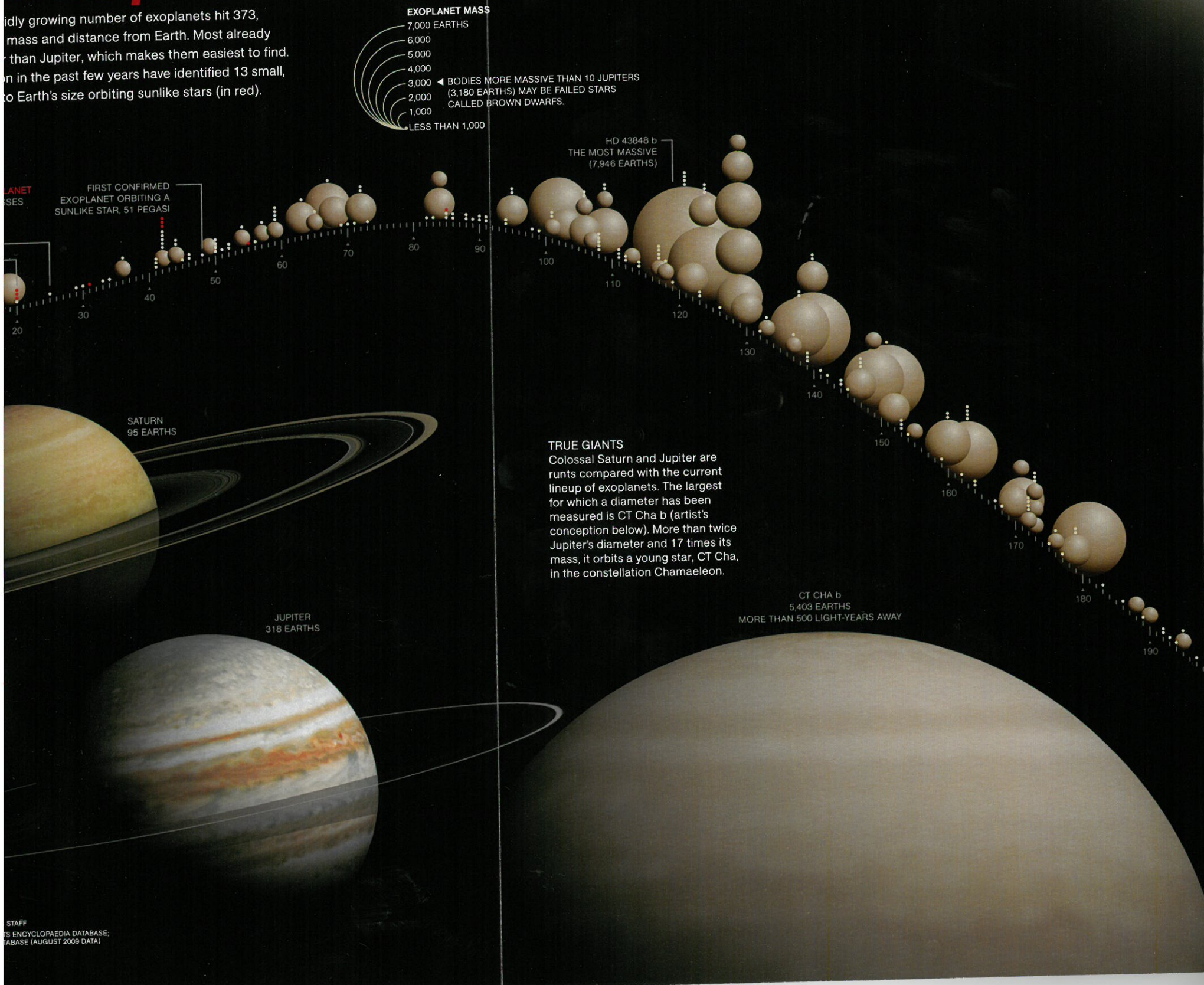


Known planets

rapidly growing number of exoplanets hit 373, mass and distance from Earth. Most already larger than Jupiter, which makes them easiest to find. In the past few years have identified 13 small, Earth's size orbiting sunlike stars (in red).

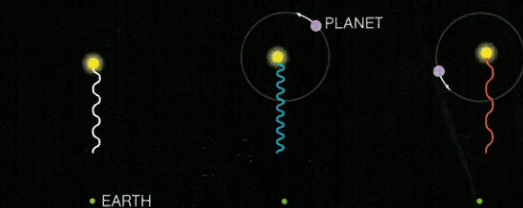


FINDING EXOPLANETS

Few of the planets discovered outside our solar system have been directly observed. Astrophysicists detect them and gather a remarkable amount of information by interpreting very subtle changes they cause in their star.

DOPPLER WOBBLE

A star orbited by a planet will wobble because of gravitational pull. As the star moves slightly toward and then away from Earth, its light shifts in the spectrum to shorter or longer wavelengths. Measuring the degree of spectral shift reveals the planet's minimum mass.



TRANSITS

A planet passing in front of a star minutely dims its light, revealing the planet's diameter, orbital period, and sometimes atmosphere.

ASTROMETRY

The gravity of a very large planet pulls its star from side to side, far enough to be measured against background stars.

DIRECT IMAGING

Blocking a star's light has yielded images of 11 planets, including Fomalhaut b and CT Cha b.

GRAVITATIONAL MICROLENSING

If a star and planet pass in front of another star, their gravitational fields act as a lens, bending light from the far star in a distinctive way.

