

Countdown To A Moon Launch Springer Praxis Books

It's 1969 and the United States is about to begin an adventure that mankind has dreamed of since the beginning of time — a trip to the moon. In a day-by-day, minute-by-minute countdown — in the control room and up in space — you'll experience the thrill of this breathtaking "One small step for man, one giant leap for mankind!" Countdown to the Moon is a companion to Steve Englehart's award-winning story of the Wright Brothers, Countdown to Flight. Together, these two Countdowns chronicle the liftoff and apex of mankind's eternal quest to leave the earth behind.

Three comprehensive official NASA documents chronicle the amazing journey of Apollo 12, which performed the second manned lunar landing in November 1969. It was conducted by astronauts Conrad, Gordon, and Bean. Two technical mission reports, the Manned Spacecraft Center (MSC) Apollo Mission Report and the NASA Headquarters Mission Operation Report (MOR), provide complete details about every aspect of the mission. Apollo 12 MSC Mission Report: Mission description, pilots' report, communications, trajectory, command and service module performance, mission support performance, assessment of mission objectives, launch vehicle summary, anomaly summary (CSM, LM, government furnished equipment), conclusions, vehicle descriptions. Apollo 12 MOR: Mission design and execution, spacecraft performance, flight anomalies, detailed objectives and experiments, launch countdown, detailed flight mission description, back contamination program, contingency operations, configuration differences, mission support, recovery support plan, flight crew, mission management responsibility, program management, abbreviations and acronyms. Apollo 12 Press Kit: Detailed preview from countdown to landing. The Apollo 12 mission provided a wealth of scientific information in this significant step of detailed lunar exploration. The emplaced experiments, with an expected equipment operation time of 1 year, will enable scientific observations of the lunar surface environment and determination of structural perturbations. This mission demonstrated the capability for a precision landing, a requirement for proceeding to more specific and rougher lunar surface locations having particular scientific interest. The space vehicle, with a crew of Charles Conrad, Jr., Commander; Richard F. Gordon, Command Module Pilot; and Alan L. Bean, Lunar Module Pilot; was launched from Kennedy Space Center, Florida, at 11:22:00 a.m. e.s.t. (16:22:00 G.m.t.) November 14, 1969. The activities during earth-orbit checkout, translunar injection, and translunar coast were similar to those of Apollo 11, except for the special attention given to verifying all spacecraft systems as a result of lightning striking the space vehicle at 36.5 seconds and 52 seconds. A non-free-return translunar trajectory profile was used for the first time in the Apollo 12 mission. The spacecraft was inserted into a 168.8- by 62.6-mile lunar orbit at about 83-1/2 hours. Two revolutions later a second maneuver was performed to achieve a 66.1- by 54.3-mile orbit. The initial checkout of lunar

module systems during translunar coast and in lunar orbit was satisfactory. At about 104 hours, the Commander and the Lunar Module Pilot entered the lunar module to prepare for descent to the lunar surface.

Three comprehensive official NASA documents - converted for accurate flowing-text e-book format reproduction - chronicle the incredible journey of Apollo 10, which tested the Lunar Module in lunar orbit for the first time, paving the way for the Apollo 11 landing mission. It was conducted by astronauts Stafford, Cernan, and Young in May 1969. Two technical mission reports, the Manned Spacecraft Center (MSC) Apollo Mission Report and the NASA Headquarters Mission Operation Report (MOR), provide complete details about every aspect of the mission. Apollo 10 MSC Mission Report: Mission description, pilots' report, communications, trajectory, command and service module performance, mission support performance, assessment of mission objectives, launch vehicle summary, anomaly summary (CSM, LM, government furnished equipment), conclusions, vehicle descriptions. Apollo 10 MOR: Mission design and execution, spacecraft performance, flight anomalies, detailed objectives and experiments, launch countdown, detailed flight mission description, back contamination program, contingency operations, configuration differences, mission support, recovery support plan, flight crew, mission management responsibility, program management, abbreviations and acronyms. Apollo 10 Press Kit: Detailed preview from countdown to landing. The Apollo 10 mission encompassed all aspects of an actual crewed lunar landing, except the landing. It was the first flight of a complete, crewed Apollo spacecraft to operate around the moon. Objectives included a scheduled eight-hour lunar orbit of the separated lunar module, or LM, and descent to about nine miles off the moon's surface before ascending for rendezvous and docking with the command and service module, or CSM, in about a 70-mile circular lunar orbit. Pertinent data to be gathered in this landing rehearsal dealt with the lunar potential, or gravitational effect, to refine the Earth-based crewed spaceflight network tracking techniques, and to check out LM programmed trajectories and radar, and lunar flight control systems. Twelve television transmissions to Earth were planned. All mission objectives were achieved. Apollo 10 launched from Cape Kennedy on May 18, 1969, into a nominal 115-mile circular Earth-parking orbit at an inclination of 32.5 degrees. One-and-a-half orbits later, translunar injection occurred. The S-IVB fired to increase velocity from 25,593 to 36,651 feet per second on a free-return trajectory. Twenty-five minutes later, the CSM separated for transposition and docking with the LM, similar to the maneuver performed on Apollo 9. The orbital vehicle was comprised of the S-IVB stage, and its payload of the CSM, the LM and spacecraft-lunar module adapter, or SLA, shroud. The Apollo 10 crew members were Commander Thomas Stafford, Command Module Pilot John Young and Lunar Module Pilot Eugene Cernan. The first live color TV transmissions to Earth began three hours after launch when Apollo 10 was 3,570 miles from Earth and concluded when the spacecraft was 9,428 miles away. The

transmission showed the docking process and the interior of the CSM. About four hours after launch, Apollo 10 separated from the S-IVB stage, which was followed by another telecast from 14,625 miles out. A third TV transmission of pictures of Earth was made from 24,183 miles out, and a fourth telecast of the Earth was made from 140,000 miles. The LM flew over Landing Site 2 in the Sea of Tranquility. During this run, the LM landing radar was tested for altitude functioning, providing both "high gate" and "low gate" data.

Four comprehensive official NASA documents chronicle the historic mission of Apollo 11, which accomplished the first landing of humans on the moon in July 1969. Two technical mission reports, the Manned Spacecraft Center (MSC) Apollo 11 Mission Report and the NASA Headquarters Mission Operation Report (MOR), provide complete details about every aspect of the mission. Apollo 11 MSC Mission Report: Mission description, pilots' report, lunar descent and ascent, communications, trajectory, command and service module performance, lunar module performance, extravehicular mobility unit performance, the lunar surface, biomedical evaluation, mission support performance, assessment of mission objectives, launch vehicle summary, anomaly summary (CSM, LM, government furnished equipment), conclusions, vehicle descriptions, spacecraft histories, postflight testing, data availability, glossary. Apollo 11 MOR: Mission design and execution, spacecraft performance, flight anomalies, detailed objectives and experiments, launch countdown for the Apollo-Saturn AS-506 launch vehicle, detailed flight mission description, back contamination program, contingency operations, configuration differences, mission support, recovery support plan, flight crew, mission management responsibility, program management, abbreviations and acronyms Apollo 11 Press Kit: Countdown, Launch events, mission events, mission trajectory and maneuver description, earth parking orbit (EPO), trans-lunar injection (TLI), translunar coast, lunar orbit insertion, lunar module descent, lunar landing, EVA, lunar sample collection, LM ascent, lunar orbit rendezvous, transearth injection (TEI), transearth coast, entry and landing, recovery operations, quarantine, Lunar Receiving Laboratory, go/no-go decision points, alternate missions, abort modes, deep space aborts, onboard television, photographic tasks, lunar description, lunar landing sites, CSM systems, lunar module structures, Saturn V launch vehicle, Apollo 11 crew, Early Apollo Scientific Experiments Package, ALRH, launch operations, Launch Complex 39, Manned Space Flight Network, ARIA, tracking ships, contamination control program, Apollo program management, Principal Investigators and Sample Investigations, Glossary, acronyms and abbreviations. NASA Mission Report (PAO Release) - At 10:56 P.M. EDT, Sunday, July 20. Astronaut Neil A. Armstrong, spacecraft commander of Apollo 11, set foot on the moon. His descent from the lowest rung of the ladder which was attached to a leg of the lower stage of the Lunar Module (LM), to the footpad, and then to the surface of earth's only natural satellite constituted the climax of a national effort that began in 1961. It was an effort that involved, at its peak, more than 300,000 people in

industry, the universities and in government. As he took his epochal step, Armstrong commented "That's one small step for a man, one giant leap for Mankind." Sharing this electric moment with Armstrong and Edwin "Buzz" Aldrin, the LM pilot, were an estimated half-billion TV watchers in most of the earth's nations. As the astronaut descended the ladder, he pulled a "D" ring that deployed a black and white television camera which was focused to record the event. Framed by parts of the LM's under-carriage, Armstrong's heavily-booted left foot descended across millions of TV tubes until his boot sole made contact. The New York Times bestselling, "meticulously researched and absorbingly written" (The Washington Post) story of the trailblazers and the ordinary Americans on the front lines of the epic Apollo 11 moon mission. President John F. Kennedy astonished the world on May 25, 1961, when he announced to Congress that the United States should land a man on the Moon by 1970. No group was more surprised than the scientists and engineers at NASA, who suddenly had less than a decade to invent space travel. When Kennedy announced that goal, no one knew how to navigate to the Moon. No one knew how to build a rocket big enough to reach the Moon, or how to build a computer small enough (and powerful enough) to fly a spaceship there. No one knew what the surface of the Moon was like, or what astronauts could eat as they flew there. On the day of Kennedy's historic speech, America had a total of fifteen minutes of spaceflight experience—with just five of those minutes outside the atmosphere. Russian dogs had more time in space than US astronauts. Over the next decade, more than 400,000 scientists, engineers, and factory workers would send twenty-four astronauts to the Moon. Each hour of space flight would require one million hours of work back on Earth to get America to the Moon on July 20, 1969. "A veteran space reporter with a vibrant touch—nearly every sentence has a fact, an insight, a colorful quote or part of a piquant anecdote" (The Wall Street Journal) and in *One Giant Leap*, Fishman has written the sweeping, definitive behind-the-scenes account of the furious race to complete one of mankind's greatest achievements. It's a story filled with surprises—from the item the astronauts almost forgot to take with them (the American flag), to the extraordinary impact Apollo would have back on Earth, and on the way we live today. From the research labs of MIT, where the eccentric and legendary pioneer Charles Draper created the tools to fly the Apollo spaceships, to the factories where dozens of women sewed spacesuits, parachutes, and even computer hardware by hand, Fishman captures the exceptional feats of these ordinary Americans. "It's been 50 years since Neil Armstrong took that one small step. Fishman explains in dazzling form just how unbelievable it actually was" (Newsweek).

JFK issued the historic moon landing challenge. These are the stories of the visionaries who helped America complete his vision with the first lunar landing fifty years ago. A Companion Book to the AMERICAN EXPERIENCE® Film on PBS® Going in depth to explore their stories beyond the PBS series, writer/producer Robert Stone—called "one of our most important documentary

filmmakers” by Entertainment Weekly—brings these important figures to brilliant life. In 1961, President John F. Kennedy proposed the nation spend twenty billion dollars to land a man on the Moon before the end of the decade. Based on eyewitness accounts and newly discovered archival material, *Chasing the Moon* reveals for the first time the unknown stories of the fascinating individuals whose imaginative work across several decades culminated in America’s momentous achievement. More than a story of engineers and astronauts, the moon landing—now celebrating its fiftieth anniversary—grew out of the dreams of science fiction writers, filmmakers, military geniuses, and rule-breaking scientists. They include • Science fiction author Arthur C. Clarke, whose writing inspired some of the key players in the Moon race. A scientific paper he wrote in his twenties led to the U.S. beating Russia in one area of space: communications satellites. • Wernher von Braun, the former Nazi military genius who oversaw Hitler’s rocket weapons program. After working on ballistic missiles for the U.S. Army, he was recruited by NASA to manage the creation of the Saturn V moon rocket. • Astronaut Frank Borman, commander of the first mission to circumnavigate the Moon, whose powerful testimony before Congress in 1967 decisively saved the U.S. lunar program from being cancelled. • Poppy Northcutt, a young mathematician who was the first woman to work in Mission Control. Her media exposure as a unique presence in this all-male world allowed her the freedom to stand up for equal rights for women and minorities. • Edward Dwight, an African American astronaut candidate, recruited at the urging of the Kennedy White House to further the administration’s civil rights agenda—but not everyone welcomed his inclusion. Setting these key players in the political, social, and cultural climate of the time, and including captivating photographs throughout, *Chasing the Moon* focuses on the science and the history, but most important, the extraordinary individuals behind what was undoubtedly the greatest human achievement of the twentieth century.

Examines the history of NASA’s shuttle program, its missions, and its impending demise in a behind-the-scenes view of what was once the cornerstone of the U.S. space program.

The historic Apollo 11 mission to the moon is recounted for the very young in this richly-detailed, vividly rendered description of the voyage from launch, to landing, to Moonwalk. Glorious illustrations and rhyming verse, along with individual recognition of each of the three astronauts, make this dramatic story a blast for young readers.

Exposes the behind-the-scenes events of the U.S. and Soviet space programs, describing key personalities, technologies, successes, and failures encountered along the way

Jonathan Ward takes the reader deep into the facilities at Kennedy Space Center to describe NASA’s first computer systems used for spacecraft and rocket checkout and explain how tests and launches proceeded. Descriptions of early operations include a harrowing account of the heroic efforts of pad workers

during the Apollo 1 fire. A companion to the author's book *Countdown to a Moon Launch: Preparing Apollo for Its Historic Journey*, this explores every facet of the facilities that served as the base for the Apollo/Saturn missions. Hundreds of illustrations complement the firsthand accounts of more than 70 Apollo program managers and engineers. The era of the Apollo/Saturn missions was perhaps the most exciting period in American space exploration history. Cape Canaveral and Kennedy Space Center were buzzing with activity. Thousands of workers came to town to build the facilities and launch the missions needed to put an American on the Moon before the end of the decade. Work at KSC involved much more than just launching rockets. It was a place like none other on Earth. Technicians performed intricate operations, and hazards abounded everywhere, including lightning, fire, highly-toxic fuels, snakes, heat, explosives, LOX spills, and even plutonium. The reward for months of 7-day workweeks under intense pressure was witnessing a Saturn V at liftoff. For anyone who ever wished they had worked at Kennedy Space Center during the Apollo era, this book is the next best thing. The only thing missing is the smell of rocket fuel in the morning.

Three comprehensive official NASA documents chronicle the incredible flight of Apollo 13, which returned safely to Earth after aborting its planned lunar landing in April 1970. (Please note that due to space constraints, the Cortright Apollo 13 Review Board report is available as a separate ebook.) Two technical mission reports, the Manned Spacecraft Center (MSC) Apollo Mission Report and the NASA Headquarters Mission Operation Report (MOR), provide complete details about every aspect of the mission. Apollo 13 MSC Mission Report: Mission description, pilots' report, communications, trajectory, command and service module performance, mission support performance, assessment of mission objectives, launch vehicle summary, anomaly summary (CSM, LM, government furnished equipment), conclusions, vehicle descriptions. Apollo 13 MOR: Mission design and execution, spacecraft performance, flight anomalies, detailed objectives and experiments, launch countdown, detailed flight mission description, back contamination program, contingency operations, configuration differences, mission support, recovery support plan, flight crew, mission management responsibility, program management, abbreviations and acronyms. Apollo 13 Press Kit: Detailed preview from countdown to landing. The Apollo 13 mission, planned as a lunar landing in the Fra Mauro area, was aborted because of an abrupt loss of service module cryogenic oxygen associated with a fire in one of the two tanks at approximately 56 hours. The lunar module provided the necessary support to sustain a minimum operational condition for a safe return to earth. A circumlunar profile was executed as the most efficient means of earth return, with the lunar module providing power and life support until transfer to the command module just prior to entry. Although the mission was unsuccessful as planned, a lunar flyby and several scientific experiments were completed. The space vehicle, with a crew of James A. Lovell, Commander; Fred W. Haise, Jr., Lunar Module Pilot; and John L. Swigert, Jr., Command Module Pilot; was

launched from Kennedy Space Center, Florida, at 2:13:00 p.m. e.s.t. (19:13:00 G.m.t.) April 11, 1970. Two days before launch, the Command Module Pilot, as a member of the Apollo 13 backup crew, was substituted for his prime crew counterpart, who was exposed and found susceptible to rubella (German measles). During S-II stage boost, an automatic shutdown of the center engine occurred because of a divergent dynamic structural condition associated with that engine. At approximately 56 hours, the pressure in cryogenic oxygen tank 2 began to rise at an abnormally high rate and, within about 100 seconds, the tank abruptly lost pressure. The loss of oxygen and primary power in the service module required an immediate abort of the mission. The crew powered up the lunar module, and the first maneuver following the incident was made with the descent propulsion system to place the spacecraft once again on a free-return trajectory. A second maneuver performed with the descent engine 2 hours after passing pericynthion reduced the transearth transit time and moved the earth landing point from the Indian Ocean to the South Pacific. Two small transearth midcourse corrections were required prior to entry. The lunar module was jettisoned 1 hour before entry, which was performed nominally using the primary guidance and navigation system. Landing occurred at 142:54:41 within sight of the recovery ship. The landing point was reported as 21 degrees 38 minutes 24 seconds south latitude and 165 degrees 21 minutes 42 seconds west longitude. The crew were retrieved and aboard the recovery ship within 45 minutes after landing.

A New York Times Bestseller "Celebrates a bold era when voyaging beyond the Earth was deemed crucial to national security and pride." -The Wall Street Journal Restoring the drama, majesty, and sheer improbability of an American triumph, this is award-winning historian Craig Nelson's definitive and thrilling story of man's first trip to the moon. At 9:32 a.m. on July 16, 1969, the Apollo 11 rocket launched in the presence of more than a million spectators who had gathered to witness a truly historic event. Through interviews, 23,000 pages of NASA oral histories, and declassified CIA documents on the space race, *Rocket Men* presents a vivid narrative of the moon mission, taking readers on the journey to one of the last frontiers of the human imagination.

Stung by the pioneering space successes of the Soviet Union - in particular, Gagarin being the first man in space, the United States gathered the best of its engineers and set itself the goal of reaching the Moon within a decade. In an expanding 2nd edition of *How Apollo Flew to the Moon*, David Woods tells the exciting story of how the resulting Apollo flights were conducted by following a virtual flight to the Moon and its exploration of the surface. From launch to splashdown, he hitches a ride in the incredible spaceships that took men to another world, exploring each step of the journey and detailing the enormous range of disciplines, techniques, and procedures the Apollo crews had to master. While describing the tremendous technological accomplishment involved, he adds the human dimension by calling on the testimony of the people who were

there at the time. He provides a wealth of fascinating and accessible material: the role of the powerful Saturn V, the reasoning behind trajectories, the day-to-day concerns of human and spacecraft health between two worlds, the exploration of the lunar surface and the sheer daring involved in traveling to the Moon and the mid-twentieth century. Given the tremendous success of the original edition of *How Apollo Flew to the Moon*, the second edition will have a new chapter on surface activities, inspired by reader's comment on Amazon.com. There will also be additional detail in the existing chapters to incorporate all the feedback from the original edition, and will include larger illustrations.

Jonathan Ward takes the reader deep into the facilities at Kennedy Space Center to describe NASA's first computer systems used for spacecraft and rocket checkout and explain how tests and launches proceeded. Descriptions of early operations include a harrowing account of the heroic efforts of pad workers during the Apollo 1 fire. A companion to the author's book *Countdown to a Moon Launch: Preparing Apollo for Its Historic Journey*, this explores every facet of the facilities that served as the base for the Apollo/Saturn missions. Hundreds of illustrations complement the firsthand accounts of more than 70 Apollo program managers and engineers. The era of the Apollo/Saturn missions was perhaps the most exciting period in American space exploration history. Cape Canaveral and Kennedy Space Center were buzzing with activity. Thousands of workers came to town to build the facilities and launch the missions needed to put an American on the Moon before the end of the decade. Work at KSC involved much more than just launching rockets. It was a place like none other on Earth. Technicians performed intricate operations, and hazards abounded everywhere, including lightning, fire, highly-toxic fuels, snakes, heat, explosives, LOX spills, and even plutonium. The reward for months of 7-day workweeks under intense pressure was witnessing a Saturn V at liftoff. For anyone who ever wished they had worked at Kennedy Space Center during the Apollo era, this book is the next best thing. The only thing missing is the smell of rocket fuel in the morning.

Provides recollections from Apollo astronauts and a collection of photographs that document the history of the Apollo space program.

The long-awaited memoir of a trailblazer and role model who is telling her story for the first time. Eileen Collins was an aviation pioneer her entire career, from her crowning achievements as the first woman to command an American space mission as well as the first to pilot the space shuttle to her early years as one of the Air Force's first female pilots. She was in the first class of women to earn pilot's wings at Vance Air Force Base and was their first female instructor pilot. She was only the second woman pilot admitted to the Air Force's elite Test Pilot Program at Edwards Air Force Base. NASA had such confidence in her skills as a leader and pilot that she was entrusted to command the first shuttle mission after the Columbia disaster, returning the US to spaceflight after a two-year hiatus. Since retiring from the Air Force and NASA, she has served on numerous corporate boards and is an inspirational speaker about space exploration and

leadership. Eileen Collins is among the most recognized and admired women in the world, yet this is the first time she has told her story in a book. It is a story not only of achievement and overcoming obstacles but of profound personal transformation. The shy, quiet child of an alcoholic father and struggling single mother, who grew up in modest circumstances and was an unremarkable student, she had few prospects when she graduated from high school, but she changed her life to pursue her secret dream of becoming an astronaut. She shares her leadership and life lessons throughout the book with the aim of inspiring and passing on her legacy to a new generation.

Thousands of workers labored at Kennedy Space Center around the clock, seven days a week, for half a year to prepare a mission for the liftoff of Apollo 11. This is the story of what went on during those hectic six months. Countdown to a Moon Launch provides an in-depth look at the carefully choreographed workflow for an Apollo mission at KSC. Using the Apollo 11 mission as an example, readers will learn what went on day by day to transform partially completed stages and crates of parts into a ready-to-fly Saturn V. Firsthand accounts of launch pad accidents, near misses, suspected sabotage, and last-minute changes to hardware are told by more than 70 NASA employees and its contractors. A companion to Rocket Ranch, it includes many diagrams and photographs, some never before published, to illustrate all aspects of the process. NASA's groundbreaking use of computers for testing and advanced management techniques are also covered in detail. This book will demystify the question of how NASA could build and launch Apollo missions using 1960s technology. You'll discover that there was no magic involved – just an abundance of discipline, willpower, and creativity. Countdown to a Moon Launch Preparing Apollo for Its Historic Journey Springer

Thousands of workers labored at Kennedy Space Center around the clock, seven days a week, for half a year to prepare a mission for the liftoff of Apollo 11. This is the story of what went on during those hectic six months. Countdown to a Moon Launch provides an in-depth look at the carefully choreographed workflow for an Apollo mission at KSC. Using the Apollo 11 mission as an example, readers will learn what went on day by day to transform partially completed stages and crates of parts into a ready-to-fly Saturn V. Firsthand accounts of launch pad accidents, near misses, suspected sabotage, and last-minute changes to hardware are told by more than 70 NASA employees and its contractors. A companion to Rocket Ranch, it includes many diagrams and photographs, some never before published, to illustrate all aspects of the process. NASA's groundbreaking use of computers for testing and advanced management techniques are also covered in detail. This book will demystify the question of how NASA could build and launch Apollo missions using 1960s technology. You'll discover that there was no magic involved - just an abundance of discipline, willpower, and creativity. Chronicles the launch of the Apollo 11 and the story of Neil Armstrong and Buzz Aldrin's historic walk on the moon.

LONGLISTED FOR THE NATIONAL BOOK AWARD • YALSA EXCELLENCE IN NONFICTION FINALIST • A ROBERT F. SIBERT HONOR BOOK This beautifully illustrated, oversized guide to the people and technology of the moon landing by award-winning author/illustrator John Rocco (illustrator of the Percy Jackson series) is a must-have for space fans, classrooms, and tech geeks. Everyone knows of Neil Armstrong's famous first steps on the moon. But what did it really take to get us there? The Moon landing is one of the most ambitious, thrilling, and dangerous ventures in human history. This exquisitely researched and illustrated book tells the stories of the 400,000 unsung heroes--the engineers, mathematicians, seamstresses, welders, and factory workers--and their innovations and life-changing technological leaps forward that allowed NASA to achieve this unparalleled accomplishment.

From the shocking launch of the Russian satellite Sputnik to the triumphant splashdown of Apollo 11, Caldecott Honor winner John Rocco answers every possible question about this world-altering mission. Each challenging step in the space race is revealed, examined, and displayed through stunning diagrams, experiments, moments of crisis, and unforgettable human stories. Explorers of all ages will want to pore over every page in this comprehensive chronicle detailing the grandest human adventure of all time!

Voted the Best Space Book of 2018 by the Space Hipsters The dramatic inside story of the epic search and recovery operation after the Columbia space shuttle disaster. On February 1, 2003, Columbia disintegrated on reentry before the nation's eyes, and all seven astronauts aboard were lost. Author Mike Leinbach, Launch Director of the space shuttle program at NASA's John F. Kennedy Space Center was a key leader in the search and recovery effort as NASA, FEMA, the FBI, the US Forest Service, and dozens more federal, state, and local agencies combed an area of rural east Texas the size of Rhode Island for every piece of the shuttle and her crew they could find. Assisted by hundreds of volunteers, it would become the largest ground search operation in US history. This comprehensive account is told in four parts: Parallel Confusion Courage, Compassion, and Commitment Picking Up the Pieces A Bittersweet Victory For the first time, here is the definitive inside story of the Columbia disaster and recovery and the inspiring message it ultimately holds. In the aftermath of tragedy, people and communities came together to help bring home the remains of the crew and nearly 40 percent of shuttle, an effort that was instrumental in piecing together what happened so the shuttle program could return to flight and complete the International Space Station. Bringing Columbia Home shares the deeply personal stories that emerged as NASA employees looked for lost colleagues and searchers overcame immense physical, logistical, and emotional challenges and worked together to accomplish the impossible. Featuring a foreword and epilogue by astronauts Robert Crippen and Eileen Collins, and dedicated to the astronauts and recovery search persons who lost their lives, this is an incredible, compelling narrative about the best of humanity in the darkest of times and about how a failure at the pinnacle of human achievement became a story of cooperation and hope.

"Explores various perspectives on the Apollo 11 moon landing. The reader's choices reveal the historical details"--

Fifty years ago, in a small, fragile spacecraft designed for only one purpose-landing on the Moon-two American astronauts prepared to fly that spacecraft from its 10 mile high orbit above the Moon down to a landing on the Sea of Tranquility. It was a sea in name only. It was actually a bone dry, ancient dusty basin pockmarked with craters and littered with rocks and boulders. Somewhere in that 500 mile diameter basin, the astronauts would attempt to make Mankind's first landing on the Moon.Neil Armstrong would pilot the Lunar Module "Eagle" during its twelve minute descent from orbit down to a landing. Col. Edwin "Buzz" Aldrin would assist him. On the way down they would encounter a host of problems, any one of which could have potentially caused them to have to call off the landing, or, even worse, die making the attempt. The problems were all technical-communications problems, computer problems, guidance problems, sensor problems. Armstrong and Aldrin faced the very real risk of dying by the very same technical sword that they had to live by in order to accomplish the enormous task of landing on the Moon for the first time.Yet the human skills Armstrong and Aldrin employed would be more than equal to the task. Armstrong's formidable skills as an aviator, honed from the time he was a young boy, would serve him well as he piloted Eagle down amidst a continuing series of systems problems that might have fatally distracted a lesser aviator. Armstrong's brilliant piloting was complemented by Aldrin's equally remarkable discipline and calmness as he stoically provided a running commentary on altitude and descent rate while handling systems problems that threatened the landing. Finally, after a harrowing twelve and a half minutes, Armstrong gently landed Eagle at "Tranquility Base", a

name he had personally chosen to denote the location of the first Moon landing.

On January 27, 1967, astronauts Gus Grissom, Ed White, and Roger Chaffee climbed into a new spacecraft perched atop a large Saturn rocket at Kennedy Space Center in Florida for a routine dress rehearsal of their upcoming launch into orbit, then less than a month away. All three astronauts were experienced pilots and had dreams of one day walking on the moon. But little did they know, nor did anyone else, that once they entered the spacecraft that cold winter day they would never leave it alive. The Apollo program would be perilously close to failure before it ever got off the ground. But rather than dooming the space program, this tragedy caused the spacecraft to be completely overhauled, creating a stellar flying machine to achieve the program's primary goal: putting man on the moon. Apollo 1 is a candid portrayal of the astronauts, the disaster that killed them, and its aftermath. In it, readers will learn: How the Apollo 1 spacecraft was doomed from the start, with miles of uninsulated wiring and tons of flammable materials in a pure oxygen atmosphere, along with a hatch that wouldn't open How, due to political pressure, the government contract to build the Apollo 1 craft went to a bidder with an inferior plan How public opinion polls were beginning to turn against the space program before the tragedy and got much worse after Apollo 1 is about America fulfilling its destiny of man setting foot on the moon. It's also about the three American heroes who lost their lives in the tragedy, but whose lives were not lost in vain.

For many, the moon landing was the defining event of the twentieth century. So it seems only fitting that Norman Mailer—the literary provocateur who altered the landscape of American nonfiction—wrote the most wide-ranging, far-seeing chronicle of the Apollo 11 mission. A classic chronicle of America's reach for greatness in the midst of the Cold War, *Of a Fire on the Moon* compiles the reportage Mailer published between 1969 and 1970 in *Life* magazine: gripping firsthand dispatches from inside NASA's clandestine operations in Houston and Cape Kennedy; technical insights into the magnitude of their awe-inspiring feat; and prescient meditations that place the event in human context as only Mailer could. Praise for *Of a Fire on the Moon* "The gift of a genius . . . a twentieth-century American epic—a *Moby Dick* of space."—New York "Mailer's account of Apollo 11 stands as a stunning image of human energy and purposefulness. . . . It is an act of revelation—the only verbal deed to be worthy of the dream and the reality it celebrates."—Saturday Review "A wild and dazzling book."—The New York Times Book Review "Still the most challenging and stimulating account of [the] mission to appear in print."—The Washington Post Praise for Norman Mailer "[Norman Mailer] loomed over American letters longer and larger than any other writer of his generation."—The New York Times "A writer of the greatest and most reckless talent."—The New Yorker "Mailer is indispensable, an American treasure."—The Washington Post "A devastatingly alive and original creative mind."—Life "Mailer is fierce, courageous, and reckless and nearly everything he writes has sections of headlong brilliance."—The New York Review of Books "The largest mind and imagination [in modern] American literature . . . Unlike just about every American writer since Henry James, Mailer has managed to grow and become richer in wisdom with each new book."—Chicago Tribune "Mailer is a master of his craft. His language carries you through the story like a leaf on a stream."—The Cincinnati Post

The Space Race of the mid-1900s took humankind where it had never gone before—the moon! This volume takes readers on their own moon mission as it outlines a contest of ultimate exploration, recounts the Apollo missions, and adds depth with stellar detail and stunning visual aids.

All worlds are dying, and it's up to one broken and dysfunctional family from Earth—the Wellsleys—to save the day. Cancer-ridden Ella celebrates her fifteenth birthday beneath an enchanted mountain, but it is what lies even farther below—the mysterious Star in the sea—that demands she grow up quickly. While Ella grapples with the sacrifice she must make and the lies she is forced to tell, her mother, Tessa, is hell-bent on protecting her. Through bizarre

encounters, love-sick Tessa realizes that she is not the lonely orphan she believes. Her husband, Arden, and father-in-law, Archie, are not the only ones with magical bloodlines. This revelation changes everything. As Archie chooses to embody his unexpected ancestry, he learns that leading the charge in the ultimate battle against evil won't be as easy as he thought. He'll need his family—and the strange allies he has gained—by his side to give Ella enough time to set things right. Can they defeat the unstoppable Millia sands—and another unexpected foe—before everything they hold dear is destroyed? Or will their adventure tear them apart for good? The finale to The 8th Island Trilogy will hold you spellbound until the final page, and long after.

This official NASA document provides the complete transcription of the historic Apollo 11 post-flight debriefing given by astronauts Neil Armstrong, Buzz Aldrin, and Michael Collins on July 31, 1969. Every aspect of the incredible adventure is discussed - from moonwalking to personal hygiene issues, launch through landing. This is an invaluable addition to the ebook library of anyone interested in the Apollo moon landings. Contents: Suiting and Ingress * Status Checks and Countdown * Powered Flight * Earth Orbit and Systems Checkout * TLI through S-IVB Closeout * Translunar Coast * LOI through Lunar Module Activation * Lunar Module Checkout through Separation * DOI through Touchdown * Lunar Surface * CSM Circumlunar Operations * Lift-Off, Rendezvous and Docking * Lunar Module Jettison through TEI * Transearth Coast * Entry * Landing and Recovery * Geology and Experiments * Command Module Systems Operations * Lunar Module Systems Operations * Miscellaneous Systems, Flight Equipment and GFE * Visual Sightings * Pre-mission Planning * Mission Control * Training * Human Factors * Miscellaneous * Concluding Comments At 10:56 P.M. EDT, Sunday, July 20. Astronaut Neil A. Armstrong, spacecraft commander of Apollo 11, set foot on the moon. His descent from the lowest rung of the ladder which was attached to a leg of the lower stage of the Lunar Module (LM), to the footpad, and then to the surface of earth's only natural satellite constituted the climax of a national effort that began in 1961. It was an effort that involved, at its peak, more than 300,000 people in industry, the universities and in government. As he took his epochal step, Armstrong commented "That's one small step for a man, one giant leap for Mankind." Sharing this electric moment with Armstrong and Edwin "Buzz" Aldrin, the LM pilot, were an estimated half-billion TV watchers in most of the earth's nations. As the astronaut descended the ladder, he pulled a "D" ring that deployed a black and white television camera which was focused to record the event. Framed by parts of the LM's under-carriage, Armstrong's heavily-booted left foot descended across millions of TV tubes until his boot sole made contact.

Three comprehensive official NASA documents chronicle the flight of Apollo 17, the sixth and final Apollo lunar landing featuring the first scientist-astronaut, Harrison "Jack" Schmitt. Two technical mission reports, the Manned Spacecraft Center (MSC) Apollo Mission Report and the NASA Headquarters Mission Operation Report (MOR), provide complete details about every aspect of the mission. Apollo 17 MSC Mission Report: Mission description, pilots' report, communications, trajectory, command and service module performance, mission support performance, assessment of mission objectives, launch vehicle summary, anomaly summary (CSM, LM, government furnished equipment), conclusions, vehicle descriptions. Apollo 17 MOR: Mission design and execution, spacecraft performance, flight anomalies, detailed objectives and experiments, launch countdown, detailed flight mission description, back contamination program, contingency operations, configuration differences, mission support, recovery support plan, flight crew, mission management responsibility, program management, abbreviations and acronyms. Apollo 17 Press Kit: Detailed preview from countdown to landing. At 9:15:29 a.m. GMT Dec. 7, 1972, the command and service module, or CSM, was separated from the S-IVB. Approximately 15 min later, the CSM docked with the lunar module, or LM. Landing occurred at 7:54:57 p.m. Dec. 11, at lunar latitude 20 degrees, 10 minutes north, and

longitude 30 degrees 46 minutes east. Apollo 17 was the last lunar landing mission. Three extravehicular activities, or EVAs, lasted a total of 22 hours, four minutes on the lunar surface. EVA No. 1 began at 11:54:49 p.m. Dec. 11, with Eugene Cernan egressing at 12:01 a.m. Dec. 12. The first EVA was seven hours, 12 minutes long and was completed at 7:06:42 a.m. Dec. 12. The second EVA began at 11:28:06 p.m. Dec. 12, and lasted seven hours, 37 minutes, ending at 7:05:02 a.m. Dec. 13. The final EVA began at 10:25:48 p.m. Dec. 13, and ended at 5:40:56 a.m. Dec. 14. The LM ascent stage lifted off the moon at 10:54:37 p.m. Dec. 14. Ronald Evans performed a transearth EVA at 8:27:40 p.m. Dec. 17, that lasted one hour, six minutes, during which time he retrieved the lunar sounder film, as well as the panoramic and mapping camera film cassettes. Apollo 17 hosted the first scientist-astronaut to land on moon: Harrison Schmitt. The sixth automated research station was set up. The lunar rover vehicle traversed a total of 30.5 kilometers. Lunar surface-stay time was 75 hours, and lunar orbit time 17 hours. Astronauts gathered 110.4 kilograms, or 243 pounds, of material.

Three comprehensive official NASA documents chronicle the vital first manned test flight of the Apollo lunar module, Apollo 9, conducted by astronauts McDivitt, Scott, and Schweickart in early 1969. Two technical mission reports, the Manned Spacecraft Center (MSC) Apollo Mission Report and the NASA Headquarters Mission Operation Report (MOR), provide complete details about every aspect of the mission. Apollo 9 MSC Mission Report: Mission description, pilots' report, communications, trajectory, command and service module performance, mission support performance, assessment of mission objectives, launch vehicle summary, anomaly summary (CSM, LM, government furnished equipment), conclusions, vehicle descriptions. Apollo 9 MOR: Mission design and execution, spacecraft performance, flight anomalies, detailed objectives and experiments, launch countdown, detailed flight mission description, back contamination program, contingency operations, configuration differences, mission support, recovery support plan, flight crew, mission management responsibility, program management, abbreviations and acronyms. Apollo 9 Press Kit: Detailed preview from countdown to landing. Apollo 9 was the first manned flight of the lunar module and was conducted to qualify this portion of the spacecraft for lunar operations. The crew members were James A. McDivitt, Commander; David R. Scott, Command Module Pilot; and Russell L. Schweikart, Lunar Module Pilot. The primary objectives of the mission were to evaluate crew operation of the lunar module and to demonstrate docked vehicle functions in an earth orbital mission, thereby qualifying the combined spacecraft for lunar flight. Lunar module operations included a descent engine firing while docked with the command module, a complete rendezvous and docking profile, and, with the vehicle unmanned, an ascent engine firing to propellant depletion. Combined spacecraft functions included command module docking with the lunar module (after transposition), spacecraft ejection from the launch vehicle, five service propulsion firings while docked, a docked descent engine firing, and extravehicular crew operations from both the lunar and command modules. These primary objectives were all satisfied. All spacecraft systems operated satisfactorily in performing the mission as planned. The thermal response of both spacecraft remained within expected ranges for an earth orbital flight, and consumable usages were maintained within acceptable limits. Management of the many complex systems of both spacecraft by the crew was very effective, and communications quality was generally satisfactory. The space vehicle was launched from the Kennedy Space Center, Florida, at 11:00:00 a.m. e.s.t., on March 3, 1969. Following a normal launch phase, the S-IVB stage inserted the spacecraft into an orbit of 102.3 by 103.9 nautical miles. After the post-insertion checkout was completed, the command and service modules were separated from the S-IVB, transposed, and docked with the lunar module. The docked spacecraft were ejected from the S-IVB at 4:08:06.

This memoir of a veteran NASA flight director tells riveting stories from the early days of the Mercury program through Apollo 11 (the moon landing) and Apollo 13, for both of which Kranz

was flight director. Gene Kranz was present at the creation of America's manned space program and was a key player in it for three decades. As a flight director in NASA's Mission Control, Kranz witnessed firsthand the making of history. He participated in the space program from the early days of the Mercury program to the last Apollo mission, and beyond. He endured the disastrous first years when rockets blew up and the United States seemed to fall further behind the Soviet Union in the space race. He helped to launch Alan Shepard and John Glenn, then assumed the flight director's role in the Gemini program, which he guided to fruition. With his teammates, he accepted the challenge to carry out President John F. Kennedy's commitment to land a man on the Moon before the end of the 1960s. Kranz recounts these thrilling historic events and offers new information about the famous flights. What appeared as nearly flawless missions to the Moon were, in fact, a series of hair-raising near misses. When the space technology failed, as it sometimes did, the controllers' only recourse was to rely on their skills and those of their teammates. He reveals behind-the-scenes details to demonstrate the leadership, discipline, trust, and teamwork that made the space program a success. A fascinating firsthand account by a veteran mission controller of one of America's greatest achievements, *Failure is Not an Option* reflects on what has happened to the space program and offers his own bold suggestions about what we ought to be doing in space now.

Powerful free verse and stunning illustrations tell the true story of the American effort to land the first man on the Moon. In 1961, President John F. Kennedy announced that the United States would try to land a man on the Moon by the end of the decade. During the two thousand, nine hundred and seventy-nine days that followed his speech, eighteen astronauts climbed into spaceships; three of them died before even leaving the ground. Eight rockets soared into space. And four hundred thousand people—engineers, technicians, scientists, mathematicians, and machinists—joined Project Apollo in hopes of making the dream a reality. Award-winning author and former mechanical engineer Suzanne Slade joins up with New York Times best-selling illustrator Thomas Gonzalez to tell the powerful story of the successes, failures, triumphs, tragedies, and lessons learned from Apollos 1 through 10 that led to the first Moon landing.

Three comprehensive official NASA documents chronicle the epic December 1968 mission of Apollo 8, the first manned lunar orbit mission by Frank Borman, James Lovell, and Bill Anders. Two technical mission reports, the Manned Spacecraft Center (MSC) Apollo 8 Mission Report and the NASA Headquarters Mission Operation Report (MOR), provide complete details about every aspect of the mission. Apollo 8 MSC Mission Report: Mission description, pilots' report, lunar descent and ascent, communications, trajectory, command and service module performance, mission support performance, assessment of mission objectives, launch vehicle summary, anomaly summary (CSM, government furnished equipment), conclusions, vehicle descriptions. Apollo 8 MOR: Mission design and execution, spacecraft performance, flight anomalies, detailed objectives and experiments, launch countdown, detailed flight mission description, back contamination program, contingency operations, configuration differences, mission support, recovery support plan, flight crew, mission management responsibility, program management, abbreviations and acronyms. Apollo 8 Press Kit: Detailed preview from countdown to landing. The mission objectives for Apollo 8 included a coordinated performance of the crew, the command and service module, or CSM, and the support facilities. The mission also was to demonstrate translunar injection; CSM navigation, communications and midcourse corrections; consumable assessment; and passive thermal control. The detailed test objectives were to refine the systems and procedures relating to future lunar operations. All primary mission objectives and detailed test objectives were achieved. All launch vehicle and spacecraft systems performed according to plan. Engineering accomplishments included use of the ground network with onboard navigational techniques to sharpen the accuracy of lunar

orbit determination and the successful use of Apollo high-gain antenna -- a four-dish unified S-band antenna that deployed from the service module, or SM, after separation from the third stage. Mission Highlights Apollo 8 launched from Cape Kennedy on Dec. 21, 1968, placing astronauts Frank Borman, James Lovell Jr. and William Anders into a 114 by 118 mile parking orbit at 32.6 degrees. During the second revolution, at two hours, 50 minutes ground elapsed time, the S-IVB third stage restarted for a five-minute, 17-second burn, initiating translunar coast. Following S-IVB/CSM separation at three hours, 21 minutes, a 1.5 feet per second radial burn of the SM reaction control engines was initiated to establish sufficient distance for S-IVB propellant dumping. Following the propellant dumping, which sent the stage into diverging trajectory and solar orbit, the separation distance still was deemed inadequate and a second SM reaction control burn of 7.7 feet per second was performed. The first midcourse correction occurred at about 10 hours, 55 minutes into the mission and provided a first check on the service propulsion system, or SPS, engine prior to committing spacecraft to lunar orbit insertion. The second and final midcourse correction prior to lunar orbit insertion occurred at 61 hours, 8 minutes, 54 seconds. Loss of signal occurred at 68 hours, 58 minutes, 45 seconds when Apollo 8 passed behind the moon. At that moment, NASA's three astronauts became the first humans to see the moon's far side. The first lunar orbit insertion burn, at 69 hours, 8 minutes, 52 seconds, lasted four minutes, two seconds and reduced the spacecraft's 8,400 feet per second velocity by 2,994 feet per second, resulting in an initial lunar orbit of 70 by 193 miles. The orbit circularized at 70 miles by the second lunar orbit insertion burn of 135 feet per second, performed at the start of the third revolution, again on the back side of the moon, at 73 hours, 35 minutes, five seconds.

July 16, 2019 will be the 50th anniversary of the Apollo 11 mission, celebrating an incredible decade in science history. In *Eight Years to the Moon*, unique personal stories of NASA engineers and MIT computer experts are interwoven with Nancy's gripping style to tell the story of Apollo 11 in a fresh and riveting way. Despite incredible hurdles and catastrophes, Apollo 11 launched a successful mission within President Kennedy's proposed timeline. The employees of NASA made the impossible possible—creating new technology and completely reimagining space travel. In *Eight Years to the Moon*, readers are transported into the space race of the 1960s. Nancy begins in 1962—when NASA had to build the Manned Spacecraft Center and space exploration first became a priority—and spans to the successful Apollo 11 mission. With firsthand accounts from Henry Pohl (director of engineering at Johnson Space Center), Glynn Lunney (Apollo flight director), and Frank Hughes (lead test engineer for the Apollo command and lunar module simulators), it's easy to get wrapped up in the excitement of what it was like. In the words of Henry Pohl when he saw his first rocket test launch, "When that thing lit off I had never seen such power in my life...I decided right then and there that's what I wanted to be part of..." And he was far from alone. Filled with stories from those involved and interviews with other Apollo experts, *Eight Years to the Moon* is a book that will delight anyone who has ever looked up at the moon and wondered how we got there. Recounts Borman's flights aboard NASA's Gemini 7 and Apollo 8, and his battle to keep Eastern Airlines financially sound during his tenure as the company's president "An extraordinary delight for a reader of any age." —The New York Times Book Review Brian Floca explores Apollo 11's famed moon landing with this newly expanded edition of *Moonshot!* Simply told, grandly shown, and now with eight additional pages of brand-new art and more in-depth information about the historic moon landing, here is the flight of Apollo 11. Here for a new generation of readers and explorers are the steady astronauts clicking themselves into gloves and helmets, strapping themselves into sideways seats. Here are their great machines in all their detail and monumentality, the ROAR of rockets, and the silence of the Moon. Here is a story of adventure and discovery—a story of leaving and returning during the summer of 1969, and a story of home, seen whole, from far away.

NEW YORK TIMES BESTSELLER • The riveting inside story of three heroic astronauts who took on the challenge of mankind’s historic first mission to the Moon, from the bestselling author of *Shadow Divers*. “Robert Kurson tells the tale of Apollo 8 with novelistic detail and immediacy.”—Andy Weir, #1 New York Times bestselling author of *The Martian* and *Artemis* By August 1968, the American space program was in danger of failing in its two most important objectives: to land a man on the Moon by President Kennedy’s end-of-decade deadline, and to triumph over the Soviets in space. With its back against the wall, NASA made an almost unimaginable leap: It would scrap its usual methodical approach and risk everything on a sudden launch, sending the first men in history to the Moon—in just four months. And it would all happen at Christmas. In a year of historic violence and discord—the Tet Offensive, the assassinations of Martin Luther King, Jr., and Robert Kennedy, the riots at the Democratic National Convention in Chicago—the Apollo 8 mission would be the boldest, riskiest test of America’s greatness under pressure. In this gripping insider account, Robert Kurson puts the focus on the three astronauts and their families: the commander, Frank Borman, a conflicted man on his final mission; idealistic Jim Lovell, who’d dreamed since boyhood of riding a rocket to the Moon; and Bill Anders, a young nuclear engineer and hotshot fighter pilot making his first space flight. Drawn from hundreds of hours of one-on-one interviews with the astronauts, their loved ones, NASA personnel, and myriad experts, and filled with vivid and unforgettable detail, *Rocket Men* is the definitive account of one of America’s finest hours. In this real-life thriller, Kurson reveals the epic dangers involved, and the singular bravery it took, for mankind to leave Earth for the first time—and arrive at a new world. “*Rocket Men* is a riveting introduction to the [Apollo 8] flight. . . . Kurson details the mission in crisp, suspenseful scenes. . . . [A] gripping book.”—The New York Times Book Review

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