



# Exploration & Empire

The Explorer and the Scientist  
in the Winning of the American West

William H. Goetzmann

*Winner of the Pulitzer Prize in History, 1967*

*To*

*Mewes, Will, Anne, and Stephen*

*See, vast trackless spaces,  
As in a dream they change, they swiftly fill,  
Countless masses debouch upon them,  
They are now cover'd with the foremost people,  
arts, institutions, known.*

WALT WHITMAN, "Starting From  
Paumanok," *Leaves of Grass*

## INTRODUCTION

THE nineteenth century, for Americans as well as for Europeans, was an age of exploration. During this period all of the islands of the sea were charted, the Antarctic discovered, and the interiors of the continental land masses opened up to the mobile citizens of the Western world, who came to them with Christianity, ideas of progress, new techniques in science, and dreams of romantic imperialism. The nineteenth-century confrontation of the unknown was almost uniquely a Western phenomenon, and as such was primarily important because it helped to create in the centers of dominant culture a series of images which conditioned popular attitudes and public policy concerning the new lands. Out of the charts and the travel literature, the scientific reports, the collections of exotic specimens, the lithographs, the photographs, the adventure novels and popular biographies, the schoolboy geographies, the museums, and even the children's books, emerged a series of impressions—often a series of first impressions unconsciously conditioned by the established culture of the time—which became a crucial factor in shaping the long-range destiny of the newly discovered places and their peoples, and which at the same time altered forever the established culture.

An important part of this latter-day age of discovery was the exploration of the American West, which took place almost entirely within the confines of the last century and reflected many of the characteristics of the broader global phenomenon. Because of its impact upon American culture and in turn upon world culture, this century-long adventure deserves a somewhat different sort of attention than it has hitherto received. Building upon decades of patient and detailed scholarship, it is now possible to attempt the beginning of a new and more general assessment of the role of exploration in the development of the American West, and also, using the American West as a very extensive case study, to inquire more closely into the nature of exploration itself and its consequences as an activity for civilization in general. Such in broadest outlines are the objectives of this book.

A beginning fairly made, however, rests most comfortably upon the reassuring foundations of definition, and in the case of exploration

such comfort is difficult to find, for exploration closely analyzed proves, like everything else, to be a very complex phenomenon. It can perhaps best be defined in terms of a concrete example, and then a more general model. For the concrete example let us return to 1868.

On an August day in 1868 the Union Pacific made an unscheduled stop at Antelope Station in western Nebraska. From one of the ornate parlor cars a dignified, scholarly gentleman stepped out upon the prairie. He was Othniel Charles Marsh, a Yale paleontologist, and he was following up a story that had appeared in an Omaha newspaper to the effect that a railroad well-digger had accidentally unearthed the bones of a prehistoric man out there in Nebraska at a place famous only as a way station on the emigrant route to the West. Marsh's own account of the incident captures some of the excitement he felt that day:

*"Before we approached the small station where the alleged primitive man had been unearthed," Marsh remembered, "I made friends with the conductor, and persuaded him to hold the train long enough for me to glance over the earth thrown out of this well, thinking perchance that I might thus find some fragments, at least, of our early ancestors. In one respect I succeeded beyond my wildest hopes. By rapid search over the huge mound of earth, I soon found many fragments and a number of entire bones, not of man, but of horses diminutive indeed, but true equine ancestors. . . . Other fragments told of his contemporaries—a camel, a pig, and a turtle . . . perhaps more . . . when I could remove the clay from the other remains secured. Absorbed in this work I took no note of time."*

When ultimately Marsh reboarded the train, he had the first clues to his reconstruction of Protohippus, the miniature three-toed horse of the Pleistocene era. And out of this "find" grew his classic fossil genealogy of the modern horse, one of the most famous pieces of paleontological evidence for the validity of Darwin's theory of evolution through natural selection.

More significantly for the student of exploration, however, Professor Marsh's Antelope Station adventure marked the beginning of the career of still another outstanding explorer of the American West. For Marsh's enthusiasm went far beyond the fossil horse.

*"I could only wonder," he wrote, "if such scientific truths as I had now obtained were concealed in a single well, what untold treasures must there be in the whole Rocky Mountain region. This thought promised rich rewards for the enthusiastic explorer in this new field, and thus my own life work seemed laid out before me."*

The nature of Marsh's adventure in 1868 and his subsequent view

of himself as a Rocky Mountain explorer (despite his obvious tender-foot background) highlight one of the most important elements in the history of the American West. The country beyond the Mississippi, as we now know it, was not just "discovered" in one dramatic and colorful era of early-nineteenth-century coonskin exploration. Rather it was discovered and rediscovered by generations of very different explorers down through the centuries following the advent of the shipwrecked Spaniard Cabeza de Vaca. And this process of repeated discovery was in itself among the most important factors which shaped the development of culture and civilization in that region.

Usually, however, exploration is not thought of as a process with cultural significance. Rather it is viewed as a sequence of dramatic discoveries—isolated events, colorful and even interesting perhaps, but of little consequence to the basic sweep of civilization. This is because exploration has rarely if ever been viewed as a continuous form of activity or mode of behavior. The words "exploration" and "discovery" are most often and most casually linked in the popular imagination simply as interchangeable synonyms for "adventure." But exploration is something more than adventure, and something more than discovery. According to Webster, the explorer is actually one who "*seeks* discoveries." He is not simply and solely the "discoverer." Instead the accent is upon process and activity, with advances in knowledge simply fortunate though expected incidents along the way. It is likewise not casual. It is purposeful. It is the seeking. It is one form of the learning process itself, and, as the case of Professor Marsh illustrates, it was often a branch of science which resulted in a discovery at a place trod many times over by previous generations of explorers bent on other missions in days gone by.

The importance of viewing exploration as activity rather than as a sequence of discoveries is further underscored when one considers the distinction between the explorer and the discoverer in terms of the concept of *mission*. Discoveries can be produced by accident, as in the case of the fortunate well-digger at Antelope Station. Exploration, by contrast, is the result of purpose or mission. As such, it is an activity which, to a very large degree, is "programmed" by some older center of culture. That is, its purposes, goals, and evaluation of new data are to a great extent set by the previous experiences, the values, the kinds and categories of existing knowledge, and the current objectives of the civilized centers from which the explorer sets out on his quest. If Marsh, for example, had not been a paleontologist trained at Yale and in Europe, he might have looked for different things on his trip out West. He might have kept his eye out for mineral deposits perhaps, instead of waxing enthusiastic over a "big bonanza" in bones. He certainly never

would have set off with such zest in search of an ancient America in the form of gigantic dinosaurs, exotic pterodactyls, and his own favorites—the extinct toothed birds. Yet, his exploring activity, peculiar as it was, programmed by an older center of culture, had a lasting importance not only in terms of his startling discoveries, but also in terms of the effect it had on the future course of science and public policy in the West, and on the United States as a whole as Marsh rose to prominence in the worlds of science and government. The same might be said in varying degrees for a whole host of other nineteenth-century explorers of the American West—men who synthesized the new sights they saw in the wilderness into projections or images of what the older centers thought the West ought to be. Thus in various periods the West became the great empty continent, Eldorado or Cibola, a barren waste of heathen savages and Spaniards, the passage to India, an imperial frontier, a beaver kingdom, the Great American Desert, a land of flocks and herds, a pastoral paradise, an agricultural Arcadia, a military and administrative problem, a bonanza of gold and silver, a safety valve, a haven for saints, a refuge for bad men, and ultimately, toward the end of the nineteenth century, an enormous laboratory. And so it went—there were many more such images that it might be possible to point out, each demonstrating in some measure the preconceptions that an older culture and its explorers brought to the search for knowledge in the new environment.

With this in mind, my aim has been to focus upon exploration as a meaningful activity and to trace its complex impact not only upon the history of the West but upon the nation as a whole, particularly as it stimulated advances in science and scientific institutions and the evolution, on a national level, of a public policy for the West as a part of the nation. Much of the story necessarily revolves about the role of the federal government in sponsoring the exploration of the West, since it is clear that, contrary to the myth of the rugged independent frontiersman, a good part of the exploration done in the West was done under federal sponsorship. From the early days of Lewis and Clark down to the formation of the United States Geological Survey, the government explorer in one form or another played a vital role. And even when the agents of exploration were not federal servants, their constant referent was nevertheless the national government, and the aid and protection it might be expected to provide.

In addition, the history of Western exploration can serve as a vehicle for demonstrating in a more subtle way some of the larger consequences of the way the West was won. If the region was settled along lines or according to images projected by the older centers of culture, then in the most precise way it was—to borrow a modern concept usu-

ally not thought of as being applicable to the nineteenth century of rugged individualism—"other-directed." Men appear to have gone out West to reconstitute the society they had known on countless frontiers to the East—only of course with themselves at the top instead of at the bottom of the social and economic ladder. Even as they came in conflict with the rapidly changing Eastern and national interests, Western men were still largely prisoners of an emulative society. This in turn was not unique to the frontier West. America itself grew up in this emulative and "programmed" fashion. Thus the explorers reflecting national images and plans, and the Westerners who followed their lead, were all part of an "other-directed" pattern. And this perhaps is the major difficulty in defining Western culture itself, for the West, as the history of its exploration clearly shows, has always been in rapid transition. It is, as Frederick Jackson Turner has pointed out, more of a process than a place. But that process has been as much an Americanization process as it has been one of distinctiveness. Contrary to Turner's hypothesis, the Western experience in the main appears not to have brought distinctiveness as such to bear on the country, but instead has offered a theater in which American patterns of culture could be endlessly mirrored.

Thus in a sense the problem of Western culture becomes the problem of American culture, which is itself the rapidly changing offspring of an older, broader society. The two units represent different degrees of the same complex problem which continues to tantalize and elude historians down to our own day. Exploration, by no means the eccentric activity it is sometimes taken to be, does offer, however, a major clue to the shifting relationship of the regional to the national culture in our recent historical experience.

In its broadest terms, the history of nineteenth-century Western exploration can be seen unfolding through three major periods each characterized by a dominant set of objectives, particular forms of exploring activity, distinctive types of explorers, and appropriate institutions which governed these other factors. The first of these periods began with Lewis and Clark and continued down to approximately 1845. It was an era of imperial rivalry in which even the mountain men and fur traders were self-conscious pawns in an international competition for the West. The second was a period of settlement and investment in which numbers and opportunity—"westering"—were all that counted and the explorer was largely dedicated to lending a helping hand in the matter of Manifest Destiny. The third period, from 1860 to 1900, was the era of the Great Surveys, a time for more intensive scientific reconnaissances and inventories. It was also a time for sober second thoughts as to the proper nature, purpose, and future direction.



of Western settlement. Incipient conservation and planning in the national interest became a vogue, signifying that the West had come of age and its future had become securely wedded to the fortunes of the nation. These three stages or phases of Western exploration form the major parts of the narrative that follows.

Specialists in Western history will readily perceive that in the interests of consolidation and thematic development I have omitted some of the better-known anecdotal material connected with Western exploration, particularly that relating to the fur trade, a subject with which I am not primarily concerned. The numerous voyages up the Missouri River, for example, which are interesting as part of fur-trade history but of less significance to exploration history, I have not attempted to describe at all. Likewise, my excursions into such vast fields as military and mining history, as well as the history of science, have been deliberately, and from a personal point of view, regretfully circumscribed by the requirements of my theme. But since the total story of nineteenth-century Western exploration has never been told before, and one of my primary concerns is to present the reader with a comprehensive and useful reference, as complete as possible within the limitations of space, as to where the explorers actually went, as well as how and why they penetrated the unknown, I have necessarily been forced to include a great deal of geographical detail. It is hoped that the maps inserted at appropriate places will provide the reader with guidance through what is a bewildering geographical maze far greater in scope than any that ever confronted the individual explorer.

And finally, though I have endeavored to go somewhat beyond the descriptive in analyzing the explorer and his activities, I have been continually conscious of him as a man—an individual whose impressions at a particular time and place can only be recaptured by going out with him on his journeys into the unknown and gazing in astonishment at the same wonders he saw, from the same point of view. For in order to understand something of the internal history of exploration it is necessary to understand as fully as possible the explorer himself—to know something of what it felt like to cross the silent wastes of the Great Basin for the first time, or to course down the foaming cataracts of the Green River toward an unknown destination and an unknown fate. It is also necessary to know something of the trivia that affected men's lives in the wilderness, whether it be the limitations of bullboat travel or the discomforts of being caught with a brass surveying instrument on a bald mountain peak in an electrical storm—which is to say that history, to be accurate, must be romantic as well as scientific. So with apologies for many apparent digressions and limitations, herewith is presented a beginning synthesis which is in intent only a reconnais-

sance in the scientific and at the same time romantic spirit, intended to lay out an imperfect historical trail for others to follow upon, correct, and improve. For me it has been a great but serious adventure of which the reader is invited to partake to the limits of his perseverance and indulgence.

*New Haven, Connecticut*  
*Austin, Texas*



## ACKNOWLEDGMENTS

THE late Yale President, A. Whitney Griswold, once asked rhetorically: "Could *Hamlet* have been written by a committee, or the 'Mona Lisa' painted by a club?" To a large extent the writing of history like the work of the artist is also a solitary occupation, with the responsibility for selection, synthesis, and judgment resting squarely upon the individual. Nevertheless, the present historical adventure would not have been possible without the help of a great number of people and institutions.

First of all I should like to acknowledge the generous financial aid and encouragement granted me by the Executive Committee of American Studies of Yale University, by the Chairman of the American Studies Department, Professor Norman Holmes Pearson, and by former Dean William C. De Vane. Through their agency I was awarded a Susan B. Morse Fellowship and Summer Travelling Grant, which enabled me to complete a large part of the basic research for this book. I am also indebted to the Social Science Research Council for a fellowship granted me in 1961-62 at a crucial stage in my work. In addition I have also benefited from the scholarly generosity of the American Philosophical Society, which awarded me a travel grant in 1959, permitting me to make the first important research trip in connection with this project.

I am indebted in another way to the Yale University Library, which has been my virtual headquarters for some years. I have special reason to thank James T. Babb, former Librarian of Yale, for his breadth of vision that made Yale congenial to the study of Western Americana in the first place; Archibald Hanna, Curator of Western Americana, for his constant and close cooperation with my project; and not the least, Harry P. Harrison, Director of Circulation at the Sterling Memorial Library, whose patient understanding of the scholar's problems most certainly made this book possible. I am also indebted to Miss Judy Schiff of the Yale Historical Manuscripts Collection and to Professor Brooks M. Kelley, Archivist of Yale University and Curator of Historical Manuscripts, for their aid at crucial points in my work.

The list of colleagues, friends, and sometimes even complete strangers who contributed in important ways to this book is very long. Pro-

fessors Rollin G. Osterweis, Edmund S. Morgan, John M. Blum, Robin Winks, Howard R. Lamar, Norman Holmes Pearson, William H. Dunham, William Lilley, Robert Dalzell, and Peter Bunnell, all of Yale University, in one way or another made helpful suggestions that materially aided my work. Whitfield Bell of the American Philosophical Society and Nathan Reingold of the Library of Congress contributed expert advice in matters pertaining to the history of science. In this aspect of my work, I also benefited greatly by conversations with Professor Carl Waage of the Yale Department of Geology and Professor Thomas Manning of Texas Technological College. Professor Keith Young of the University of Texas Department of Geology assisted me with the scientific illustrations.

Western historians who have come to my aid, if not rescue, in one way or another, are Dale L. Morgan of the Bancroft Library; Robert V. Hine of the University of California at Riverside; William Turrentine Jackson of the University of California at Davis; J. V. Howell of Tulsa, Oklahoma, the forthcoming biographer of F. V. Hayden; Donald Jackson of the University of Illinois Press; the late Edward S. Wallace of Milington Green, Connecticut; the late Robert Glass Cleland; and Wallace W. Farnham of the University of Wyoming. Helpful suggestions in the field of Western history were also furnished me by Fred Nicklason, formerly on the faculty of Amherst College, now in the Yale Graduate School; Michele La Clergue of the University of Texas Graduate School; and the late Newell Remington of Salt Lake City, Utah. Dr. Erwin Raisz, a master cartographer, and my colleague on the National Atlas Project, saved me from many errors through his masterful knowledge of Western topography.

Licenciado Jorge A. Vargas graciously acted as my guide through the Ministry of External Relations in Mexico City. The Marquesa de Zahara generously loaned me family papers which cast light on George Armstrong Custer and John James Abert. She, in fact, served as a spirited guide through the maze of complex "Abertiana," thereby contributing no little enjoyment to my tour. Eugene Kingman and Mildred Goosman made the resources of the very excellent Joslyn Art Museum in Omaha available to me. I am likewise indebted to the Walters Art Gallery, the Kennedy Galleries Inc., the Hudson's Bay Company, the American Geographical Society, the American Museum of Natural History, the Northern Natural Gas Co., the University of Texas Geology Library, and the University of Oklahoma Press for making illustrative materials available to me.

Stewart Richardson, David Horne, Angus Cameron, and Alfred A. Knopf have given me important advice in matters of publishing. Not the least of Mr. Cameron's labors has been the editing of this book for

its publisher. Mr. and Mrs. Robert Perry of Cleveland, Ohio; Mr. and Mrs. Graham Courtney of Minneapolis, Minnesota; and Dr. and Mrs. Edward Stitt Fleming, of Washington, D.C., all provided forms of encouragement and convivial hospitality that were no less important than professional advice.

An author's most important critic is often not his wife, but his typist. Marie Avitable, my typist for many years, has successfully performed that function, in addition to the many hours of tedious labor connected with deciphering handwriting and getting words on paper. Additional contributions in this vein were made by Mrs. Phyllis O'Keefe, Miss Colleen Kain, and Mrs. Barbara Norwood. Miss Barbara Greenberg assisted in the reading of proof, a tedious job at best. And finally, though I cannot possibly name them all, I am indebted to my closest companions of the past few years, the Fellows of Jonathan Edwards College, and my students at both Yale and Texas universities in seminars on Romantic America, American Intellectual History, and Science in American Culture.

Much to my regret, I am not able to name individually all of the people at all of the institutions who have contributed so much to my search for the raw materials out of which this book was fashioned. In addition to those mentioned above, I am, however, indebted to the staffs of the following institutions more than I can say: the American Philosophical Society, the Philadelphia Academy of Natural Sciences, the Pennsylvania State Historical Society, the Yale Peabody Museum, the Yale Geological Library, the Missouri Historical Society, the Library of the St. Louis Botanical Gardens, the Oklahoma State Historical Society, the Library of the University of Oklahoma, the Kansas State Historical Society, the Gilcrease Institute, the Barker Library of the Texas State Historical Society, the University of Texas Geology Library, the Denver Public Library, the Houston Public Library, the San Jacinto Museum, the Rosenberg Library of Galveston, the Panhandle-Plains Historical Museum, the William Robertson Coe Library of the University of Wyoming, the libraries and museums at Grand Canyon, Yellowstone, Big Bend, Zion, Scott's Bluff, and Jackson Hole national parks and monuments, the Jackson Hole Museum (private), the Washington State Historical Society, the Bancroft Library, the Huntington Library, the Arizona Pioneers Historical Society, the New Mexico Historical Society, the John Carter Brown Library, the West Point Museum, the Newberry Library, the New-York Historical Society, the New York Public Library, the Torrey Botanical Gardens of New York, the Butler Library of Columbia University, the American Museum of Natural History, the New York State Library, the New York State Museum, the Archivo Nacional de Mexico, the Ministerio de Relaciones Exteriores de Mexico, the Li-

brary of Congress Manuscript, Cartographical, and Picture Sections, the Smithsonian Institution, and the United States Geological Survey. All of these institutions not only made information and materials available to me, but in addition individual members of their staffs performed services for me ranging from producing typescripts of documents to making suggestions concerning obscure collections that I might otherwise have overlooked. In only one instance did I meet with anything less than full and enthusiastic cooperation. Last of all the institutions, however, I should like especially to acknowledge the help of the people in the following branches of the National Archives: the Army Records Section, the Interior Department Records Section, the Still Pictures Section, Cartographic Records, and the State Department Records Section. More than anything else, this book is a child of the National Archives and its dedicated people.

Parts of this book have appeared in somewhat different form in *The American Quarterly*, *The Journal of World History*, and *The American West: An Appraisal* (Museum of New Mexico Press, 1963), to which acknowledgments are due.

Finally, though it is now fashionable to pay homage to Venus and Bacchus, or to acknowledge the important services of Zen, Miltown, and "Pot," I should like to conclude on a more traditional note and express gratitude to, and admiration for, my wife Mewes, who some years ago in another book was with me as we went "down the edges, through the passes, up the mountains steep." She is still with me, though the edges have grown more precarious, the passes narrower, and the mountains steeper.

## CONTENTS

### PART ONE

#### *Exploration and Imperialism: 1805-45*

CHAPTER I	Westward the Clash of Empires	3
CHAPTER II	The Rediscovery of the Southwest	36
CHAPTER III	Canada Moves South	79
CHAPTER IV	The Mountain Men	105
CHAPTER V	Something More Than Beaver	146
CHAPTER VI	The Romantic Horizon	181

### PART TWO

#### *The Great Reconnaissance and Manifest Destiny: 1845-60*

CHAPTER VII	When the Eagle Screamed: The Explorer as Diplomat in the Final Clash of Imperial Energies	231
CHAPTER VIII	In Search of an Iron Trail	265
CHAPTER IX	The Great Reconnaissance	303

### PART THREE

#### *Exploration and the Great Surveys: 1860-1900*

CHAPTER X	The New Mountain Men: California's Geological Survey	355
CHAPTER XI	The Army Way	390
CHAPTER XII	The West of Clarence King	430



CHAPTER XIII	The Last Stand of the Army Explorer	467
CHAPTER XIV	F. V. Hayden: Gilded Age Explorer	489
CHAPTER XV	John Wesley Powell: The Explorer as Reformer	530
CHAPTER XVI	Epilogue: Beyond the Explorer's Frontier	577
	<i>A Note on the Sources</i>	649
	<i>Index</i>	<i>follows page 656</i>