



Astronauts (front to back) Frank Borman, Jim Lovell and Bill Anders head to the launch pad for the Apollo 8 mission.

## SPACE SCIENCE

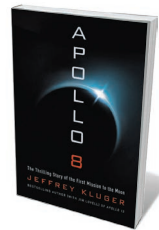
# First three round the Moon

Roger Launius on a valentine to the astronauts behind Apollo 8 and *Earthrise*.

“He gave the scarred side of the command module an affectionate slap, then turned around and walked away.” That was Apollo 8 commander Frank Borman’s matter-of-fact response to the mission’s end, as Jeffrey Kluger records in his book *Apollo 8*. When the week-long flight returned to Earth on 27 December 1968, Borman and fellow astronauts Bill Anders and Jim Lovell did not publicly make much of having pulled off the first orbit of the Moon.

The rest of the world felt differently, and *Apollo 8* is a valentine to NASA’s extraordinary achievement and the trio of astronauts who made it happen. Kluger puts the latter, especially Borman, centre stage, leaving NASA’s engineers and politicians in the shade. That is not surprising: Kluger is a veteran space writer best known for *Lost Moon: The Perilous Voyage of Apollo 13* (Houghton

Mifflin, 1994), co-authored with Lovell. If there is a weakness in this praiseworthy book, it is that it emphasizes the roles of the astronauts over those of the thousands of engineers, technicians, mission controllers and number crunchers who made Apollo 8 possible. Among these were the female mathematicians such as those in Margot Lee Shetterly’s book *Hidden Figures* (William Morrow, 2016) and its film adaptation, as well as in Nathalia Holt’s *Rise of the Rocket Girls* (Little, Brown, 2016). The emphasis on astronauts is evident



**Apollo 8: The Thrilling Story of the First Mission to the Moon**  
JEFFREY KLUGER  
Henry Holt: 2017.

in Kluger’s telling of the lead-up to the first circumlunar flight. Apollo 8 is best remembered for two things. The first is the decision to send a Saturn V rocket around the Moon after only a single Earth orbital flight — one of the gutsiest calls in NASA’s history. After a capsule fire during the 1967 Apollo 1 launch rehearsal, which killed astronauts Gus Grissom, Ed White and Roger Chaffee, NASA fell behind its schedule to land on the Moon by the end of the decade. It had planned to test Apollo hardware in the relatively safe confines of low Earth orbit, but to catch up, agency leaders concocted a bravura scheme to regain momentum by making Apollo 8 a lunar fly-by. The experience and data acquired would, they reasoned, enable a landing — and demonstrate US technological excellence.

This decision makes for a weighty story, but Kluger glosses over it and instead focuses on

the astronauts' preparations. Beyond their efforts, the technical analysis for the mission took months; the political determination proved equally difficult. Accelerating the preparation for launch, with more than 150,000 people fully involved in the process, represented a management challenge as arduous as any ever taken by NASA.

Apollo 8's second claim to fame is one of the most significant photographs of the twentieth century, *Earthrise*, snapped by Anders from lunar orbit (see [go.nature.com/2ne4zai](http://go.nature.com/2ne4zai)). It shows the Moon, grey and lifeless in the foreground, with Earth awash in colour in the blackness of space. *Earthrise* symbolized an emerging environmental consciousness for more than a generation. In a remarkable understatement, Kluger concludes that it "would eventually move people to understand that worlds — like glass — do break and that the particular world in the photograph needed to be cared for more gently than humans had ever treated it before".

He might have included some of the expansive commentary on this image by the astronauts, or responses from poets and pundits, preservationists and potentates. Instead, he emphasizes that the astronauts did not guess that the portrait, taken on 24 December, would be so influential — the ultimate reconnaissance photograph of Earth from afar. (Kluger does pay due attention to a Christmas Eve broadcast in which the crew read from Genesis, striking a rather heroic tone.)

Kluger closes *Apollo 8* with a touching story that Borman has told repeatedly. This hinges on the events that made 1968 one of the most tumultuous in US history, from North Korea's capture of the surveillance ship USS *Pueblo* to the Tet Offensive of the Vietnam War, the assassinations of civil-rights icon Martin Luther King Jr and presidential hopeful Robert F. Kennedy, and widespread rioting over racism. The success of the mission seemed to many US citizens balm for an open wound. Borman recalled receiving a telegram that said, "Thank you, Apollo 8. You saved 1968."

That triumphalist story is symptomatic of Kluger's emphasis. Historian Alex Roland has called such accounts "tribal rituals, meant to comfort the old and indoctrinate the young". He is right. But rituals serve a purpose. That is why most readers will enjoy the vicarious thrill of that flight to the Moon in the stellar company of Borman, Anders and Lovell. ■

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Protestors hold a rally against the lack of an adult trauma centre at the University of Chicago Hospital.

#### INEQUALITY

## Live poor, die young

**Abigail A. Sewell** examines a physician's study of how deprivation shortens lifespan.

**D**avid Ansell's passionately written *The Death Gap* presents a powerful case for social inequality as a cause of disease and disparities in health. The social epidemiologist, physician and public-hospital veteran invokes the concept of 'death gaps' to describe differences in life expectancy by race, ethnicity, class and geography.

Ansell uses an approach that is gaining traction in health and medicine, casting health disparities in the United States as arising from the commodification and

politicization of health care. He sees the country's health system as another form of structural violence — harm resulting from unjust social systems, such as poor-quality housing and emergency infrastructures. This architecture, anchored by racism, classism and placeism (discrimination on the basis of neighbourhood), fosters ill health in the most marginalized and vulnerable groups, such as poor black people in urban areas and rural working-class white people. For the most unfortunate, such assaults on