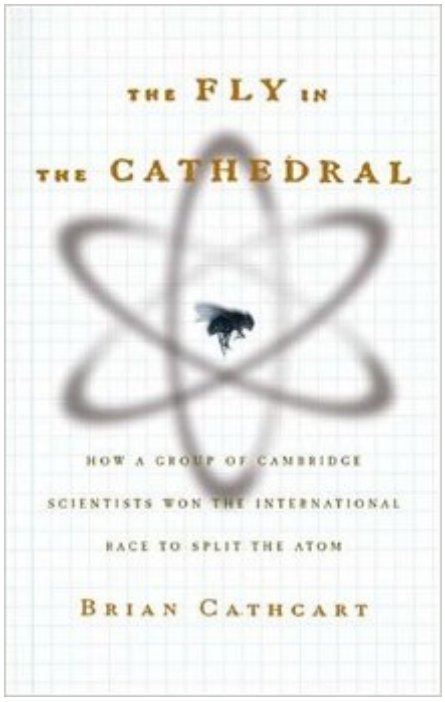
The Fly In The Cathedral: How A Group Of Cambridge Scientists Won The International Race To Split The Atom



Synopsis

"Cathcart tells this exhilarating story with both verve and precision" --The Sunday TelegraphRe-creating the frustrations, excitements, and obsessions of 1932, the "miracle year" of British physics, Brian Cathcart reveals in rich detail the astonishing story behind the splitting of the atom. The most celebrated scientific experiment of its time, it would lead to one of mankind’s most devastating inventions--the atomic bomb. All matter is made mostly of empty space. Each of the billions of atoms that comprise it is hollow, its true mass concentrated in a tiny nucleus that, if the atom were a cathedral, would be no bigger than a fly. Discovering its existence three quarters of a century ago was Lord Rutherford’s greatest scientific achievement, but even he caught only a glimpse. Almost at the point of despair, John Cockcroft and Ernest Walton, two young researchers in a grubby basement room at the famous Cavendish Laboratory in Cambridge, grappled with the challenge. Racing against their American and German counterparts-a colorful cast of Nobel Prize winners--they would change everything. With paper-and-pencil calculations, a handmade apparatus, the odd lump of plasticine, and some revolutionary physics, Cockroft and Walton raised the curtain on the atomic age. The Fly in the Cathedral is a riveting and erudite narrative inspired by the dreams that lead the last true gentlemen scientists to the very essence of the universe: the heart of matter.

Book Information

Hardcover: 320 pages
Publisher: Farrar, Straus and Giroux (January 12, 2005)
Language: English
ISBN-10: 0374157162
ISBN-13: 978-0374157166
Product Dimensions: 9.4 x 6.3 x 1.1 inches
Shipping Weight: 1.2 pounds
Average Customer Review: 4.6 out of 5 starsÂ Â See all reviewsÂ (23 customer reviews)
Best Sellers Rank: #829,989 in Books (See Top 100 in Books) #96 inÂ Books > Science & Math > Physics > Nuclear Physics > Atomic & Nuclear Physics #4229 inÂ Books > Science & Math > History & Philosophy

Customer Reviews

People had always thought that solid matter was, well, solid. It was only when scientists had an understanding of what atoms were that they began to realize that there were huge spaces between

atoms. Later they got to understand that an atom itself consisted mostly of empty space, a big outer shell where electrons whizzed around, containing only a tiny nucleus. The image of the big shell and the tiny nucleus was given by comparison, a comparison that gives the title to _The Fly in the Cathedral: How a Group of Cambridge Scientists Won the International Race to Split the Atom_ (Farrar, Straus and Giroux) by Brian Cathcart. Actually, the atom had been split long before, if the atom, which had been considered indivisible, is split by chipping electrons off that outer cathedral-like shell. But "splitting the atom" has long had the real meaning of splitting the nucleus, and this is the intriguing story of the stolid, energetic and gentlemanly scientists at the Cavendish Laboratory in Cambridge who in 1932 brought forth the birth of nuclear physics.The commanding presence in the book, just as he was as he oversaw the lab, is Sir Earnest Rutherford, a "barreling, thundering, penetrating presence in the world of physics, a great rowdy boy full of ideas and energy." He was thrilled by the ardor of the chase in scientific exploration, and he was an ingenious experimenter, although he was often clumsy with apparatus. In 1927, Rutherford as its president addressed the Royal Society, proposing a new way forward for solving the problem of the composition of the nucleus. If it were possible to accelerate particles artificially, he said, by huge voltages of electricity, they could be slammed against the nucleus and the scattered wreckage analyzed.

The Fly in the Cathedral takes the microscope to Cambridge University’s Cavendish Laboratory in the late 1920s-early 1930s, a period of explosive growth in physics and, in particular, nuclear physics. The knowledge we so take for granted today - that the nucleus (the "fly") is comprised of neutrons and protons with electrons occupying certain energy levels far from the nucleus (the "cathedral") - was suspected but never proven conclusively by the mid 1920s.The author, Brian Cathcart, does a credible job at introducing the main players - Ernest Walton, John Cockcroft, Ernest Rutherford, James Chadwick - and evinces their personalities by describing their manner of working and by examining their interactions with others. The overwhelming impression is of very modest men making extremely immodest progress in understanding the very fundamentals of nature. Indeed, they all went on to win Nobel prizes; the sheer brain power of these men is inspiring.The subject matter of the book might be nuclear physics but the author does a terrific job of explaining things and provides some very neat analogies to help the reader, such as describing continuous functions like temperature as "milk" and discontinuous things like quanta of energy as "eggs". In context, this makes a lot of sense for readers without the benefit of a background in physics or chemistry. Those who do understand the essentials of nuclear physics will not feel

condescended.Rutherford was the head of the Cavendish Laboratory during this period and his group proved two important things: Chadwick of the existence of the neutron and Walton & Cockcroft the "splitting" of the atom, although technically they weren't splitting so much as cleaving. Rutherford's mind is described as "like the bow of a battleship.