

EYE ON THE SKY

LICK OBSERVATORY'S FIRST CENTURY



DONALD E. OSTERBROCK

JOHN R. GUSTAFSON

W. J. SHILOH UNRUH

Eye On The Sky Lick Observatorys First Century

Donald E. Osterbrock



Eye On The Sky Lick Observatorys First Century:

Eye on the Sky Donald E. Osterbrock, John R. Gustafson, W.J. Shiloh Unruh, 2010-04-12 The world's first mountain top observatory and America's first big science research center Lick Observatory exemplifies astronomy's dramatic development in the past century. A dedicated Confederate naval officer and his jack of all trades foreman used the bequest of a miserly California eccentric to transform an isolated mountain peak into the world's premier research observatory. Its first staff included a director from West Point and three of the outstanding astronomers of their time. Since its dedication in 1888 Lick Observatory has been the site of many of the most important discoveries in astronomy. Eye on the Sky presents Lick Observatory from the point of view of the people who breathed life into its giant telescopes. Their community was both constant and constantly transformed, shaped by workers famous and unknown who made it their home. The authors also explain in terms anyone can understand the laboratory advances that were adapted to telescopes to make them more powerful and the conceptual breakthroughs that discoveries at the telescope helped bring about. The men and women who went to the top of Mount Hamilton in search of greater knowledge of the skies helped to change our conception of the universe and our place in it. They were people with personal and political lives as well as scientific careers and their story illuminates a time and a place where foundations were laid for the discoveries of the next century.

Eye on the Sky Osterbrock/Gustafson, 1988 The world's first mountain top observatory and America's first big science research center Lick Observatory exemplifies astronomy's dramatic development in the past century. A dedicated Confederate naval officer and his jack of all trades foreman used the bequest of a miserly California eccentric to transform an isolated mountain peak into the world's premier research observatory. Its first staff included a director from West Point and three of the outstanding astronomers of their time. Since its dedication in 1888 Lick Observatory has been the site of many of the most important discoveries in astronomy. Eye on the Sky presents Lick Observatory from the point of view of the people who breathed life into its giant telescopes. Their community was both constant and constantly transformed, shaped by workers famous and unknown who made it their home. The authors also explain in terms anyone can understand the laboratory advances that were adapted to telescopes to make them more powerful and the conceptual breakthroughs that discoveries at the telescope helped bring about. The men and women who went to the top of Mount Hamilton in search of greater knowledge of the skies helped to change our conception of the universe and our place in it. They were people with personal and political lives as well as scientific careers and their story illuminates a time and a place where foundations were laid for the discoveries of the next century.

The Haunted Observatory Richard Baum, 2007-06-05 For many centuries observers of the night sky interpreted the moving planets and the surrounding starry realms in terms of concentric crystalline spheres in the center of which hung the Earth, the hub of creation. But with the discoveries of Galileo, Copernicus, Kepler, and Newton, astronomers were suddenly struck by a momentous truth: the solar system was neither small nor intimate but extended an unfathomable distance toward

countless even more distant stars The endless possibilities of these astounding developments fired scientists imaginations leading both to further discoveries and to flights of fancy While newly discovered facts are important and interesting the quaint curiosities and spectral ghosts that led scientists astray have a fascination of their own This is the subject of astronomer Richard Baum in this elegant narrative about the mysteries and wonders of celestial exploration The fabled mountains of Venus a city in the moon ghostly rings around Uranus and Neptune bright inexplicable objects seen near the sun and the truth behind Coleridge s Star dogged Moon in his famous poem about the Ancient Mariner these are just some of the intriguing twists and turns that astronomers took while investigating our starry neighbors Baum vividly conveys the romance of astronomy at a time when the vistas of outer space were a new frontier and astronomers guided only by imagination and analogy set forth on uncharted seas and were haunted for a lifetime by marvels both seen and imagined

Sky and Ocean Joined Steven J. Dick,2003 As one of the oldest scientific institutions in the United States the US Naval Observatory has a rich and colourful history This volume is first and foremost a story of the relations between space time and navigation from the rise of the chronometer in the United States to the Global Positioning System of satellites for which the Naval Observatory provides the time to a billionth of a second per day It is a story of the history of technology in the form of telescopes lenses detectors calculators clocks and computers over 170 years It describes how one scientific institution under government and military patronage has contributed through all the vagaries of history to almost two centuries of unparalleled progress in astronomy Sky and Ocean Joined will appeal to historians of science technology scientific institutions and American science as well as astronomers meteorologists and physicists Accretion Rick Novy, **Yerkes Observatory, 1892-1950** Donald E. Osterbrock,2008-04-15 Drawing on his experience as historian of astronomy practicing astrophysicist and director of Lick Observatory Donald Osterbrock uncovers a chapter in the history of astronomy by providing the story of the Yerkes Observatory **Proving Einstein Right** S. James Gates Jr.,Cathie Pelletier,2019-09-24 A thrilling adventure story chronicling the perilous journey of the scientists who set out to prove the theory of relativity the results of which catapulted Albert Einstein to fame and forever changed our understanding of the universe In 1911 a relatively unknown physicist named Albert Einstein published his preliminary theory of gravity But it hadn t been tested To do that he needed a photograph of starlight as it passed the sun during a total solar eclipse So began a nearly decade long quest by seven determined astronomers from observatories in four countries who traveled the world during five eclipses to capture the elusive sight Over the years they faced thunderstorms the ravages of a world war lost equipment and local superstitions Finally in May of 1919 British expeditions to northern Brazil and the island of Principe managed to photograph the stars confirming Einstein s theory At its heart this is a story of frustration faith and ultimate victory and of the scientists whose efforts helped build the framework for the big bang theory catapulted Einstein to international fame and shook the foundation of physics **Astronomy and Astrophysics National Historic Landmark Theme Study** Harry A.

Butowsky,1989 **Destined for the Stars** Catherine L. Newell,2019-06-05 Where did humanity get the idea that outer space is a frontier waiting to be explored *Destined for the Stars* unravels the popularization of the science of space exploration in America between 1944 and 1955 arguing that the success of the US space program was due not to technological or economic superiority but was sustained by a culture that had long believed it was called by God to settle new frontiers and prepare for the inevitable end of time and God's final judgment Religious forces Newell finds were in no small way responsible for the crescendo of support for and interest in space exploration in the early 1950s well before Project Mercury the United States first human spaceflight program began in 1959 In this remarkable history Newell explores the connection between the art of Chesley Bonestell the father of modern space art whose paintings drew inspiration from depictions of the American West and the popularity of that art in Cold War America Bonestell's working partnership with science writer and rocket expert Willy Ley and Ley and Bonestell's relationship with Wernher von Braun father of both the V 2 missile and the Saturn V rocket whose millennial conviction that God wanted humankind to leave Earth and explore other planets animated his life's work Together they inspired a technological and scientific faith that awoke a deep seated belief in a sense of divine destiny to reach the heavens The origins of their quest Newell concludes had less to do with the Cold War strife commonly associated with the space race and everything to do with the religious culture that contributed to the invention of space as the final frontier [Galactic Encounters](#) William Sheehan,Christopher J. Conselice,2014-09-17 Written by William Sheehan a noted historian of astronomy and Christopher J Conselice a professional astronomer specializing in galaxies in the early universe this book tells the story of how astronomers have pieced together what is known about the vast and complicated systems of stars and dust known as galaxies The first galaxies appeared as violently disturbed exotic objects when the Universe was only a few 100 million years old From that tortured beginning they have evolved through processes of accretion merging and star formation into the majestic spirals and massive ellipticals that dominate our local part of the Universe This of course includes the Milky Way to which the Sun and Solar System belong it is our galactic home and the only galaxy we will ever know from the inside Sheehan and Conselice show how astronomers understanding has grown from the early catalogs of Charles Messier and William Herschel developed through the pioneering efforts of astronomers like E E Barnard V M Slipher Henrietta Leavitt Edwin Hubble and W W Morgan and finally is reaching fruition in cutting edge research with state of the art instruments such as the Hubble Space Telescope that can see back to nearly the beginning of the Universe By combining archival research that reveals fascinating details about the personalities rivalries and insights of the astronomers who created extragalactic astronomy with the latest data gleaned from a host of observations the authors provide a view of galaxies and their place in our understanding of the Universe as they have never been seen before

Starlight Detectives Alan Hirshfeld,2014-06-16 Julia Ward Howe Award Finalist NBC News Top Science and Tech Books of the Year selection Scientific American FSG Favorite Science Books of the Year selection Nature.com Top Reads of

the Year selection Kirkus Reviews Best Books of the Year selection Discover magazine Top 5 Summer Read A masterful balance of science history and rich narrative Discover magazine Hirshfeld tells this climactic discovery of the expanding universe with great verve and sweep as befits a story whose scope characters and import leave most fiction far behind Wall Street Journal Starlight Detectives is just the sort of richly veined book I love to read full of scientific history and discoveries peopled by real heroes and rogues and told with absolute authority Alan Hirshfeld's wide deep knowledge of astronomy arises not only from the most careful scholarship but also from the years he's spent at the telescope posing his own questions to the stars DAVA SOBEL author of A More Perfect Heaven How Copernicus Revolutionized the Cosmos and Longitude In 1929 Edwin Hubble announced the greatest discovery in the history of astronomy since Galileo first turned a telescope to the heavens The galaxies previously believed to float serenely in the void are in fact hurtling apart at an incredible speed the universe is expanding This stunning discovery was the culmination of a decades long arc of scientific and technical advancement In its shadow lies an untold yet equally fascinating backstory whose cast of characters illuminates the gritty hard won nature of scientific progress The path to a broader mode of cosmic observation was blazed by a cadre of nineteenth century amateur astronomers and inventors galvanized by the advent of photography spectral analysis and innovative technology to create the entirely new field of astrophysics From William Bond who turned his home into a functional observatory to John and Henry Draper a father and son team who were trailblazers of astrophotography and spectroscopy to geniuses of invention such as L on Foucault and George Hale who founded the Mount Wilson Observatory Hirshfeld reveals the incredible stories and the ambitious dreamers behind the birth of modern astronomy Alan Hirshfeld Professor of Physics at the University of Massachusetts Dartmouth and an Associate of the Harvard College Observatory is the author of Parallax The Race to Measure the Cosmos The Electric Life of Michael Faraday and Eureka Man The Life and Legacy of Archimedes

Einstein's Jury Jeffrey Crelinsten, 2016-05-31 Einstein's Jury is the dramatic story of how astronomers in Germany England and America competed to test Einstein's developing theory of relativity Weaving a rich narrative based on extensive archival research Jeffrey Crelinsten shows how these early scientific debates shaped cultural attitudes we hold today The book examines Einstein's theory of general relativity through the eyes of astronomers many of whom were not convinced of the legitimacy of Einstein's startling breakthrough These were individuals with international reputations to uphold and benefactors and shareholders to please yet few of them understood the new theory coming from the pen of Germany's up and coming theoretical physicist Albert Einstein Some tried to test his theory early in its development but got no results Others through toil and hardship great expense and perseverance concluded that it was wrong A tale of international competition and intrigue Einstein's Jury brims with detail gleaned from Crelinsten's far reaching inquiry into the history and development of relativity Crelinsten concludes that the well known British eclipse expedition of 1919 that made Einstein famous had less to do with the scientific acceptance of his theory than with his burgeoning public fame It was not until the 1920s when the

center of gravity of astronomy and physics shifted from Europe to America that the work of prestigious American observatories legitimized Einstein's work As Crellin so expertly shows the glow that now surrounds the famous scientist had its beginnings in these early debates among professional scientists working in the glare of the public spotlight

Chasing the Stars James Lattis, Kelly Tyrrell, 2024-04-23 A richly illustrated history of Wisconsin's astronomical innovations Explore the remarkable story of Wisconsin astronomers whose curiosity persistence and innovation helped us better understand our universe Chasing the Stars traces the history of the University of Wisconsin's Washburn Observatory where some of the world's most cutting edge astronomical inventions were born Learn about the earliest Indigenous stargazers the women who worked as the first human computers the astronomers who sold time by the stars the scientists who shrank the Milky Way and the crucial role Wisconsin astronomers played in the development of modern astrophysics and space astronomy This extraordinary book features more than 100 modern and historic photographs that illustrate the people and science behind Wisconsin's astronomical innovations Designed for lay readers and astronomers alike Chasing the Stars inspires all of us to look up at the sky in wonder Filled with fascinating astronomy related facts Chasing the Stars covers the first century plus of the University of Wisconsin's Washburn Observatory and the science it inspired It is a thorough enlightening history of an important scientific site and the personalities who brought it to life Foreword Reviews Lattis and Tyrrell give us a masterful tour of Washburn Observatory its legacy of astronomical discovery and the key figures who forever changed our understanding of the cosmos Readers will find delightful insights on these pages that bring this rich history to life and instill a desire to gaze at the stars Kenneth Sembach former director of the Space Telescope Science Institute Through enchanting photos and compelling tales of astronomers Lattis and Tyrrell shed light on the impressive innovations Wisconsin has contributed to the field of astrophysics From the novel ways of collecting light from space to the new technologies sent to space on early satellites readers will be fascinated to learn how Wisconsin astronomers have influenced our understanding of the universe Dr Amanda Bauer deputy director and head of science and education Yerkes Observatory This fascinating and detailed account of the history of astronomy in Wisconsin highlights a diverse set of connections from the construction of the University of Wisconsin's first observatory in the late 1880s to General Mills Oscar Meyer railroads and the creation of the American Astronomical Society Chasing the Stars recounts for us how Wisconsin's astronomers came to be leaders in this field for more than a century and reminds us of why astronomy is a deeply human endeavor that appeals to professionals and nonprofessionals alike Dr Andrea Ghez UCLA astrophysicist and Nobel laureate

Compendium of Practical Astronomy Günter D. Roth, 2012-12-06 It is a pleasure to present this work which has been well received in German speaking countries through four editions to the English speaking reader We feel that this is a unique publication in that it contains valuable material that cannot easily if at all be found elsewhere We are grateful to the authors for reading through the English version of the text and for responding promptly for the most part to our queries Several

authors have supplied us on their own initiative or at our suggestion with revised and updated manuscripts and with supplementary English references We have striven to achieve a translation of Handbuch für Sternfreunde which accurately presents the qualitative and quantitative scientific principles contained within each chapter while maintaining the flavor of the original German text Where appropriate we have inserted footnotes to clarify material which may have a different meaning and or application in English speaking countries from that in Germany When the first English edition of this work Astronomy A Handbook translated by the late A Beer appeared in 1975 it contained 21 chapters This new edition is over twice the length and contains 28 authored chapters in three volumes At Springer's request we have devised a new title Compendium of Practical Astronomy to more accurately reflect the broad spectrum of topics and the vast body of information contained within these pages

Kew Observatory and the Evolution of Victorian Science, 1840-1910 Lee T.

Macdonald, 2018-06-05 Kew Observatory was originally built in 1769 for King George III a keen amateur astronomer so that he could observe the transit of Venus By the mid nineteenth century it was a world leading center for four major sciences geomagnetism meteorology solar physics and standardization Long before government cutbacks forced its closure in 1980 the observatory was run by both major bodies responsible for the management of science in Britain first the British Association for the Advancement of Science and then from 1871 the Royal Society Kew Observatory influenced and was influenced by many of the larger developments in the physical sciences during the second half of the nineteenth century while many of the major figures involved were in some way affiliated with Kew Lee T Macdonald explores the extraordinary story of this important scientific institution as it rose to prominence during the Victorian era His book offers fresh new insights into key historical issues in nineteenth century science the patronage of science relations between science and government the evolution of the observatory sciences and the origins and early years of the National Physical Laboratory once an extension of Kew and now the largest applied physics organization in the United Kingdom

The Immortal Fire

Within William Sheehan, 1995-06-30 This the first full length biography of Edward Emerson Barnard tells the remarkable tale of endurance and achievement of one of the leading astronomers of the late nineteenth and early twentieth century Through his career Barnard scoured the heavens endlessly leaving an astonishing legacy of observations of planets satellites comets double stars bright and dark nebulae and globular clusters that make him one of the greatest observers of all time Beautifully illustrated throughout this book includes many of Barnard's famous wide field photographs of comets and the Milky Way It provides a complete history of Barnard's fascinating life and work and offers unusual insight into the astronomers he knew and observatories with which he was associated and will be of interest to astronomers and historians of science

Proceedings, Nautical Almanac Office Sesquicentennial Symposium Alan D. Fiala, Steven J. Dick, 1999

Advancing Variable Star Astronomy Thomas R. Williams, Michael Saladyga, 2011-05-26 Founded in 1911 the AAVSO boasts over 1200 members and observers and is the world's largest non profit organization dedicated to variable star

observation This timely book marks the AAVSO's centennial year presenting an authoritative and accurate history of this important association Writing in an engaging and accessible style the authors move chronologically through five eras of the AAVSO discussing the evolution of its structure and purpose Throughout the text the main focus is on the thousands of individuals whose contributions have made the AAVSO's progress possible Describing a century of interaction between amateur and professional astronomers the authors celebrate the collaborative relationships that have existed over the years As the definitive history of the first hundred years of the AAVSO this text has broad appeal and will be of interest to amateur and professional astronomers as well as historians and sociologists of science in general

The Cambridge History of Science: Volume 5, The Modern Physical and Mathematical Sciences David C. Lindberg, Mary Jo Nye, Roy

Porter, Ronald L. Numbers, 2003 A new and comprehensive examination of the history of the modern physical and mathematical sciences

The Muleskinner and the Stars Ronald L. Voller, 2015-08-28 This is the story of the astronomer Milton La Salle Humason whose career was integral to developing our understanding of stellar and universal evolution and who helped to build the analytical basis for the work of such notable astronomers and astrophysicists as Paul Merrill Walter Adams Alfred Joy Frederick Seares Fritz Zwicky Walter Baade and Edwin Hubble Humason's unlikely story began on the shores of the Mississippi River in Winona Minnesota in 1891 and led to the foot of Mount Wilson outside Los Angeles California twelve years later It is there where he first attended summer camp in 1903 and was captivated by its surroundings The mountain would become the backdrop for his life and career over the next six decades as he helped first build George Ellery Hale's observatory on the summit and then rose to become one of that institution's leading figures through the first half of the twentieth century The story chronicles Humason's life on Mount Wilson from his first trip to the mountain to his days as a muleskinner leading teams of mules hauling supplies to the summit during the construction of the observatory and follows him through his extraordinary career in spectroscopy working beside Edwin Hubble as the two helped to reconstruct our concept of the universe A patient knowledgeable and persistent observer Humason was later awarded an honorary doctorate for his work despite having no formal education beyond the eighth grade His skill at the telescope is legendary During his career he photographed the spectra of stars galaxies and other objects many thousands of times fainter than can be seen with the naked eye and pushed the boundary of the known universe deeper into space than any before him His work which included assisting in the formulation of Hubble's Law of redshifts helped to set the field of cosmology solidly on its foundation Milton Humason was one of the most charismatic characters in science during the first half of the 20th century Uneducated streetwise moonshining roguish humble and thoroughly down to earth he rose by sheer chance innate ability and incredible will to become the leading deep space observer of his day The Renaissance man of Mount Wilson as Harlow Shapley once referred to him Humason's extraordinary life reminds us that passion and purpose may find us at any moment

Unveiling the Magic of Words: A Report on "**Eye On The Sky Lick Observatorys First Century**"

In a global defined by information and interconnectivity, the enchanting power of words has acquired unparalleled significance. Their power to kindle emotions, provoke contemplation, and ignite transformative change is really awe-inspiring. Enter the realm of "**Eye On The Sky Lick Observatorys First Century**," a mesmerizing literary masterpiece penned with a distinguished author, guiding readers on a profound journey to unravel the secrets and potential hidden within every word. In this critique, we shall delve to the book is central themes, examine its distinctive writing style, and assess its profound impact on the souls of its readers.

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