



Project Orion: The True Story of the Atomic Spaceship, George Dyson, Henry Holt and Company, 2003, 0805072845, 9780805072846, 368 pages. In 1957, a small group of scientists, supported by the U.S. government, launched an attempt to build a four-thousand-ton spaceship propelled by nuclear bombs. The initial plan called for missions to Mars by 1965 and Saturn by 1970. After seven years of work, political obstacles brought the effort to a halt. The Orion team, led by the American bomb-designer Theodore B. Taylor, included the physicist Freeman Dyson, whose son George was five years old when the existence of the project was first announced. In Project Orion, George Dyson has synthesized hundreds of hours of interviews and thousands of pages of newly excavated documents, still only partially declassified, to piece together one of the most tantalizing "what if" stories of the twentieth century. .

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Outer space propulsion by nuclear energy Hearings before subcommittees of the Joint Committee on Atomic Energy, Congress of the United States, Eighty-fifth Congress, second session, United States. Congress. Joint Committee on Atomic Energy, 1958, Technology & Engineering, 232 pages. .

Nuclear rocket propulsion , NASA - Conference on the Science and Technology of Space Exploration, Chicago, 1962, United States. National Aeronautics and Space Administration, 1963, Technology & Engineering, 62 pages. .

The starflight handbook a pioneer's guide to interstellar travel, Eugene F. Mallove, Gregory L. Matloff, 1989, Science, 274 pages. Discusses the feasibility of interstellar travel, and explains the principles behind a variety of propulsion and navigation systems.

Surviving the Extremes A Doctor's Journey to the Limits of Human Endurance, Kenneth Kamler, Jan 20, 2004, Science, 324 pages. A physician, NASA consultant, and expert on the extreme conditions that confront the human body journeys into six inhospitable environments to examine the reaction of the body

Dogs , Nancy Kress, Jul 1, 2008, FICTION, 320 pages. The threat of terrorism and biological warfare become all too real in this riveting thriller when the danger comes from a family's most cherished pets. Tessa Sanderson, ex-FBI

Nuclear energy in space exploration , Glenn Theodore Seaborg, 1968, Technology & Engineering, 20 pages. .

The limitless sky Air Force science and technology contributions to the nation, John C. Bedford, Sandra Davis, Air Force History and Museums Program (U.S.), 2004, History, 265 pages. .

Stone Dogs A Draka Novel, S. M. Stirling, Jul 1, 1990, , 522 pages. A cold war between the American-led Alliance and the Domination, rivals in the Draka conquest, erupts in a space

confrontation that will decide the freedom or slavery of

Doctor on Everest , Peter Steele, 1972, Biography & Autobiography, 222 pages. The man who served as expedition doctor on the ill-starred 1971 climb up Everest shares details of his ascent up the Southwest face, which was hampered by bad weather

The Los Alamos Primer The First Lectures on how to Build an Atomic Bomb, Robert Serber, 1992, Biography & Autobiography, 98 pages. Primer, the first document passed out to new recruits to the wartime enterprise, classified Secret Limited for twenty years after the Second World War and published here for

The mirrorstone , Michael Palin, Richard Seymour, Nov 12, 1986, Juvenile Fiction, 32 pages. An English schoolboy is snatched into another world by the magician scientist Salaman, who forces him to brave underwater terrors in a quest for the priceless Mirrorstone..

Fundamentals of nuclear flight , R. W. Bussard, Richard D. De Lauer, 1965, Technology & Engineering, 453 pages. .

The World Set Free , H. G. Wells, Mar 1, 2007, Fiction, 152 pages. This chilling, futuristic novel, written in 1913 and first published the following year, was incredibly prophetic on a major scale. Wells was a genius and visionary, as

Space nuclear power applications Hearings before the Subcommittee on Research, Development, and Radiation of the Joint Committee on Atomic Energy, Congress of United States, Eighty-seventh Congress, second session ... September 13, 14, and 19, 1962, United States. Congress. Joint Committee on Atomic Energy, 1962, , 368 pages. .

Flight my life in mission control, Christopher C. Kraft, Mar 29, 2001, Biography & Autobiography, 371 pages. One of the architects of the U.S. space program recalls his most exciting moments at mission control as he guided heroes like Alan Shepard and John Glenn on their historic

In 1957, a small group of scientists, supported by the U.S. government, launched an attempt to build a four-thousand-ton spaceship propelled by nuclear bombs. The initial plan called for missions to Mars by 1965 and Saturn by 1970. After seven years of work, political obstacles brought the effort to a halt.

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Like cheap, shiny space suits and bug-eyed rubber monsters, nuclear-powered spaceships today seem like little more than laughably naïve 1950s science fiction tropes. It might have been otherwise--and still could be. George Dyson, son of supergenius physicist Freeman Dyson, wrote Project Orion to share some of his father's amazing research with the world. Much had been kept secret for years, but Dyson's unique insider status permits great depth and breadth on this important tale. Conceived in the wake of Sputnik, Project Orion was a true vision of '50s engineering: a huge 40-person ship powered by hundreds of tiny atomic bombs, capable of much greater lift and efficiency than chemically driven rockets. Struggles between NASA, the military, Congress, and other parties doomed Orion, but Dyson has gathered hundreds of documents and interviewed most of the researchers and engineers who worked together, trying to reach "Saturn by 1970." His knack for storytelling makes the book a quick, delightful read; even the staunchest anti-nuke activist has to admit that lighting a cigarette off a parabolic mirror facing a bomb test is pretty cool. By the end of the 20th century, technology had caught up with the vision of Orion--it's considered one of our best bets for long-distance space transit. Whether or not that could ever happen politically, Project Orion

is a compelling exploration of scientific imagination. --Rob Lightner --This text refers to an out of print or unavailable edition of this title.

In the years after WWII and the Russian launch of two sputniks, Americans were searching for any technology that would give them dominance in the space race. In his latest, Dyson (*Darwin Among the Machines*) charts the history of the failed Project Orion, which called for a massive rocket to be built atop a nuclear-powered piston. The project's physicists and engineers, buoyed by the thrilling idea of traveling through space on "pulse technology," conducted a number of explosive experiments to ascertain the abilities of such a system (which reveals how little was actually known about the bombs being produced by the world's superpowers). Meanwhile, the project, started in 1957, ran headlong into detractors Kennedy and NASA included and eventually was canceled. Much of the technical information in the Orion files remains classified, but Dyson's explanations of the nuclear science behind the system are lucid. A great strength of Dyson's project is the interviews he conducted with surviving Orion team members among them his father, Freeman Dyson affording readers an intimate view of the story's central characters (and its government contractors) who helped shape Orion. At the same time, these compelling interviews drag on; the story's drama is diffused by the musings of its key players, who sometimes crowd out the dynamic background of the Cold War, Wernher Von Braun's chemical rocket program, atmospheric weapons test bans and presidential administrations vested in nuclear capacities only designed for destruction. Illus. and photos.

For those of us who dream of visiting the outer planets, seeing Saturn's rings up close without intermediation of telescopes or charge-coupled devices, well, we pretty much *have* to read "Project Orion." In 1958, some of the world's smartest people, including famous physicist Freeman Dyson (the author's father), expected to visit the outer planets in "Orion," a nuclear-bomb propelled ship big enough and powerful enough to seat its passengers in lazy-boy recliners. They expected to start their grand tour by 1970. This was not pie-in-the-sky optimism; they had strong technical reasons for believing they could do it.

Imagine a spaceship 135 feet in diameter, and 10 stories tall. Imagine it weighing 4000 tons. Bet that doesn't sound too impressive. If this were a normal chemical rocket, only about 10 tons of this would make it into space. Now just imagine for a moment that there was a way to allow over 3500 tons of this ship to make it to orbit. This is possible, if a ship were to launch nuclear bombs as fuel. This is known as Project Orion.

The book starts with the Day Sputnik was launched. This was an inspiration to a great many Americans, not the least of whom was Ted Taylor. From that day onward, Ted became fascinated with finding a way to build a space ship of his own. This path would lead him to probably the most controversial design for a spacecraft ever, and probably one of the greatest "What If" statements of all time, his path led him to Project Orion.

George Dyson does a great job of bringing the key points of the history of Project Orion together in one place. He covers virtually ever aspect, including nearly a dozen different designs for Orion, information on it's design to the best degree publicly available, and interviews with most of the living former Orion staff. He also covers many of the potential problems, including the shock absorbers, fallout, and many more.

Project Orion is a remarkable story of a handful of dedicated scientists who devised a plan to put people on other planets--decades ago. Not science fiction, but science fact: government funds were allocated, concept drawings and bills of materials devised, propulsion tests carried out--all in top secret.

Decades later, the Project is still shrouded in mystery and would have stayed that way if it weren't for the dogged efforts of George Dyson to carefully research the events and piece the story back together; a daunting task, since top secret information is inaccessible and some Project Orion documents may have disappeared forever.

Like Dyson's previous book "Darwin Among the Machines," Orion is provocative on many levels: in addition to being an important historical testimony, it makes the reader wonder how many significant projects have been shelved and where space exploration would be today if Orion had gone forward. Incredibly, Orion scientists didn't have the luxury of microcomputer technology, yet they dared to dream big and translate those dreams into action.

George Dyson has turned in a surprisingly literate and interesting history of a forgotten part of space history. Some of the technical issues he describes (opacity, ablation, computational codes) have more than likely never been covered in a mass market text, due to their complexity and security classification. He makes it all readable.

The idea Project Orion studied back in the 50's is wonderful. This book is not. You can get all of the story contained in this book by reading the first 9 chapters and studying all the illustrations carefully. All of the project's technical details of interest are classified and not included. The book suffers from a lack of any sort of useful timeline as to the events of Project Orion. The reader is left to piece together the story from a sprinkling of semi-random vignettes and personal reminiscences.

Most of this book is filler, with the details left to the reader's own mind to fill in. And yet, the idea is so Grand that I found myself staring off into space every so often as I ground my way through the turgid prose and confusing organization, imagining where we might be now if hopes had been realized 40 years ago.

5) There is a lot of teeth gnashing about atomic scientists feeling guilty about the bombs after they had made them. They acknowledge that Orion was a constructive use of that effort, but in their old age many of the scientists interviewed for this book are a little hypocritical in their disavowals. More grinding.

George Dyson, the son of distinguished physicist Freeman Dyson, grew up immersed in the world of groundbreaking science. His previous books include the acclaimed Darwin Among the Machines. He and his father are also the subjects of Kenneth Brower's classic profile The Starship and the Canoe. Dyson lives in Washington State.

There was a serious proposal, starting in 1945, for the US to build a gigantic nuclear-powered spaceship. Top scientists worked on the plan for secret in years, but it was eventually abandoned. This book is the story of that project, and what could have been. The solar system would have been our lake, decades ago. From the book:

"To visualize Orion, imagine an enormous one-cylinder external combustion engine, a single piston reciprocating within the combustion chamber of empty space. The ship itself, egg-shaped and the height of a twenty-story building, is the piston, armored by a 1,000-ton pusher plate, attached by shock-absorbing legs. The first hundred explosions, fired at half-second intervals, with a total yield equivalent to some 100,000 tons of TNT, would lift the ship from sea level to 125,000 feet."

Project Orion was quite possibly a crazy idea. Conceived of in the late 1950s, Project Orion proposed the propulsion of a space ship by exploding a large number (hundreds) of small (by nuclear standards) fission bombs with the power of up to about 5 kilotons TNT, about the quarter of the size of the Hiroshima bomb. These bombs would be ejected from the space ship and explode behind it. The bombs would vaporize a propellant (which could be just about anything) that would strike a thick steel plate.

Project Orion was mainly a paper project, developed at General Atomics (still in existence) in California. A very small model propelled by conventional explosives was developed and a film of its launch used for public relations purposes. No actual nuclear explosions were done to advance the project, much to the disappointment of those working on the project. The project suffered from remaining an Air Force project after NASA came into existence, because military applications, although conceivable, always seemed rather forced. The ideas merits only really appear when applied to the problem of how to explore the solar system in a few years, the benefits with regards to

putting things into orbit around the Earth are not obvious. In 1965, when it became clear to the Air Force that NASA was not willing to share in the funding, the project died. One reason that NASA didn't support the idea may be that it had a competing idea of using a nuclear reactor to heat hydrogen, the hydrogen then being the propellant. The 1963 ban on atmospheric testing was also a problem, though the notion of hoisting Orion into space on a conventional rocket was explored.

Another reviewer mentioned that the book was only for nerds who knew their math and physics, and a liberal arts person would have great trouble reading it. I'm FAR from a math whizâ€”math is the reason I went into Fine Artsâ€”and I found the book easy to read and understand. I'm writing this review about a week after returning the book to the library, and as I recall, there were no equations at all in the text.

Fascinating stuff. Construct a 4,000 tonne spaceship which is propelled by hundreds of small nuclear bombs? In the late 1950s, this was close to being a reality. Eye-opening stuff, this book is full of tech detail, but it's the people involved who are the most interesting - full of boundless thinking, wide horizons and intelligence, not only able to think outside the box but able to kick the box aside and leap for the stars. Most of them gradually had the 'Hold on a second' epiphany and re-evalu...more Fascinating stuff. Construct a 4,000 tonne spaceship which is propelled by hundreds of small nuclear bombs? In the late 1950s, this was close to being a reality. Eye-opening stuff, this book is full of tech detail, but it's the people involved who are the most interesting - full of boundless thinking, wide horizons and intelligence, not only able to think outside the box but able to kick the box aside and leap for the stars. Most of them gradually had the 'Hold on a second' epiphany and re-evaluated their work and the possible proliferation of nukes, but they still retain a wistful image of an early 21st century world where ORION is taking us to the outer planets, supporting a large moon base and pointing the way to the universe.(less)

From the late '50s to the mid '60s a group of scientists and engineers, never numbering more than 50, and spending barely \$10 million over seven years, developed what remains the only efficient method of putting large cargoes into space or of sending large scale missions to explore other planets. Their method? Explode nuclear bombs a short distance from the spacecraft and ride the shockwave like a surfboard.

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