

The Condon report revisited—*UFOs: An Insider's View of the Official Quest for Evidence*

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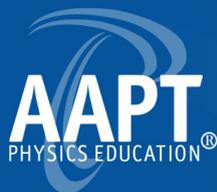
Roy Craig, and Katherine R. Sopka



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plement could be used for the advance placement students if the instructor desires, thereby allowing both advanced and regular students to mainstream for the bulk of the course.

Anyone looking for a basic physics text for an introductory general-education course should consider *Physics: A World View*. It would be an excellent choice. The text is well written and appears to be free of technical errors. In fact, the authors offer a \$5 prize to anyone who finds errors other than typographical in the book.

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▶ MMMM.....Good!

Physics Begins With Another M...Mysteries, Magic, Myth, and Modern Physics, John Jewett, Jr., Allyn & Bacon, Boston, 1996. 496 pp., \$39.95.

In his sequel to the popular *Physics Begins with an M...Mysteries, Magic, and Myth*¹ (*PBWM*), author John Jewett continues to challenge and entertain the reader with thought-provoking questions and engaging activities pertaining to the physics of everyday life. Like its predecessor, the new volume provides teachers of physics and physical science with a wealth of supplementary material that can be used in a variety of ways in the classroom.

As in *PBWM*, concepts are introduced in the context of mysteries, magic, and myth. The “M” treatment—the presentation of physical principles using stimulating questions (mysteries), easily performed hands-on activities (magic), and challenges to common misunderstandings (myths)—retains its appeal and effectiveness the second time around.

Whereas the purview of *PBWM* was restricted to classical physics, the scope of this volume has been expanded to include topics from “modern” physics. Seven chapters are devoted to the examination of phenomena relating to relativity, early modern physics, quantum theory, atomic physics, nuclear physics, solid-state physics, and particle physics and cosmology. Emphasis is on direct connections between the abstruse world of twentieth-century physics and everyday life whenever possible. For example, one “mystery”—“Why are pupils black?”—looks to blackbody theory for a solution. The “magic” of a bright wash is revealed to be nothing more than some fluorescent material in the detergent. A “myth” challenges a commonly held notion that “A quantum leap is a very large change.”

The book is attractive and easy to use. The artwork that accompanies each “M” makes the “mysteries” and “myths” come alive and illustrates the apparatus needed to perform the “magic.” Topics are arranged in standard physics textbook order, making it easy to locate material relating to a particular subject. A list of over 250 resources facilitates further investigation.

Collectively, *Physics Begins with Another M...* and its predecessor *PBWM* contain over 800 examples of intriguing and often misunderstood physical phenomena. Both books offer accurate and clearly written explanations of physical phenomena while providing the instructor with a treasure trove of ideas for classroom discussions and demonstrations, take-home experiments, and research projects. *Physics Begins with Another M...*, along with the companion *PBWM*, should be in every physics teacher’s library.

Reference

1. Chris Chiaverina, *Phys. Teach.* **33**, 412 (1995).

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▶ Stalking the Wild Atom

Taming the Atom, Hans Christian von Baeyer, Random House, New York, 1992. 272 pp., \$15.

A number of authors have sought to expose the mysteries of the quantum mechanical world for the public. Rarely have they focused on the atom, preferring the more exotic realm of subatomic particles. In *Taming the Atom*, Hans Christian von Baeyer gives a history of the theory and research into atoms from the ideas of Democritus to the trapping of individual atoms, the scanning tunneling microscope, and femtosecond laser chemistry.

Granting the immense challenge of crafting illuminating analogies for the many mysteries of quantum mechanics, it must be said that von Baeyer has made a valiant if tedious effort. The book is filled with colorful language, painting strained analogies and metaphors that frequently do little to further understanding.

Consider his discussion of laser-driven, femtosecond chemistry that explores the dynamics of the chemical reaction $H + CO_2 \rightarrow OH + CO$. “The tumbling, shivering HOCO molecule is a quantum mechanical Cheshire cat.... a cluster of electrons forms a ghostly, oozing miasma.” A few such descriptions go a long way.

In the chapter “The Atomic Landscape,” which describes the scanning-tunneling microscope (STM), the reader cries out for images but is given instead more metaphor and analogy. We find Mount-Everest-like molecules rising out of snowy plains, phalanxes of ocean waves, troughs filled with claret. A colorful collection of STM images placed in the center of the book has little connection to the explanations. There are no other illustrations in the book.

In trying to help the reader understand the electron and its dual nature, we are told that “...it can in some sense occupy two places at once....” Well, sort of. After all, until one makes a measurement, actually nails it down, the electron can, in some sense, be said to be almost anywhere or perhaps, everywhere. But when the author says, “It is normal for an atomic particle to occupy two places at once...to circumvent an obstacle on both sides at once,” the reader balks. The electron is someplace only when a measurement is made. Then it is either at that place or not.

I suppose the book does a reasonable job of describing our understanding of the atom, but the overblown language becomes tedious and I for one wish for a more straightforward approach. It is not a book I could recommend highly to an eager high-school or college student.

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▶ The Condon Report Revisited

UFOs: An Insider’s View of the Official Quest for Evidence, Roy Craig, University of North Texas Press, Denton, TX, 1995. 276 pp., cloth \$24.95, paper \$18.95.

Edward Uhler Condon (1902–1974) was a highly respected member of the American physics profession. His doctoral thesis at the University of California in Berkeley became the Franck-Condon Principle. His subsequent career included professorships and directorships such as that of the National Bureau of Standards 1945–1951. He was President of the American Physical Society (1946) and of the American Association of Physics Teachers (1964). By the mid-1960s he was professor of physics at the University of Colorado in Boulder.

Known as a forthright person and veteran of controversies, Condon was asked to investigate reports of Unidentified Flying Objects received by the U.S. Air Force. In accepting the challenge he agreed to investigate only contemporary reports and to prepare a summary report. The work was done

in 1967 and 1968. The 965-page report was published in 1969 as *Scientific Study of Unidentified Flying Objects* in both hardback by Dutton and paperback by Bantam. It stated that no tangible scientific evidence was found to support belief in the existence of extraterrestrial UFOs—to the disappointment and disbelief of many confirmed believers and widespread adverse criticism in the press. Very early in the project Condon hired Roy Craig, a Ph.D. chemist teaching at C.U., as field investigator. The volume reviewed here is Craig's account of his experience in that capacity and makes worthwhile reading on several counts. Part I describes ten of the episodes that Craig person-

ally investigated, each recounted with wit and information on the methods and tools he used. Part II, "The Production, Content and Impact of the Condon Report," tells of disagreements within Condon's staff, leading to a "mutiny" (to Craig's dismay) and the writing of an alternate report by the dissidents, and the public reception of the official report. In his final chapter Craig summarizes subsequent developments and gives the reader his own outlook on the place of UFOs in human belief.

It has been almost half a century since reports began to surface throughout the world of the appearance of UFOs. None have ever been verified by tangible evidence

at the alleged site. Yet in the 1990s accounts of UFOs, alien visitations (and even abductions) still are circulated in publications, television programs, and moving pictures. This has no relation to bona fide science but it attracts audiences ready to believe in the reality of UFOs and suspicious of information hidden by governmental agencies and members of the scientific community. Craig's book tells what happened in a sociological and psychological context when a serious investigation was undertaken by reputable scientists.

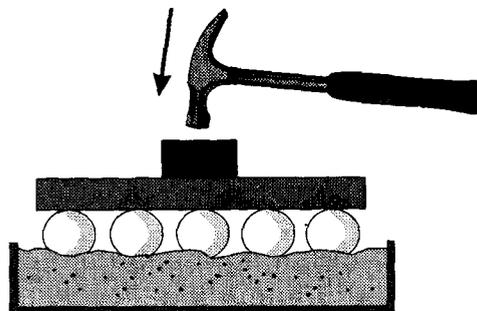
Katherine R. Sopka, *FOCAS: Four Corners Analytic Sciences, 1611 Forest Avenue, Durango, CO 81301*

Unbroken Eggs

Is it possible to place an egg against a stone, whack the stone with a hammer, and yet keep the egg whole? It is. Set up your demonstration as the sketch shows: fill a box with fine sand, place some eggs on the sand, lay a heavy flat stone on the eggs, and top it off with a smaller piece of brick.

Quickly hit the brick with a hammer and behold a miracle—the brick is in pieces, yet the eggs are undamaged (wear safety glasses!).

You'll find this demonstration very useful in stimulating students' interest, and it's a lot safer than the usual demonstration with a concrete block on the teacher's chest!



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