The Ethereal Aether A History Of The Michelson Morley Miller Aether Drift Experiments 1880 1930 Jr Swenson Loyd S

The Reader's Guide to the History of Science looks at the literature of science in some 550 entries on individuals (Einstein), institutions and disciplines (Mathematics), general themes (Romantic Science) and central concepts (Paradigm and Fact). The history of science is construed widely to include the history of medicine and technology as is reflected in the range of disciplines from which the international team of 200 contributors are drawn.

Noakes' revelatory analysis of Victorian scientists' fascination with psychic phenomena connects science, the occult and religion in intriguing new ways.

Experiment is widely regarded as the most distinctive feature of natural science and essential to the way scientists find out about the world. Yet there has been little study of the way scientists actually make and use experiments. The Uses of Experiment fills this gap in our knowledge about how science is practised. Presenting 14 original case studies of important and often famous experiments, the book asks the questions: What tools do experimenters use? How do scientists argue from experiments? What happens when an experiment is challenged? How do scientists check that their experiments are working? Are there differences between experiments in the physical sciences and technology? Leading scholars in the fields of history, sociology and philosophy of science consider topics such as the interaction of experiment; instruments and theory; accuracy and reliability as hallmarks of experiment in science and technology; realising new phenomena; the believability of experiments and the sort of knowledge they produce; and the wider contexts on which experimentalists draw to develop and win support for their work. Drawing on examples as diverse as Galilean mechanics, Victorian experiments on electricity, experiments on cloud formation, and testing of nuclear missiles, a new view of experiment emerges. This view emphasises that experiments always involve choice, tactics and strategy in persuading audiences that Nature resembles the picture experimenters create.

Places the work of Faraday, Kelvin, and other nineteenth-century physicists into historical context, and describes how discoveries in electromagnetism, thermodynamics, energy, atomic structure, the kinetic theory, and other topics relate to the Industrial Revolution and European nationalism

The fascinating story of an ancient riddle and what it reveals about the nature of time and space Three millennia ago, the Greek philosopher Zeno constructed a series of logical paradoxes to prove that motion is impossible. Today, these paradoxes remain on the cutting edge of our investigations into the fabric of space and time. Zeno's Paradox uses the motion paradox as a jumping-off point for an exploration of the twenty-five-hundred-year quest to uncover the true nature of the universe. From Galileo to Einstein to Stephen Hawking, some of the greatest minds in history have tackled the problem and made spectacular breakthroughs, but through it all, the paradox of motion remains.

The epic tale of an ancient, unsolved puzzle and how it relates to all scientific attempts to explain the basic structure of the universe At the dawn of science the ancient Greek philosopher Zeno formulated his paradox of motion, and amazingly, it is still on the cutting edge of all investigations into the fabric of reality. Zeno used logic to argue that motion is impossible, and at the heart of his maddening puzzle is the nature of space and time. Is space-time continuous or broken up like a string of beads? Over the past two millennia, many of our greatest minds—including Aristotle, Galileo, Newton, Einstein, Stephen Hawking, and other current theoreticians—have been gripped by the mystery this puzzle represents. Joseph Mazur, acclaimed author of Euclid in the Rainforest, shows how historic breakthroughs in our understanding of motion shed light on Zeno’s paradox. The orbits of the planets were explained, the laws of motion were revealed, the theory of relativity was discovered—but the basic structure of time and space remained elusive. In the tradition of Fermat’s Enigma and Zero, The Motion Paradox is a lively history of this apparently simple puzzle whose solution—if indeed it can be solved—will reveal nothing less than the fundamental nature of reality.

Containing 609 encyclopedic articles written by more than 200 prominent scholars, The Oxford Companion to the History of Modern Science presents an unparalleled history of the field invaluable to anyone with an interest in the technology, ideas, discoveries, and learned institutions that have shaped our world over the past five centuries. Focusing on the period from the Renaissance to the early twenty-first century, the articles cover all disciplines (Biology, Alchemy, Behaviorism), historical periods (the Scientific Revolution, World War II, the Cold War), concepts (Hypothesis, Space and Time, Ether), and methodologies and philosophies (Observation and Experiment, Darwinism). Coverage is international, tracing the spread of science from its traditional centers and explaining how the prevailing knowledge of non-Western societies has modified or contributed to the dominant global science as it is currently understood. Revealing the interplay between science and the wider culture, the Companion includes entries on topics such as minority groups, art, religion, and science's practical applications. One hundred biographies of the most iconic historic figures, chosen for their contributions to science and the interest of their lives, are also included. Above all The Oxford Companion to the History of Modern Science is a companion to world history: modern in coverage, generous in breadth, and cosmopolitan in scope. The volume's utility is enhanced by a thematic outline of the entire contents, a thorough system of cross-referencing, and a detailed index that enables the reader to follow a specific line of inquiry along various threads from multiple starting points. Each essay has numerous suggestions for further reading, all of which favor literature that is accessible to the general reader, and a bibliographical essay provides a general overview of the scholarship in the field. Lastly, as a contribution to the visual appeal of the Companion, over 100 black-and-white illustrations and an eight-page color section capture the eye and spark the imagination.

Discussing the idea of space in the first half of the 19th century, this book uses contemporary poetry, essays, and fiction as well as scientific papers, textbooks, and journalism to give an account of 19th-century literature's relationship with science.

The Hungarian émigré Imre Lakatos (1922–1974) earned a worldwide reputation through the influential philosophy of science debates involving Thomas Kuhn, Paul Feyerabend, and Sir Karl Popper. In Imre Lakatos and the Guises of Reason John Kadvany shows that embedded in Lakatos’s English-language work is a remarkable historical philosophy rooted in his Hungarian past. Below the surface of his life as an Anglo-American philosopher of science and mathematics, Lakatos covertly introduced novel transformations of Hegelian and Marxist ideas about historiography, skepticism, criticism, and rationality. Lakatos escaped Hungary following the failed 1956 Revolution. Before then, he had been an influential Communist intellectual and was imprisoned for years by the Stalinist regime. He also wrote a lost doctoral thesis in the philosophy of science and participated in what was criminal behavior in all but a legal sense. Kadvany argues that this intellectual and political past animates Lakatos’s English-language philosophy, and that, whether intended or not, Lakatos integrated a penetrating vision of Hegelian ideas with rigorous analysis of mathematical proofs and controversial histories of science. Including new applications of Lakatos’s ideas to the histories of mathematical logic and economics and providing lucid exegesis of many of Hegel’s basic ideas, Imre Lakatos and the Guises of Reason is an exciting reconstruction of ideas and episodes from the history of philosophy, science, mathematics, and modern political history.

In this biography of Albert A. Michelson (1852-1931), his daughter shares personal reminiscences, describes her father’s family life — two wives, six children, and a strong temperament — and follows Michelson from his birth in Poland to Jewish parents to the United States where his parents brought him at the age of three, settling in a gold-rush town in Nevada and then in San Francisco. Michelson

graduated from the US Naval Academy in 1873, studied in Europe, taught at Clark University, and was head of the department of physics at the University of Chicago from 1894 to 1929. Michelson's passion was the accurate measurement of the speed of light. In his first experiment, he found it to be 186,320 miles per second, which remained the best value available for a generation, until Michelson himself bettered it. He also invented the interferometer to measure distances using the length of light waves; he measured the meter using the wavelength of cadmium light for the International Bureau of Weights and Measures in Paris; and he used light interference to determine the size of stars. With E. W. Morley, he showed that the absolute motion of the earth through the ether is not measurable, contributing to the development of the theory of relativity. The first American to receive a Nobel prize in science, Michelson received the Nobel prize in physics in 1907 for his optical precision instruments and for the spectroscopic and metrological investigations he made with them. "This work of a devoted daughter who is not herself a scientist catches the humanity of a complex, brilliant man through anecdotes and informed detail." — The New York Times "From personal recollection, from much reading, and from interviews, Mrs. Livingston has written a well-organized scientific biography of her father... In this book the author has attempted not only to discuss his scientific achievements, but also to portray Michelson the man — his personality and character, strengths and foibles. He was dedicated but demanding and could be arrogant, strict, and severe... This book portrays Michelson not as a legend, but as a real, believable person." — John N. Howard, Science "[A] beautiful family portrait of Albert Abraham Michelson, America's first Nobel laureate for science. This biography is more than an intellectual exercise, more than merely of academic or scientific or historical interest. It is almost a religious work that begins with a 'quest for my father' and ends with a 'postscript' on Michelson's honors and continuing influence... an intelligently organized, emotionally motivated, intellectually controlled search for meaning in the life and works of a great man of science... Michelson's youngest daughter by his second marriage, has presented a sensitive, artful, honest, and superbly readable portrait of her father... [which] paints the full life, personal relations, and human figure of Michelson in a form that is a worthy monument to his memory... We learn to know much more intimately where Michelson originated, how he matured, who recognized and helped him, what personal influences shaped his life, when and where his own exertions were influential in shaping the life of physics in the United States and the world... the author has been remarkably judicious and meticulous in handling her material." — Loyd S. Swenson, Jr., Isis "A non-physicist herself, [the author] has relied heavily on physicists who were familiar with her father's work and with the field of optics in general, as well as archivists, historians of science, writers and editors. Thus, this thorough biography is the fortunate combination of the efforts of many people, resulting in a valuable reference work as well as a very readable story about one of America's greatest scientists... Its merit lies in the masterful way the author has melded voluminous information from many sources into a sensitive and realistic portrait of Michelson, showing him as a very real person with strengths and weaknesses, and showing his relation to scientists and the science of his period. It is a book well written and well worth reading by physicists and non-physicists alike." — Jean M. Bennett, Physics Today "Mrs Livingston, Michelson's last child by his second wife, is, as she says, neither a physicist nor a writer. Her book nonetheless has something for both the general reader and the specialist. The former will find an interesting and even adventurous life, the latter some gems from unpublished correspondence." — J. L. Heilbron, The British Journal for the History of Science "The biography is a well-researched, accurate, and reliable work enhanced by the author's invaluable first-hand experience with the subject. Michelson's achievements are set against his personal life including his family, relationships to other scientists, and the struggles which inevitably develop in establishing a college science department." — George T. Ladd, The Science Teacher "This excellent biography by Michelson's youngest daughter is a judicious mixture of anecdotes and details of the scientific achievements... Dorothy Livingston is to be congratulated on this very readable and informative biography of her talented father." — W. W. Watson, American Scientist "[An] admirable biography of Michelson the man... most fascinating." — David R. Topper, Technology and Culture

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The highly acclaimed first edition of this major work convincingly established Gerald Holton's analysis of the ways scientific ideas evolve. His concept of "themata," induced from case studies with special attention to the work of Einstein, has become one of the chief tools for understanding scientific progress. It is now one of the main approaches in the study of the initiation and acceptance of individual scientific insights. Three principal consequences of this perspective extend beyond the study of the history of science itself. It provides philosophers of science with the kind of raw material on which some of the best work in their field is based. It helps intellectual historians to redefine the place of modern science in contemporary culture by identifying influences on the scientific imagination. And it prompts educators to reexamine the conventional concepts of education in science. In this new edition, Holton has masterfully reshaped the contents and widened the coverage. Significant new material has been added, including a penetrating account of the advent of quantum physics in the United States, and a broad consideration of the integrity of science, as exemplified in the work of Niels Bohr. In addition, a revised introduction and a new postscript provide an updated perspective on the role of themata. The result of this thoroughgoing revision is an indispensable volume for scholars and students of scientific thought and intellectual history.

This Encyclopedia examines all aspects of the history of science in the United States, with a special emphasis placed on the historiography of science in America. It can be used by students, general readers, scientists, or anyone interested in the facts relating to the development of science in the United States. Special emphasis is placed in the history of medicine and technology and on the relationship between science and technology and science and medicine.

This Encyclopedia traces the history of the oldest science from the ancient world to the space age in over 300 entries by leading experts.

Everybody knows—or thinks they know—Charles Darwin, the father of evolution and the man who altered the way we view our place in the world. But what most people do not know is that Darwin was on board the HMS Beagle as a geologist—on a mission to examine the land, not flora and fauna.Tracing Darwin's footsteps in South America and beyond, geologist Rob Wesson sets out on a trek across the Andes, repeating the nautical surveys made by the Beagle's crew, hunting for fossils in Uruguay and Argentina, and explores traces of long vanished glaciers in Scotland and Wales. By following Darwin's path literally and intellectually, Rob experiences the landscape that absorbed Darwin, followed his reasoning about what he saw, and immerses himself in the same questions about the earth. Upon Darwin's return from the five-year journey, he conceived his theory of tectonics—his first theory. These concepts and attitudes—the vastness of time; the enormous cumulative impact of almost imperceptibly slow change; change as a constant feature of the environment—underlie his subsequent discoveries in evolution. And this peculiar way of thinking remains vitally important today as we enter the Anthropocene.

From 1900 to 1924 Spain experienced a stage of vigorous academic freedom and unfettered scientific inquiry that strikingly contrasted with the repressive atmosphere of the periods before and after. Thomas Glick explores this "recovery of science" by focusing on the national discussion provoked by Einstein's trip to Spain in 1923. His visit stimulated a debate on the nature and social value of science that was remarkable in a society so recently awakened to the scientific role in the process of modernization. Einstein's universal appeal created the unlikely occasion for a fascination with science that cut across social classes and previously established domains of discourse. The political Right, which in other countries opposed relativity in the name of "traditional" Newtonian science, backed the new theories with surprising enthusiasm. Engineers, a politically conservative group, contributed much of the rank-and-file support for Einstein; physicians, who tended to the Left, also eagerly embraced his ideas, as did a host of mutually antagonistic political groups, including anarcho-syndicalists and bourgeois Catalan nationalists. Professor Glick's analysis of this multidimensional scientific forum provides an unusual amount of

information on science in Spain and an opportunity to contrast the Spaniards' reception of Einstein's work and that of other nations during this historical period. Originally published in 1988. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

Challenges the conventional view of a “disenchanted” and secular modernity, and recovers the complex relation that exists between science, religion, and esotericism in the modern world. Max Weber famously characterized the ongoing process of intellectualization and rationalization that separates the natural world from the divine (by excluding magic and value from the realm of science, and reason and fact from the realm of religion) as the “disenchantment of the world.” Egil Asprem argues for a conceptual shift in how we view this key narrative of modernity. Instead of a sociohistorical process of disenchantment that produces increasingly rational minds, Asprem maintains that the continued presence of “magic” and “enchantment” in people’s everyday experience of the world created an intellectual problem for those few who were socialized to believe that nature should contain no such incalculable mysteries. Drawing on a wide range of early twentieth-century primary sources from theoretical physics, occultism, embryology, radioactivity, psychical research, and other fields, Asprem casts the intellectual life of high modernity as a synchronic struggle across conspicuously different fields that shared surprisingly similar intellectual problems about value, meaning, and the limits of knowledge. “The Problem of Disenchantment is, in its entirety, extraordinarily well researched, argued, and written—representing at once the most complete and nuanced treatment of the notion of disenchantment within this network of scientific, religious, philosophical, and esoteric discourses and currents.” — Nova Religio

The Ethereal Aether is a historical narrative of one of the great experiments in modern physical science. The fame of the 1887 Michelson-Morley aether-drift test on the relative motion of the earth and the luminiferous aether derives largely from the role it is popularly supposed to have played in the origins, and later in the justification, of Albert Einstein’s first theory of relativity; its importance is its own. As a case history of the intermittent performance of an experiment in physical optics from 1880 to 1930 and of the men whose work it was, this study describes chronologically the conception, experimental design, first trials, repetitions, influence on physical theory, and eventual climax of the optical experiment. Michelson, Morley, and their colleague Miller were the prime actors in this half-century drama of confrontation between experimental and theoretical physics. The issue concerned the relative motion of “Spaceship Earth” and the Universe, as measured against the background of a luminiferous medium supposedly filling all interstellar space. At stake, it seemed, were the phenomena of astronomical aberration, the wave theory of light, and the Newtonian concepts of absolute space and time. James Clerk Maxwell’s suggestion for a test of his electromagnetic theory was translated by Michelson into an experimental design in 1881, redesigned and reaffirmed as a null result with Morley in 1887, thereafter modified and partially repeated by Morley and Miller, finally completed in 1926 by Miller alone, then by Michelson’s team again in the late 1920s. Meanwhile Helmholtz, Kelvin, Rayleigh, FitzGerald, Lodge, Larmor, Lorentz, and Poincaré—most of the great names in theoretical physics at the turn of the twentieth century—had wrestled with the anomaly presented by Michelson’s experiment. As the relativity and quantum theories matured, wave-particle duality was accepted by a new generation of physicists. The aether-drift tests disproved the old and verified the new theories of light and electromagnetism. By 1930 they seemed to explain Einstein, relativity, and space-time. But in historical fact, the aether died only with its believers.

The extraordinary story of the scientific expeditions that ushered in the era of relativity In 1919, British scientists led expeditions to Brazil and Africa to test Albert Einstein’s new theory of general relativity in what became the century’s most celebrated scientific experiment. The result ushered in a new era and made Einstein a celebrity by confirming his prediction that the path of light rays would be bent by gravity. Yet the effort to “weigh light” during the May 29, 1919, solar eclipse has become clouded by myth and skepticism. Could Arthur Eddington and Frank Dyson have gotten the results they claimed? Did the pacifist Eddington falsify evidence to foster peace after a horrific war by validating the theory of a German antiwar campaigner? In No Shadow of a Doubt, Daniel Kennefick provides definitive answers by offering the most comprehensive and authoritative account of how expedition scientists overcame war, bad weather, and equipment problems to make the experiment a triumphant success.

The first article in this volume, by Tetu Hirosige, is a definitive study of the genesis of Einstein's theory of relativity. Other articles treat topics—theoretical, experimental, philosophical, and institutional—in the history of physics and chemistry from the researches of Laplace and Lavoisier in the eighteenth century to those of Dirac and Jordan in the twentieth century. Contents: The Ether Problem, the Mechanistic World View, and the Origins of the Theory of Relativity (Tetu Hirosige); Kinstein's Early Scientific Collaboration (Lewis Pyenson); Max Planck's Philosophy of Nature and His Elaboration of the Special Theory of Relativity (Stanley Goldberg); The Concept of Particle Creation before and after Quantum Mechanics (Joan Brombery); Chemistry as a Branch of Physics: Laplace's Collaboration with Lavoisier (Henry Guerlac); Mayer's Concept of "Force": The "Axis" of a New Science of Physics (P. M. Heimann); Debates over the Theory of Solution: A Study of Dissent in Physical Chemistry in the English-Speaking World in the Late Nineteenth and Early Twentieth Centuries (R. G. A. Dolby); The Rise of Physics Laboratories in Britain (Romualdas Sviedrys); The Establishment of the Royal College of Chemistry: An Investigation of the Social Context of Early-Victorian Chemistry (Gerrylynn K. Roberts) Originally published in 1976. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

These fourteen essays by leading historians and philosophers of science introduce the reader to the work of Albert Einstein. Following an introduction that places Einstein's work in the context of his life and times, the essays explain his main contributions to physics in terms that are accessible to a general audience, including special and general relativity, quantum physics, statistical physics, and unified field theory. The closing essays explore the relation between Einstein's work and twentieth-century philosophy, as well as his political writings.

'The book should be an interesting read for advanced students within the field and for experts working in it.'Contemporary PhysicsIn 1887, Michelson and Morley tried to observe in laboratory the 'ether drift' by measuring a small difference in the velocity of two perpendicular light beams. The result of their measurements, however, was much smaller than the classical prediction and

interpreted as a 'null result'. This was crucial to stimulate the first pioneering formulations of relativity and, as such, it represents a fundamental step in the history of science. Since then, many repetitions of that original experiment have been performed with better and better sensitivity and the standard conclusion has been always the same: no genuine ether drift has ever been detected. However, in the authors' new scheme, the small irregular residuals observed in laboratory show surprising correlations with the direct observations of the Cosmic Microwave Background (CMB) with satellites in space. This opens the possibility of finally linking the CMB to a fundamental reference frame for relativity, with substantial implications for the interpretation of non-locality in the quantum theory. The importance of the issue would require new dedicated experimental tests and significant improvements in the data analysis. Otherwise, without such more stringent checks, these crucial experiments will remain forever as an enigma for physics and the history of science. The book illustrates the many facets of this research together with historical accounts on some leading scientists involved in these measurements.

The personal stories of forty-eight historic scientists and an overview of their contributions to their field and faith.

There have been many recent discussions of the 'replication crisis' in psychology and other social sciences. This has been attributed, in part, to the fact that researchers hesitate to submit null results and journals fail to publish such results. In this book Allan Franklin and Ronald Laymon analyze what constitutes a null result and present evidence, covering a 400-year history, that null results play significant roles in physics.

Ether and Modernity offers a snapshot of the status of an epistemic object, the "ether" (or "aether"), in the early twentieth century. The contributed papers show that the ether was often regarded as one of the objects of modernity, hand in hand with the electron, radioactivity or X-rays, and not simply as the stubborn residue of an old-fashioned, long-discarded science. The prestige and authority of scientists and popularisers like Oliver Lodge and Arthur Eddington in Britain, Phillip Lenard in Germany or Dayton C. Miller in the USA was instrumental in the preservation, defence or even re-emergence of the ether in the 1920s. Moreover, the consolidation of wireless communications and radio broadcasting, indeed a very modern technology, brought the ether into audiences that would otherwise never have heard about such an esoteric entity. The ether also played a pivotal role among some artists in the early twentieth century: the values of modernism found in the complexities and contradictions of modern physics, such as wireless action or wave-particle puzzles, a fertile ground for the development of new artistic languages; in literature as much as in the pictorial and performing arts. Essays on the intellectual foundations of Umberto Boccioni's art, the linguistic techniques of Lodge, and Ernst Mach's considerations on aesthetics and physics witness to the imbricate relationship between the ether and modernism. Last but not least, the ether played a fundamental part in the resurgence of modern spiritualism in the aftermath of the Great War. This book examines the complex array of meanings, strategies and milieus that enabled the ether to remain an active part in scientific and cultural debates well into the 1930s, but not beyond. This portrait may be easily regarded as the swan song of an epistemic object that was soon to fade away as shown by Paul Dirac's unsuccessful attempt to resuscitate some kind of aether in 1951, with which this book finishes.

This detailed account of the controversy surrounding the publication of Albert Einstein's theory of relativity explores the ferocious popular and academic opposition which at one time encircled one of the most important scientific breakthroughs of the twentieth century. Based on extensive archival research, this fascinating discourse includes a compelling and entertaining examination of the contemporary literature created by Einstein's detractors. Exploring the arguments and strategies, social contexts, and motivations of Einstein's detractors, and providing unique insights into the dynamics of scientific controversies, this book is ideal for anyone interested in the history and philosophy of physics, popular science, and the public understanding of science.

The Ethereal AetherA History of the Michelson-Morley-Miller Aether-drift Experiments, 1880-1930University of Texas Press

This book is a full, long-term history of relativity thinking in physics, from Galileo's early reflections on the proper reference of mechanical motion to Einstein's exploitation of relativity principles in his theories of special and general relativity.

Nineteenth-Century Aether Theories focuses on aether theories. The selection first offers information on the development of aether theories by taking into consideration the positions of Christiaan Huygens, Thomas Young, and Augustin Fresnel. The text then examines the elastic solid aether. Concerns include Green’s aether theory, MacCullagh's aether theory, and Kelvin's aether theory. The text also reviews Lorentz’ aether and electron theory. The development of Lorentz’ ideas of the stagnant aether and electrons; Lorentz' theorem of corresponding states and its development; and Lorentz' response to the Michelson-Morley experiment are discussed. The book discusses the relative motion of the earth and the luminiferous aether and laws of the reflection and refraction of light at the common surface of two non-crystallized media. The text also focuses on the electrical and optical phenomena in moving bodies; simplified theory of electrical and optical phenomena in moving systems; and rotational aether in its application to electromagnetism. The selection is a dependable reference for readers wanting to study aether theories.

In the nineteenth century, science and technology developed a close and continuing relationship. The important advancements in physics were deeply rooted in the new technologies of the steam engine, the telegraph, and electric power and light. The author explores how the leading technologies of the industrial age helped reshape modern physics.

This book is a study of the narrative techniques that developed for two very popular forms of fiction in the nineteenth century - ghost stories and detective stories - and the surprising similarities between them in the context of contemporary theories of vision and sight. Srdjan Smaji? argues that to understand how writers represented ghost-seers and detectives, the views of contemporary scientists, philosophers, and spiritualists with which these writers engage have to be taken into account: these views raise questions such as whether seeing really is believing, how much of what we 'see' is actually only inferred, and whether there may be other (intuitive or spiritual) ways of seeing that enable us to perceive objects and beings inaccessible to the bodily senses. This book will make a real contribution to the understanding of Victorian science in culture, and of the ways in which literature draws on all kinds of knowledge.

An American Scientist on the Research Frontier is the first scholarly study of the nineteenth-century American scientist Edward Williams Morley. In part, it is the long-overdue story of a man who lent his name to the Michelson and Morley Ether-Drift Experiment, and who conclusively established the atomic weight of oxygen. It is also the untold story of science in provincial America: what Hamerla presents as science on the "American research frontier". This important examination of Morley’s struggle for personal and professional legitimacy extends and transforms our understanding of science during a foundational period, and leads to a number of unique conclusions that are vital to the literature and historiography of science. By revealing important aspects of the scientific culture of the American heartland, An American Scientist on the Research Frontier deepens our understanding of an individual scientist and of American science more broadly. In so doing, Hamerla changes the way we approach and understand the creation of scientific knowledge, scientific communities, and the history of science itself.

This sixth volume of Historical Studies in the Physical Sciences presents articles by ten eminent scholars on the intellectual and social history of the physical sciences from the eighteenth century to the present. CONTENTS The Emergence of Japan's First Physicists: 1868-1900 (Kenkichiro Koizumi) The Reception of the Wave Theory of Light in Britain: A Case Study

Illustrating the Role of Methodology in Scientific Debate (Geoffrey Cantor) Origins and Consolidation of Field Theory in Nineteenth Century Britain: From the Mechanical to the Electromagnetic View of Nature (Barbara Giusti Doran) Hertz's Researches on Electromagnetic Waves (Salvo D'Agostino) God and Nature: Priestley's Way of Rational Dissent (J. G. McEvoy and J. E. McGuire) Laurent, Gerhardt, and the Philosophy of Chemistry (John Hedley Brooke) The Lewis-Langrnuir Theory of Valence and the Chemical Community, 1920-1928 (Robert E. Kohler, Jr.) G. N. Lewis on Detailed Balancing, the Symmetry of Time, and the Nature of Light (Roger H. Stuewer) Rutherford and Recoil Atoms: The Metamorphosis and Success of a Once Stillborn Theory (Thaddeus J. Trenn) Originally published in 1976. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

With over 150 alphabetically arranged entries about key scientists, concepts, discoveries, technological innovations, and learned institutions, the Oxford Guide to Physics and Astronomy traces the history of physics and astronomy from the Renaissance to the present. For students, teachers, historians, scientists, and readers of popular science books such as Galileo's Daughter, this guide deciphers the methods and philosophies of physics and astronomy as well as the historical periods from which they emerged. Meant to serve the lay reader and the professional alike, this book can be turned to for the answer to how scientists learned to measure the speed of light, or consulted for neat, careful summaries of topics as complicated as quantum field theory and as vast as the universe. The entries, each written by a noted scholar and edited by J. L. Heilbron, Professor of History and Vice Chancellor, Emeritus, University of California, Berkeley, reflect the most up-to-date research and discuss the applications of the scientific disciplines to the wider world of religion, law, war, art and literature. No other source on these two branches of science is as informative or as inviting. Thoroughly cross-referenced and accented by dozens of black and white illustrations, the Oxford Guide to Physics and Astronomy is the source to turn to for anyone looking for a quick explanation of alchemy, x-rays and any type of matter or energy in between.

The God Knot Undone by Religiosity Origins and Cycles By: HC Potter with GH Moore D Min The origin of evil has been the deepest problem of life. It confronts every human being in one form or other. If there is one question which has eluded all investigations of the keenest intellects of all lands and all times; if there is one problem which has called forth volumes of writings from the profoundest of thinkers; if there is one riddle that has baffled all attempts of the sages at solving it; if there is one problem on which the last word yet remains to be said, despite the world’s voluminous literature of some ten and twenty centuries—it is the problem of the existence of evil. Inspired by recent books disparaging religion, many of which use exemplary human foibles to make their case and show a common disregard for historical background, The God Knot corrects their failings and instead provides a surprisingly simple answer to the ages-old theodicy question: How is God compatible with evil?

The most important scientist of the twentieth century and the most important artist had their periods of greatest creativity almost simultaneously and in remarkably similar circumstances. This fascinating parallel biography of Albert Einstein and Pablo Picasso as young men examines their greatest creations -- Picasso's Les Demoiselles d'Avignon and Einstein's special theory of relativity. Miller shows how these breakthroughs arose not only from within their respective fields but from larger currents in the intellectual culture of the times. Ultimately, Miller shows how Einstein and Picasso, in a deep and important sense, were both working on the same problem.