

Project Orion: The True Story of the Atomic Spaceship

by George Dyson. Owl Books, 2003. 345 pp., \$16.

Project Orion asks you to imagine a world where Apollo was consigned to history's trash can before it left the drawing board. It is the story of a team of accomplished nuclear scientists, including the author's father (and *Air & Space/Smithsonian* contributing editor), Freeman Dyson, who designed a spaceship powered by nuclear bombs. Starting in 1957, the team planned missions to Mars by 1965, and to Saturn by 1970, not in capsules but in 4,000-ton space cruisers, complete with a two-ton traditional barber's chair. It was a serious, if extravagantly imaginative and grand-scale plan for space exploration.

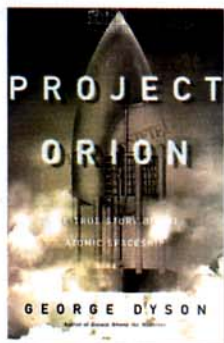
George Dyson describes the technical details elegantly: "To visualize Orion, imagine an enormous one-cylinder external combustion engine: a single piston reciprocating within the combustion chamber of empty space." He is equally good at capturing the buccaneering spirit of the project team at the General Atomics company. The book is full of appealing details like the description of trials of a C4 explosive-powered scale model at Point Loma on the California coast and discussions with the Coca-Cola company on shifting thousands of nuclear bombs, like bottles in a factory, so that one could be fired every half-second.

Particularly touching are his father's memories of the cafeteria and library at La Jolla—at 135 feet in diameter, the latter was the same size as the Orion design—"We always imagined the ship with a big recreation area in the nose, and windows looking out forward and sideways so we could see the rings of Saturn sweeping overhead as we passed through." Undeterred by the prospect of surfing nuclear explosions, the designers expected to become crew members.

The 1963 atmospheric test ban delivered the death blow to the already-moribund program, but it lives on in the minds of its designers: "It would have worked," says one. "Even in my dotage,

I'm a true believer." In 1965, the project won a short-lived reprieve as the model for the Discovery spacecraft in Stanley Kubrick's film *2001: A Space Odyssey*. It was a fitting end to a project that was almost science fiction.

Project Orion's narrative is sometimes lost among the fascinating details; tighter editing and a little weight loss would have enhanced it. The illustrations are few and disappointing. Nevertheless, it's a tantalizing story and a good read about



one of history's great "what if" scenarios. While designers are still struggling with single-stage-to-orbit rockets, Orion would have gone "from downtown Jackass Flats to Saturn orbit back to low earth orbit in a single stage," according to writer and rocket designer Scott Lowther. Team member Ted Taylor may have captured the spirit of the project best: "The first flight of that thing... would be the most spectacular thing that

humans had ever seen."

—Matthew Stibbe is a business and aviation writer living in London.

The Mercury 13: The Untold Story of Thirteen American Women and the Dream of Space Flight

by Martha Ackmann. Random House, 2003. 227 pp., \$24.95.

Martha Ackmann chronicles a shocking period in NASA history: In 1961, 13 women pilots passed the same tests as the original Mercury 7 astronauts—in some cases exceeding the men's performances and qualifications—but were never seriously considered for early U.S. spaceflight missions. Despite



their daring, often record-setting accomplishments as pilots, the women were mocked as "girl astronauts" by Air Force Brigadier General Donald

Flickinger, and dismissed as "110 pounds of payload for recreational equipment" by a high-ranking NASA official. In truth, the lighter, smaller women would have improved fuel efficiency in those early flights, but, according to the author, "egregious" sexism in the military and at NASA prevailed.

In 1957, Jerrie Cobb, after posing in the requisite dress and high heels, set out to break the world record for high-altitude flight in a light aircraft. She succeeded, reaching 30,330 feet (she set the record again in 1960 at 37,010 feet); this achievement and others drew the attention of scientists who wanted to see if objective data would support the idea of women in space. Cobb and 12 other women passed the same rigorous tests—physical, mental, emotional—at the Lovelace Clinic that their more famous brethren did. Along the way, several of the women surpassed by hours the men's times in the infamous isolation tank, and some had thousands more hours of flying time than the men. No matter: Even after Congressional hearings, the highest powers declared that women were "not required" in space.

Not until 1983, more than 20 years after the Mercury 13 proved their mettle as potential astronauts, did an American woman, Sally Ride, visit space. It was 15 years longer before Eileen Collins commanded a U.S. spacecraft, *Columbia*, with most of the surviving Mercury 13 present at Cape Canaveral for liftoff.

Ackmann's prose does not soar like an eagle, and the many footnotes are distracting, but the steady accumulation of facts forms a damning picture of the times and creates a valuable addendum to the popular history of spaceflight.

—Nan Chase last reviewed Secret Empire: Eisenhower, the CIA and the Hidden Story of America's Space Espionage for *Air & Space*.

The Pilots

by James Spencer. G.P. Putnam's Sons, 2003. 268 pp., \$23.95.

Want to fly with young pilots amid the heat, sweat, noise, and terror of World War II air combat in the Southwest Pacific? Want to experience the pilots' escape from the cruelty of war as they consort in Australia with young women already torn by the pain of losing their husbands and brothers?

James Spencer's *The Pilots* is easy to read, difficult to put down, and almost