

COVER STORY*

The JOURNEY of a LIFETIME

Welcome, weary traveller. You've come a long, long way. You and the world around you are a temporary arrangement of matter and energy that took many billions of years to assemble. Imagine if you could deconstruct it all and trace each part's journey.

Many of the trillions of atoms in your body were forged in the incandescent cores of stars. What did they experience as they travelled through space? Some of the water in our cells has been through dinosaurs. And there are gems that have survived all of Earth's growing pains. Our travels continue: your physical body will eventually return to the stars. Even the act of looking at a distant constellation takes you on a strange journey through time and space.

Come with us on a selection of imaginary journeys that you will never take but, in some way, already have.

ONCE, YOUR BLOOD WAS DINOSAUR URINE

TRAVELLER Water

ORIGIN A comet, smashed into Earth

DESTINATION This page

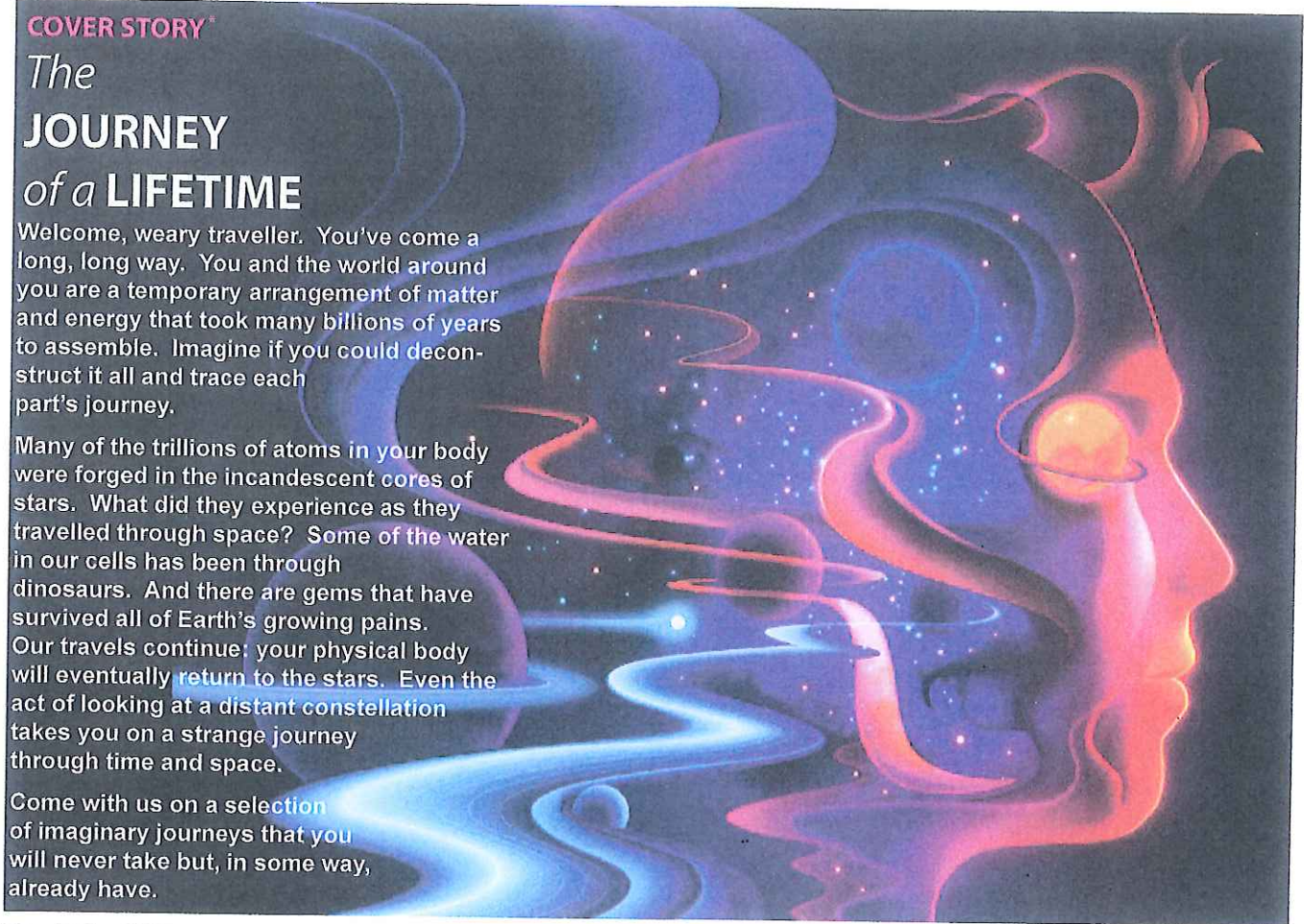
DURATION 4 billion years

Water's journey began 4 billion years ago when Earth's hellish, dry and volcanic surface was being pummelled by a relentless rain of comets and asteroids. Molecules of water trapped inside them spread across the surface of our planet, and 700 million violent years later, Earth's dry rock had been transformed into the familiar blue marble. As temperatures rose, a water molecule was swept with billions more into a vast oceanic river that slowly made its way from one pole to the other. For millions of years, the molecule skirted

continents, nudged the sea floor, helped to dissolve rocks and transport gases. It crossed the equator hundreds of thousands of times. It found itself at the surface of the sea, was warmed by the sun, rose high into the atmosphere and fell to ground in a raindrop. It seeped through cracks and became stuck in an underground aquifer for centuries. Eventually, as all water does, it found its way back to the ocean.

From 3.8 billion years ago, a new deviation became possible from its usual route cycling around the oceans and atmosphere: inside living cells, keeping them alive.

And so, around 150 million years ago, our molecule finds itself in a lake on what will eventually become one of the great plains of North America. A brontosaurus cranes its neck down for a drink. The water roils around the beast's digestive system and is absorbed into its blood.



Now it can perform the most important role Earth has found for it - enabling the basic chemistry of life.

In concert with other water molecules, it forces DNA, proteins and other cell membranes into the correct shapes to function. It helps carry oxygen to the dinosaur's brain and shuffles electricity around a heart cell. For a week, it moves around the dinosaur's body, but the game is up once it reaches the animal's kidneys. The molecule is expelled in urine, taking with it some of the brontosaurus's waste. It sinks through the ground and, like so many times before, finds its way through cracks and fissures and streams back to the oceans.

In subsequent millennia, our molecule finds its way into a whale's brain, an Antarctic ice sheet, a glass of water and a human heart.

Later, it waters a pine tree. It sits for decades in the cellulose fibres of the tree's heartwood before the pine is felled and turned into pulp.

The molecule stays in place as the pulp goes through chemical reactions, manipulations and dryings until it finds itself locked in a sheet of paper. That paper is printed with ink. It is cut, folded and stapled. The water molecule sits, motionless, at the end of a sentence, this very one.

Alok Jha is the author of *The Water Book* (Headline, 2015).

From an article in the magazine *New Scientist*, 14 Nov 2015

* cover story: the article is one of a selection on the cover story's theme

- Analyse the stylistic features of the text, both written and visual, with particular attention to the combination of the imaginative and the scientific.

