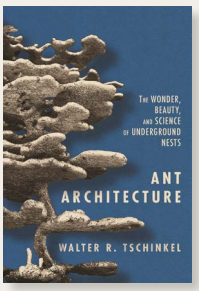
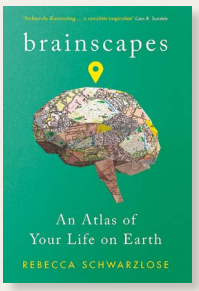
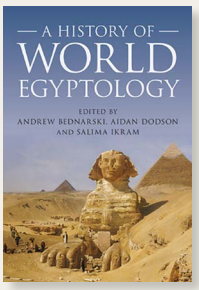
Books in brief



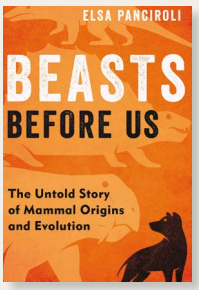
Ant Architecture
Walter R. Tschinkel *Princeton Univ. Press* (2021)
About 14,000 ant species are known, including 1,400 from Brazil. Their behaviour is intriguing. For example, to protect their nest at night, a few sterile *Forelius pusillus* workers conceal the entrance from outside with debris; they then march into the desert and die. Myrmecologist Walter Tschinkel focuses on his excavation of Florida nests in a highly personal, sometimes witty memoir flavoured with soil science, physics and chemistry. But, he admits, "most of the central mysteries of ant nests remain intact", such as how the insects organize their digging.



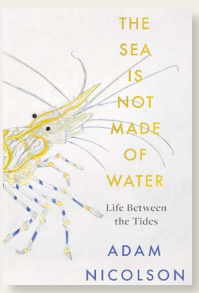
Brainscapes
Rebecca Schwarzlose *Profile* (2021)
If each human brain neuron were connected randomly to the other 86 billion, notes neuroscientist Rebecca Schwarzlose, the brain would be more than 20 kilometres wide. Instead, they link through maps of the "body, senses, movements, and crucial sources of information". These "brainscapes" are the complex, partially understood subject of her clear, often vivid history. Much evidence derives from people with brain damage or other conditions, such as blind children who can remap their visual cortex for uses such as language processing.



A History of World Egyptology
Edited by Andrew Bednarski, Aidan Dodson & Salima Ikram *Cambridge Univ. Press* (2021)
Egyptology began in an international atmosphere, with rival French and English researchers deciphering hieroglyphs in 1814–23, and a French–Italian expedition visiting Egypt in 1828–29. So it is appropriate that this encyclopedic history, with contributions from 19 nations, should analyse the subject's development globally, country by country. It is both immensely detailed and generally accessible, despite failing to include the Rosetta Stone in its copious index.



Beasts Before Us
Elsa Panciroli *Bloomsbury Sigma* (2021)
This pioneering study of the origin of mammals by palaeontologist Elsa Panciroli presents radical worldwide research from the past 20 years, based on new fossils and technologies. "If you thought it all began with the extinction of the non-bird dinosaurs" after a catastrophic asteroid impact 66 million years ago, says Panciroli, "think again." Mammals go back much further. They first diverged from reptiles and birds in the Carboniferous period, more than 300 million years ago — long before the rise of the dinosaurs.



The Sea is Not Made of Water
Adam Nicolson *William Collins* (2021)
Writer Adam Nicolson's latest nature book concerns the seashore. The intertidal zone, he reflects, is one of the most revelatory habitats on earth. Inspired by the Victorians, he uses poetry and science to engagingly chart his creation of new rock pools near his wife's family home in Scotland. They are, he writes, "governed by the movement of the planets; philosophical understandings can be applied to the ecology of invertebrates; the life of the crabs is attuned to the tides." **Andrew Robinson**

But a 'public versus private' conceit is too simplistic. Start-ups, Turrell writes "are proposing to use millions of dollars, and some crazy ideas, to do what billions of dollars, and decades of scientific investigation, have been unable to". In fact, the firms are building on foundations laid down by national laboratories and university research.

Audacious partnerships

Developing and integrating the technologies needed to form a working and economical fusion power plant is beyond the current scope of one company or public lab. The next phase could be like the public–private partnerships between NASA and companies SpaceX and Orbital Sciences to develop commercial transportation for the International Space Station, in which cost and risk were shared.

Decades of investment in collaborative programmes such as ITER, the NIF and the Joint European Torus in Oxfordshire, UK, plus programmes in plasma physics and high-energy-density physics, have brought fusion science to a point at which start-ups are commercializing ideas and new technologies. Now, governments are introducing programmes to stimulate the public and private sectors to work together. The key question is how best to make these partnerships flourish.

Star builders are optimistic by nature — you'd have to be, to tackle something so audacious. As a result, unrealistic timescales and over-promising have dogged fusion since the 1950s. More discussion on this would have been welcome. How much will fusion energy cost? And how long until it is powering our homes? The answers don't yet exist. But investors, governments, utility companies and the public can be forgiven for wanting answers — and the scientists for trying to provide them.

The discussion of the dangers of fusion is thoughtful and illuminating, from the low-to-zero possibilities of weapons proliferation or meltdown to the real risks from the radioactivity that high-energy neutrons create. Objectively, Turrell compares the numbers of deaths per exajoule of energy generated by current sources such as fossil fuels, renewables and nuclear fission. Fusion emerges as much safer than any of them.

In the end, *The Star Builders* is realistic and positive — an interesting snapshot of the current situation and key players. And, as if the challenge of clean energy weren't enough, Turrell has one last stretch for our imagination: to fusion propulsion for space travel. Humanity, he shows, is always reaching for the stars.

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The author declares competing financial interests; see go.nature.com/3ayhx8k for details.