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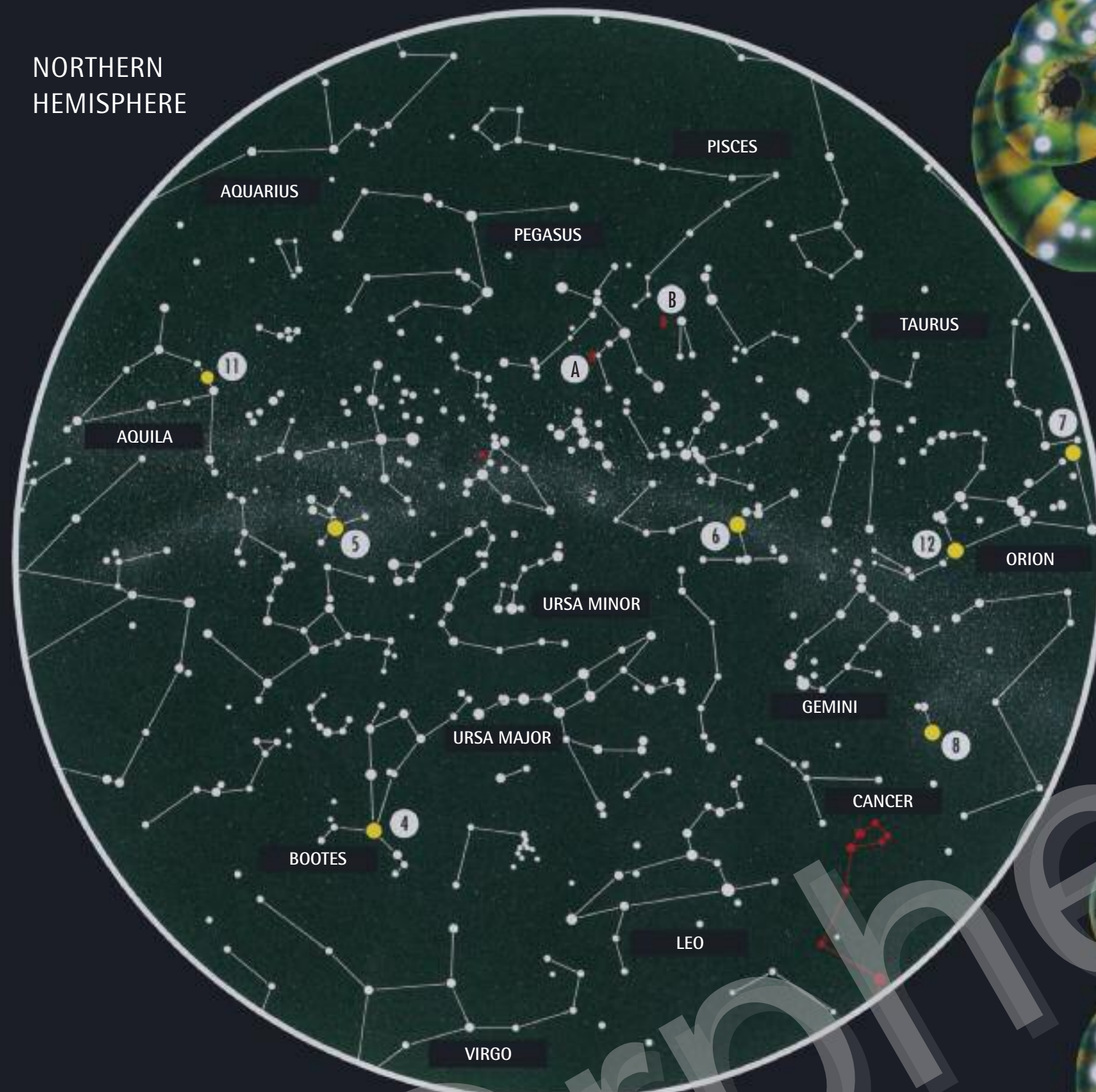
INTRODUCTION

Imagine a star so gigantic that, even if you travelled in the fastest plane, it would take over 500 years to fly round it. Yet there are other stars, called black holes, so incredibly tiny they are smaller than the ball from a ball-point pen! Even though some black holes are unbelievably distant, astronomers can still detect where these objects are.

Our own Solar System also contains many astonishing record holders. Tornadoes on Earth are extremely destructive, but winds on Saturn are more than ten times as fast. The swirling storm of the Great Red Spot on Jupiter is twice the size of the Earth itself, while some sunspots can be more than twenty times as large. Venus is so hot that any astronaut who landed there would be immediately incinerated, while Pluto is so cold (below -200 degrees Celsius) its surface is made of frozen gases.

How does Earth's Grand Canyon compare with the giant valleys on Mars? Where is the world's deepest lake, its highest mountain, and its longest river? When did the most powerful earthquake ever recorded occur? Find the answers to these and many more questions in this book.

NORTHERN HEMISPHERE



Imagine flying in supersonic jet at a cruising speed of 2000 km/h. It would take nearly 200,000 years to reach the nearest star! Distances in the universe are so vast that we have to use a special measure called light-years. Light moves at 299,792 kilometres per second (it would take the aircraft nearly five-and-a-half days to cover the same distance). In a year, light travels

about 9,460,528,405,000 kilometres, so we can use this distance, a light-year, instead of reckoning in millions and millions of kilometres. Powerful telescopes can detect quasars, central regions of galaxies throwing out enormous amounts of light and heat far out in the universe. They are the farthest objects known. The most distant quasar so far discovered is about 13,200,000 light-years away!

These two charts show the night sky visible from the Northern Hemisphere (left) and Southern Hemisphere (right). (Over the course of a year, the part you can see varies.) The brighter stars are shown as larger spots. The lines between the stars link those stars together in the same constellation.

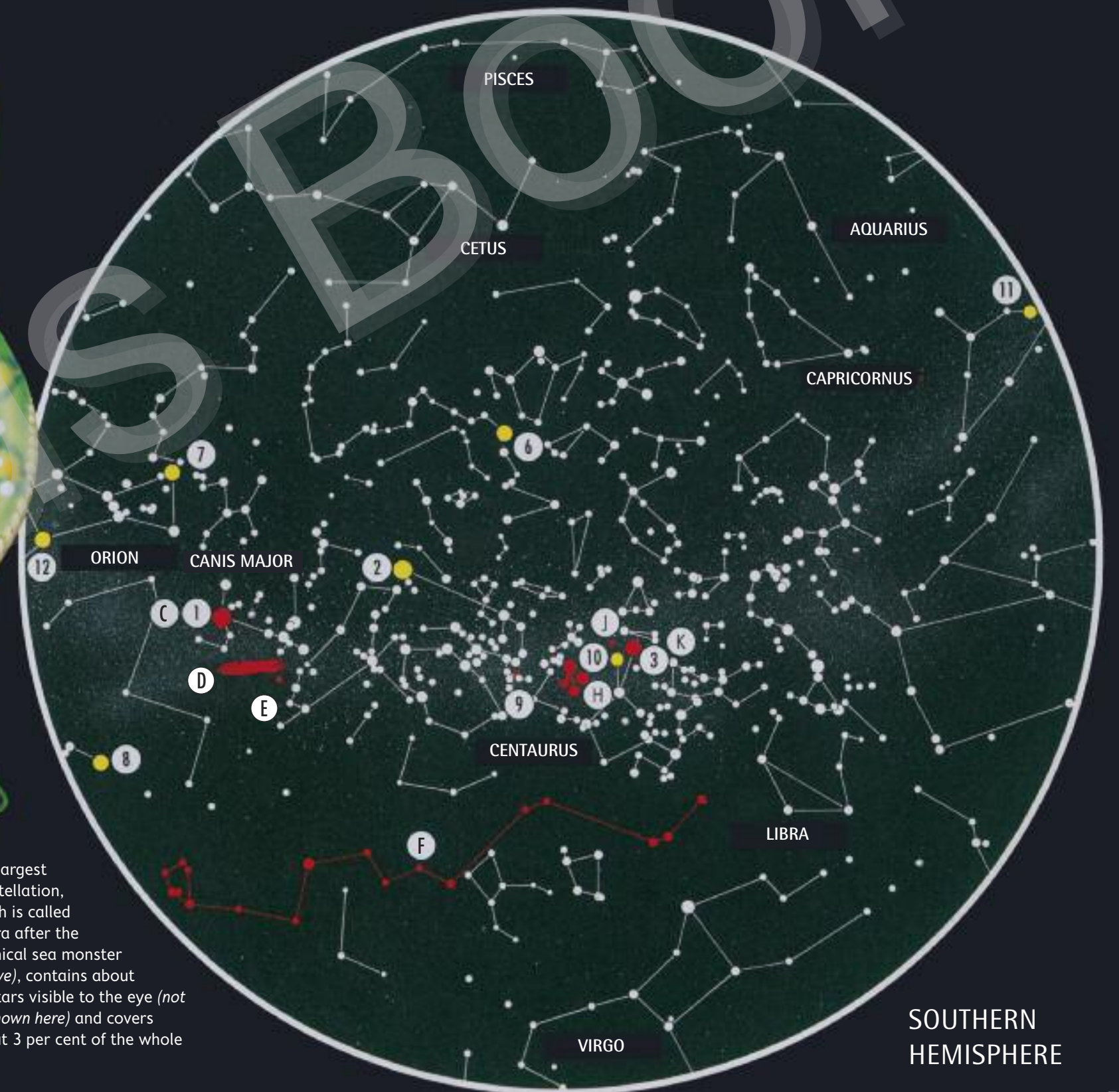
THE BRIGHTEST STARS

- 1 Sirius
- 2 Canopus
- 3 Alpha Centauri (Rigel Kent)
- 4 Arcturus
- 5 Vega
- 6 Capella
- 7 Rigel
- 8 Procyon
- 9 Achernar
- 10 Hadar
- 11 Altair
- 12 Betelgeuse

STAR RECORD HOLDERS

- A M31 galaxy Farthest object easily visible to the eye 2.5 million light-years away
- B M33 galaxy Farthest object ever visible to the eye 2.6 million light-years away
- C Sirius Brightest star 8.6 light-years away
- D Canis Major dwarf galaxy Nearest galaxy 50,000 light-years away
- E VY Canis Majoris Largest star 2100 times the size of the Sun
- F Hydra Largest constellation
- G Eta Carinae Most massive star 200 times the mass of the Sun
- H Crux Smallest constellation
- J Proxima Centauri Nearest star 4.2 light-years away
- K Alpha Centauri (Rigel Kent) Second nearest star and nearest visible to the eye 4.4 light-years away

The largest constellation, which is called Hydra after the mythical sea monster (above), contains about 68 stars visible to the eye (not all shown here) and covers about 3 per cent of the whole sky.



SOUTHERN HEMISPHERE