



Richard Feynman lecturing in 1962 on optics and Pierre de Fermat's principle of least time.

## IN RETROSPECT

# The Feynman Lectures on Physics

Rob Phillips celebrates the US physicist's seminal series as it nears its 50th anniversary.

Over the past three decades, I have asked hundreds of people to name the five or ten books that have meant the most to them. Although Jane Austen's *Pride and Prejudice* tops the list, *The Feynman Lectures on Physics* is the science title most often cited. That may say something about the kind of readers I talk to, but it is an accurate reflection of the broad reach of this half-century-old scientific classic.

The book was based on a course the Nobel-prizewinning theoretical physicist and polymath Richard Feynman taught from 1961 to 1963, in an attempt to reinvigorate 'freshman physics' at the California Institute of Technology (Caltech) in Pasadena. In 1964, the course was published as the three-volume *The Feynman Lectures on Physics*, by Feynman and fellow physicists Matthew Sands

and Robert Leighton. With his lectures, Feynman joined a long tradition of famed physicists — such as Max Planck, Arnold Sommerfeld, Wolfgang Pauli and Lev Landau — providing personal grand vistas. Unlike those, Feynman's vista is 'elementary' and joyous — a joy deeply magnified in the audio version.

What makes these lectures timeless? Elementary physics has been taught to undergraduates for nearly a century with relatively little change. Over the past 50 years the subject has been even more static. Textbooks and introductory courses have largely targeted those planning to study medicine and engineers with a focus on formulaic problem-solving and exam preparation, rather than cultivating a wonder for nature and the development of physical intuition.

Superficially, Feynman's primer touches on the same topics that others do: mechanics, thermodynamics, optics, electricity and magnetism, and modern physics. Beneath this veneer of common cause, his introduction to elementary physics seems to have higher aspirations — the love of nature and a grasp of it through experimentation and reasoning. In Feynman's hands, even a topic as mundane as projectile motion becomes the story of how Galileo and Newton unlocked the secrets of planetary motion. Feynman's physics is about simplicity, beauty, unity and analogy, presented with enthusiasm and insight that bursts from the page.

He works this magic even in areas often thought to be the most boring parts of the curriculum. For example, his fascination with the way that Newton's second law of

