(23) G. R. Ricker *et al.*, *Journal of Astronomical Telescopes, Instruments, and Systems*, **1**, 014003, 2015.
(24) J. M. Jenkins *et al.*, in *Proc. SPIE*, 2016, *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, vol. 9913, p. 99133E.
(25) Lightkurve Collaboration, 'Lightkurve: Kepler and TESS time series analysis in Python', Astrophysics Source Code Library, 2018.
(26) S. A. Otero & P. A. Dubovsky, *IBVS*, **5557**, 1, 2004.
(27) C. H. Porowski, *IBVS*, **5606**, 1, 2005.
(28) L. Brat *et al.*, *Open European Journal on Variable Stars*, **137**, 1, 2011.
(29) P. Zasche *et al.*, *IBVS*, **6007**, 1, 2011.
(30) A. Pasche, *OEJV*, **191**, 1, 2018.
(31) L. Pagel, *IBVS*, **6244**, 1, 2018.
(32) L. Pagel, *BAV Journal*, **052**, 1, 2021.
(33) A. Paschke, *BAV Journal*, **079**, 1, 2023.
(34) J. Southworth, P. F. L. Maxted & B. Smalley, *MNRAS*, **351**, 1277, 2004.
(35) J. Southworth, *A&A*, **557**, A119, 2013.
(36) D. Hestroffer, *A&A*, **327**, 199, 1997.
(37) P. F. L. Maxted, *A&A*, **616**, A39, 2018.
(38) J. Southworth, *The Observatory*, **143**, 71, 2023.
(39) A. Claret & J. Southworth, *A&A*, **664**, A128, 2022.
(40) A. Claret & J. Southworth, *A&A*, **674**, A63, 2023.
(41) J. M. Kreiner, C.-H. Kim & I.-S. Nha, *An atlas of O-C diagrams of eclipsing binary stars* (Wydawnictwo Naukowe AP, Kraków, ul. Studencka 5, Poland), 2001.
(42) J. Southworth, *MNRAS*, **386**, 1644, 2008.
(43) J. Southworth, *The Observatory*, **141**, 234, 2021.
(44) J. Southworth, P. F. L. Maxted & B. Smalley, *A&A*, **429**, 645, 2005.
(45) A. Prša *et al.*, *AJ*, **152**, 41, 2016.
(46) P. Kervella *et al.*, *A&A*, **426**, 297, 2004.
(47) A. Bressan *et al.*, *MNRAS*, **427**, 127, 2012.
(48) B. Smalley *et al.*, *A&A*, **564**, A69, 2014.
(49) B. Smalley *et al.*, *MNRAS*, **465**, 2662, 2017.

REVIEWS

Planetary Geology: An Introduction, 3rd Edition, by Dominic Fortes & Claudio Vita-Finzi (Liverpool University Press), 2025. Pp. 318, 26 × 20 cm. Price £31·99 (paperback; ISBN 978 1 78046 104 5).

Planetary Geology, by Fortes & Vita-Finzi, gives a thorough and up-to-date overview of this topical and rapidly advancing subject. It covers more or less all aspects of planetary geology, from the basic origin of the Solar System, orbital physics, and geophysical techniques, to crust-building processes, atmospheres and cryospheres and the possibility of volcanism, plate tectonics, and life on non-terrestrial planets.

The book is information-rich and must have been an enormous undertaking. The complementary specialties of the authors have enabled excellent integration of knowledge concerning Earth, about which we clearly have information gathered close-up that provides unique detail, and the other planets, most of which we can study only remotely. Integration of information on such disparate scales is challenging. However, the authors have effectively achieved what they set out to do.

It is a courageous undertaking to produce a book on this subject in the face of the almost monthly announcements of significant new findings. However, the content has been effectively designed to maintain relevance in the face of rapid advancements. A read of this

book equips the reader with an excellent overview and basic understanding of most aspects of the subject on which to build as new advances are made.

The book is beautifully produced and a pleasure to read. It is scholarly, and assumes a readership with a good general scientific grounding. At the same time, it is well readable and attractively and abundantly illustrated in beautiful colour. It also provides a good level of detailed data in the form of tables and charts. Given that, it will have wide utility for students, teachers, scholars, and interested lay persons. It provides an excellent supporting text for courses and can function as a basic reference volume on the bookshelves (for those of us who still have such things) of all Earth scientists. I recommend it highly as a supporting text to courses on planetary geology. — Gillian R. Foulger.

From the Laboratory to the Moon: The Quiet Genius of George R. Carruthers, by David H. DeVorkin (MIT Press), 2025. Pp. 434, 23 × 15 cm. Price $75 (about £55) (paperback; ISBN 978 0 262 55139 7).

I had never heard of George Carruthers, and I suspect most astronomers not involved in instrument development may share my ignorance. And yet he played a vital role in the Apollo programme and in earlier attempts to discover what happens above the Earth's atmosphere. This book explains how and why.

Born in 1939, Carruthers's family were part of the professional middle class, unlike the vast majority of other African Americans at the time (his Uncle Ben taught at Howard University in DC). He was brought up on a farm, where his father had worked hard to make the farm buildings useable and liveable, setting an example of hard work that his son followed throughout his career. He helped his father, who had a background in civil and general engineering, to fix things around the farm. The farm was run for just themselves, and his father worked during the week at an Air Corps base in Dayton, Ohio, and told young Carruthers many tales of what he saw there. His school grades were excellent, and his private reading mostly involved how to build flying machines in air and space. He also made designs for spacecraft and wrote "quite corny" stories about space flight. With his father's help and encouragement, he made himself a small refractor and loved looking at the Moon, planets, and stars, so he became very excited when people like von Braun started talking seriously about space rockets being possible and useable for astronomy.

His father died young, when Carruthers was about six, and the family moved to Chicago to live with his grandmother and great aunt. At his new school, several science teachers guided him through experimental work, at which he excelled. He also built himself a better telescope, a reflector for which he ground the mirror, with the help of the Adler Planetarium, which ran programmes for young people. After school, he went to the Champaign/Urbana campus of the University of Illinois to pursue a degree in engineering, where he found himself for the first time in a mostly White environment. However, he encountered little direct racism — mostly the White students simply ignored him. That didn't bother him, because he had always been a loner and just continued his goal of learning enough to get involved in space flight. He was particularly keen on working in the laboratories, and it was practical work with a special interest in cameras and in the engineering of rocketry that became his life's work. He even set up his own laboratory in his mother's basement while he was still a student. He was always trying risky things and had plenty of mishaps as a result. Much later, he had a sign on his office wall saying, "If it ain't broke, let's see if we can break it."

After graduation, he obtained a summer job at the Aerojet Corporation in California, his first introduction "to what engineers actually do" and discovered that he didn't like being one cog in much larger wheel — he wanted to see the whole picture. After that, he pursued graduate study, studying aeronautical and astronautical engineering combined with a minor in physics and astronomy, which introduced him to some of the astronomy faculty. He chose a thesis topic that was very precise but which he knew would give him