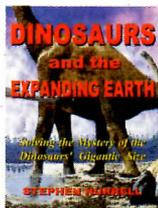


Very big and far away

Reduced gravity explains how pterosaurs could fly and dinosaurs run, but the book is better on geology than dinos



Dinosaurs and the Expanding Earth

Solving the Mystery of the Dinosaurs' Giant Size

Stephen Hurrell

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If it's correct, mechanical design engineer Stephen Hurrell's idea (first put forward in the 1994 hard-back edition) would be the biggest paradigm-shift since Copernicus announced the Earth moved round the Sun. Puzzled at how the hugest dinosaurs could support their own weight, Hurrell has concluded that gravity was less in the dinosaur days of the Mesozoic era, and that our planet has been expanding in size. This has in turn increased the force of its gravity.

The "expanding Earth hypothesis" has always ended up consigned to the science establishment's dustbin of what Fort called 'damned' data. Galileo proved mathematically that a giant human would crush itself unless its bones were proportionally many times thicker than in conventionally sized humans. But the history of science makes no mention of Prof. C John Mann, Sherman P Kanagy, James Maxlow, Prof. Lance Endersbee, Giancarlo Scalera, geophysicist Ott Christoph Hilgenber and other "expanding Earth" and "reduced gravity Earth" advocates who approached the subject from various disciplines.

The 29m (95ft)-high horsetail ferns and 45cm (18in) wingspan dragonflies of 300 million years ago could only have flourished in

a world in which "gravity must have been about one third of the present value", according to Hurrell's estimates.

A reduced-gravity prehistoric Earth also neatly explains the mystery of "too heavy to fly pterosaurs" or how enormous predatory or preyed-upon dinosaurs could run. *Archæopteryx* and other even less efficient gliding reptiles of the Mesozoic start to make more sense in a Cretaceous period where gravity had a value of less than 0.9g, an earlier Jurassic period with gravity at 0.5g (equivalent to gravity on present-day Mars) and with gravity at a mere 0.33g when dinosaurs took their first steps in the Triassic.

As gravity increased, animals became less massive – Hurrell notes the Jurassic behemoths like *Brachiosaurus* of 150 million years ago were not matched by the late Cretaceous fauna of 80 million years later, while the biggest ever prehistoric land mammals never came close. Even the evolution of avian and mammalian four-chambered hearts could reflect the higher blood pressures needed as gravity rose.

Dinosaurs succeeds in the considerable task of making very boring geology gripping. Earth's oldest-known rocks "have chemical compositions known only to form" at about a millionth of our current air pressure. As Earth expanded, and the gravity increased, heavier gases like oxygen and CO₂ lingered in the thickening atmosphere instead of dissipating through it.

There's supporting evidence from the Moon and Mars, both of which have "rills" – huge tears in their surfaces – which are convincingly explained as "expansion cracks".

What drives Earth's alleged expansion? There's 300,000 tonnes of "meteoric bombardment" annually, as our Solar System progresses through the galaxy and into cosmic dust clouds. The

1980s Dynamic Explorer satellite apparently showed 10 million house-sized comets a day – too small to have been previously detected – vaporising as they hit our atmosphere, leaving only dust and water vapour, but at a billion tonnes-worth a year, that's an awful lot of material over geological time.

While this book makes even geology sound cool, it sadly does less well at what should be much easier – making the dinosaurs come to life. The cover illustration suggests it's about really cool, huge dinos, but the book is mostly about the expanding Earth, with a mere 80 pages on dinosaurs, which aren't even revisited in the conclusion.

The amateur palaeontologist in me spotted some dino info was wrong, while the outdated prehistoric animal illustrations reminded me of one of my older brother's early 1960s children's dinosaur books. Many dinosaur discoveries within the last decade would lend weight (pun intended) to Hurrell's hypothesis but are omitted. The book confuses two different-looking species of giant armadillo, asserts "Iguanodon walked on two legs" – it's been regarded as mostly bipedal for well over 20 years – and incorrectly dates *Quetzalcoatlus* to the Jurassic, not the Cretaceous when it actually flew (in what would have been heavier skies, according to Hurrell).

If Hurrell's theories are to attract the palaeontology/engineering crossovers they invite, their presentation calls for a deeper love of science's greatest gift to pulling in the general reader – really cool, awesome, bizarre kick-ass dinosaurs rather than treating dinosaurs as just another engineering problem.

Matt Salusbury

Fortean Times Verdict

COMPELLING ON GEOPHYSICS,
LESS SO ON THE DINOSAURS

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