any other museum.”

The final display in the Hall of Fossil Mammals presented “ancient American cultures” and contained Folsom points, implements from the Lindenmeier Site (an extensive Folsom culture campsite), and grinding stones, choppers, and projectile points of the Cochise Culture. This case demonstrated the Museum’s ambition to create more displays on early human culture. As early as 1944 the Museum’s postwar strategy called for the support of a donor for a building addition, which would house a Hall of Man.

It would not be until 1951 that a young woman named Arminta “Skip” Neal (Fig. 1.39) could start on the first of the 18 exhibits in a new hall, which would display the ancient cultures of the New and Old Worlds.
It was H. Marie Wormington, curator of the Department of Archaeology, who hired Neal in 1950; Neal first helped Wormington during her 1948 field season. Under Wormington’s direction, Neal designed and installed the Hall of Man. Neal’s first miniature diorama showed “a Neanderthal family of the Old Stone Age defending its cave home against a giant bear.” The Hall of Man was dedicated in the summer of 1956. The Museum’s annual report revealed, “Among the distinguished guests was Dr. Kenneth Oakley of the British Museum, the famous discoverer of the Piltdown hoax. After a few brief speeches, the ribbon at the doorway of the Hall was cut by Edwin S. Kassler, whose generous contributions aided so greatly in the completion of the alcove named in his honor.”

Exhibit production in the Museum had long been decentralized, placed in the hands of each department under the supervision of curators. Neal began to cross over departmental lines when she finished the Hall of Man and then was assigned the task of designing and installing interpretive displays in the dinosaur and geology halls. By 1957 she had the title of exhibit designer for archaeology, geology, and paleontology. Later, she became the curator of the Department of Graphic Design, a title she held until 1971. When the vast Crane Collection of North American Indian artifacts arrived at the Museum in 1968, Neal became the exhibits designer for that hall and felt the need to further her anthropological studies by obtaining her master’s degree from the University of Denver. Later, in 1975, she was made assistant director for exhibits planning and took over the management of diorama installations in the North American Wildlife and Botswana Africa Halls. During this period, Neal was the one person who could go from subject to subject and impose a uniform approach to exhibitry at the Museum.
The Museum’s efforts toward improving and expanding exhibits led to an attendance boom under Bailey’s tenure. After Bailey became director, attendance grew from 266,900 in 1936 to 805,005 in 1941. In 1946 the Museum’s attendance hit the one million mark, a number twice the population of the City of Denver at the time. Attendance dipped shortly thereafter but remained steady at more than 500,000 per year for many years. In 1948, the Museum changed its name to the Denver Museum of Natural History, at the request of the City and County of Denver to acknowledge the city’s ownership and maintenance of the institution.

Collections and Research

Given Alfred M. Bailey’s research interests and his position within the Museum, ornithology and mammalogy were central areas of growth during the mid-20th century. Collecting in these areas was mainly undertaken to provide specimens for dioramas. Bailey’s goal when he arrived at the Museum was to convert all the Museum’s dioramas to the curved and domed cases. This he did, and he added new wings, which also would contain new dioramas designed to round out the presentations. Field collecting was also done to supplement the Museum’s study collections and to provide objects for trade with other museums. Notable field projects included expeditions to Canada (1946); mid-Pacific islands, Australia, and New Zealand (1949, 1952, 1954, 1957, 1958); Galápagos Islands and Ecuador (1960); Alaska and the mid-Pacific islands (1961); and Botswana (1969).

Even as director of the Museum, Bailey personally continued his fieldwork, which between 1936 and 1948 was facilitated by President of the Board Charles Hanington, who ran the Museum in Bailey’s absences. As a devoted photographer and cinematographer, Bailey made photo documentation a key part of his fieldwork, providing him with great source material for his popular lectures and scholarly engagements. Bailey’s dedication to the field led one of the Museum’s later directors, Raylene Decatur, to suggest that by comparison with today’s museum CEOs and presidents, Bailey was truly more akin to a chief curator than a director.

Building on Figgins’s legacy, the Museum continued to build its paleontological and geological collections. Harvey Nininger advanced the Department of Meteorites until 1941, at which time, as the 1942 annual report indicates, the “curator is devoting his entire time to the war effort and is expected to do so for the duration.” (World War II was also used as the explanation for the suspension of the Department of Archaeology in 1942.) In paleontology, excavations were conducted to enhance the Museum’s collections, but other exhibit-worthy fossils were also collected and prepared that could be traded with other museums. Significant fieldwork in paleontology included the 1937 excavation of a complete Stegosaurus near Cañon
City, Colorado; in geology, a 1959 expedition to Mexico focused on the collection of cave crystals.

In the year of Bailey’s arrival, 1936, the Department of Archaeology was formally established. H. Marie Wormington led the department (Fig. 1.40) and was assisted by her friend and former classmate from the University of Denver, Betty Holmes (later Betty Huscher, and later still Betty Bachman). During the department’s first year, Wormington and Holmes undertook an excavation of the Lindenmeier Site, a Folsom campsite near Fort Collins, Colorado, making clear the Museum’s continued focus on the earliest Native American cultural traditions. In 1938 Charles A. Mantz joined the Museum as the curator of Asiatic anthropology. Mantz conducted archaeological excavations in Japan; however, his work came to an unexpected end with the inception of World War II. Wormington and Holmes continued their research in Utah and Colorado into the 1940s, until Wormington left for Radcliffe College to obtain her PhD and Bailey briefly suspended the department. Wormington continued to be listed as honorary curator of archaeology in the Museum’s annual reports while she was at Radcliffe. When she returned to the Museum in 1945, her title reverted to full curator and she went on to an illustrious career.

Wormington received her PhD in 1954 and became one of the most prominent archaeologists in the United States. During her tenure at the Museum, she completed Ancient Man in North America, a synthetic volume that received multiple printings and revisions and inspired a whole generation of early human archaeologists in North America. In 1968, Wormington was elected the first female president of the Society of American Archaeology. The Department of Archaeology closed in July 1968 with her departure. In mid-1969 the Museum chartered the new Department of Anthropology with Susan Grant Raymond as curator, after receiving the Crane Collection of North American Indian artifacts.

**Modernization, 1970–1987**

Alfred M. Bailey was largely recognized as a successful museum director: he experimented with new outreach opportunities, drew large audiences, vastly expanded the Museum building’s footprint, and brought the world to Denver through many captivating exhibits and dioramas. With Bailey’s retirement, the Museum gradually began to grow from the roots that Bailey had planted in the Denver community; it was incrementally transformed into a more modern museum. This next period in the Museum’s history saw the formal creation of a membership program, a development department, and a volunteer organization; and the Museum was among the first to receive accreditation from the American Association of Museums. With time, the Museum’s research departments began to expand and grow as well.
The man who began this hard work—though his residence, ultimately, would be short—was Roy Earl Coy (Fig. 1.41). Born in 1915, Coy developed an interest in taxidermy while a student at Saint Joseph Junior College, located in his Missouri hometown. Coy moved on to Bailey’s alma mater, the University of Iowa, where he graduated in 1939 with a major in geology and a minor in museum methods. The next year Coy returned home and became director of the Saint Joseph Municipal Museum while also serving for several years as the WPA northwest Missouri area supervisor for public museums. Under his administration the Saint Joseph museum moved twice, greatly increasing its size beyond the few rooms it occupied when Coy first took charge; he was also acknowledged for creating quality educational programs and exhibits.

Across the plains in Denver, in 1967 Bailey was preparing himself for retirement and seeking his successor. Candidates from across the United States applied, but Coy was chosen because, Bailey said, “We are presently undertaking an expansion program and we feel that someone of Mr. Coy’s talent and experience will be needed,” referring to the new wings under construction and plans for additional dioramas and a new Planetarium. Privately, Coy apparently wavered about accepting the post, unsure if the position would be good for him, but ever since childhood vacations to Colorado he had dreamed of becoming director of the Denver Museum.

Coy came to the Museum as Bailey’s assistant director in January 1968, with the plan to become director two years later when Bailey would formally retire. One of Coy’s first tasks—and successes—was finding a collection of Native American objects to fill the Museum’s new northwest wing. Coy wrote to two friends, Francis and Mary Crane (Fig. 1.42), who operated a private museum in the Florida Keys and whom he had met several years earlier on a lecture tour. The Cranes were looking for a new home for their large and diverse collection because of a lack of visitors to their museum, and also because of Francis’s declining health. The Cranes initially considered moving their museum to Carefree, Arizona, and appointing Coy its director. However, Coy did not endorse the location and instead convinced them to donate their entire collection to the Denver Museum. The Crane Collection arrived in 1968, and Coy and Arminta “Skip” Neal were charged with planning the Museum’s newest permanent gallery. Coy felt comfortable with this task because at the Saint Joseph Municipal Museum he had worked with a collection of Native American objects, and he was eager to pursue the Crane Collection because, he acknowledged, “Indian artifacts are pretty hard to acquire these days.” Indeed, the Crane Collection is among the largest private collections ever donated to a public U.S. museum.

During his time in Denver, Coy built up other collections and exhibits. In 1969 Coy led the Museum’s four-month-long collecting expedition in preparation for the Botswana Africa Hall. He also was able to convince his
friend Fred Rosenstock, who owned an antiquarian book shop on East Colfax Avenue in Denver, to donate Captain William Clark’s telescope (which was used during the celebrated Lewis and Clark expedition of 1804–1806), dueling pistols, powder flask, and the 1837 codicil of his will.

As planned, in December 1969 Bailey retired and Coy became the Museum’s next director. In 1971, the Museum was hosting the U.S. premiere of a much-touted Planetarium show called The Beginning and the End of the World. The media, international dignitaries, Museum trustees, and other notables attended. The show was an early computer-driven prototype, and just as it was to begin, it malfunctioned. Coy grew angry and ordered security to clear the Planetarium. He then fired at least three employees on the spot and cancelled the show’s planned three-month run resulting in adverse publicity for the Museum. In October 1971, after an investigation by the Museum Trustees, Coy was asked to resign and staff who had been fired by Coy were later rehired. Fortunately, Coy recovered from this stumble and went on to a profitable career as a lecturer and museum director in local Missouri museums.

**IMAX and Completing the Habitat Dioramas**

With Coy’s departure, the Museum experienced a period in which the Board of Trustees had a strong hand in the organization’s development. This was perhaps epitomized by Allan Rogers Phipps. Born in 1912, he was the son of Senator Lawrence C. Phipps, himself a long-serving Museum Trustee, from 1913 to 1958. Allan Phipps was successful in his own right, having obtained a degree in jurisprudence from Oxford University in 1936 and a law degree from the University of Denver in 1937. Among many other credits, he, with his brother Gerald H. Phipps, purchased the organization that owned the Denver Broncos football team and the Denver Bears baseball team in 1965.

Phipps (Fig. 1.43) believed in giving back to his community. He served on the boards of many local cultural, conservation, health, service, and financial organizations. During his lifetime he was the longest-serving board member of the University of Denver (45 years). But he would serve even longer on the Denver Museum’s Board (54 years). He had become the Board’s president in 1971. When Coy suddenly left the Museum, Phipps stepped in as acting director, a position he would hold for three years. Phipps was well-liked by both staff members and Trustees and was a steadying influence on the Museum during an unsettling time. Even after he stepped down as acting director, Phipps continued to wield power, remaining on as Board president until 1982. He was a driving force behind the Museum’s creation of the IMAX Theater. Over the years Phipps provided generous financial gifts as well as donations of specimens. He finally retired from the Board in 1996, though he
remained an honorary lifetime trustee until his death in the fall of 1997.

In 1974 Charles T. Crockett (Fig. 1.44) replaced Phipps as acting director. After gaining the confidence of the Board, Crockett was named director in 1976, a position he would hold for a decade. Promoted from within, Crockett had been a curator in the Department of Paleontology (1969–1970) and the Department of Conchology (1970). As was the norm for the Museum’s curators during this time, Crockett held a bachelor’s degree, from the University of Colorado. When the transition of the directorship from Bailey to Coy began, Crockett was appointed assistant to the director (1970) and then assistant director (1971). Under Phipps, Crockett continued as assistant director until he finally took the Museum’s reins himself. The Phipps-Crockett era saw a greater emphasis on policy development and modernization of the facility.

In 1972 the Museum launched the National Association of the Denver Museum of Natural History, and a Members Council was formed that focused on both promoting membership and running a volunteer program. Some 600 members joined in the first year. Although volunteers had always been central to the Museum’s day-to-day operations, helping with a variety of duties and supervised by the staff of the department in which they worked, this was the first formal effort to organize this corps. The membership and volunteer organizations were eventually absorbed into the Department of Community Services.
CHAPTER 1 — “A MUSEUM HERE FOUNDED” A Summative History

in 1978, though they were later separated again into distinct programs. Also in 1972 Museum administrators issued the first personnel, security, and auditorium policy manuals. These policy documents likely helped the Museum to gain accreditation by the American Association of Museums that year, making it among the first institutions to obtain this mark of distinction.

During this period the Museum also began to focus more on community relations and public perception, a move likely fed by a noticeably declining attendance. The first public relations staff person, Henrietta Perry, was hired to form the Department of Public Affairs in 1972, renamed the next year as the Department of Public Relations. In 1973 Arminta Neal proposed establishing the Native American Advisory Council (later renamed the Native American Resource Group) to advise on the care of the Crane Collection and development of exhibits for the Crane American Indian Hall. Phipps strongly supported the proposal, and the council was quickly founded.

The Museum’s efforts to standardize policies and practices continued swiftly in 1974. Crockett appointed a committee, headed by two curators, Betsy Webb (Zoology) and Jack Murphy (Geology), to write the first collections policy. Even payroll entered the modern age as the Museum’s first computerized system was installed. And, several years later, the Museum’s phone system was updated when the antiquated switchboard was retired and switched to the City Centrex system. Phipps and Crockett also took a hard look at the Museum’s aging building and produced a facility master plan, followed by a feasibility study. These reports resulted in steps that needed to be taken before any new building additions could be completed, such as bringing the 1908–1928 wings up to fire code, building a new heating and cooling plant and transformer vault, constructing a penthouse for air movement equipment, and purchasing an emergency power generator. Museum administrators followed up the facility plan with an interior traffic flow study and a survey to determine departmental space requirements.

Phipps and Crockett had the ambition for more additions, but this of course would require more financial resources. Phipps expressed concern over the “Museum’s ability to remain financially self-supporting.” Phipps saw the need for repairing older parts of the building while continuing to expand the facility, but at the same time anticipated shrinking City support. As early as 1971, murmurs arose over the potential need to charge an admission fee. Small steps were taken, such as installing the still-popular saber-toothed cat donation box in 1973 (Fig. 1.45) in which visitors dropped their loose change. In 1975 Phipps called for a planned fundraising drive, a need made more immediate the next year when the City of Denver did begin reducing funding over several years by 22 percent. In response the Museum hired Carole Hayward as fundraising coordinator (the position was soon assimilated into the newly formed Development Department), and began the Museum’s first capital campaign, which was successfully completed six years later.

Figure 1.43. Allan R. Phipps, acting director (1971–1974) and trustee (1942–1996).

Figure 1.44. Charles T. Crockett, preparator, curator, assistant director, and director, 1967–1986.
Phipps held out hope that voluntary contributions from visitors—like at the American Museum of Natural History—would plug the financial hole. He long opposed a mandatory entrance fee, feeling it would cut down on visitation and leave some audiences out. However, by the new decade it was clear that such an approach was necessary for the Museum’s financial well-being. In 1981 the Old World Cultures Hall was demolished to make way for an admissions ticket desk. As the Museum’s annual report explained, the appearance of this desk marked the end of an unbroken eighty-year span during which the building was open to the public without charge, except for auditorium and planetarium shows. An admissions fee policy was literally forced on the Museum by the City of Denver’s drastic cut in its appropriations for 1982 operations. This in turn was preceded by refusal of the Colorado General Assembly in its 1981 session, to continue a policy of expense sharing with Denver, in aid of the Museum and three other cultural agencies within the City—the Zoo, Art Museum, and Botanic Gardens.

Despite the state government’s unwillingness to fund the Museum, in 1982 Denver voters approved a $20 million bond improvement project. This funding source finally addressed many of the issues raised in the 1974 facility master plan and financed the new northeast and southeast wings. The bond project also created new work and lab spaces, exhibit areas, and a north entry to the Museum. A planned collections storage facility, however,
did not materialize. The large open galleries within the new wings were an important focus for the Board members, as their priority was to find a means of enticing visitors back repeatedly, especially after the admissions fee was imposed in 1982. Although not explicitly envisioned at the time, the large changing exhibit space created through the bond financing, and named the Allan R. Phipps Changing Exhibits Gallery, laid the groundwork for the “blockbuster” exhibitions that would soon come to define the Museum.

In addition to the focus on finances, buildings, and community relations, the Museum continued to nurture its traditional programs. In 1983 the Collections and Research Division was formally established amid a general staff reorganization; Curator of Anthropology Joyce Herold was appointed as the first chief curator (Fig. 1.46). This new division focused on centralizing the acquisition and management of collections to support the Museum’s research, exhibition, and education initiatives. During this period, the first major permanent exhibition to be completed was North American Indian Cultures in Crane Hall in 1978 (Fig. 1.47). It was supported by a number of innovative temporary exhibitions and outreach.

Figure 1.47. A portion of the Cheyenne diorama in Crane American Indian Hall.

Figure 1.48. Allan R. Phipps and Charles C. Gates Jr. cutting ribbon at the Lawrence C. Phipps IMAX Theater opening, July 1, 1983.
programs such as *Moccasins on Pavement*, which addressed the urban Indian experience. In Crane Hall’s Lifeways Gallery, funded by the Assistance League of Denver, staff mounted small changing exhibits through the 1980s. Diorama halls that started under the Bailey administration opened: the Helen K. and Arthur E. Johnson Botswana Africa Hall in 1981 and the North American Wildlife Hall in 1982.

The Planetarium was modernized during the ’80s, but a larger alteration was the remodeling of Phipps Auditorium into a giant-screen IMAX theater, the first in Colorado. Funding came from charitable foundations and corporations; Allan Phipps contributed heavily. The new theater opened on July 1, 1983 (Fig. 1.48), 75 years to the day after the Museum’s opening to the public on July 1, 1908. In the years since, this theater has been a major draw for educational films on the natural world and a steady source of financial income.

Upgrading the Planetarium and Phipps Auditorium precipitated discussion within the Board and the administration about how to formally include science and technology in the Museum’s activities. The Board entertained, but at the time did not act upon, the idea that perhaps a name change and a new logo would better represent a museum looking toward the future. The administration and Trustees did continue to expand the range of disciplines when health sciences became another core science competency for the Museum. Administrators agreed, in an effort led by Max T. Morton and Fran Corsello, to make the Museum the new home for *Hall of Life*, an exhibition originally located downtown and devoted to teaching the public about healthy choices. *Hall of Life* officially relocated to the Museum in 1987, and staff initiated plans for its new exhibits.

The Trustees and administration continued facing financial challenges. In 1985, with declining City support, the Museum joined a coalition of Denver-area cultural facilities to try “to secure a broader funding base through formation of a metropolitan tax district.” The next year a bill was introduced in the state legislature; it was passed by the state senate but defeated in the House Local Affairs Committee. However, this step planted a seed that would later grow into a significant turning point in the history of cultural organizations in the Denver area.

Also in 1985, the Museum joined the City Park Task Force, formed to provide communication between City Park neighbors, the Museum, the Zoo, and many regional not-for-profit organizations. Such a move was sparked by the Museum’s construction of two large building additions and proposed expansion elsewhere in the park that had the neighbors concerned about loss of green space, the size of the Museum’s building, additional traffic and parking issues, and the legality of the project. The Museum reported, “We are actively participating in the Task Force in hopes that our mutual concerns can be solved by working together.” The Task Force began the development of the City Park master plan in 1986.
In September 1986, Crockett resigned. President of the Board Charles C. Gates Jr. conveyed “special thanks to Charles T. Crockett for his service to the Museum as Director for the past ten years, 1976−1986, and especially for his efforts and vision on the bond issue construction project.” Trustee Irving “Bud” Shwayder stepped in as acting director and served for six months. He recalled that he missed a Board meeting and upon his return learned he had been tapped to serve as acting director. Shwayder also noted that he left the brief post with “enormous enthusiasm for the future of the Museum.”

A Museum for the New Millennium, 1987–2013

John G. Welles (Fig. 1.49) took the director’s reins in March 1987 and brought along his strong background in business administration. With a bachelor’s degree in electrical engineering from Yale University, Welles went on to receive an MBA from the Wharton School at the University of Pennsylvania. He initially worked as an engineer with the General Electric Company and was a labor relations negotiator for General Motors Corporation before becoming head of the University of Denver’s Denver Research Institute, a position he held for 18 years. Just before arriving at the Museum he served as regional administrator of the six-state U.S. Environmental Protection Agency (EPA) office in Denver. During his time at the Museum’s helm, he would serve as both general chair and vice president of the American Association of Museums (AAM) and as a member of the AAM ethics commission.

The choice of Welles as director reflected a shift in museum administration across the United States as boards began selecting leaders for their administrative savvy rather than their scientific credentials. Upon announcing the selection, the Museum Board’s president, C. Neil Norgren, was explicit about this change. President Norgren said Welles was “chosen from a pool of 300 applicants despite his lack of previous museum experience.” But, he added, “In today’s world we needed a very strong administrator and financial type guy.” For his part, Welles explained, “I’ve always been interested in natural history, but I’m still learning about museums.” Welles’s administrative and business experience had prepared him for the challenges of rapid change.

Welles arrived just months before the Museum opened the new northeast and southeast wings, featuring 50-foot-high atriums, doubling the building’s size in one stroke. The main entrance and ticketing area were moved to the north side, and a new 25-foot-high cast of *Tyrannosaurus rex* began greeting guests, to their great delight, as they entered the Museum.
This expansion allowed the Museum to accommodate the exhibition that would radically alter the Museum’s sense of possibility: *Ramses II: The Great Pharaoh and His Time* (Fig. 1.50).

Announced in 1985, the exhibition opened to fanfare in October 1987 and ran through March 1988. The initial estimate for attendance was upward of 500,000 people; by the time the exhibition closed, total attendance was 908,828 visitors. A veritable Egyptomania took hold of Denver; the age of the blockbuster had begun. The Museum would seek to repeat this phenomenal success, building up its Exhibits Division to attract unprecedented numbers of visitors who would learn about natural and cultural history in exciting new ways and whose ticket sales would subsidize the Museum’s scientific and educational mission.

The success of Ramses brought about another unexpected outcome. More than 1,000 new volunteers were recruited to work in the exhibition, overseen by a paid supervisor, Dorothy Safford. The volunteer program burgeoned. After Ramses closed, Sarah Christian was hired as a dedicated Museum-wide coordinator, and positions were created throughout the building to effectively use the skills and expertise of this influx of volunteers.

To coordinate with the ongoing discussion about how to create more emphasis on science and technology, the Museum generated its first exhibition directly related to these topics, entitled *New Visions of Earth: The Technology of Reading Our Planet*. The effort represented “an experimental step toward our long-range goal of presenting scientific developments in understanding global change.” The Museum also joined the Museum Film Network, a consortium of 12 science museums devoted to producing educational and entertaining IMAX films using the latest giant-screen production technologies.

In late 1988, metro Denver voters made history when they overwhelmingly approved the Scientific and Cultural Facilities District (SCFD). The innovative proposal for funding the cultural arts directed that funds from a one-tenth of 1 percent sales-and-use tax would be distributed beginning in 1989 among cultural organizations both large and small throughout six counties (seven counties today) in the Denver area. The SCFD sales tax was key to reinvigorating the Museum’s education, exhibits, collections, and
research efforts to enrich the visitor experience. The Museum used this novel revenue stream to refurbish dioramas and other permanent exhibits, increase care and management of collections, mount exhibits and programs in the building additions, increase outreach to metro area schools to broaden education in the natural sciences, bring in more large traveling exhibitions, and hire a new group of scientists as curators with national reputations. In its first disbursement in 1989, the Museum received $1.4 million from SCFD; the next year it received $3.4 million. With the new funding also came regular Free Days for residents of the tax district.

During this period Museum administrators began to seriously consider how to shore up the Museum’s scientific qualifications. Jane Stevenson Day (Fig. 1.51) had been appointed to the post of chief curator. She oversaw a new direction for the Collections and Research Division, adding more PhDs to the curatorial staff, obtaining more external grants, and encouraging the publication of more academic papers by the research staff. One year after her selection, the staff’s scientific publications leapt from 3 to 10, and then to 35 the next year. Day also oversaw naming H. Marie Wormington as curator emeritus of archaeology and establishing an annual distinguished lectureship named in her honor.

Long-term preservation of the scientific collections was also on the minds of administrators. The Museum’s first collections conservation survey was conducted by the Rocky Mountain Regional Conservation Center and served as the basis for grant applications and requests for use of SCFD funds. New funding allowed the Museum to clean, reorganize, and restore hundreds of objects from the anthropology collections. In 1990, Carl Patterson was hired as the Museum’s first conservator in the newly founded Conservation Department. He opened the first conservation lab and wrote the first long-term conservation plan. The Conservation Department has a successful grant-writing history, receiving grants totaling more than $1 million from the Institute of Museum and Library Services since 1990 to support preservation of the collections. This funding has supported improved storage conditions and stabilization treatments for thousands of objects and specimens.

Day’s leadership also invigorated the Museum’s publications program (Fig. 1.52). The *Proceedings of the Denver Museum of Natural History* began anew, and a publication manager, Betsy Armstrong, was hired to develop a series of both popular and scientific works. Among these was a

*Hall of Life* opened in 1990, paired with popular health education programs offered at the Museum and at locations around the state. Installed outside in front of the building that same year was *When Legends Run Free*, a set of bronze pieces depicting a pack of wolves, sculpted by Colorado artist Rik Sargent. Educational programming was expanding more broadly at this time, too: the Museum initiated a Paleontology Certification Program to allow “citizen-scientists” to get a basic education in the field and participate in actual research; and Robert Ballard’s JASON Project, a live-action outreach effort using satellite technology was presented for the first time. With a renewed emphasis on audience, the Museum also began a formal effort to encourage diversity in its visitorship.

For all of these efforts, the El Pomar Foundation recognized the Museum with the Julie and Spencer Penrose Award as Colorado’s outstanding cultural institution of 1991. Strides continued. Computerization of collections began with a grant from the Helen K. and Arthur E. Johnson Foundation, and Mead Hall was refurbished into *Explore Colorado*, featuring dioramas of the state’s ecosystems and interactive elements for visitors. It received the Curator’s Award from the American Association of Museums. WOW (Worlds of Wonder), an outreach vehicle and program, completed its first year and brought “suitcase programs” to 72,000 schoolchildren. The biggest hit, though, was another blockbuster exhibition, this time one that was created in-house under the leadership of Day. As the annual report summarized it,

*Aztec: The World of Moctezuma* was the most complete exhibition of Aztec culture ever seen in this country. Museum staff re-created the sophisticated Aztec world that ended in 1521. We are especially proud that Aztec, which was exhibited only in Denver, was conceived and produced by our own
Aztec (Fig. 1.53) brought in 721,000 visitors and helped the Museum reach its highest onsite annual attendance number: 1.9 million. The blockbuster also increased attendance in IMAX (633,000) and the Planetarium (201,000). These numbers placed the Museum “third in attendance among natural history museums, behind only the Smithsonian Institution’s National Museum of Natural History and the American Museum of Natural History in New York City. This is all the more noteworthy considering that the Denver Metropolitan area ranked twenty-first in population in 1993 among the nation’s metropolitan areas.” The Museum’s membership of staff in collaboration with the Templo Mayor Museum and the National Museum of Anthropology of Mexico City, and the University of Colorado at Boulder.
33,000 households also ranked “third among the nation’s natural history museums.”71 Numbers aside, Aztec also presented great content, receiving an award from the American Association of Museums for “excellence in exhibition concept, content, and execution.”72

Original scientific work also continued apace, particularly in paleontology. In 1989 and 1990, Richard Stucky and Kirk Johnson were hired, respectively, to lead the development of a new paleontology research program and exhibition, ultimately entitled Prehistoric Journey. Stucky had been a curator of paleontology at the Carnegie Museum in Pennsylvania, and Johnson had just completed his post-doctorate work in Australia. Each would later serve in vice president positions and as chief curator at the Museum. In 1992, Bryan Small discovered the most complete Stegosaurus skeleton then known, and in 1994 he excavated the most complete Tyrannosaurus rex specimen ever found in Colorado. The next year the Museum received a $225,000 National Science Foundation grant to conserve the vertebrate paleontology collection.

In June 1994 Welles retired, and the Museum’s annual report summarized some of his successes:

During Welles’ tenure ... Museum attendance increased by 40 percent, memberships increased by 33 percent, the Museum’s endowment increased by 369 percent, and the volunteer program grew from about 400 volunteers in 1987 to nearly 2,400 in 1994. One of Welles’ most significant contributions was the addition of professional staff in the Collections and Research Division that enhanced the Museum’s ability to serve the public as a resource for scientific research and information sharing.73

New Directions

In the spring of 1995, Raylene Decatur became the Museum’s top executive (Fig. 1.54). When she was hired, more emphasis was placed on the fact that the Trustees had returned to hiring a museum professional than on the fact that Decatur was the Museum’s first female director.74 However, rather than fitting the mold of Figgins or Bailey, who were scientist-directors, Decatur came from the administrative and exhibit side of the museum world. Decatur held experience as a curatorial assistant (Renwick Gallery, 1978–1983), exhibit consultant (Lynch Museum Services, 1985–1987), director of exhibits (Academy of Natural Sciences of Philadelphia, 1988–1990), and executive director of the Maryland Science Center, where a headhunter found her and recommended her for the opening in Denver.
With the addition of the uniquely hands-on Hall of Life to the Museum and with increasing community discussions about the need for a science center in Denver, the Board felt that Decatur’s particular experience would be great leverage in moving the Museum in a new direction. Reportedly, Decatur quickly came to realize the Museum’s reputation in the community. She recounted,

> When I travel on business I always talk to the taxi drivers. When I get into a cab and say I want to see the natural history museum or whatever, often the cab drivers go, “huh?” or “what?” But when I came to Denver and got into a cab and said, “I want to go to the Denver Museum of Natural History,” the driver, no matter how old he or she is, or what they may look like, or what you may perceive about them from their exterior appearance, launches into what they thought about the Ramses exhibit, what you’re bringing in the future, what you’ve had here, what’s the best IMAX film. It’s deep. They really understand what you have here, and they have a great level of pride. I think that’s the kind of pride in an institution that speaks well of programs and services within the community and the value that you’re creating in the community.75

Decatur inherited an institution in good shape, and 1995 saw a number of important achievements. Most significantly, SCFD funding was reauthorized by the generosity of metro Denver voters, securing a vital source of revenue. In the fall the permanent exhibition Prehistoric Journey opened, telling the story of life on Earth from its beginning to the dawn of humankind. The exhibition included the Museum’s first “enviroramas,” with sound and light effects, and the Schlessman Family Laboratory of Earth Sciences, which for the first time allowed public observation and access to the processing of ancient fossils (Fig. 1.55). The Museum was honored when Prehistoric Journey was selected as outstanding exhibition of 1995 by the American Association of Museums Curators’ Committee. Also, a permanent exhibition master
plan was completed, laying the groundwork for future endeavors. Collections also continued to be acquired. The Adolph Coors Foundation gave the Museum the “Alma King,” the largest and finest known rhodochrosite crystal on Earth (Fig. 1.56), now displayed in Coors Gems and Minerals Hall. And, in Decatur’s freshmen year at the Museum, “An unexpected but exciting development was the acquisition of a 1.75 million-year-old Oldowan pebble tool. Among the most significant artifacts ever donated to the Museum, it represents one of the earliest attempts by our hominid ancestors to control their lives by making tools. It was donated by Dr. Anthony J. Pfeiffer, whose father, science writer John Pfeiffer, received the tool from famed anthropologist and archaeologist Dr. Louis Leakey”76

When Richard Stucky became chief curator in 1995, he initiated a complete revision of the collections policy and began centralized registration of all collections, eventually overseen by a professional collections registrar.

The grand traveling exhibition *Imperial Tombs of China* arrived in Denver in 1996 and was credited with raising Museum membership by 15 percent, to more than 41,000 households. Overall, the exhibition helped reach a total onsite and outreach attendance of more than 2 million, “making the Museum the most visited cultural institution in the Rocky Mountain Region.”77 In 1997, the Museum was chosen by federal officials as the site for the Summit of Eight conference; however, administrators turned it down because of the cost and disruption to the building. The Museum hosted a related reception and a corporate sponsor meeting with President Boris Yeltsin of Russia.

In addition to presenting major traveling exhibitions, the Museum had several memorable successes during this period. In 1998 Phipps IMAX Theater attendance totaled more than 906,000, fueled in part by the seven-month run of *Everest*, the most popular IMAX film ever shown at the Museum. Gates Planetarium, in turn, attracted nearly 40,000 visitors to *Where in the Universe Is Carmen Sandiego?*, an interactive show based on the popular PBS character and featuring actors who invited audience members to solve a mystery. This show was produced by the Planetarium staff as part of a consortium of seven international planetariums.

When Decatur arrived, she instituted a mission-driven planning process that identified major goals for the Museum. The process included a comprehensive review of each of the Museum’s core science competencies. In 1996, the Trustees, administration, and staff adopted a common vision focused on “presenting our world in transition.” Space sciences was added as a core competency, and plans began for the development of a new permanent exhibition, ultimately entitled *Space Odyssey*. Laura Danly joined the curatorial staff as the first space scientist hired at the Museum.

The 1990s included many additional highlights for the Museum’s research and collections. In 1998, arachnologist Paula Cushing was hired, and she launched the Colorado Spider Survey, the first comprehensive biological
survey of arachnids in Colorado, which engaged hundreds of citizen-scientists and collected thousands of specimens. Kirk Johnson excavated an ancient rain forest in Castle Rock, Colorado, and also led the Denver Basin Project, a major grant-funded initiative that involved drilling a 2,200-foot core from the ground near Kiowa, Colorado, to quantify the geology of the region.

In 1998, there was a major sign that times were changing for natural history museums: the Museum’s first website went live, and the Museum’s library catalog became the first collection to be accessible online. The Museum became a partner in the Colorado Digitization Project, a collaboration among Colorado’s archives, historical societies, libraries, and museums to provide access to the historical resources of the state.

In the late spring of 2000, in its centennial year, the institution adopted a new name: Denver Museum of Nature & Science (Fig. 1.57). The Museum’s Trustees unanimously agreed “after careful consideration that the time was right to update the Museum’s name and identity ... By incorporating the words nature and science into our name, we reflect the fact that nature and science are integral parts of the community and our mission, and reinforce our commitment to these key issues for the twenty-first century and beyond.”

The name change reflected a new direction for the Museum to become the leading science and natural history museum in the Rocky Mountain Region and implied a new emphasis on hands-on science experiences, culminating with Space Odyssey (2003) and Expedition Health (2009). In 2001, the Board approved the reorganization of the bylaws and structure of the Museum into a corporate model. The Museum director became president and chief executive officer of the Museum, and the senior leadership became vice presidents, responsible for fundraising, research and collections, finance, and the visitor experience in a rapidly changing marketplace.

Construction of the Space Odyssey exhibition led to a complete remodel of the Museum’s west side. In 2002 the Leprino Family Atrium (Fig. 1.58) opened, presenting one of Denver’s most iconic views of downtown Denver and miles of the snowcapped Rocky Mountains. The atrium’s interior was designed with some unusual architectural features, offering four rings of perforated aluminum meant to “represent the circles, orbits, and cycles inherent in the natural world” and “serve as a science lesson” as they were aligned to points on the horizon with the equinoxes and solstices. After scenic Bailey Lounge was closed due to the remodeling, the Board of Trustees voted to “name the Library and Archives for Dr. Alfred M. Bailey.” Another challenge of the modern age that had vexed the Museum for several years was inadequate parking for visitors. In 2002, a 564-space parking garage opened, a significant step in addressing the issue.
Space Odyssey was intentionally designed to have an original approach to delivering meaningful content to 21st-century audiences. Unlike most previous exhibitions at the Museum, Space Odyssey offered “hands-on science, allowing visitors to make their own discoveries about the mysterious worlds beyond Earth. Highly trained volunteers, along with educators and curators, provide timely science information and engage visitors in their own discoveries.” The particularly novel tactic was using a digital collection of primarily news articles and images that constantly delivered space-related content and informed activities in the exhibition. In 2005 Space Odyssey received the coveted Leading Edge Award from the Association of Science-Technology Centers.

Accompanying Space Odyssey, Gates Planetarium reopened in a new facility with one-directional domed seating on a 25-degree tilt to make “the audience feel as if they are flying into the horizon rather than looking up into the sky.” A stage at the front of the theater allowed for speakers and performers. The digital format and high-resolution projection made it possible to create and present more-realistic shows.

In the opening days of 2004, Decatur announced her resignation to spend more time with her young family. During Decatur’s tenure, the
Museum changed its name and developed a strategic direction that addressed a rapidly changing world and included nontraditional topics and approaches for natural history museums, decisions that were not always popular. Museums across the country were evaluating the visitor experience and examining less didactic opportunities that involved greater participation of visitors in directing their own science learning, supported by professional and volunteer facilitators. These approaches shaped *Space Odyssey*, which was destined to become very popular among visitors and to influence the development of future exhibitions.

**Reinventing the Natural History Museum**

After Decatur’s departure, Tom Swanson, a Museum Trustee, stepped in as the Museum’s interim CEO. Swanson helped see the Museum through another successful SCFD reauthorization and the opening of the temporary exhibition, *The Quest for Immortality: Treasures of Ancient Egypt*.

By the end of the year, George W. Sparks became the Museum’s sixth leader (excluding interim directors) (Fig. 1.59). He was chosen from a field of six finalists culled from more than 200 resumes as a result of a national search. His science background was solid, with a master’s degree in aeronautics and astronautics from the Massachusetts Institute of Technology and a bachelor’s degree in aeronautical engineering from the U.S. Air Force Academy. Early in his career he served as a U.S. Air Force pilot and was an assistant professor of aeronautics at the Air Force Academy. For 20 years, from 1979 to 1999, Sparks worked for Hewlett-Packard, eventually becoming general manager of several divisions, and then until 2003 he served as a vice president for Agilent Technologies, a Hewlett-Packard spin-off.

Sparks described himself as the “luckiest guy in Colorado” to become president of the Museum. He dived into a comprehensive strategic planning process, which in 2005 generated new mission, vision, and strategic direction statements, eventually culminating with the Museum 20/20 Strategic Plan. The plan proposed $142 million in initiatives that would strongly propel the Museum forward into the 21st century, as described in the 2005 Annual Report:

> Our mission is to engage the public in science, and our vision is to create critical thinkers. We imagine children growing into literate, open-minded adults, whose knowledge of nature and science help them live as productive, inspired citizens.
of the world. We strive to provide adults with quality opportunities as well, so that they can make informed decisions that affect their everyday lives.85

In 2006, the Museum would host the exhibition that was causing a stir around the world: *Gunther von Hagens’ Body Worlds*. The Museum was already deep into planning a new permanent exhibition about health sciences and had hired Bridget Coughlin, the first curator of human health. *Body Worlds* was an opportunity to showcase the Museum’s commitment to offering visitors compelling ways to learn about the human body and the importance of keeping it healthy. The exhibition’s unique approach to studying anatomy using real human bodies was clearly popular with the public: attendance reached 688,000 visitors.86 In an unprecedented move, the Museum was opened around the clock during the exhibition’s final weekend, and every single ticket was sold.

About this time, the Museum was honored when Colorado’s first astronaut, Scott Carpenter, one of the Original Seven, selected the Museum to display his Apollo Ambassador of Exploration Award, which features a moon rock encased in acrylic. The rock was collected from the surface of the moon in 1972 by Apollo 17, bringing home a little piece of history to inspire future space exploration.

In fall 2007, Sparks led the Museum through its next big undertaking: a successful $50 million bond election for the Museum. The people of Denver voted to fund deferred maintenance and help construct a new education and collections facility. Work quickly began on renovating and updating the existing building: upgrading Phipps Gallery for temporary exhibitions, installing clear film on diorama glass panes to lessen shatter risk, retrofitting older parts of the building with a new fire-suppression system, and making systems improvements to decrease the Museum’s environmental footprint. Plans for the new wing also began, to include three levels with technologically engaging spaces, an additional temporary exhibition gallery, and a new Discovery Zone for early learners, as well as a two-story underground state-of-the-art facility to house all the nearly 1.5 million objects and specimens in the Museum’s collections. The Research and Collections Division had completed its first-ever long-range collections plan in 2008, which would be instrumental in planning and preparation for the new consolidated collections facility, dubbed the Rocky Mountain Science Collections Center.87

In February 2009, Sparks received a surprise call from the White House saying that President Barack Obama wanted to sign the historic American Recovery and Reinvestment Act in the Museum’s southeast atrium (Fig. 1.60). The White House was seeking an opportunity to showcase green energies and had learned of the Museum’s newly installed rooftop solar array, the second largest in Colorado. Before signing the legislation into law, the President toured the array (Fig. 1.61), featuring 465 panels to provide up to 5 percent of the Museum’s
President Obama, Vice President Joe Biden, and others left behind several significant, if unintended, donations for the Museum archives, including thank-you notes on white boards to staff whose offices they borrowed.

The first permanent exhibition of the Museum’s second century opened in April 2009 when *Expedition Health* brought an innovative approach to health education, a topic made very popular among Museum visitors by the retired *Hall of Life*. Using the volunteer- and technology-driven model successfully established by *Space Odyssey*, *Expedition Health* enlists an intentional process of discovery using a hike up Colorado’s Mount Evans as an overarching theme. Visitors move and measure their bodies at a variety of interactive stations. *Expedition Health* also premiered the first participatory theater in the Rocky Mountain Region, using special effects and other elements that give visitors a visceral look at how the body reacts during a mountain hike. Another key feature is the community lab, where the public participates in actual health-related research projects. In its first year, it received 425,000 visitors and the Museum’s second Leading Edge Award from the Association of Science-Technology Centers.

Connecting real people with real science was a challenge facing natural history museums as the 21st century got underway, and the Denver Museum was no different. Because the ways people receive and perceive information were constantly changing, the Museum remained open to applying creative ways to make science more approachable for a wide variety of audiences. Living history actors had been successfully used in temporary exhibitions about Ben Franklin and the Titanic, and these enactors were now a regular part of the Museum’s visitor experience strategy. Science Lounge became a monthly series aimed at offering entertainment, science, and cocktails to an adult audience. Technology was applied as well: Scientists in Action, produced by the Museum, presented a modern-day JASON Project–style interactive communication between students and scientists; Science on a Sphere, a spherical projection system incorporated into *Space Odyssey* provided to visitors a whole new perspective on Earth and other planets; and *Science Bites*, an online video series featured Museum scientists explaining the how and why behind headline news as well as science topics occurring right in Colorado. (*Science Bites* was also shown on Rocky Mountain PBS.)
In 2010, the Museum received both the largest single private donation and the largest grant in its history. The Morgridge Family Foundation gave $8 million for construction of the upper three levels of the new education and collections wing, aptly named the Morgridge Family Exploration Center (Fig. 1.62). The National Science Foundation awarded $3.27 million for Urban Advantage Metro Denver, a program designed to improve science literacy among urban middle-school students. These gifts both helped buoy the Museum’s historic commitment to engaging children and youth in science education. By the early 2000s, more than 300,000 students and teachers were participating in science education programs annually. Opportunities for free general admission and robust scholarship programs also helped ensure that every child in metro Denver would have access to a Museum visit.

Museum membership was also reaching record levels beginning in 2010. The year ended with more than 58,000 households, a first-time high for the Museum, and it continued to rise from there with a record 64,000 at the end of the following year. Membership dues generated more than $4 million in revenue; however, the members’ role as Museum champions in the community continued to be priceless. The Museum has also had the good fortune of long having the largest volunteer corps among any museum in the country. Upward of 1,500 to 1,700 people volunteer at the Museum on a regular basis, working more than 200,000 hours per year. Volunteer opportunities abound for people of all ages—families, teens, those retired, and those still employed—to work behind the scenes and in public areas with visitors. The unparalleled commitment of the both members and volunteers has truly contributed to making the Museum one of the best in the country.

The Ice Age Returns

In October 2010, the Museum received a call from a crew digging a reservoir high in the mountains of Colorado. A bulldozer operator had unearthed something interesting, and the crew thought the Museum’s scientists had better come take a look. Indeed, they had stumbled upon the remains of a female Columbian mammoth; after digging a little deeper, the Museum began excavating one of the most remarkable scientific finds in Colorado history.

The find was an exceptionally well-preserved fossil site, packed with Ice Age animals. Just as winter was moving in, Museum scientists and volunteers, under the direction of Chief Curator Kirk Johnson, raced against the calendar to begin excavating the site. The Museum’s scientific team was clearly amazed, as Ian Miller, curator of paleontology, recounted:

The original discovery at the site, the juvenile mammoth, is more spectacular with each day of excavation, with its
pelvis and cervical vertebrae now exposed. Teams are also
digging in the sloth pit, which is still producing various mast-
odon parts, and in a new peat site that has a disarticulated
mammoth. As the logistical leader of the excavation, I end
up doing a little of everything, which is fantastic. We have
found something stunning every single day. I should be used
to it by now, but I’m still floored every time.90

Before snowfall suspended their efforts, the team found the remains
of 10 American mastodons, four Columbian mammoths, a Jefferson’s ground
sloth, four gigantic Ice Age bison, two Ice Age deer, snails, iridescent insects,
and plants still green after being buried for 40,000 to 130,000 years. Educa-
tional events were quickly organized, pulling in thousands of Coloradans
who were thrilled to be a part of this amazing discovery made right in their
own backyard. Between May 15 and July 1, 2011, an enthusiastic, tireless
crew of about several hundred staff
and volunteers returned to the site to
ultimately recover more than 5,000 large
fossil bones and another 22,000 tiny ones
(Fig. 1.63). The “Snowmastodon Project,”
as the discovery was christened and
trademarked by the Museum, received
international media attention and was
the subject of a highly rated episode
of NOVA on PBS. The project was the
capstone of paleontologist Kirk Johnson’s
career at the Museum (Fig. 1.64). In
2012, he left to become director of the
National Natural History Museum at
the Smithsonian in Washington, D.C. In
2013, Scott Sampson, another paleon-
tologist with a national reputation, was
hired to become chief curator and vice
president of research and collections.

Perhaps more than any other
single event, the Snowmastodon Project
epitomized what the Museum had become and what it could do after more
than a century of existence. Museum scientists had the expertise to conduct
the excavations; a corps of trained citizen-scientist volunteers was ready to
assist; collections and conservation personnel were prepared to process these
delicate specimens; outreach specialists and educators could create exciting
new programs that drew thousands of people; a marketing team could
coordinate and promote the discovery; a fundraising team could attract the

Figure 1.63. The skull of a massive Ice Age bison (Bison latifrons) was considered by
scientists to be the prize specimen unearthed at the Snowmass Village Ice Age site.
necessary resources; and the Museum was respected enough across the state to become the trusted repository for one of the most spectacular paleontological finds in Colorado’s history.

As the Denver Museum of Nature & Science continues in its second century, it is prepared to open a 126,000-square-foot addition in February 2014 that will be one of the greenest and most energy sustainable spaces in Denver and will leave a positive and lasting mark on the city with innovative, interactive science experiences for all ages and long-desired consolidated preservation for the collections. Sparks is challenging the Museum to embark on a new strategic intent that would reinvent the relevance of natural history and science through experiential engagement. The Museum experience would not just focus on what visitors do within the building but will be augmented by extending the visitor experience outside in the natural world and in the ever-changing virtual world.

The Museum has clearly, unquestionably, become everything its founders dreamed it would one day become, a museum that would grow to be “one of the great entertaining and educational institutions of the country.”
CHAPTER 1 — “A MUSEUM HERE FOUNDED” A Summative History

Literature Cited


Endnotes

2 Edwin Carter, letter to John F. Campion, June 8, 1897, DMNS Archives # VIP.20.
3 Articles of Incorporation of the Colorado Museum of Natural History, December 6, 1900.
4 CMNH Annual Report, 1934: 3.
5 ibid.
9 Dr. Figgins resigns as museum head in dispute with board. Denver Post, November 26, 1935: 16.
11 Cooke, P.M. CMNH Board of Trustees meeting minutes, November 21, 1935.
12 Dr. Figgins resigns as museum head in dispute with board. Denver Post, November 26, 1935: 16.
15 Retired or not, he’ll still work. Rocky Mountain News, November 19, 1969.
16 High honor to Alfred Bailey. Published in an Iowa City, IA, newspaper, probably in early December 1912.
18 Ibid.
19 Ibid.: 22.
20 Ibid.
22 CMNH Annual Report, 1939: 11.
23 Ibid.: 6.


Ibid.


The Works Progress Administration was renamed the Work Projects Administration in 1939.


DMNH Annual Report, 1944.


Raylene Decatur, oral history interview, April 8, 2011, DMNS Archives.


Ibid.: 17.


Ibid.


Mary Crane, letter to Roy E. Coy, September 27, 1967, DMNS Archives.


CHAPTER 1 — “A MUSEUM HERE FOUNDED” A Summative History

59 DMNH Annual Report, 1985: 3.
61 DMNH Annual Report, 1985: 5.
63 Ibid.: 6.
67 Ibid.: 7.
68 Ibid.: 2–3.
70 DMNH Annual Report, 1993: 3.
71 Ibid.
72 Ibid.: 6.
80 Ibid.: 21.
82 Ibid.: 8.
83 DMNS Magazine, April/May 2004: 12.
88 DMNS Annual Report, 2010: 3.
CHAPTER 2

EXHIBITS An Evolution

Not Finished After All These Years

Museums have many important functions, but exhibits are what most people come to see. In addition to educating and entertaining, exhibits bring visitors in the door, generating revenue that supports Museum operations. More than a century after John F. Campion spoke at the Museum’s opening exercises on July 1, 1908, his observation that “a museum of natural history is never finished” is especially true in the world of exhibits (Fig. 2.1)—and in fact needs to stay true for the Museum to remain relevant (Alton 2000). Times change, expectations change, demographics change, and opportunities change. This chapter is a selective, not-always-chronological look at some of the ways that the Museum’s exhibits have changed with the times, evolving from static displays and passive observation to immersive experiences to increased interactivity and active visitor involvement. Starting from a narrow early focus, the Museum went on to embrace the goal of “bringing the world to Denver” and, more recently, to a renewed regional emphasis and a vision of creating a community of critical thinkers who understand the lessons of the past and act as responsible stewards of the future.1
Displays and Dioramas

Construction of the Colorado Museum of Natural History, as the Museum was first called, began in 1901. Edwin Carter’s collection of Rocky Mountain birds and mammals became the nucleus for the aspiring Museum. Work progressed behind the scenes on mounting Carter’s specimens for display, and additional objects were acquired such as John Campion’s collection of crystallized gold from Breckenridge, including Tom’s Baby—the largest single piece of gold ever discovered in Colorado, still on exhibit today (Alton 2000). When the Museum opened its doors in 1908, its three floors housed displays of birds, mammals, and rocks and minerals. The top floor of the 1903 building served as an art gallery to which trustees and others gave or loaned objects of art, and Denverites referred to the Museum as the “art museum in City Park.”2 Denver’s “unsinkable” Molly Brown is reputed to have been bringing items for the Museum from Europe on the ill-fated 1912 voyage of the Titanic.3 Eventually, in 1932, the art collections were transferred to the Denver Art Museum (Fig. 2.2).

The fruits of active fieldwork and pursuit of new specimens, along with professional exhibit work including taxidermy, foregrounds construction, and background painting, soon filled the small building. By 1916 the Museum was firmly established, with an annual attendance of nearly 160,000 people, but more room was already needed. Construction of the Joseph Standley Memorial Wing, completed in 1918, gave staff three new exhibit halls, complete with electric lighting, to fill (Haglund 1990). Now new subject matter could be addressed and new kinds of exhibits installed.

Wall Frames, Glass Cubes, and Beyond

Mirroring nationwide trends based on new construction techniques, educational philosophies, and artistry, approaches to exhibiting plants and animals have changed tremendously over the years. The Walter C. Mead Ecological Hall, now called Explore Colorado, was already an exhibit gallery (the Colorado Bird Hall) in 1908. Mounted glass frames and glass-sided “cabinets of curiosities” lined the walls, filled with birds and bird eggs and illuminated by light from windows. A central opening allowed air to circulate and natural light to reach the second floor (Haglund 1990) (Fig. 2.3). In 1936 the windows and floor opening were covered, and Mead Hall became the Museum’s first exhibit hall to have modern dioramas with compound-curved walls and ceilings, and even interior fluorescent lighting—newly patented in 1941 (Alton 2000). The theme was to be “life zones,” with dioramas sequentially representing locations and elevations around Colorado, one in neighboring Arizona (Fig. 2.4).

Museum staff went on targeted collecting trips in the late 1930s and early 1940s to fill the renovated hall, bringing home mammals, birds, casts of rocks and outcroppings, plants, and field sketches of the places that would
be re-created for visitors to see through large, tilted glass windows. The curvature of the diorama shells, skilfully constructed of plaster smoothed over expanded metal lathe, made the art of background painting vastly more complex. Out of public sight, talented artists like C. Waldo Love filled their curved plaster “canvasses” with realistic scenes that captured every detail of the sky, clouds, landforms, plants, and—crucially—the spatial perspective from a visitor’s point of view (Alton 2000) (Fig. 2.5).

Even farther behind the scenes, a tremendous amount of work went into creating the three-dimensional components of the dioramas. Skilled tanners and taxidermists tanned animal skins and stretched them over unique hand-shaped body forms, making the mounted specimens as lifelike as possible—although usually in static, trophy-animal poses (Fig. 2.6). In that day and age, taxidermy body forms contained asbestos, and specimens were treated with arsenic and DDT to ward off insects—unknowingly posing a danger to exhibit artisans as well as pests.

From 1936 through 1940 efforts to bring the country out of the Great Depression were a great boon to the Museum. Workers funded by the federal Work Projects Administration (WPA) more than doubled the staff’s size. In addition to rearranging and re-cataloging varied collections and chipping fossils out of rock, WPA workers in a backroom workshop formed and painted “accessories”—the remarkably lifelike grasses, plants, stems, leaves, and blossoms that make up diorama foregrounds—a vital role later filled by volunteers. They produced 56,031 leaves and 5,200 flowering stalks in 1937 alone; by 1940 there were three times as many (Alton 2000).
As director, Alfred M. Bailey oversaw tremendous development and expansion of the Museum from 1936 to 1969, beginning with the transformation of the Colorado Bird Hall into the Walter C. Mead Ecological Hall.

Well, it was just a gallery, you see. There was a well in the middle and around that railing was a collection of Colorado birds and the Bradbury bird eggs. We had daylight lighting, of course, and in between the windows were these little cases with exhibits.

One day, walking around the top floor here, Walter Mead [trustee] said, “I’ve never liked this hall. If you want to do something about it, I’ll help pay for it.”

When Walter … offered to help, that was the beginning of the ecological hall. We decided we wanted to show the life zones of Colorado … from the Alpine clear down to the Upper Sonoran, and the Lower Sonoran in Arizona.

Waldo Love painted every one of the backgrounds in this hall, just from the sketches he’d make in the field. Instead of blocking it in first, he’d start at the left side and paint clear around to the right!

Bob [Robert Niedrach] started as a taxidermist in 1913 and became one of the best field men in Colorado. He supervised the diorama installation and trained all those WPA workers to make the plant materials.

We had women making the accessories. And actually they made a car load. All of those leaves were made by these really wonderful people we had working for us.
Painstakingly placed on wooden foreground flats, diorama foregrounds work in concert with the background painting to create the illusion of seamless perspective and to re-create the habitats of the stars of the show: the animals themselves (Fig. 2.12).

Realistic and high-quality habitat dioramas are early examples of immersive—albeit passive—museum environments, and quickly became a Museum hallmark and tradition. Many more dioramas, reputed to be some of the best in the world, were completed at the Museum over the years, including the South America Hall, completed in 1929 and redone in compound-curved diorama shells in the 1950s; the Australia Hall in 1959 and South Pacific Islands Hall in 1962–1966; the Galápagos Islands dioramas in 1968; the Alaska Hall in 1970; the North American Wildlife Hall in 1982; and the Helen K. and Arthur E. Johnson Botswana Africa Hall in 1983.

**Dinosaurs and Prehistoric Mammals**

Diorama halls were not the only exhibitions to be created in the Museum’s early years. By about 1915 the Museum was ready to try its hand at paleontology, and over the succeeding years many dinosaur and mammal fossils and fossil skeletons were collected and placed on exhibit. The Museum’s first fossil-hunting crew collected 800 specimens from the Florissant fossil beds in central Colorado in 1915. The same year, the remains of a *Diplodocus* were discovered near Cañon City and donated to the Museum. Over the years, more and more fossils and skeletons were acquired, including the official state fossil, *Stegosaurus*.

The family of Harold James Cook, curator of paleontology in the 1920s, owned land at Agate Springs, Nebraska, which became the source of many of the Museum’s first fossil mammal skeletons. In 1930 fossil skeletons of a dire wolf and saber-toothed cat, among others, were articulated and put on display, soon followed by many other skeletons, including some from California’s La Brea Tar Pits. In 1932 a huge Nebraska mammoth was articulated on the first floor in what would become the Fossil Mammal Hall (Markman 1961). A *Diplodocus* skeleton arrived in 1934 and 1935, bones still surrounded by their rock matrix from Dinosaur National Monument.
Vertebrate paleontology preparator Philip Reinheimer, along with other staff members and WPA workers, prepared and articulated the huge skeleton in record time (Fig. 2.13).4

Because fossils and skeletons were put on exhibit one at a time, it is difficult to say just when either the Fossil Mammal Hall or the Dinosaur Hall “opened,” but by 1938 the Museum’s signature Diplodocus was on prominent display, and in 1939 the Stegosaurus skeleton joined other North American dinosaurs. The Fossil Mammal Hall was available to the public around 1947. Artist Mary Chilton Gray painted a series of well-known murals above the exhibit cases, fleshing out the fossil skeletons, placing them in landscapes, and putting the finishing touches on both the Dinosaur and Fossil Mammal Halls (Fig. 2.14). With some relocations, changes, and additions, both halls remained essentially the same for some 50 years.

Between the opening of Prehistoric Journey in 1995 and the beginning of Space Odyssey’s installation around 2001, the first-floor area previously devoted to dinosaurs became a “Curator’s Choice” hall, with wall cases devoted to individual curators and their research, to highlight the science behind the scenes and put a human face on the Museum’s science. The Fossil Mammal Hall and part of the old Dinosaur Hall were subsequently converted to collections storage, but likely will again become public exhibition space as the Museum proceeds with upcoming initiatives.

More Room for Exhibits

From 1917 through today, the need for more room has been a recurring refrain in the Museum’s history. Complementing the Standley wing, the William H. James Memorial Wing opened to the south of the core building in 1929. In 1940 Phipps Auditorium opened. In 1947 Denver voters approved a $350,000 bond issue for construction of another addition, this one to the west. When dedicated in 1953, it provided a new entrance, a scenic lounge, and lots more exhibit space—including a temporary exhibits room. Two wings completed in 1968 provided even more room for growth. Spurred by a $1 million gift, the southwest Boettcher Foundation Wing created space for the Charles C. Gates Planetarium and planned halls of North American and African wildlife. The northwest wing paved the way for what are now Ricketson
Auditorium, offices, collection areas, and exhibits such as the Mary W. A. and Francis V. Crane American Indian Hall, now known as North American Indian Cultures. This remained the configuration of the Museum until another major expansion, in 1987 (Alton 2000).

**Breaking the Million Mark**

Starting in 1972 visitors could purchase Museum memberships. As financial support from the City of Denver dwindled in the early 1980s, memberships became increasingly important to the Museum’s financial health, and the eventual reduction of government funding forced Museum administrators to begin charging admission in 1982 (Haglund 1990). Since both general attendance and memberships are driven by the attractions the Museum has to offer, it is not surprising that the 1980s saw a steep rise in the number and importance of temporary exhibitions. As of this writing, the Museum has reached an all-time high of more than 64,000 member households.5

Some were traveling exhibitions, such as 1983’s *The Unknown Ansel Adams* and 1984’s *Folk Toys of Japan*, which occupied the Assistance League Gallery in what is now the Naturalist’s Nook classroom on the third floor. Others included a Hopi Snake Dance exhibit and *Colorado Archaeology: Riddles from the Past*, which were created in house in 1984. With space at a premium, some, such as 1984’s *Chaco Phenomenon*, 1985’s *Ebla to Damascus*, 1986’s *Cenote of Sacrifice*, and 1987’s *After Man* and *In Search of the Mary Rose*, were installed within existing diorama halls and permanent galleries (Fig. 2.15). Increased and varied temporary exhibition offerings paid off, with paid Museum attendance exceeding 1 million

![Figure 2.15. Cenote of Sacrifice was installed in a diorama hall; note the coved ceiling and terrazzo floor.](image)
in 1982—the first time since 1946 that the Museum saw that many visitors—and again in 1984, rarely to fall below the mark.

Not surprisingly, starting around 1983 the major—though far from only—focus of Exhibits Department staff shifted from permanent to temporary exhibitions. Since its opening in 1986, there have been more than 40 Museum-enhanced exhibitions in the Allan R. Phipps Changing Exhibits Gallery. Between 1980 and 1997, more than 50 other in-house and traveling exhibitions occupied smaller galleries around the building, such as the Assistance League Gallery—both when it was on the first floor and in its initial third-floor location—and the third-floor Johnson Gallery (which later became the third—and last—location for the Assistance League Gallery and eventually home to the permanent Egyptian Mummies exhibition). When the IMAX Theater was installed, a number of complementary tie-in exhibitions were created in house for the IMAX lobby, such as To Fly, Grand Canyon, and Speed. Countless more small in-house temporary exhibits have been in other locations, such as the former Lifeways Gallery in the center of North American Indian Cultures, the interior of Botswana Africa Hall, and portions of the former Hall of Ancient Peoples and Perspectives Gallery in the former west entrance lobby, both now part of Space Odyssey. Almost all of these smaller temporary venues were lost to more permanent uses over the years, but the Leprino Family Atrium on the west side is now a venue for twice-yearly two-dimensional art exhibitions that highlight the relationship between art and science.

Figure 2.16. Botswana Africa Hall’s 2,700-square-foot Savuti Crossroads diorama, the Museum’s largest.
The Last Wildlife Hall Dioramas

The opening of the Helen K. and Arthur E. Johnson Botswana Africa Hall in 1981 represented the completion of an exhibit commitment made in 1966. The Savuti Crossroads diorama, the last to be completed in the hall and the Museum’s largest, contains 22 mounted mammal specimens including baboons, greater kudu, sable antelope, steenboks, warthogs, and zebras in a savanna grassland environment (Fig. 2.16).6

The Boettcher North American Wildlife Hall opened to the public in 1982, with completion of exhibit cases and interpretive panels complementing the hall’s recently finished dioramas. Exhibits staff who worked here at the time of its planning and completion think of it as the first Museum wildlife hall to be conceived of three-dimensionally as an interpretive exhibition and more complete visitor experience.7

In 1983 an all-new pronghorn diorama was completed in the Colorado Mammal Hall, and a new white-tailed deer diorama—the Museum’s first to show signs of human presence, in the form of a cultivated cornfield—was finished in 1984. Though these were the last wildlife dioramas to be produced at the Museum, future efforts refurbished foregrounds and replaced specimens. And the diorama sensibility was far from gone, with dioramas reconstructing past life still to come in Prehistoric Journey, and even of future life in Space Odyssey.

The Blockbuster Revolution

In 1982 Denver voters passed a $20 million bond issue to modernize the Museum’s aging facilities and expand the building eastward. The original 1903 building was demolished in 1985 to make room for 50-foot-high atria that would connect two new wings to Phipps Auditorium and the rest of the Museum. Completed in 1987, the project moved the main entrance to the north side for the first time and added an attractive new retail shop as well as the popular T-Rex Cafe (Haglund 1990). The new wings also provided room for a new exhibition about the history of life on Earth, Prehistoric Journey, and classroom and exhibit space for the Hall of Life, which merged with the Museum in 1987. A major driving force for the expansion was the creation of a large gallery capable of housing major temporary exhibitions—so-called blockbusters, for their ability to draw crowds willing to circle the block for the chance to attend once-in-a-lifetime experiences.
Record-Breaking Attendance

The nationwide blockbuster phenomenon came to Denver in a big way with the Museum’s hosting of Ramses II: The Great Pharaoh and His Time (Fig. 2.17). This powerful pharaoh ruled Egypt for 67 years, from 1279 to 1213 BC, and was responsible for many of the monumental temples and palaces associated with ancient Egypt. The exhibition presented a priceless collection of 71 artifacts loaned from the Egyptian Antiquities Organization, including a 57-ton colossal statue of Ramses. Nearly 1 million people visited the exhibition during its five-and-a-half-month stay at the Museum, from October 1987 to March 1988; the downside of such dramatic attendance is the “shadow effect,” which adversely affected Museum attendance for many months after Ramses II closed its doors.

Planning for Ramses II began in 1985. The 30,000-square-foot exhibition was the first to open in the newly constructed addition, occupying the Allan R. Phipps Gallery, the Morrison Atrium, and the first-floor southeast wing. To enhance and give context to the experience, Museum staff designed and produced an ancient Egyptian environment complete with magnificent pillars, models of palaces, and replicas of tomb art from Ramses II’s time. A visitor favorite was the lily pond, with water lilies and papyrus growing in the water, surrounding a statue of Horus and Ramses as a child. Interpretation included a mini-theater video presentation, maps of Egypt, a timeline showing when Ramses lived and ruled Egypt, and an audio tour narrated by Charlton Heston.

The colossus of Ramses, which welcomed Museum visitors in a monumental way, was brought to Denver in three massive pieces—each on its own custom-appointed truck—from Memphis, Tennessee. A special reinforced platform and new service door were created to handle its size and weight (Fig. 2.18). Specialized rigging equipment was required to reassemble the pieces, and it took five days to install and seam the colossal statue.8

Museum staff also created an Egyptian bazaar in the northeast atrium, evoking the wares, sights, and sounds of the Middle East, to complement the exhibition. Artisans and craftsmen from Egypt demonstrated their skills, some little changed from Ramses’s day. Visitors could observe a potter at work, copperware being decorated, rugs being handwoven, gold jewelry being custom-made, and the intricate techniques of inlaying mother-of-pearl into wooden objects. Demonstrations of papyrus-making fascinated the crowds—and of course many items were available for purchase (Fig. 2.19).

The Museum’s volunteer program reached new heights with Ramses II. More than 1,300 volunteers—178 each and every day—did everything from talking with visitors within the exhibition, helping to sell wares in the bazaar, guiding tours, and checking coats.9 In fact, to this day we could not do what we do without the many volunteers who facilitate visitor experiences in galleries and exhibitions throughout the building, and the Museum’s
phenomenally successful volunteer program is regarded as a national and even international model.

Reflecting the popularity and importance of this Museum and other scientific and cultural organizations in the region, in 1988 voters in the metro area approved the farsighted creation of the Scientific and Cultural Facilities District (SCFD), a 0.1 percent sales tax to help support beloved institutions that is still in effect today—to the envy of museums in many other metropolitan areas.

**Major In-House Effort**

The Museum’s next major blockbuster, the 40,000-square-foot *Aztec: The World of Moctezuma*—developed completely in house and the most comprehensive exhibition of its kind ever presented outside Mexico—opened in September 1992. By the time it closed in February 1993, more than 700,000 people had visited the exhibition—and it won the 1993 American Association of Museums (AAM) Curators’ Committee Exhibit Competition. This unique exhibition was the result of a long-term collaboration between the Museum, the University of Colorado Boulder, Mexico’s National Museum of Anthropology, and the Templo Mayor Museum of Mexico City. The concept originated in 1983 during a series of discussions among Jane S. Day, David Carrasco, and Eduardo Matos Moctezuma. As part of the exchange, the Museum assembled an exhibition called *The Navajos: Indians of the Southwestern United States*, which was presented at the Templo Mayor Museum in Mexico City in 1991.

---

Figure 2.20. *Aztec: The World of Moctezuma* featured colorful reconstructions and Mesoamerican artifacts.
Whatever It Takes

The internal structuring of institutions is always in flux, flexing to meet the needs and the times, and the Museum is no exception. In its early days, nearly everyone was involved in the business of creating exhibits, and in fact, in creating an entire museum from the ground up. “Preparateurs” and “field men” abounded, working to dig, chisel, clean, articulate, and display fossils and fossil skeletons; to find, identify, sort, and arrange rocks and minerals; and to collect, skin, tan, mount, and pose animals—everything it took to prepare the Museum’s exhibits. The Museum’s directors and curators oversaw exhibit content, and curators wrote the labels.

Taxidermy and sculpture were a huge part of the exhibits business for many years as new dioramas were created and new wildlife halls opened. Al Rogers, Jack Putnam, Kent Ullberg, and Henry (Wichers) Inchumuk were among the talented cast of characters, each an artist in his own right. In the 1930s and long beyond, several departments had their own exhibit preparators and technicians. The roster was joined by the Accessories Department, where artificial foliage was produced for the Museum’s dioramas and displays (Fig. 2.21).

Figure 2.21. WPA workers creating artificial foliage in the Accessories Department.

The world of exhibit preparation and production changed under the leadership of Arminta “Skip” Neal, at a time when the museum world was beginning to think about exhibits in more modern, visitor-centered ways. In a farsighted move that resulted in high quality—and most important, consistency—she brought the Museum’s exhibit experts together into a multitalented, professional department. This legacy was carried forward by a protégé, Alan Espenlaub, who started as an exhibit preparator and later served as exhibits director from the late 1970s until 1992.

The Espenlaub years saw a tremendous amount of change. By 1984, with no new dioramas being built, tanning, taxidermy, and foregrounds were no longer needed. Reshuffling and layoffs ensued. The Exhibits Department consisted of six preparators, several graphic designers, a photographer, and a videographer—a small staff that accomplished a great deal of work in a creative environment that was much more insulated than it soon became. With the shift in emphasis from permanent to temporary exhibitions came a shift from all preparators doing aspects of everything—from developing, designing, and writing to building, wiring, and installing to cleaning and maintenance—toward specialization. Existing staff found themselves gravitating toward their strengths, such as exhibit design, content development and writing/editing, project coordination, maintenance and upkeep, and so on.

Also during these years, the department strengthened a commitment to cross-departmental teamwork, for which the Museum is well known in the museum field—particularly in terms of exhibition content development. A far cry from the days when curators wrote all the labels and even from the 1980s, when curators still drafted labels then edited by exhibit staff, exhibition content in the 1990s was developed much more collaboratively. Mirroring nationwide trends pioneered by the Field Museum in Chicago and embracing the relatively new field of visitor studies and evaluation, the exhibition professions of visitor-centered content
development and interpretive writing were born. In 1994 the Exhibits Department and Prehistoric Journey project team created a process document, “Triad-Based Interpretive Content Development of Medium-to-Large In-House Exhibitions,” laying out roles, responsibilities, and authority for project team representatives of the three major players, the Exhibits, Research and Collections, and Visitor Programs Departments. With some procedural and nomenclature changes, the addition of Technology Department representation, and increased project management oversight—along with a gated approval process by senior leadership and trustees—this tried-and-true model has become part of how we operate and a source of great success for the Museum.

For a brief period, the Museum’s exhibits team also developed, designed, and fabricated exhibitions for Rocky Mountain National Park, Kawuneeche Visitor Center, and Moraine Park Museum (Fig. 2.22). As the Museum took on more and larger temporary exhibition challenges, the department grew, reaching a staff of around 40 in the early 1990s. Aside from the “shadow effect” that followed Ramses II, times were good. New specialties, such as technology and visitor studies and evaluation, were added. The foregrounds and sculpture groups—though not taxidermy—were rebuilt, and both permanent and temporary staff were hired to take on the tasks of creating Prehistoric Journey. At its height, the department encompassed some 60 people, not counting subcontractors. Then, at the end of 1995, the axe began to fall.

Again mirroring nationwide museum trends, including the outsourcing of major projects, staffing levels were reduced over time to current levels, where they have remained for a decade or more—but the commitment to teamwork remains the same. Currently, the department consists of 18 full time equivalents (19 individuals): a three-quarter-time director, Jodi Schoemer; an office manager, Kate Richter; three project managers, Lisa Decker, Jamie Klein, and Bryce Snellgrove; two three-quarter-time and one full-time exhibit developer/writers, Nancy Knepper, Laurel Navo, and Frances Kruger; two exhibit designers, David Pachuta and Chad Swiercinsky; one full-time and one three-quarter-time graphic designers, Salle Tulchin and Lisa McGuire; two graphic design and production assistants, Tyrone Beall and Lauren Yandik; one graphic production artist/shop manager, Rob Jurado; one gallery installation coordinator, Victor Muñoz; one fabricator/installer, Todd Norlin; one fabricator/production shop manager, Kevin Johnson; and one exhibit and lighting maintenance coordinator, Jack Leyba (Fig 2.23). Technical exhibit maintenance, videography and digital media development, photography, print graphics, and visitor studies and evaluation, all specialties that once resided in Exhibits, are currently in other departments.

Figure 2.22. Museum-produced exhibits at Rocky Mountain National Park’s Moraine Park Museum.

Figure 2.23. Exhibits Department staff in 2013.
The Aztec exhibition interpreted the people, their culture, and their empire as it existed in the early 16th century under Moctezuma II, the last great Aztec ruler (Fig. 2.20). The theme of the exhibition was a walk through the great capital of Tenochtitlan at a moment in time just before the arrival of Hernán Cortés and his Spanish conquistadores in 1519. Through the display of artifacts loaned by Mexican museums and illustrated text panels, original murals, models, and dioramas; videos; and an audio tour created by Museum staff, the achievements and accomplishments of the Aztec people came to life for Museum visitors. Visitors journeyed through the floating agricultural islands—called *chinampas*—at the city’s outskirts, through the city streets to the great marketplace at Tlatelolco, and eventually to the sacred precinct and the Templo Mayor—the physical, political, and spiritual heart of the Aztec empire. This highly immersive experience even went beyond *Ramses II* to set a new standard for temporary exhibitions at the Museum, continuing to influence many later exhibitions and exhibit enhancements such as the Viking Village (Fig. 2.24), a village-themed family activity area produced in house in 2001 to accompany *Vikings: The North Atlantic Saga*, and even the 2011–2012 Exhibits Department collaboration with the Science Museum of Minnesota to develop and produce a traveling exhibition about the Maya.

**Allure of the East**

For its next blockbuster the Museum turned its sights to the Far East, hosting *The Imperial Tombs of China* from November 1996 through March 1997 (Fig. 2.25). This exhibition introduced the Museum’s audiences to the splendors of Chinese dynasties. Four of the 8,000 ancient clay soldiers and two horses from the “silent army” guarding Qinshihuang—the first Chinese emperor—came to the Museum, along with a 2,000-piece jade burial suit, sewn together by two pounds of gold thread, and a wealth of other artifacts (Friedland 1996).
Keeping up with the Times

One way to think of the evolution of exhibits is to look at permanent Museum exhibits through the lens of visitor activity level: passive, interactive, personal, interpersonal, and personally active. For many years, exhibits at the Museum and elsewhere were pretty much passive affairs, requiring lots of looking and reading. They appealed mostly to experts, people who were already interested in the subject matter, or those who had guests in from out of town. The Museum’s first attempt at hands-on interactivity in the mid-1980s, which is—somewhat embarrassingly—still on exhibit as of this writing, was the Mammals, Monotremes, and Marsupials exhibit adjacent to Australia Hall. Push buttons reveal backlit transparencies, and visitors are asked to match answers to questions (Fig. 2.26).

Figure 2.26. Interactives with the Mammals, Monotremes, and Marsupials case.

1991: Explore Colorado, with discovery boxes associated with each diorama, a menu-driven video kiosk, touchable bronze sculptures, and a push button interactive map in the center of the hall, represents another step toward interactivity (Fig. 2.27).

Figure 2.27. Explore Colorado’s interactive map and central “preorganizer” structure.

1994: Edge of the Wild’s on-demand animal sounds, touch specimens, hands-on opportunities, interactive video activities, and talk-back board make for a very interactive experience—with a touch of the personal (Fig. 2.28).

2003: Space Odyssey’s visitor-choice, almost science-center environment is highly interactive—both mechanical and digital—and the Museum Galaxy Guides and staff make it an interpersonal experience (Fig. 2.29).

Figure 2.29. A Museum Galaxy Guide works magic with young visitors in Space Odyssey.

2009: Expedition Health takes all these attributes and goes them one better, with a large number of digital interactives and an emphasis on both personalization and personally, physically active experiences. This continuing evolution, driven largely by audience awareness and technology—staying just ahead of what people have at home—is a pretty interesting place for a museum to be (Fig. 2.30).

Figure 2.30. Visitors are encouraged to engage in physical activity in Expedition Health.
Early Chinese emperors spent much of their lives getting ready for their deaths. Artifacts in the exhibition represented nearly 2,400 years of Chinese culture and objects from seven dynasties, from the warring states of 75 BC through the Han and Ming dynasties and the Qing dynasty, which ended in 1911. Galleries throughout the exhibition were designed to replicate the layout of tomb complexes, putting objects in context and immersing visitors in the atmosphere and environment of imperial tombs—complete with a reconstruction of the throne room of the last emperor at Shenyang Palace. Totaling nearly 30,000 square feet, Imperial Tombs occupied not just the Phipps Gallery but also the entire second-floor space below.11

In addition to the splendid artifacts, one of the most appreciated aspects of the Museum’s presentation of this exhibition was the sense of context imparted by the elegant, spacious design and the fact that it was, like Ramses II, a rich experience replete with food, film, merchandise, and ambience. In fact, the Museum did so well—attracting more than 700,000 visitors—that the next venue, the Orlando Museum of Art, purchased many Museum-developed props, videos, and graphic panels. This is a phenomenon that continues to this day, largely because the Museum has maintained the tradition of enhancing each temporary exhibition with everything from props and immersive elements to improved graphics and interpretation to facilitated cart activities to specimens and artifacts from our own collections and beyond.

The BODY WORLDS Phenomenon
In 2006 the nationwide human-bodies exhibit craze came to Phipps Gallery with BODY WORLDS 2: The Anatomical Exhibition of Real Human Bodies, showcased at the Museum from March through July 2006 (Fig. 2.31). BODY WORLDS 2 represented a type of blockbuster for the Museum unseen since Ramses II, Aztec, and The Imperial Tombs of China. BODY WORLDS 2, the brainchild of Gunther von Hagens, was organized by the Institute for Plastination of Heidelberg, Germany.

The overall goal of BODY WORLDS 2 and its associated programs was health education, and it resonated well with the health-conscious Rocky Mountain region. The exhibition included 28 whole-body plastinates—donated bodies preserved through a patented plastination process and dissected to highlight specific systems or aspects of the human body. Additionally, approximately 200 individual organs and backlit body slices were displayed in 40 cases. An audio guide, made available through the Institute for Plastination, was available in both Spanish and English to provide deeper insight about the specimens.

The popular camel and calf whole-body plastinates were featured on the second floor bridge, just outside the IMAX Theater lobby. An 800-square-foot gift shop was located at the end of the exhibition, selling primarily BODY
WORLDS 2 merchandise. Nearly 700,000 people saw the exhibition during its four-month stay.  

Capitalizing on the success of the first BODY WORLDS exhibition, the Museum hosted another: von Hagens’s BODY WORLDS and the Story of the Heart. The exhibition featured more than 200 authentic specimens, including entire bodies and individual organs, focused on the first functioning organ to develop after conception—the heart—which nourishes, regulates, and sustains our bodies throughout our lives. Like BODY WORLDS 2, the exhibition was an unforgettable anatomy lesson that allowed visitors to see and understand physiology and health, and gain new appreciation and respect for what it means to be human. Though not as well attended as the first, more than 300,000 people experienced the exhibition from March through July 2010.
Major Changes, Honored Traditions

Over the years, many new permanent exhibitions have been added to the Museum’s varied menu of choices, and even more have been renovated, relocated, or even replaced. With each new project, Museum staff looks for ways to blend respect for tradition and understanding of visitor needs with the latest exhibition techniques and educational philosophies. Dioramas have been the Museum’s mainstay for many decades, but today’s exhibitions incorporate elements unimagined not all that long ago. Exhibits staff team up with curators, educators, and others to create memorable, educational, and meaningful experiences for visitors.

Arminta “Skip” Neal, a Leader in Exhibitions

Arminta “Skip” Neal (1921–2003) helped pave the way for women in traditionally male fields, creating innovative exhibitions at the Museum and fostering the careers of museum professionals around the country and the world (Fig. 2.32).

In 1943 Neal received a fine arts degree from UCLA and went on to serve two years in the Women’s Army Corps during World War II. She then went to work at the Denver Art Museum as a scientific illustrator for Eric Douglas, curator of Native American art, in 1947. Douglas greatly influenced Neal’s later work in exhibit design.

In 1950 Neal began working at the then-Denver Museum of Natural History in the Archaeology Department, under the renowned H. Marie Wormington. Neal’s talents were quickly recognized, and she became the curator of graphic design. By 1976 she was promoted to assistant director, heading up exhibitions work at the Museum.

Neal is best known for pioneering, innovative interpretive exhibit design. She authored several award-winning “how-to” books: Cigar Box Dioramas (1961), Help for the Small Museum: Handbook of Exhibit Ideas and Methods (1973), and Exhibits for the Small Museum: A Handbook (1996). She also co-authored, with Wormington, The Story of Pueblo Pottery (1974). During her tenure at the Museum, Neal designed and oversaw installation of Crane Hall, among other noteworthy exhibitions, and also managed to instruct museum exhibit methods courses as a Fulbright professor in Lima, Peru, and in Nigeria for UNESCO, as well as here in the United States. Neal’s proudest accomplishment was her instrumental role in the establishment of the Museum’s Native American Advisory Council, one of the country’s first.
Two Cranes to Build One Hall

The exhibition now known as *North American Indian Cultures*, on the second level of the Museum, owes its existence largely to Mary and Francis Crane. From 1951 to 1968, the Cranes collected some 12,000 Native American artifacts, purchased from other collectors, Native artists, trading posts, dealers, and galleries. They displayed their treasures in their Southeast Museum of the North American Indian in Marathon, Florida, in the Florida Keys. When the Cranes decided to find a new home for their collection in 1968, they chose Denver.\(^\text{13}\)

Thanks to the Cranes’ generosity, the Museum went overnight from owning a small collection of North American ethnographic materials to curating the largest such collection between Chicago and Los Angeles. Crane Hall opened in phases from 1974 through 1978, with Arminta “Skip” Neal designing and guiding the process (Alton 2000). Since then, especially between 1992 and 2012, staff have added new interpretive panels, rotated objects on and off display to ensure their long-term preservation, re-created a Navajo hogan and weaving platform, and reinterpreted objects and cultures with more cultural sensitivity and awareness. Like the cultures it depicts, the hall constantly evolves while remaining true to its heritage (Fig. 2.33).

In addition to several splendid miniature dioramas—artifacts in their own right—that depict Native American life in the past, the hall boasts the only two life-size dioramas in the Museum currently featuring Native people and cultural materials. In one, a visitor arrives in the early 1860s at a Cheyenne encampment just 20 miles east of the Museum, along Coal Creek (Fig. 2.34). As visitors wander throughout the hall, they are immersed in environments that show how Native people in places as diverse as Arctic coastlines, southwestern deserts, and eastern woodlands gathered, cultivated, and hunted food and built homes using the resources...
Frances Kruger, Liz Clancy, and Kristine A. Haglund

of their environments. Unfortunately, construction of the Leprino Family Atrium in 2003 made North American Indian Cultures more difficult for visitors to find. A future Museum initiative calls for developing an entirely new exhibition, internally referred to as Human Journey or The Human Experience.

Although much of the current exhibition focuses on the past, woven throughout are ways in which modern Native Americans keep their cultures strong and continue to observe their people’s traditions. Various tribes, part of the Museum’s Native American Resource Group, helped develop the hall and ensure Native perspectives were included. This dialogue renews and sustains the relationship between the Museum and Native peoples.

Marvelous Gems and Minerals

The Museum’s original mineral hall typified the earliest styles of museum exhibitry: flat-topped wooden display cases and labels with tiny type on cream-colored card stock, an old-style crystal cavern display, a drill core specimen in a long case, a fluorescent minerals area, and a few meteorites for good measure. A complete renovation of the hall into the Coors Mineral Hall, carried out from 1978 to 1982, was both a labor of love and created one of the Museum’s first “modern” exhibitions. One of many noteworthy aspects of the hall is its breathtaking optical-illusion-at-its-finest crystal cave display (achieved with skillfully placed mirrors) (Fig. 2.35).

Periodic additions over the years continued to improve the hall and add immersive elements. The Colorado Mining section at the back of the exhibition’s winding hallways, completed in 1985, takes visitors through mine-themed environments and exhibits (Fig. 2.36). The exquisite gems section adds glittering appeal. Alma King, the magnificent rhodochrosite specimen from the Sweet Home Mine, added in 1997, is displayed within a dramatic cave-like area reached through a simulated mine shaft. Diane’s Pocket, a spectacular “vug” of aquamarine crystals, was installed in 2006, bringing the hall to a new level of excellence.

New Life for an Old Hall

Now as in the past, it takes nearly an army of people to create an exhibition. Thanks to the efforts of these dedicated people, many temporary and permanent Museum exhibitions have been awarded national honors, continuing the Museum’s long-standing tradition of producing high-quality exhibitions. Extensive renovations transformed the Mead Ecological Hall into Explore Colorado in 1991, an effort that won the American Association of Museums Curators’ Committee Exhibit Competition in 1992. The two-year project was funded by the Denver Metropolitan Area’s SCFD 0.1 percent sales tax. It set new standards for Museum-wide teamwork, diorama refurbishment methodology and techniques, state-of-the-art exhibitry and educational
effectiveness, and the delicate business of tampering with a venerable, aging exhibit hall. Period architectural detailing, such as the beautiful cove ceiling, was restored, and the dioramas themselves were painstakingly cleaned and refurbished (Fig. 2.37). One severely damaged diorama—the great blue heron group—was almost completely replaced.

Around this time the Museum was becoming more and more aware of the importance of visitor expectations, comfort, and needs. A sterile, cavernous exhibit hall was transformed into a spacious yet intimate one, incorporating structures for exhibit interpretation and providing visitors with seating, interactive experiences, and other amenities while maintaining a historic flavor and reference to a glorious past (Alton 2000) (Fig. 2.38). Also in recognition of the importance of clarity for visitors, the exhibit team—immortalized in composite as the fictitious naturalist-artist-explorer C. Moore—developed a set of specific educational objectives.

The interpretive challenge was to interpret the existing dioramas—and Colorado’s ecosystems—in such a way as to draw attention to environmental interactions as well as individual species, to interest visitors in absorbing further information, to underscore general ecological themes, and to help visitors experience the entire exhibition in more meaningful ways, thereby better understanding Colorado. Curators conducted original research on Colorado’s ecosystems, transforming the old “life zones” concept into a more fluid understanding of environment-species dynamics.14

Building on Success

Edge of the Wild, an exhibition that resulted from refurbishing the Charles Boettcher Colorado Mammal Hall, was the second major diorama hall renovation project undertaken with SCFD funding. Project staff took what
they learned from *Explore Colorado* a step further, focusing not just on interpretation but on increased interactivity and accessibility—resulting in a 1996 American Association of Museums accessibility award. Extremely innovative in its day, the exhibition includes custom-designed disabled-access seating and such visitor-involvement opportunities as a talk-back board asking visitors to record their own wildlife encounters and experiences, an animal tracking video game, touchable objects, and numerous other opportunities for direct visitor engagement (Fig. 2.39).

Taking its cue from the cornfield in the white-tailed deer diorama, *Edge of the Wild* asks visitors, “Whose backyard is it, anyway?” The principal theme of the exhibition—embodied in the hall’s original dioramas—is how Colorado’s large mammals survive in an environment that is increasingly altered by human activity. Several zoological specimens were replaced in the process, substituting a new bison and mountain lion in more active and dramatic poses for
animals that had previously been on display, but now needed to be better safeguarded for posterity (Fig. 2.40).

How Dare You Move the Dinosaurs!

Another major new permanent exhibition opened its doors to the public in 1995. Tackling evolution head-on, *Prehistoric Journey*—affectionately known as “PJ”—involved sacrilege from the beginning: gutting the first-floor Dinosaur and Fossil Mammal Halls and relocating specimens to a new location on the third floor of the relatively new northeast wing of the building. Protests of people seeking nostalgic childhood experiences to the contrary, *Prehistoric Journey*, too, won the American Association of Museums Curators’ Committee Exhibit Competition, in 1996. This exhibition is widely viewed as the last major permanent exhibition that the Museum will ever undertake entirely using in-house staff, largely because of the expense of employing the large number of people needed for such efforts.

To the great benefit of the visitor experience, the Museum hired its first in-house museum evaluator at the outset of the *Prehistoric Journey* project to work with the cross-departmental in-house team. Explicit goals and objectives were determined early in the process. Visitor studies and museum evaluation, then a new and growing field, was beginning to reveal a gold mine of information about what people know and don’t know, are or are not interested in, and how best to reach them and give them the kinds of
A Character among Characters

Sculptor and taxidermist Henry Inchumuk, one of the Museum’s most colorful characters and sculptor, taxidermist, and curator from 1947 to 1981, was born Henry Wichers in 1921 (Fig. 2.43). In 1938, when he and his family came to Denver for a vacation, he decided he wanted to work at the Denver Museum of Natural History. He embarked on a plan to learn everything he could about taxidermy: work for the renowned Jonas Brothers taxidermy studio, go to photography school, and attend the University of Denver. He followed this plan nearly to the letter—interrupted by a stint in the military that he spent hunting, collecting, and mounting specimens for special services clubs and officers. His next move was to see if he could live primitively in the wilds of Wyoming. For four winter months he hunted, camped, and lived on raw meat, getting a start on his no-holds-barred, road-kill-eating reputation (Crew 1981).

On a collecting trip to Alaska in 1957, while hunting with Eskimos off the coast, a native hunter shouted, “Inchumuk!” while staring at Wichers. Told that it meant “man who makes things alive again,” Wichers later changed his last name to Inchumuk (Lawhorn 2010). In his words, “Every … animal I do is a part of me. I put my whole soul, body, and mind into it. I try to convey that back into the exhibit so it all comes together as a story.”

Inchumuk also said that his was “the greatest job in the world … ” “I’ve traveled the globe in my work, walked 20 miles onto a glacier, photographed the awesome African elephant, and explored the sea with scuba gear and underwater cameras. These … years at the Museum have been like play to me, because it’s doing for a living what I did for fun as a boy: attempting to make animals look permanently as they did when alive.” Not surprisingly, his favorite day of the year was Halloween (Costello).

Figure 2.43. Henry (Wichers) Inchumuk in the Galápagos Islands.

experiences they expect and will remember for a lifetime. One example of the value of testing and evaluation is the evidence cases next to each diorama or “envirorama”—the Museum-coined term for an open, walk-through diorama—along Prehistoric Journey’s trail through time (Fig. 2.41). Designed to answer the question on the tip of every visitor’s tongue, “Yes, but how do you know?” and to re-create the experience a visitor might have listening to an expert paleontologist answering that question, it took many mock-ups, fine-tuned iterations, and conversations with visitors to arrive at the successful formula: “There was once an [underwater reef, tropical forest, and so on] where this [limestone quarry, dry Wyoming hillside, etc.]
is today.” Like the red circles drawn on-screen by sports commentators during a football game, hand-drawn notations point the way, and straightforward 1–2–3 lists, in simple language, explain how we know (Fig. 2.42).

Since the subject of Prehistoric Journey is nothing less than the history of life on Earth, even with carefully honing the content it became clear that more room was needed in the 10,000-square-foot space in order to tell the story. Careful sculpting of the space took advantage of every square inch, rather like building a trim yacht, and a mezzanine was added to accommodate two of the seven major sections of the exhibition, in the process allowing visitors to symbolically simulate the rise of life from the seas, complete with lighting and other experiential cues, as they ascend. Other visitor-centered innovations include content targeted to three levels of interest: discovery, exploration, and study. Discovery elements, usually on sloping panels in front of exhibit cases, are identified by a large magnifying glass symbol. They are almost always interactive or touchable, written at a fourth-grade reading level, and deal with fundamental and fascinating topics. With permission from National Geographic, study elements are always presented in a “book” format reminiscent of the instantly recognizable magazine. They deal with select topics, such as radiometric dating or the famous Miller-Urey experiment, in greater depth—and at a 12th-grade reading level. Everything else is presented on the exploration level, with an integrated mix of color illustrations, text, specimens, and interpretive media.15

Although Prehistoric Journey is standing the test of time, a cross-departmental core team ensures that time does not stand still. In addition to adding a touchscreen interactive on human evolution, a dramatic new entrance, and several other upgrades from 2008 through 2011, Museum staff recently installed a new exhibit of the famous Folsom and Dent projectile points, excavated by Museum scientists, in Prehistoric Journey—another example of paying homage to the Museum’s distinguished scientific tradition (Fig. 2.44).

Room for Improvement

Until 1997 two Egyptian mummies—one in a closed coffin—were housed in a small, isolated, hard-to-find gallery on the Museum’s third floor. A single case of artifacts was interpreted only with identification labels. Three “books-on-a-wall” panels presented scholarly explanations of

Figure 2.44. The Folsom and Dent Point exhibit in Prehistoric Journey, with a human evolution interactive touchscreen beyond.
mummification practices. Not only was the gallery difficult to find for many visitors, visitor tracking studies and exit interviews showed that visitors did not understand the exhibition—and this at a time when visitor enthusiasm for and interest in both Egypt and mummification were running high (as they still do today). To solve the location challenge, and in part because of the great success of Ramses II, a new Egyptian Mummies hall opened in the spring of 1998 on the first floor, incorporating exhibit elements the Museum had created for the blockbuster. The project team set out to develop a compelling exhibition about how and why the ancient Egyptians mummiﬁed their dead. The theme would be the science of how archaeologists learn about ancient artifacts—especially when the artifacts cannot be examined by hand because of potential damage and deterioration (Fig. 2.45).

Collaboration, both internal and external, distinguished this American Association of Museums award-winning effort. The team pursued the loan of a few additional carefully selected, attention-grabbing artifacts. The two mummies that had been on display since 1985 belong to the City of Pueblo, Colorado. Their official caretakers, Pueblo’s Rosemount Museum, sent them to Denver so more people could see them; continuation of this relationship provided the centerpiece objects for the new exhibition. The Egyptian Study Society, a group associated with the Department of Anthropology, contributed both financial assistance and a unique object: an inspired reproduction of one of the coffins. Visitors can now see what the original 3,000-year-old coffin once looked like, and learn about the Egyptian Study Society members’ venture into archaeological reconstruction. Collaboration with the University of Colorado Health Sciences Center (UCHSC) and University Hospital provided the most innovative components of the exhibition: X-rays and computed tomography, better known as CT or CAT scans, of the mummies. The Center for Human Simulation at UCHSC

Figure 2.45. The Egyptian Mummies exhibition in the former Assistance League Gallery.
CHAPTER 2 — EXHIBITS An Evolution

transformed data into both two-dimensional and three-dimensional images, including the skin and funerary objects hidden inside the wrappings of the “rich woman’s mummy.” Video and other accessible interpretation tell visitors these interesting science stories. Customer satisfaction research showed that visitors rated the new experience much higher, a big leap from once being the lowest-rated exhibition in the Museum.16

To make way for the next major permanent exhibition, Space Odyssey, Egyptian Mummies was relocated to what was once the Assistance League Temporary Exhibit Gallery on the Museum’s third floor, where it continues to be a big attraction for visitors.

A more recent example of improving the visitor experience in the permanent halls is the interpretive renovation in 2010 of the North American Wildlife Hall, an effort that included new interpretive information and graphics, seating, videos and sound effects, and updating of interpretive cases. The hall’s west entrance had already been redone in 2003 when the Leprino Family Atrium opened, focusing on the theme of change and including a modern yet classical synoptic collection of large and small animals (Fig. 2.46).

Dynamic Platform for Visitor Experiences

Around the time of the Museum’s name change from the Denver Museum of Natural History to the Denver Museum of Nature & Science in 2000, and marked by a process that was fraught with internal strife but eventually yielded one of the Museum’s most popular exhibitions, Space Odyssey opened on the first floor of the Museum in 2003. A core team at the Museum worked with Delphi Productions of Alameda, California, to create the exhibition infrastructure; all programming and future enhancements were and are done in house. Adding an entirely new kind of visitor experience to the Museum’s repertoire, Space Odyssey was designed to give Museum visitors an all-new, hands- and minds-on way to explore space science, integrating exhibits and programs into a dynamic educational experience. Digital media, live performances, and a fully integrated information network highlight current space news and information, and ensure that each visit is new and different (Fig. 2.47).
Just as science centers were beginning to provide context for their visitors, natural history museums were looking to tap into the excitement of inquiry-based discovery learning. With a legacy of world-class dioramas and award-winning traditional exhibits, the Museum turned its sights in that direction. *Space Odyssey* was envisioned from the start as a seamless integration of immersive environments, hands-on interactives, live programming, and digital information working together to deliver timely, relevant, customized space science information. *Space Odyssey* is literally a “stage for the performance of space science education,” with an unusually flexible infrastructure, constantly updated information, permanent and portable interactive exhibits, and a dynamic human presence.

Bringing this complex idea to fruition required creativity and vision to plan and construct a robust digital infrastructure, compelling physical environments, a core complement of fixed and portable interactive exhibits, an opening suite of some 30 programs and demonstrations, and flexible performance stages and multiuse spaces. For example, instead of restricting performances to a single stage, *Space Odyssey* has many “virtual stages” that easily transform into performance spaces. And since extreme practicality is necessary in order to make challenging choreography appear effortless, the exhibition also required the creation of reliable behind-the-scenes processes, schedules, and techniques for staffing *Space Odyssey*, for developing new props and programs, for delivering live performances, and for living up to the promise of rapid updateability and current content. These efforts paid off, winning the Museum the 2004 Association of Science-Technology Centers Leading Edge Award for Visitor Experience, the coveted “Edgie.”

*Space Odyssey* is operationally complex and labor intensive, relying largely on updateable digital media and on people—especially on 300-plus
volunteer Museum Galaxy Guides—to shape and deliver current content. Trained to deliver demonstrations and programs, facilitate interactive exhibits, and entertain and interact with visitors, they also bring portable interactive props onto the floor to customize visitors’ experiences. The Museum—and visitors—benefit tremendously from this exceptional group’s knowledge, skills, passion, and experiences. Volunteers range from homeschooled elementary school students to retirees. They work side by side with staff, including actors and educators.

The Museum Galaxy Guides are committed to an ongoing program of learning: information on a web-based “Galaxy Guide Portal” and weekly briefings for each shift, conducted by staff and outside experts, expand their horizons and keep their knowledge and skills current and relevant. Fifteen or so Space Sciences volunteers and a small number of staff work in the Space Sciences Newsroom, keeping up with space science discoveries, images, and events, and producing topical PowerPoint presentations. These are used to train other volunteers and for display on media screens in Space Odyssey, as well as for celebrations of current events such as the Mars Exploration Rover landings, for which the DMNS was, according to NASA, the best-attended venue in the United States. Portable props, such as Phases of the Moon, the GPS Cart, and the Sundial Machine, serve as “human-based teaching devices.”

Museum Galaxy Guides also make extensive use of laptop computers, mounted on height-adjustable rolling carts, which allow them to use information from the Galaxy Guide Portal and from select sites on the Internet as source materials in response to visitor questions and interests. Laptop displays can be mirrored on large media screens (where webcasts, NASA TV, and other digital displays are also hosted), turning them into virtual stages and accommodating larger audiences.

Among Space Odyssey’s immersive environments is a realistic, scientifically accurate Mars diorama. Visitors look out on a canyon landscape with stratified rock formations based on Candor Chasma, a real site on Mars. This diorama capitalizes on the Museum’s long-standing tradition of world-class reconstructions, but it is far from static. It is a stage for “future living history,” where “astronauts” conduct live science demonstrations, communicating with visitors via two-way radio. Clever special effects simulate conditions on Mars,
contributing to scientific understanding and creating unforgettable experiences (Fig. 2.48).  

*Space Odyssey* and its success enabled the Museum to think in a new way—not to overturn what has gone before, but to add to the palette of visitor experiences at the Museum. After *Space Odyssey*’s opening, Museum attendance increased substantially, and surveys indicate that repeat attendance increased from an average of once in two years to once in six months.

**Your Human Body, Not the Human Body**

Continuing the evolutionary path of Museum exhibitions and capitalizing on the increasing potential of technology, *Expedition Health*, a permanent 10,000-square-foot health science exhibition with hands-on, full-body activities and real anatomical specimens, opened in April 2009. The theme is an expedition up Mount Evans, a beloved Colorado “fourteener.”

A Peak Pass card customizes the visitor’s experience at interactive exhibits and activity stations, where a virtual learning companion selected from a group of real-life “expedition buddies” delivers video content and provides personal connections. Specialized learning environments geared to different ages, interests, and learning styles round out the on-site experience; a customized website extends the experience at home or school. The project’s internal core team worked with Jeff Kennedy Associates of Boston, Massachusetts, to create *Expedition Health*.

In the technologically complex exhibition and on the website, the visitor experience is personalized with an electronic card reader and data collection system. At one of ten sign-in stations, visitors enter a first name, age, birth month and day, and gender on their Peak Pass and choose an expedition buddy from a group of everyday Coloradans. This information becomes part of a database that customizes and records the visitor experience at Peak Pass—activated interactive exhibits and activities, and later on the *Expedition Health* website. Visitors can access additional activities and revisit their experience online using a unique login number on their personal profile, printed at one of six sign-out stations. Regional focus is
another customizing feature, with a common thread of how the body adapts to life at 5,280 feet above sea level (Denver’s elevation) and adjusts to conditions on an expedition up 14,258-foot Mount Evans. The expedition theme weaves together science and experience, provides a compelling story line, honors the Museum’s natural history roots, and provides an element of adventure. More than 425,000 people experienced *Expedition Health* in its first year.

In keeping with increased understanding of visitor needs and behavior, five specialized learning environments in the gallery are geared to visitors of different ages, interests, and learning styles. Future Museum exhibitions are likely to include areas designed for the growing early childhood education audience, such as Tykes Peak, which gives young visitors and their caregivers a place to explore health in developmentally appropriate ways (Fig. 2.49). Summit Science Stage is a live demonstration area and hub of facilitated programs. The stage, outfitted with large flatscreens, state-of-the-art projection and audio, and a high-resolution document videocam, features science demos with hands-on activities and real specimens as well as live shows with high-quality digital media. It is hoped that the in-house Digital Media Department, created in support of *Expedition Health*, will continue to ensure a higher standard of show development and media production museum-wide. BodyTrek Theater, an immersive “object theater” combining objects, video, and props, was the first of its kind in the Rocky Mountain region. BodyTrek includes special sensory

---

Figure 2.50. Visitors and volunteers experimenting in *Expedition Health*’s Biology Base Camp.
effects and is highly participatory, making it an ideal learning environment for young teens. The experience features an expedition up Mount Evans with an expert mountain guide, illustrating how people adapt to extremes such as high elevation and exertion, and measuring how your own body responds as a sensor in your chair measures your blood-oxygen level and takes your pulse. Special effects such as wind, falling “snow,” and snapshots of the audience at dramatic moments bring the experience and science content to life. At Biology Base Camp, designed for families, visitors participate in five self-guided biology experiments (Fig. 2.50). Volunteers supply lab coats, gloves, and guidance; video tutorials give step-by-step instructions. Genetics of Taste was the first museum-based community health research lab. Guided by specially trained volunteers, visitors contribute data to an innovative National Institutes of Health project investigating the connection between body composition, genetic ancestry, and genes linked to the ability to taste bitter compounds.

To create the exhibition’s experiential underpinning, 12 expedition buddies were selected from a diverse pool of more than 500 applicants to participate—as volunteers—in a summerlong “physical and intellectual boot camp” and a real mountain expedition (Fig. 2.51). The training, expedition, and individual interviews were documented in video and stills used in interpretive graphics and media. Research shows that children in particular learn more effectively with a

Figure 2.51. Expedition Health’s intrepid group of volunteer “expedition buddies.”
companion; each visitor’s buddy delivers content and context as a virtual learning companion in professionally produced videos at Peak Pass–activated exhibits. The buddies provide a human perspective and represent ages from ten to “retiree,” as well as the diversity of the community. The process was a complex collaboration between the Museum, Jeff Kennedy Associates, community members, the National Outdoor Leadership School, the U.S. Forest Service, and filmmakers.\textsuperscript{18}

Summative evaluation data collected in the fall of 2009 indicated long dwell times and an unusually high level of engagement: nearly half the visitors stopped at more than 50 percent of the components, and more than half participated in full-body interactive experiences.\textsuperscript{19} Though the exhibition had been open a relatively short period of time, some 30 percent were making a return visit. Statistics like this helped Expedition Health earn the Museum’s second Association of Science-Technology Centers “Edgie” Award for Visitor Experience, in 2010.

Shooting for Dynamism and Quick Response

Visitor evaluations show that unless people witness things changing before their eyes, as in Space Odyssey, or that have changed since their most recent visit, they aren’t likely to think of the Museum as being truly dynamic. A number of smaller-scale efforts that strive to put new information in the visitor’s view on a quicker-term basis have been implemented in the past decade or so. As of this writing, small new exhibits are typically installed in core-competency-based changing cases every six months to a year: Anthropology’s Weckbaugh Alcove and Red Wall in North American Indian Cultures, the Earth Sciences/Paleontology changing case in Prehistoric Journey, and the Zoology case, housed in a historic mahogany exhibit case in the central atrium.
To address things that call for an even faster turnaround, the somewhat-under-the-radar Quick Response Team (QRT) started up in 1999. This large cross-departmental team takes on the task of displaying information about current events and items of topical interest. One important step for the team was to figure out what delivery mechanisms and locations were available, unlikely to conflict with other Museum programs and events, and—most important—easy to implement. Staff designed and built a rolling QRT cart that can accommodate two sides of interpretation and images, beneath which are mix-and-match modular components: a video or computer monitor, talk-back writing surface, pedestal with a vitrine for displaying objects, and/or a pedestal for touch specimens. Fifteen or so cart displays between 2000 and 2010 included such topics as Six-Billion-People Day, marking a milestone in the world’s population and including both an in-house display and a public forum in downtown Denver; wolf and lynx reintroduction; drought and groundwater; and Going Green, about the Museum’s conservation and energy efficiency initiatives (Fig. 2.52).

Other QRT delivery systems include videos, posters, programs, and facilitated carts. The most consistently successful QRT outlet is a free-standing glass-covered bulletin board that can be placed in a number of locations, complete with a graphic background that makes the display look polished while enabling quick development, production, and installation without needing to rely on graphic designers, exhibit preparators, and other busy staff. More than 50 topics have been covered thus far on this In the News bulletin board. In 2010–2011 alone, bulletin board displays covered avalanches in Colorado; the Haiti and Chile earthquakes; National Volunteer Month; a Mississippi tornado; tornados and runoff flooding because of extreme heat in Colorado; the environmental effects of the BP oil spill; beetle kill in Colorado; the Fourmile, Reservoir Road, and Fraser wildfires; spider myths; Snowmastodon ice age discoveries; the Japan earthquake and tsunami; environmental and health effects of nuclear reactor meltdown; the bedbug epidemic; and the August 2011 Colorado and East Coast earthquakes.

The 2010 discovery of ice age fossils at Snowmass Village created a need to find additional quick and relatively easy ways to keep the public informed about the exciting progress of the dig. From QRT bulletin boards and a facilitated cart in Prehistoric Journey to displays in PJ’s Earth Sciences Lab window and on the Museum website, updated Snowmastodon news has been constantly available to visitors and fans. In a testament to the flexibility and ingenuity of Museum staff, a huge, plaster-jacketed mammoth skull had a place of honor in the Museum’s central atrium, temporarily obscuring the Insects, Butterflies, and Moths exhibit. Staff and volunteers cracked open the cast and prepared the unique Clay Mammoth, known internally as “Gigantor,” unveiling the unseen and unknown before visitors’ eyes (Fig. 2.53).
What Next?

Next up is the rest of the Museum 20/20 strategic plan. From the exhibitions perspective, Museum 20/20 began with the development and installation of Expedition Health and refurbishing Phipps Gallery to the highest standards for hosting traveling exhibitions. In perfect illustration of John Campion’s 1908 words, construction has begun on the new Education and Collections Facility, which will expand the Museum to the south. The new facility will contain a second state-of-the-art temporary exhibit gallery, capable of hosting a separate exhibition or connecting to Phipps Gallery for a single extremely large one. The second floor of the new building will also house an exciting new Discovery Zone for the growing audience of families with young children age three to five. The Planet Earth initiative is the next major permanent exhibition project in the pipeline, to be followed by an anthropology exhibition currently referred to as Human Journey or The Human Experience. The Museum’s tradition of creating, hosting, and enhancing high-quality exhibits shows no signs of stopping.

Figure 2.53. Fossil preparators working on the Clay Mammoth.
Museum Conservation Department  
by Jude Southward

In 1988 the Museum completed the General/Facilities Survey funded in part through the Institute of Museum and Library Services (IMLS) Conservation Project Support program. Results of the survey indicated that the institution needed to commit to improved collections storage and develop a conservation plan for the long term. The Museum created the Museum Conservation Department in 1990 to help guide the work and in the same year completed its first annually updated Long-Range Conservation Plan.

The goal of the Conservation Department is to provide long-term preservation care and reduce risks to the collections, both in storage and on exhibit (Fig. 2.54). A preventive conservation strategy helps staff mitigate risks to collections from physical, chemical, and biological sources. This strategy includes developing policies and procedures for integrated pest management, reduction of light levels, and improving collections storage. In the latter instance, the Museum collections on open shelves are at risk for damage from mishandling, overcrowding, dust accumulation, pest infestation, and fading from light exposure. The department addressed these problems by improving storage conditions to include new closed cabinets and upgraded storage mounts. Between 2008 and 2010, the department led the Museum through a risk assessment to further identify and manage risks (IMLS Museums for America provided partial funding). This is an internationally recognized process, and the Museum was among the first worldwide to complete the process to such a degree of thoroughness across its collections and throughout the facility. The assessment allowed the Museum to quantify risks for the first time, and along with the Long-Range Conservation Plan, the Collections Risk Assessment\(^\text{20}\) (Southward et al. 2013) now guides collections preservation. Recommendations from these two documents provided invaluable input into the planning and design for the Education and Collections Facility.

The Museum and the Conservation Department have a successful grant-writing history: during the period between 1984 and 2011, staff and contract conservators received 17 grants from the IMLS Conservation Project Support program for either improving storage conditions or completing conservation stabilization treatments of objects. Almost all grants included a condition survey, the fabrication of new storage mounts (Fig. 2.55), and the purchase of new storage cabinets. Funds received from IMLS for these grants total approximately $1 million, and the matching cost share of funds for staff and volunteer time amounts to slightly more than that amount. These funds have allowed staff to examine the condition of and improve storage for

---

Figure 2.54. Conservator Jude Southward works on the Benjamin Franklin temporary exhibit.
approximately 20,000 collection objects. The physical and chemical integrity of approximately 2,000 objects have been stabilized through conservation treatments. An additional grant from the National Endowment for the Humanities helped the Museum lay the groundwork for an emergency preparedness plan for collections.

Department staff work closely with Exhibits staff on exhibitions by completing incoming and outgoing condition reports, stabilization treatments, and monitoring of environmental conditions for permanent and temporary exhibitions, as well as for numerous changing cases and object loans. Some of the more recent blockbuster exhibitions include *China, Jane Goodall, Machu Picchu, Ben Franklin, Dinosaurs, Vikings, Quest for Immortality* (Egypt), *Lewis & Clark, Titanic, Gold, Genghis Khan, Real Pirates*, and *A Day in Pompeii*. In addition, the department undertook preventive conservation measures for the dioramas and completed condition reports and stabilization treatments for objects in the *North American Indian Cultures* exhibition when it was upgraded in the mid-1990s. The Museum was a founding member of the Rocky Mountain Regional Conservation Center and used many of the conservation services provided by that organization during the 1980s until the department was created in 1990. Carl Patterson consulted closely with the Museum during the 1980s and served as the first head of the department, from 1990 until 1991. Carolyn Leckie served as department chair from 1992 until 1998. Jude Southward served as a department conservator from 1993 until 1998, and she has served as department chair since 1998. Robert (Bob) Akerley served as the special projects coordinator from 1992 until 2006. The current department is comprised of Jude Southward, conservator and chair of the department, and Julie Parker, the Save America’s Treasures grant conservator. Staff has participated in community outreach by giving presentations at local, national, and international conferences as well as being available to answer questions from the public regarding collections care.

Other conservators who have worked in the department include Matthew Crawford, Jessica Fletcher, Judy Greenfield, Barbara Johnson, Gina Laurin, Abigail Mack, Meghan McFarlane, Judi Moon, and Michaela Niero. Conservator Cathy Hawks consulted to lay the groundwork for the DMNS Collections Emergency Preparedness Plan, and conservators Robert Waller and Garnet Muething guided Museum staff through the Collections Risk Assessment. Volunteers and interns have assisted the department throughout the years, and have been especially dedicated to working with the two-year-long IMLS grants to improve storage conditions.
Literature Cited

In addition to Literature Cited and the following endnotes, the Museum’s annual reports from the years 1930–1939, 1981–1988, and 1996 were an important source of information for this chapter.


Endnotes

1 Alan Espenlaub, notes taken from personal communication with Frances Kruger, May–June 2011, DMNS Archives.
3 Kristine Haglund and Dave Pachuta, e-mails to Frances Kruger, August 29–30, 2011, DMNS Archives.
5 Mary Beth Armbruster, e-mail to Museum, August 30, 2011, DMNS Archives.
7 Kristine Haglund and Dave Pachuta, e-mails to Frances Kruger, August 29–30, 2011, DMNS Archives.
9 Ibid.
10 Nein, K. 1993. Aztec: The World of Moctezuma. American Association of
CHAPTER 2 — EXHIBITS An Evolution

Museums Curator’s Committee 5th Annual Exhibit Competition Entry.


CHAPTER 3

EDUCATION Informal Science
Learning for the Public

Carol Cochran, Polly Andrews, Liz Davis, and Rebecca Smith

Building a Museum and an Educational Program, 1911–1954

In the 1911 annual report of the Colorado Museum of Natural History, which had opened to the public three years earlier, Director Jesse D. Figgins commented that the Museum could either settle for a place among the majority of like institutions or it could “join the few that are striving to attain their highest plane of usefulness by becoming centralized places of learning in all branches of natural history.” He went on to argue that a museum’s collections and exhibits should serve a larger purpose than scientific study or amusement; rather, they should be “of an educational character to benefit the masses,” although that aim had been considered by some to be “undignified and trivial.” Over the next 100 years, the Museum would respond in varying ways and degrees to Figgins’s bold challenge.

Figgins thought the Museum could be especially valuable to schoolchildren and their teachers. At the time, Museum staff delivered short talks to visiting classes on topics their teachers chose, but Figgins recommended developing a course of lectures for both the pupils and their teachers on the natural history of Colorado in order to teach “the importance of each species in keeping an economic balance, its relation to man and to stimulate an interest in biology.” He also recommended providing portable collections of specimens for use in the schools. Apparently Figgins’s 1911 recommendations were not immediately followed because in the 1912 annual report he again called for a series of lectures “as soon as possible,” noting that “of the museums which have attained prominence the Colorado Museum is probably the single exception in not having provided for public school classes and educational features other than those rising from the exhibits themselves.” The annual reports do not mention education again for several years, but we know that the Museum did develop a lending collection because the 1916 report speculates that a decrease in Museum attendance might be due to the popular use of these collections in the classroom.
The Extension Service
In the Museum’s very early days, its education program was loosely structured. That changed significantly in 1929 when committee members from Denver Public Schools, the Museum’s board of trustees, and Museum staff inaugurated the Museum School Service (commonly called the Extension Service), a cooperative venture between the schools and the Museum. Six traveling cabinets of taxidermied local birds and six of small local mammals were placed in the school district’s administration building to be circulated to the schools. The schools also approved funds for hiring buses to bring children to the Museum. Once there, the children would gather in a newly created classroom on the first floor (then called the basement) of the Standley wing to hear a staff member lecture on a subject relevant to the exhibits they would see. In 1929 the Museum reached 50,000 students through its classes and the loan collection.

Harold Cook, curator of paleontology, initially directed the Extension Service, but he soon resigned from the Museum, and in 1930 Robert Niedrach (Fig. 3.1) was placed in charge. Although officially a preparator and an ornithologist, Niedrach was an educator at heart. He loved talking to audiences and was good at it. Before taking over the Extension Service, he spent parts of summers with Boy Scouts at their Camp Lemen above Silver Plume and with Camp Fire Girls in Idaho Springs teaching nature study and outdoor work. He taught natural history to Boy Scouts at the Museum on Saturdays, and he was a willing speaker to school groups and civic organizations throughout the year. Not surprisingly, under his direction the Extension Service grew and improved. Class visits became more carefully tied to a teacher’s lessons, college and university students attended as well as younger students, and more specimens were added to the circulating collection, which was so popular the Museum could not keep up with the demand. In 1932 the Extension Service introduced a well-received series of public lectures in the evening, often accompanied by “moving pictures.”

Figgins soon recognized that the growing offerings of the Extension Service could not be sustained with current staffing. The Museum employed no one whose specific and primary responsibilities were education. Niedrach was primarily a preparator and ornithologist, just as Cook had been curator of paleontology. Staff who greeted and lectured school groups, who gave public lectures, or who in fact often made the films shown during these lectures had other primary Museum responsibilities. But staff acknowledged the importance of Museum education and shared in its achievements, an ongoing tradition that continues today as curatorial and other scientific staff are hired with the expectation that they will participate in and enjoy educational outreach. Yet for Museum education to flourish, it needed full-time attention.
In 1932 Figgins recommended hiring a manager for the Extension Service. That didn’t happen. Instead Niedrach and others continued and even increased their educational efforts. They gave talks and showed films in schools when transportation was not available to bring classes to the Museum, and they spoke to adult groups in the evenings, presenting the results, often on film, of the Museum’s expeditions. In two years Niedrach alone spoke to more than 35,000 adults.

Some help came in 1936. The Adult Education Council, a component of Denver city government, provided two teachers to give “guided lecture tours” of the exhibits to schoolchildren and general visitors on Wednesday afternoons during the school year; a year later one of these teachers, Eloise Fleming, was placed in a full-time position as a council-sponsored tour guide and the number of tours increased. H. Marie Wormington, curator of archaeology, supervised this effort. She developed scientific programs and written materials for students, plus a teachers’ guide to Museum exhibitions. Other staff continued to lecture to large audiences in schools, clubs, and scientific societies; in 1938 entomologist R. W. L. Potts reached 20,000 people, curator of meteorites Harvey H. Nininger spoke to 9,500, Niedrach to 4,800, and several others made smaller but still significant efforts.

The Museum’s annual reports of the 1940s and 1950s enthusiastically highlight the success of the lectures in Phipps Auditorium, and they include news of the Museum’s scientific and collecting expeditions, building plans, and exhibition gallery construction. However, they say little about education, and the section of the report titled “Education and Extension” was frequently omitted altogether. We know from a 1954 report that schoolchildren and their teachers continued to visit, but the report notes that where once various staff members had been delegated to guide them, “pressure of other work gradually made more than token help impossible.” That was about to change.
From Phipps Auditorium to Phipps IMAX Theater: A Short History

In 1932 the Museum offered a program of evening lectures and “moving pictures of birds.” The largest lecture hall at the time held 150 people, only big enough to meet a quarter of the demand for these and other programs. In the annual report for that year, Director Jesse Figgins lamented the limited facilities and presciently noted that “the field for moving pictures and other forms of illustration is limitless.” Eight years later the Museum had a beautiful new auditorium, made possible through the gift of Senator Lawrence C. Phipps and Mrs. Margaret Phipps, for whom the auditorium was named (Fig. 3.2). The main floor held 750 seats, the balcony another 250. The stage had space for a concert organ and a 70-piece orchestra. The equipment in the booth was the latest in sound and projection.

The auditorium’s first program, which concluded the dedication ceremony on January 11, 1940, was Gorillas and Pygmies, a slide and film program given by Major Alfred M. Collins, a big game hunter and zoological expedition leader from Philadelphia. Eleven other film and lecture programs followed that year. The first two programs were lightly attended, and staff feared they may have overestimated the interest of the people of Denver and overbuilt an auditorium. But they need not have worried: from the third lecture on, Phipps Auditorium was unable to accommodate all who wanted to attend. In 1941 lecturers spoke twice on Sundays; by 1950 they repeated their lectures a third time on Monday evenings. For the first year, these adult lectures were free, funded by the trustees. In succeeding years, memberships

Figure 3.2. Crowds leaving Phipps Auditorium in the 1940s.
were offered for seating on the main floor; balcony seats were open to the public. In 1942–1943, attendance to the film and lecture series was 44,455. Speakers were scientists, travelers, explorers, and photographers; many were staff, but others were from outside the Museum. In addition to this Film Lecture Series, the Audubon Wildlife Film Series, begun in 1945, offered five free films per year. By 1963, when the auditorium was 25 years old, nearly 1.3 million people had attended a film lecture or Audubon film program. In the years other film and lecture programs were offered free of charge on Sunday afternoons in the summer or monthly during the winter. Saturday programs for children included educational or travel films, then two or three cartoons to interest the children in coming to the Museum, even if the visit wasn’t purely educational. When the Museum itself was not using the auditorium, it was available for civic meetings, concerts, dance recitals, and other community events.

In 1961 a disastrous fire gutted the auditorium’s interior; its quick restoration included improvements such as air conditioning. In 1970 the Phipps family donated a pipe organ. The most momentous change was proposed in 1981 and approved in 1982: a remodel of the auditorium, converting it into an IMAX-format giant-screen theater. The change was intended to stimulate attendance and revenue while presenting natural history in a new format. The plan was controversial, in large part because it appeared to threaten the existence of the popular Film Lecture Series, then more than 40 years old. The Museum assured its loyal audiences that the series would not be supplanted; it would continue in a different location during construction. (The series was relocated to South High School and Abraham Lincoln High School, but it never returned to the Museum, remaining at South High for another 13 years before it was discontinued.) On July 1, 1983, the new Phipps IMAX Theater opened with the film To Fly, which was enjoyed by 190,000 viewers during its run.

In 1991 the IMAX Theater was managed by the Education Division, which advised on the selection of films, with educational content as a primary criterion. The 1992 Rolling Stones to the MAX didn’t make the cut (but public pressure was considerable and persuasive: a few months later the film was included in the Best of IMAX Film Festival). In collaboration with other museums, the Museum invested in the development of the 1998 film Everest, a risky decision that turned out to be a good one. The film was the most popular IMAX film ever, produced a great return on investment, and presented an inspiring human story set in a demanding but breathtaking natural setting. Concurrent with the film’s showing, the Museum offered 41 educational programs, including the Hall of Life’s Physiology with an Altitude and a lecture by Sir Edmund Hillary. Although the seating capacity of the new theater was smaller than that of the old auditorium by more than half, it remains the Museum’s largest venue. With 400 seats and state-of-the-art technology, it is a desirable location for popular programs and speakers.

The most recent updates to Phipps Auditorium occurred in 2010, when the theater was briefly closed and refreshed with new carpeting, floors, seats, screen, curtains, a digital sound system, and the latest IMAX digital 3-D technology, including two new projectors. Offering popcorn to visitors was debated but finally decided against because of needed precautions against insect infestations that might threaten the zoological collections below the theater.

For most of its first half century, the Museum emphasized the education of schoolchildren through school visits or loaned specimens. Although Museum staff from various disciplines provided lectures or tours, and many did so capably and even passionately, ultimately education was not their priority. During these early years education competed for staff time with the Museum’s more pressing building and collecting activities. However, beginning in 1954 education in the Museum acquired a new status: it became prominent, permanent, and professional.

Denver Public Schools Partnership

We have Denver Public Schools (DPS) to thank: in February 1954 DPS placed its own teacher, Robert Thibodeau, in the Museum and provided his salary. Thibodeau conducted scheduled tours for DPS students Monday through Friday and made tape recordings to prepare students for their visits. He experimented with an assembly program in Phipps Auditorium during which students watched a narrated film on some aspect of Colorado natural history and then visited the appropriate exhibits. He included live animals among the Museum’s educational opportunities (a great horned owl was the favorite). Thibodeau stressed the importance of activities in the classroom following a Museum visit, and he encouraged repeat visits. He understood that the Museum had value beyond exposure to natural history; the visits also motivated learning in geography, history, English, composition, oral expression, social science, science, and even penmanship, as the students wrote careful thank you notes to Thibodeau. This focus on educational outcomes is evidence of a professional educator at the helm. Thibodeau was, of course, a public school teacher, but DPS took the welcome step of also preparing him in the field of museum education: DPS sent him to visit leading museums, and in 1956 he attended an American Association of Museums annual convention. Returning from that meeting, he reported on trends in museum education: the need for trained museum personnel, the importance of school-museum cooperation, and an increase in museum use of planetariums.11

In 1956 the Museum’s progress was consistent with these trends. With a professionally trained educator and school-museum collaboration, it also had a new planetarium. In 1955 the Denver Astronomical Society installed a Spitz Model A-1 projector in a small room on the Museum’s third floor under a 20-foot metal and fabric dome. The society’s members offered visitor programs throughout the year. Director Alfred Bailey hoped that this small planetarium would prove popular and thus demonstrate the desirability of a larger one in a future wing of the Museum. Eventually Bailey’s wishes came true, the reality perhaps even exceeding his dreams.
The Charles C. Gates Planetarium: A Time Line

1955: The Planetarium is erected on the third floor by the Denver Astronomical Society (DAS) and includes a Spitz Model A-1 projector (Fig. 3.3).

1956: DAS member William R. Van Nattan serves as curator and coordinator of the Planetarium, the Museum’s main visitor attraction. DAS members give 826 demonstrations of two shows: Star of Bethlehem and Trip to Mars; this number of performances is exceeded only by New York’s Hayden Planetarium.12 Visitors pay $.25 for adults and $.10 for children.

1959: Robert E. Samples becomes the Planetarium’s full-time curator. More and new programs are offered, still mainly by DAS members.

1960: Natural sounds are added to shows: for A Mountain Night, Assistant Curator Donald Lunetta records wind, rock falls, gurgling water, and dawn birdsong on Mount Evans.

1962: Samples resigns; Lunetta becomes curator. His expanded activities include giving general Museum tours to Colorado school systems outside Denver Public Schools.

1963: Planetarium shows are changed each month. Part-time staff is added, including Karen Noel. Martha “Marty” Hartmann becomes full-time assistant.


1968: The Charles C. Gates Planetarium is dedicated. Unique features are front-facing seats, video capability, and a television-telescope system on the roof. NBC’s John Palmer and Lunetta report live on national TV during the flight of Apollo 8.

1969: Lunetta resigns; Mark B. Peterson becomes curator. School tours are separated from Planetarium responsibilities and given to the new Department of Education. Total Planetarium attendance for the year is 109,120, of which students and teachers account for 24,883.

1974: Laserium, a multicolored laser light and music show developed by Laser Images Inc. of Los Angeles, is shown in the Planetarium, the second in the world to run this show. Immensely popular, it is seen by more than 40,000 visitors in 1974 and is “scheduled to run indefinitely.”13 The Museum agrees that the laser show is not a traditional planetarium feature, but it “allows a degree of financial flexibility to Gates Planetarium and DMNH.”14 A variety of laser shows, which eventually feature rock music and are held at night, appealing to a young audience, continue until 1998, when they are discontinued as being too far outside the scope of a natural history museum. The 22-inch telescope on the Museum’s roof is lifted by helicopter, loaded onto a truck, then transported to Jefferson County’s Outdoor Lab School, where it is used by the district’s school-children as well as the general public for many years during Museum-sponsored campouts at the site. During these years and for many years after, the Museum and DAS hold Star Parties on the west side of the Museum, complete with telescopes and astronomy experts.
1977: Museum staff produce original and innovative Planetarium shows in house, including one based on an Isaac Asimov short story, “The Last Question,” narrated by Leonard Nimoy, and Vision Beyond Time, narrated by Orson Welles. Aided by a grant from Columbia Pictures, Planetarium staff produce UFOs: Strangers in the Night? and distribute it to 40 planetariums in the United States and Canada.

1981: Supported by a Gates Family Foundation grant, Museum staff install a much improved Minolta Star machine mounted in a central pit and surrounded by seating in the round.

1984: Robert Wallace becomes Planetarium director.

1987: Stars of the Pharaohs is created in support of the Ramses II exhibition. The multimedia show features a life-size re-creation of Ramses from Abu Simbel and a temple at the dome entry.

1990: The school show Just for You invites teachers to customize certain presentations to fit the needs and interests of their classes.

1992: Donald Asquin becomes Planetarium manager. He is followed over the years by Marta Lindsay, Larry Sessions, and Dan Neafus. All add shows and improvements.

1998: Gates Planetarium, along with seven others, produces the high-tech show Where in the Universe Is Carmen Sandiego? Actors in this interactive show invite the audience to solve a mystery using space science and scientific deduction.

2003: The all-new Gates Planetarium opens in June as part of Space Odyssey. New projection and sound technology, auditorium-style seating, and a stage encourage innovative, immersive programs, often produced live.

2005: Performer Kenji Williams premieres Bella Gaia, a live violin performance accompanied by a tour through the universe choreographed by space science curator Ka Chun Yu (Fig. 3.4).

2006: Black Holes is the first show presented in the new Planetarium that is produced by Museum staff and contractors. It is narrated by actor Liam Neeson and is now shown around the world.

2010: Cosmic Journey: A Solar System Adventure, Journey to the Stars, and The Little Star That Could are scheduled for school groups. The creative team of space scientist Ka Chun Yu and geologist Bob Raynolds offer Digital Earth each quarter to adults, during which they use the Planetarium’s technology to fly in from outer space to trace the routes of early explorers or to inspect the San Andreas Fault (Fig. 3.5).
Education Becomes Official
Throughout the 1960s, DPS continued to provide a teacher to conduct Museum tours for its classes. When Thibodeau resigned in 1960 to become a school principal, Haysler Wieden took his place (Fig. 3.6). In 1967, when Wieden was promoted, Calvin D. Berglund became coordinator. Although not Museum staff per se, all three were essential to the Museum’s educational program. They educated hundreds of thousands of Denver schoolchildren and taught their teachers to use the Museum as a companion to their classrooms. Museum staff, however, could barely keep up with the increasing demands of a growing Denver, and they could do nothing for schoolchildren visiting from outside DPS. That job fell to Planetarium staff: Planetarium Curator Donald Lunetta, his assistant Martha “Marty” Hartmann, and others, who led school tours for the county districts in addition to their Planetarium duties. By 1969 Museum management saw the difficulty of that arrangement. They separated county school tours from the operations of the Planetarium and gave tour responsibility to a new Department of Education, with Hartmann as curator (Fig. 3.7).

The Marty Hartmann Years
Now with its own department, its own curator, and a small staff (including Dorothy Hodgkins, as assistant curator), education at the Museum blossomed. Thinking back on the 1970s, Hartmann offered several reasons for this rapid growth: staff support, classroom space, volunteer availability, and the improved standing of museum education nationally.¹⁵

Hartmann speaks fondly of the Museum staff she worked with, only 30 to 40 employees, small when compared to today’s staffing. She thought of her colleagues as a big family and remembers the support of directors, particularly Bailey, who would lead school tours himself when needed. As Hartmann recalled, “He did not stand on the dignity of his office as a director. His mission was education. And he’d get out there and he’d work with those schoolkids.”¹⁶ She also emphasized the support of Assistant Director Arminta “Skip” Neal and of Niedrach, who helped train her and Hodgkins. Hartmann explained that the staff “felt that we always had support for the education programs throughout the Museum with all the curators. They were always to a person very, very helpful. I think they saw us as their voice, because the Museum is as a whole an informal education institution.”¹⁷

When first established, the Education Department consisted of a couple of desks in a tiny room adjacent to the organ pipe room in Phipps Auditorium, hot in summer, cold in winter. But in 1970 the Museum added two new wings; though fiercely contested, the third floor of the northwest wing had not yet been assigned a use. Hartmann and Hodgkins, with the help of an architect, put in a bid. To their surprise the board granted everything they asked for: two state-of-the art classrooms, a storage room, and an
office. Now school groups could assemble in real classrooms equipped with laboratories, audiovisual capability, and cabinets of educational materials. Audiences other than school groups used the classrooms as well. Summers were especially busy. In 1971 the Museum and the University of Colorado offered a two-week workshop for teachers and three summer workshops for children. One classroom became a “touch room,” popular especially with preschool children, who could touch the mounted grizzly bear (Fig. 3.8), hold a 75-million-year-old fossil, or stick their hands into the gaping mouth of a giant mounted grouper fish. The growing collection of education specimens and materials could now be conveniently stored and could continue to grow. The collection proved especially useful in May when the large volume (of both bodies and noise) of schoolchildren made guided exhibit tours impossible. Instead the students, in a small, relatively quiet group, could handle natural history specimens or anthropological objects on a rolling cart. The “touch carts” appealed to everyone. Soon carts on all three floors were a regular part of the Museum experience, and they remain so today.

Hartmann and Hodgkins were very busy those first few years, building a department and a program and leading tours for students in suburban

Figure 3.6. Haysler Wieden, a Denver Public Schools teacher assigned to the Museum, speaks to a school group in the old Dinosaur Hall in 1965.
schools with help from the DPS teacher, who toured the city’s schools. In 1971, however, DPS informed the Museum that it could no longer staff its part of the program. In turn, Director Roy Coy responded that the Museum could not afford the additional staff person required to tour the DPS groups. These children could continue to come to the Museum, of course, but they could no longer have a staff-guided experience.18

This unfortunate standoff did not last long, for help soon arrived in the person of Eva McIntosh, along with eight of her friends. They wanted to be Museum volunteers. Hartmann convinced them to become tour guides for the DPS kids. Berglund, the DPS teacher working in the Museum, stayed all fall to train the guides, and in January 1972 they went to work. They were the first of the Museum’s formal education volunteers.

---

Figure 3.7. Martha “Marty” Hartmann was the Museum’s first curator of education, from 1969 to 1978.

Figure 3.8. A small boy measures himself against a mounted grizzly bear in the Museum’s touch room.
Volunteers

In a way, the Museum’s first educators were volunteers. Before “education” was part of anyone’s title, staff members from several departments and with varying backgrounds lectured, led tours for schoolchildren, wrote instructional materials, and assembled loan kits, all in the service of museum education. No doubt others from outside the Museum helped from time to time as well; unfortunately, their names have mostly been lost to history. We do know that in 1954 the Denver Astronomical Society constructed the Museum’s first Planetarium, and society volunteers presented public programs there for several years; members volunteer with the Museum’s astronomy programs to this day.

In 1971 Eva McIntosh and eight of her friends became volunteer tour guides for school groups. Curator of Education Marty Hartmann made sure they received training in both subject matter and methodology. McIntosh organized the group informally; they called themselves the HAGS, an acronym for the Honorary Association of Guide Services. The group grew over the years, eventually even including Director Bailey. The HAGS especially valued the Museum’s security guards who, by blowing whistles in the galleries, helped control the children. To thank them the HAGS treated the guards to a gourmet luncheon every year. The HAGS organization continued for some 20 years. In 2009 Coco Hackstaff, one of the original HAGS, received a Museum award for 40 years of service.

Other early volunteers were the instructors of the environmental education program WEBS, begun in 1976 and still going; its name refers to the ecological web of life. The volunteers for the Museum on Wheels program took slide programs and specimens to senior centers, hospitals, and similar facilities. That program too had a long life, ending around 2002 after nearly 25 years.

As volunteers in education increased in number, so did the opportunities to help. For years the volunteer Excursion Committee helped plan and lead field trips for adults; today the committee plans enrichment activities for all the Museum’s volunteers. Another committee staffs evening lectures. Middle and high school students work alongside teachers in children’s summer classes; in 2011 about 60 helped in this way. Interns and pre-service educators from area universities teach on-site school programs and workshops on a voluntary basis. Each morning volunteers search through storage cabinets of the education collection for the hands-on objects that will be used in programs that day. Late in the afternoon, they put them all back. Volunteers helped mount and prepare many of these same objects.

Perhaps the most ambitious, imaginative, and growing use of volunteers has been in gallery programs. Volunteers offer the popular Secrets of the Dioramas tours to general visitors, facilitate touch carts and other interpretive experiences in the galleries, and interact with children in Discovery Centers (Fig. 3.9). Volunteers have been important components of every temporary exhibition beginning with Ramses II in 1987. For the Aztec exhibition of 1992, 500 volunteers were specially trained to provide programs and activities in the exhibition.

Figure 3.9. A Museum volunteer encourages a child demonstrating during How Animals Walk, a popular gallery activity.
Every permanent exhibition, beginning with Hall of Life, included in its planning opportunities for interpretation. In Prehistoric Journey, for example, more than 100 volunteers currently talk to visitors at touch carts focused on life in the Paleozoic seas, dinosaurs, mammoths, and convergent evolution. Volunteers in Expedition Health engage visitors using touch carts, interactive exhibits, experiments in the Biology Base Camp lab, and other aids to the study of human biology. In addition to helping in the lab, some Expedition Health volunteers are integral to curator-driven research in health science. They are certified by the National Institutes of Health to work with human subjects to collect data for the genetics research that happens in this gallery. The certification process includes the study of protocols for human participation in scientific research, training on how to collect scientific health data from Museum visitors and how to educate them about genetics research, and, finally, a series of exams. These volunteers are citizen-scientists as well as educators. Their level of training is intense, but not that unusual for Museum volunteers involved with the public. Scientists from the research departments and Visitor Programs staff conduct this training, which can last weeks or even months.

The Museum as a whole could not function the way it does without its 1,800-plus volunteers. That is certainly true of the Museum’s various educational endeavors, which are assisted by, and sometimes only exist because of, its large and committed group of volunteers.

Hartmann and her staff often collaborated with educators at other cultural institutions in Denver—the zoo, art museum, and historical society—and they attended meetings and served on boards of regional and national museum associations. The 1970s were the museum world’s version of the wider world’s 1960s: old ways were challenged, new ways devised, and participants were active and committed. This creative turmoil was especially evident in museum education. Hartmann remembered the professional meetings as exciting: “They were loud and raucous and people could carry on. Educators were some of the worst. We carried on a great deal. We were very uppity, and we felt like we needed to have our place at the table. And it wasn’t just the curators of collections and the directors of exhibits anymore. It was going to be us, too. We were just as important, if not more important.”

Hartmann gave a lot of thought to the unique attributes of informal education when developing programs and training volunteers. She especially stressed the importance of using all the senses; among educational facilities, museums have a special advantage because of their collections—they have objects. Hartmann remembers, “I think there’s a tremendous power in the actual object, actually being able to pick something up and handle it and know it’s the real thing ... not an imitation ... not a reproduction ... the honest to gosh real thing.” Hartmann expanded the use of touch carts and loan kits and created the touch room. She encouraged the use of the inquiry method, whereby teachers avoided lecturing and used open-ended questions and other techniques to encourage children to think critically. PhD candidates in education completed projects or internships at the Museum and thereby supplemented the program too. One developed learning kits, another a “learning demonstration center” designed to test whether interactions in an exhibit hall with a facilitator and objects, including live animals, would affect the visitors’ use and understanding of the surrounding gallery. Apparently the results were positive; certainly they were long lasting. For many years the Education Department had a live animal collection, using it in one case for the popular Snakes Alive program for families. The use of an interactive experience in the galleries was even more durable; it continues today in nearly every gallery and exhibition hall.
John Cotton Dana, the first director of the Denver Public Library, later founder of the Newark Museum, and well-regarded museum gadfly, once said something like this: “Fully one-third of all the objects now in museum collections should be loaned for educational purposes. If lost or destroyed they will have died in a good cause.”21 Not many museums would go that far, but perhaps the Denver Museum of Nature & Science comes closer than most. Its collection of objects accessible to the public is huge (37,452 objects in 2010), and its program has been studied and admired by many other museums.

In his very first report to the board of trustees, as part of the 1911 annual report, Director Jesse Figgins called for the creation of a portable lending collection of duplicate Museum objects for use by teachers in connection with nature studies, requesting $250 for support.22 When talking to visiting school groups, staff members used objects from their departments’ collections. Thus, from the very beginning of the Museum’s educational efforts, a hands-on collection was useful; collections are used in nearly every education program today. The collection and its use speak to the power of objects. There is no better way to assess the size of a grizzly, the softness of a beaver pelt, or the weight of a space suit than to explore these objects with one’s own hands and eyes (Fig. 3.10).

Throughout the years, the education collection grew rather opportunistically, with the department often acquiring objects because they were not suitable for the scientific collections. In some cases they were duplicates, in others they lacked the provenance required for research collections. Educators maintained the collection as best they could among their other duties. In 1990 the Museum hired an education collection manager, Jeff Stephenson, to establish professional operations and collection care. Stephenson and his successor, Richard Busch, have done just that. There are now criteria for accepting and retaining objects and specimens in the collection: they must be germane to the Museum’s core competencies and are accepted in consultation with the appropriate curator. Storage is more spacious, secure, and accessible than in the past. Recent grant funds support further improvements to storage and have allowed staff to better manage the objects. The end product is the best education collection in the country, and one that is uniquely appropriate to the Museum (Fig. 3.11).
By the time Hartmann resigned in 1978, the Education Department had grown to include five full-time staff members, several other part-time employees, and 71 volunteers. A third classroom was added in 1979; one of its first uses was for a five-week training course for volunteer tour guides. Although school attendance depended on fuel prices and bus availability and therefore waxed and waned, especially during the 1970s and 1980s, attendance for education programs reached 78,236 in 1976. There were programs for adults as well: teacher training, of course, and also credit and noncredit courses, some in cooperation with the University of Colorado and Metropolitan State College of Denver. Hartmann and her staff also developed a travel program for adults that began in 1973 with whale watching in Baja California. An outreach program, begun in 1978, reached people primarily in senior centers or nursing facilities who could not attend the Museum. In general, however, the department focused primarily on on-site programs for children, particularly schoolchildren.

The First of Many Rearrangements

In 1972 the Junior League of Denver founded the National Association of the Denver Museum of Natural History, dedicated to “more active public participation in the work of the Museum.” It began a Museum membership program, recruited volunteers for all Museum departments, and, in order to make new members and volunteers feel connected, organized many educational opportunities: behind-the-scenes tours, field trips, bird walks, geology hikes, lectures, exhibit previews and tours, and foreign travel. Hartmann helped out by serving on the association’s program committee; otherwise, most of the Museum’s adult programming originated outside the Department of Education. The association began as an independent organization but in 1978 became part of the Museum as a component of the new Department of Community Services. From then on members joined the Museum directly, with the department coordinating all events for members and other special events. A volunteer Members Council provided leadership and guidance for member and volunteer activities. In 1980 the Department of Community Services sponsored 7 major lectures, 26 programs or series of programs, 4 major special events, 33 field trips, and 14 receptions. Museum members went on 13 Museum-sponsored trips to such places as Cozumel, Machu Picchu, the Smithsonian, the Grand Canyon, and China. Mary Leakey spoke, and Ansel Adams would have too had he not cancelled due to illness. The Education Department, directed now by Hodgkins, was equally ambitious. In 1982 program attendance reached its highest numbers yet at 146,745. In addition to school tours and summer programs for children and educators, the department had broadened its audience to include the general adult public for whom there were also tours as well as daytime and evening lectures and summer programs. From the distance of time, the
programming responsibilities of the two departments seem to overlap, but the distinction between the two may have been clearer at the time.

The next few years saw several reorganizations and realignments of responsibility. In 1985 the University of Denver awarded the Education Department its Phi Delta Kappa Award for Lay Educators for its contribution to public education. Ironically, a discrete Education Department no longer existed. It was part of Community Services, managed by Diana Lee Crew and staffed by a secretary and two education assistants but no education curator. Changes were brewing, but they were good ones. The Museum made two important decisions in 1985: one was to support the establishment of a tax district (eventually named the Scientific and Cultural Facilities District, or SCFD) to benefit the metro area’s cultural institutions, and the second was to merge the Hall of Life, a health education center, into the Museum’s operations. These two decisions were appropriate conclusions to the preceding 30 years of ambition and achievement in Museum education, and they promised innovation to come.

Innovation, Growth, and Leadership, 1987–Present

During the first 80 years of the Museum’s history, its education function rose and fell depending on priorities established by leadership and also no doubt on economics, as education programs are almost never self-sustaining. Education has fared well during the last 20-plus years. SCFD funding, first dispersed in 1989, has benefited Museum education ever since. In 1987 John Welles, a strong supporter of education, became the Museum’s director. Museum education also benefited from the incorporation of the Hall of Life, which brought with it innovative instructors and programs, an exhibition focused on the audience as learners, and a project director, James H. Goddard, who before long would lead a new Education Division into even larger territory.

The Hall of Life

The Hall of Life was a health education center founded in 1975 and located in the basement of the Blue Cross-Blue Shield building in downtown Denver. Because schools lacked funding and mandates for health education, the Hall of Life filled the gap with exhibits and classroom programs. By 1985 it needed more space and a greater public presence. At the same time, the Museum had added two new wings and was looking for content. With the Gates Family Foundation as matchmaker, the two organizations found one another; they, in turn, found Goddard, whose role was to effect the merger, raise funds, and help design classrooms and exhibits for what was soon to
become the largest hands-on museum health exhibition in North America. The first phase of exhibitry would not open until 1989, but programs for children began in 1987, conducted by Hall of Life’s educators, who taught sensitive topics such as AIDS prevention and tobacco awareness. Some of the health classes, like their natural history counterparts, were dynamic and object based. For example, in Move It, a 1988 summer workshop, children dissected chicken wings to see how muscles and bones worked together. Children in the 1989 You’ve Got Guts program manipulated the organs in a human body (Fig. 3.12).

Changes and More Changes
Welles created the Education Division in 1989, with Goddard as the division’s director. Goddard’s two managers were Sue Palmer for the Hall of Life and Diana Lee Crew for natural history programs. Palmer had responsibilities for the exhibition as well as for youth health programs. Crew’s duties included youth programs, teacher professional development, an ambitious travel program, and soon the Jason Project and participation in the publication of the Museum’s first children’s book, *The Wonder of Wolves*.

Eventually there were four program areas in the Education Division, each with its unique audience: Visitor Programs, Adult Programs, Youth and Teacher Programs, and the Planetarium. The IMAX Theater operation was later added as well. Each program would grow over the next 25 years, although progress was not always straight and smooth. Perhaps the bumpiest times were during the tenure of Director Raylene Decatur, when efforts were made to reduce costs and consolidate operations. By 1995 Goddard made the difficult decision to end the popular Film Lecture Series. The longest-running Museum program to date, it was nearly 60 years old at the time and had a large and loyal audience, but it was showing its age and was not consistent with the Museum’s strategic direction toward science-rich programming. The Museum’s travel program fell victim to economic realities: international travel, which served relatively few people, was first outsourced and then suspended, and the domestic travel program was greatly reduced. By 2002 Hall of Life education was no longer a separate entity, its programs and staff combined with its natural history counterpart. In 2004 all on-site classroom programs for children were eliminated, although they were brought back two years later when the school tour program ended.

In 2001 Goddard left the Museum, perceiving that the education function had lost its priority as evidenced by a reorganization that removed the
director of education from senior staff. He was succeeded for several years by Ron Rohovit. By 2011 there was no Division of Education, the traditional functions folded into the Division of Strategic Partnerships and Programs, led by Vice President Bridget Coughlin and two directors: Polly Andrews for Youth and Teacher Programs and Nancy Walsh for Museum Programs (Adult Programs and Visitor Programs). Thus organizational shuffling continues, but the three programmatic departments are thriving, and the current structure allows for easy collaboration among them.

Visitor Programs

Early in his directorship, Goddard hired educators in the Museum’s core competencies to help develop educational programs and exhibit interpretation and to train volunteers. In planning exhibitions, these educators joined Goddard in an arrangement known as “the triad”: a partnership of education, exhibits, and research staff. Educators continue to be intimately involved in the creation of permanent as well as temporary Museum exhibitions. As members of the Visitor Programs staff, led for many years by Rebecca Smith, they make sure that the needs of the audience are met and that the exhibition exemplifies the best practices in informal education. That done, they then add the creative activities for which they are known.

Beginning with the blockbuster Ramses II in 1987 and soon followed by the Hall of Life, Museum planners made sure to include interactive elements to enrich and enliven the exhibition experience. Goddard had seen gallery presentations at science museums and zoos and was particularly impressed with the performances of Eddie Goldstein at the National Zoo. In 1992 he hired Goldstein to head a new Gallery Presentations Department (later reorganized as part of Visitor Programs) with the mission to “get
acceptance of presentations in the previously contemplative environments of the wildlife diorama halls. Goldstein produced his first interactive activity for the 1992 temporary exhibition *Aztec: The World of Moctezuma*, an interactive Aztec calendar whereby visitors could compute their birthdays in Aztec time. Soon he added more elaborate performances, and in 1994 the Museum built a demonstration stage where Goldstein and other staff and volunteers included visitors in such programs as How Animals Walk, the Camouflage and Deception Quiz Game, and the physics lesson The Pressure Demo, which featured a bed of nails.

During *Aztec*, educators and curators trained 500 people as interpreters who would work within the exhibition; they included dancers, storytellers, artists, and volunteers who answered questions, provided information, or were stationed behind touch carts holding such objects as jaguar pelts, baby cradles, and other ethnographic materials. Thus began a continuing tradition of enhancing temporary exhibitions with interactive educational programming to meet the needs of diverse audiences.

In 1999 Museum educators began to create a string of temporary discovery centers, generally themed to coincide with a current exhibition. Over the next five years, there would be 10 of these, all extremely popular with visitors, particularly the families for whom they were intended. One example was the Viking Village added to enhance the 2001 traveling exhibition *Vikings: The North Atlantic Saga*. Visitors to the village were greeted by costumed enactors Helga and Harald. They could wander along a village street busy with merchants, farmers, artisans, and sailors, and explore a longhouse and a Viking ship. Activities included jewelry making, spinning and weaving, fabricating a wattle-and-daub fence (Fig. 3.13), and cooking up a Viking stew. Between 5 and 15 volunteers were present in the village at any one time, trained by curators in subject matter and by educators in facilitation techniques. On average more than 2,000 adults and children visited the Viking Village each day. Evaluations revealed that children who visited the village remembered more about the exhibition, parents and other adults became more involved with children, visits to the exhibition lasted longer, and families repeated their visit.

Encouraged by the success of this and other temporary discovery centers, the Museum added a permanent Discovery Zone in 2002, focused on areas of Museum expertise and changed periodically to enhance temporary exhibitions. In this space families can dig for fossils (Fig. 3.14), dissect an owl pellet, build a tower, or participate in shows such as African Rhythms. The Discovery Zone has proved so popular (per square foot it sees more visitors than any other spot in the Museum) that in 2014 the Museum will enlarge and upgrade it with a new 5,400-square-foot Discovery Zone on the second floor of the Science Engagement Center, tailored especially to the interests and abilities of early learners.
Vikings offers a good example of another Museum-created enhancement. For this exhibition, and for other exhibitions and occasions, the Visitor Programs staff produced a festival, in this case over a weekend. Activities began Friday night with a feast of Viking fare. Over the next two days, Vikings filled the Museum (staff, volunteers, individuals from Denver’s Nordic communities, and members of the Society for Creative Anachronism role-played for the occasion). In costume they paraded throughout the Museum, fought battles in the atria, demonstrated crafts, played music, and told stories. Although the exhibition itself was ticketed, the festival was free to all Museum-goers. This tradition of special events continues with annual Fiesta Free Days, Space Days, Astronomy Days, and Earth Days. Events such as Ice Age Festival or Pirate Invasion celebrate Museum research or temporary exhibitions.

Costumed characters, including authentic historical enactors, often enliven temporary exhibitions. The first was the ship’s barber-surgeon in the 1987 exhibition In Search of the Mary Rose. Today enactors are regular inhabitants encountered anywhere in the Museum. One is Mr. Bones, a dinosaur puppeteer who roams the halls during the Museum’s 12 yearly free days (Fig. 3.15). Another is Miss Margaret Winters, who entertains visitors with tales of life as a naturalist in 1908 Colorado (Fig. 3.16).

Surveys conducted while planning the Space Odyssey exhibition, which would open in 2003, revealed that visitors most wanted “to experience space.” Exhibit planners tried to make that happen, and they also included opportunities for the personal discoveries that might occur through interaction with an object or device or through a conversation with a knowledgeable person. Accordingly, the exhibition offered visitors the opportunity to watch the play Living in Space, talk to an astronaut as he or she maneuvered about the Mars landscape, dock a space shuttle, help make a discovery (Fig. 3.17), or strike up a conversation with a Museum Galaxy Guide, a volunteer trained in space science, some of whom carried a laptop computer to help answer complicated questions on the spot or send an e-mailed response, extending the Museum experience right into the visitor’s home.

During planning for Expedition Health, which would replace the popular but aging Hall of Life exhibition in 2009 with an even greater focus on the visitor, exhibit educator Nancy Walsh (now director of Museum Programs) commented that this was not an exhibition about the human body, it was about your human body. Expedition Health includes a laboratory where visitors can perform experiments (Fig. 3.18), a suite of educational carts, and highly interactive shows such as Pirates of the Human Being: Meet Your Microbial Mates and The Superfood Heroes.
The Denver Museum, along with many others, recognized that its visitors were not ethnically diverse and has tried to make visitation more reflective of the Denver community. In the 1990s the Museum initiated efforts toward greater inclusiveness with such new programs as a multicultural camp-in, African American cultural activities, a minority intern program, a community outreach coordinator, and cultural diversity training for staff, adding these to continuing programs such as the Native American Resource Group. Not all of these programs continue; others have taken their place to fulfill similar goals. But despite these efforts, today Museum visitors, staff, and volunteers still do not represent the diversity of ethnicity and class in the metro Denver area.

A fast-growing segment of the Museum’s audience has been families with preschool-age children. Portions of the discovery areas had been created with this group in mind. In 2004 an ambitious and unusual collaboration greatly increased cultural opportunities for this audience. Initiated by the Mayor’s Office for Education and Children, The 5 By 5 Project provides low-income Denver Head Start and Early Head Start children and their families with year-round access and educational opportunities at 13 of Denver’s cultural venues, including the Denver Museum of Nature & Science, at no cost. The project’s goals are to strengthen families and support school readiness by providing Denver’s young children with at least five cultural experiences by the age of five. To participants of the program, the Museum provides free unlimited family visits, a bilingual guide to children’s activities in the Museum, science tattoos, and free Planetarium shows. Teachers report that the project is improving students’ vocabulary and verbal skills, building confidence, and enhancing classroom participation. Parents report that these opportunities, which they could not otherwise afford, have strengthened their families and have increased their sense of belonging to, and ownership of, the community. The program illustrates the empowering and far-reaching capacity of a Museum experience.

It is nearly impossible to visit the Museum today without experiencing opportunities to interact with staff or volunteers or Museum objects in fun, enlightening ways. In 2010 the 25 members of the Visitor Programs staff performed more than 7,000 shows and interacted with visitors 1.9 million times. The Museum is known nationally for programming of this type.

**Adult Programs**

Beginning with the Film Lecture Series in 1940, the Museum has always offered after-hours programs for adults: lectures, courses, behind-the-scenes tours, field trips, and international and regional travel, most coordinated early on by the Public Programs Department and later by the Adult Programs Department.
At times the Museum has hosted celebrity speakers with large reputations. Jane Goodall has made several appearances, as have paleoanthropologists Mary and Richard Leakey. But expensive, world-famous speakers have not been required for successful programs. Rather than focus predominately on the “who” of the talk, Museum planners have more recently focused on the “what” and the “how.” They choose speakers whose topics are relevant to audience interests, the Museum’s core competencies, and current science or cultural topics. Equally important is the selection of speakers who can inspire a lay, but sophisticated, audience. Adult Programs staff offer advice and guidelines tailored to the Museum’s audience and insist that lecturers be prepared for a lively, sometimes challenging question and answer session following the talk, for, as with adult audiences everywhere, the Museum’s audiences want participation. Speakers from inside the Museum, its curators and other scientific staff, are held to the same high standards of effective communication. The Museum is unique and fortunate that its scientific staff has always been interested in communicating science to the public and has appreciated the guidance of knowledgeable program organizers.

In addition to the public lectures held in the evenings, Museum scientists offer less formal free lunchtime lectures that showcase current research to an audience composed primarily of volunteers and staff. In this way, information and expertise are shared among the Museum community.

Adult programs often complement and amplify an exhibition. During Aztec, for example, the Museum offered a four-part series titled The World of Moctezuma and five lectures on the Aztec world. Stephen Jay Gould helped celebrate the opening of Prehistoric Journey, and Sir Edmund Hillary spoke
during the 1997–1998 run of the IMAX film Everest (Fig. 3.19).

Lecture topics are often designed to coincide with current events: in 1997 Alan Hale timed three sold-out lectures with the rare appearance of Hale-Bopp, the comet he codiscovered. Following the tragedy of September 11, 2001, the Museum offered a controversial but important series titled Understanding the Middle East. And when the rovers landed on Mars, the Museum was there: in 2004 the Museum threw open its doors, quite late at night, so the public could watch the landings via a live feed from NASA, narrated by the Museum’s curator of planetary science, Steve Lee.

Programs often bring the Denver community together in discussions of current issues. When Denver Mayor John Hickenlooper launched his Sustainable Development Initiative in 2005, the Museum collaborated with five lectures on water issues. Panels representing divergent viewpoints have debated Living with Wolves, Bears and Humans, and The Future of Our National Forests. In 2010 Our Energy Future included perspectives from government, the oil and gas industry, environmentalists, scientists, and the audience. Using handheld wireless devices, the audience could enter the discussion in real time, clicking to indicate their opinions. “This topic is challenging, and you turned it into a fun, motivating evening,” commented one participant.

Museum members and others who want deeper exposure to a topic can enroll in one of the Museum’s courses; approximately 35 are offered each year. The courses range in intensity from Osteology, a semester-long study of vertebrate bones that includes tests, grades, and an option for college credit, to a three-hour discussion about the Anthropology Department’s bead collection. Most of the courses use specimens from the collection, and many involve field trips to directly experience what was studied in the classroom. For example, arachnology students conclude their coursework with a search for spiders in the field; geology students apply their knowledge of stratigraphy to highway road cuts. The most intensive course is the Paleontology Certification program. This series of eight classes attracts citizen-scientists who want to learn more about fossils and how to collect, prepare, and care for them. Begun in 1990, the program is managed by Adult Programs and taught by Earth Sciences Department staff. It has been used as a model for other institutions and organizations and has drawn students from around the country. As of 2010, 275 students have received their certification. Most
have gone on to work with Museum scientists in the lab or the field. One has written a book, several have published or presented papers, and two have discovered new dinosaur species.

Liz Davis, the current manager of Adult Programs, agrees with former curator Hartmann: the availability of space is key to abundant and successful programs. The Museum is fortunate to have a variety of venues for adult programming: classrooms, the intimate Ricketson Auditorium, the much larger Phipps IMAX Theater, and all the secret spots behind the scenes. Science studios will be available with the completion of the Science Engagement Center in 2014. Through the technological savvy and wizardry of Space Science Curator Ka Chun Yu, Planetarium programs provide visualizations and immersive experiences in geology or history as well as astronomy, and can combine these with art and music—a dramatic realization of Director Bailey’s long-ago dream (Fig. 3.20).

Davis and others before her have studied the demographics of the attendees of the Museum’s adult programs and found that on average they are 55 or older, have advanced degrees, and mid- to high socioeconomic status. They are appreciative, loyal, and lively, but they are not especially diverse. Over the years, program planners have worked in various ways to attract new and different audiences. The Museum has a longtime relationship with the Anschutz Family Foundation, which has helped the Museum with programming for seniors, especially those who might not otherwise come to the Museum. On occasion programs were offered off-site, for example 6 Billion People Day, an open-mike forum held in downtown Denver.
CHAPTER 3 — EDUCATION Informal Science Learning for the Public

Formats were experimental: in collaboration with Colorado Humanities, Chautauqua-type performances introduced audiences to Thomas Jefferson, Galileo, Sir Isaac Newton, Meriwether Lewis, Ben Franklin, and Robert Oppenheimer. Relationships with organizations having similar missions, such as The Nature Conservancy, or with expertise in an area attractive to our audience, for example the Denver Film Society, have helped grow the Museum’s adult programming and its audiences.

The most successful recent effort has been the monthly Science Lounge, targeted at an audience 25 to 45 years old (Fig. 3.21). Promoted as “Entertainment, Mind-Expanding Science, Cocktails,” the evenings are interactive and social. This promotional description for the January 2011 program gives the flavor:

Ice Age on the Rocks

Ice Age myths exposed! Find out if you could have survived the icy tundra by throwing an atlatl at a mammoth target. Enjoy drinks, music, and scientists on ice. Learn the latest about the Snowmass Village discovery from two of the scientists who led the dig.

More than 300 people attended this event, 75 percent between the ages of 25 and 45. Overall, they felt this was a “mammoth” evening. Many staff enjoy the event as much as the participants; it is an exciting and creative collaboration among Adult Programs, Visitor Programs, and Research and Collections, and it involves others across the Museum as well. With the help of recent and longtime partnerships, and especially with the Science Lounge, the Museum is successfully broadening its future adult audience. With new audiences and new formats, Adult Programs is growing, in 2010 reaching 13,000 participants.

Youth and Teacher Programs

With few exceptions, such as the travel programs mentioned previously, all of the Museum’s education programs have grown over the last 20 years. Nowhere is this more obvious than with the youth and teacher programs. As noted earlier, in 1985 only two staff members were identified as educators; they conducted school tours and trained volunteers. Today, 25 years later, the Youth and Teacher Programs Department includes 35 full- and part-time staff, around 20 seasonal employees, and nearly 80 adult and teen volunteers. These educators reach approximately 300,000 schoolchildren and teachers annually through a wide array of programs.

One of Goddard’s early actions as director was to take classes off-site in a program called Worlds of Wonder (or WOW), which traveled in a van funded by SCFD (Fig. 3.22). The 2010–2011 catalog of offsite programs to
schools lists 37 different offerings, including classroom programs, assemblies, displays, after-school activities, and distance learning. Museum educators also visit libraries, community organizations, fairs, and festivals.

Onsite programs include facilitated tours, self-guided tours, labs, classes, children’s summer and weekend workshops, camp-ins (Fig. 3.23), homeschool days, and IMAX and Planetarium shows for school groups. The Museum’s various opportunities for professional development served more than 3,000 teachers in 2010 (Fig. 3.24).

Museum education programs are above all Museum programs, making use of all the institution has to offer. They center on at least one of the Museum’s core scientific competencies: geology, paleontology, health science, space science, zoology, and anthropology. Often they feature the specific research projects of individual scientists. They are object based, making full use of the 37,000-object education collection. They are informal, experiential, and sometimes messy: in the lab programs, for example, students participate in dissections of frogs or sheep lungs. Museum dioramas and exhibits are available to them: in Colorado Wildlife Adventures, children can investigate predator-prey relationships by examining skulls and pelts and by encountering the animals in the dioramas of the Explore Colorado hall. Often programs complement a Museum temporary exhibition, as they did with Aztec: classroom programs included A Day in the Life of an Aztec Child, Health in the Time of the Aztecs, and Plants, Animals, and Aztecs. A resource book on the exhibition and a discovery kit of slides and audiotapes prepared teachers and students for their Museum visits.

The Museum’s children’s programs are also relevant to the needs of the schools and the school audience. All programs are age-appropriate and
support Colorado Model Content Standards for education. The audience is primarily preschoolers to eighth graders from the seven-county Denver metro area. One program, WEBS (named for its focus on ecology, the web of life), is a partnership with DPS and its Balarat Outdoor Education Center. Volunteers began this program in 1976 and still conduct it, the only current Youth and Teacher Programs offering not taught by paid staff. Each Monday a WEBS volunteer and a Balarat teacher hike with the kids at Genesee Park, interpreting what they see. Then they come to the Museum, where hands-on specimens and dioramas add depth to the morning’s experience. In 2010 about 15 WEBS volunteers reached 1,283 students, nearly 20 percent of DPS third graders.

Reaching and serving low-income children is an important Museum goal that is also relevant to the needs of the larger educational community. Scholarships for classroom programs and workshops are available for classes or families with demonstrated need. A Bus Fuel Fund enables field trips for economically disadvantaged Colorado schools. During the 2011–2012 school year, a time when schools faced serious financial difficulties, the Museum offered free Museum admission to school groups and other organized youth groups on self-guided tours. Some of the Museum’s most creative and ambitious programs are intended for underserved audiences. The Student Health: Awareness and Responsibility through Education (SHARE) program of 1996, conducted in Spanish and English, taught the role of personal responsibility for good health decisions to third- to fifth-grade students. The Class of 2003 was a collaborative program between the “I Have A Dream” Foundation and the Museum and was funded by the Texaco Foundation. As part of the program, in 1994 61 fourth graders from Stedman Elementary were adopted for nine years, until they graduated from high school. During that time they and their families were provided with Museum educational experiences, including two and a half days at the Comanche National Grasslands in southeastern Colorado, where the children studied birds of prey and small mammals in a “research in action” experience.
Distance Learning

In 1990 Diana Lee Crew, manager of the Museum’s travel program, acquired a very different kind of project: the Jason Project, which was the first step in the evolution of the Museum’s distance learning programs. Jason, an innovative national program founded a year earlier by oceanographer and explorer Robert Ballard, was designed to excite students about science by connecting them in real or near-real time with real scientists involved in actual projects. Using emerging technology, Jason featured a live feed from scientists at their research sites to students, some in satellite sites around Colorado, most in Ricketson Auditorium at the Museum. Students, who prepared in advance for the experience, were able to question the scientists directly. In 1992 the Museum’s involvement became even more firsthand when it sent two student argonauts and one teacher argonaut to the Sea of Cortez, where they helped scientists study tubeworms and other strange marine animals and helped research migrating gray whales. In later years the Museum sent argonauts to Yellowstone National Park and to Hawaii. Jason continued at the Museum until 2003.

The Museum’s next venture into distance learning was the 2006 R@D:IUS project (an acronym for Research at DMNS: Investigating and Understanding Science). In collaboration with Rocky Mountain PBS, paleobotanist Kirk Johnson and space scientist Steve Lee broadcast live into schools using videoconferencing equipment. In 2007 R@D:IUS evolved into the more accessible and ambitious Scientists in Action program. Once a month this free program connects students in grades four through eight directly with scientists during live 45-minute broadcasts from field sites or research labs. During the conversations, scientists demonstrate research techniques or share discoveries while students virtually look over their shoulders, an experience the Museum designed to promote critical thinking and communication skills and to foster scientific literacy. During the 2010–2011 school year, Museum astronomers, anthropologists, biologists, health scientists, and geologists beamed themselves into classrooms (Fig. 3.25).

Figure 3.25. Curator of Paleobotany Kirk Johnson, at a very prolific leaf fossil site, introduces students to science careers and fieldwork through the Scientists in Action program.

A basement room is the unpretentious site of Virtual Classes, the Museum’s newest distance learning program. As an educator dissects a sheep heart or lung, students in classrooms, perhaps in New York or Pennsylvania, observe via videoconference the workings of the circulatory or respiratory system and can discuss them with Museum staff. Beginning with health science in January 2011, the program will expand to other disciplines in the future. In 2010 Virtual Classes and Scientists in Action reached 6,932 students.

Through the Museum’s website, teachers can access online guides to the Museum’s major exhibitions; these provide relevant content, student activities, online resources, and other background information to help with self-guided visits to the Museum. Two teacher professional development courses are available online. Titled Making Science Relevant, one course covers life science and is offered in collaboration with the Denver Zoo. The second course covers earth science.
Three recent programs are intended for children in low-income neighborhoods. Passport to Health extends the experience of the Museum’s *Expedition Health* exhibition to fifth graders at 30 low-income schools in the Denver metro area. Funded by the Colorado Health Foundation, it is free to the schools and is intended to increase students’ understanding of health science, raise their health literacy, and inspire them to lead healthy lifestyles. The Early Excellence Program provides monthly bilingual parent-child workshops in science to families with young children who attend Harrington Elementary or Academia Ana Marie Sandoval, both in lower-income Denver neighborhoods. The third program, Urban Advantage Metro Denver (UA Metro Denver), is likewise intended for underserved children, their families, and teachers, but this time the students are seventh graders. UA Metro Denver is a partnership between metro-area school districts and science-based cultural institutions (the Denver Museum of Nature & Science, Denver Zoo, and Denver Botanic Gardens). As the lead organization, in 2010 the Museum received $3.27 million from the National Science Foundation, the largest federal grant received by the Museum. The program is designed to improve science literacy and promote science inquiry and investigation among middle school students. Like Passport to Health, UA Metro Denver provides professional development, field trips, family days at the Museum, family nights at the schools, and resource materials. Scientists at all three institutions help students with their projects and investigations. Both the Colorado Health Foundation and the National Science Foundation have included funding to evaluate the outcomes of both programs—including, in the case of Passport to Health, efforts to better understand the role of adult influencers and family members in informal learning.

Youth and Teacher Programs has developed these recent programs specifically in response to research findings that show the importance of science education for two age groups: preschool and early childhood, when the excitement for science can lead to success in school and a lifelong interest, and grades four to eight, especially girls, who are likely to lose their interest and ability in science if they have not acquired it by then (Fouad 2008). These programs also intend to answer society’s need for greater science literacy, locally exemplified by the Denver paradox. This is the incongruous situation in which Denver is rich in science- and technology-related employment opportunities, yet its schools perform poorly in science literacy and thus do not prepare students for these opportunities. The Museum’s 20/20 strategic plan, established in 2005, responded to these needs and opportunities by chartering the Youth and Teacher Initiative. This initiative, led by Andrews, has as its goal nothing less than transforming the Museum’s science education for preschool through eighth-grade children. The Science Engagement Center, to be built on the south side of the Museum and scheduled for completion in 2014, will house the program. The center will include
galleries for temporary science-based exhibitions targeted to younger audiences, state-of-the-art science studios, and an entire floor devoted to early childhood education, with a discovery gallery especially for this age group (Fig. 3.26).

The programmatic transformation begins with the Science Education Framework developed by Karen Hays, manager of school programs, and her team. This document identifies science processes, age-appropriate science content, unifying scientific themes, and criteria for exemplary science program delivery. In spring 2011 the framework was used to audit all current Youth and Teacher Program programs. Andrews anticipates that as a result of this audit, 12 to 15 programs will be eliminated, the rest will be revised, and new programs will be added; all will advance science literacy. As Andrews says of this process, “We are reinventing ourselves.”

Over the last 100 years, Museum education has come a long way from its early days of lectures and lending kits. Today, education staff in all departments are venturing off the traditional path, well-constructed by early years of successful programming, and they are heading off in new directions. If they could glance over their shoulders, they would see Education’s early supporters and builders—Figgins, Niedrach, Bailey, Hartmann, and Goddard, among others—who would be pleased to see that their Museum had indeed become “a centralized place of learning.”
CHAPTER 3 — EDUCATION Informal Science Learning for the Public

Literature Cited


Endnotes

2. Ibid.: 9.
5. CMNH Annual Report, 1932: 15.
12. Ibid.: 40.
15. See transcript of oral history with Martha Hartmann, January 27, 2010, DMNS Archives. At the time of her appointment as curator, Marty Hartmann was not married; her maiden name was Martha C. Nelson. Similarly with Dorothy Hodgkins, who was Dorothy Smith in 1969. For convenience, their married names are used in the text.
16. Ibid.
17. Ibid.
18. Ibid.
19. Ibid.
20. Ibid.
27. Ibid.