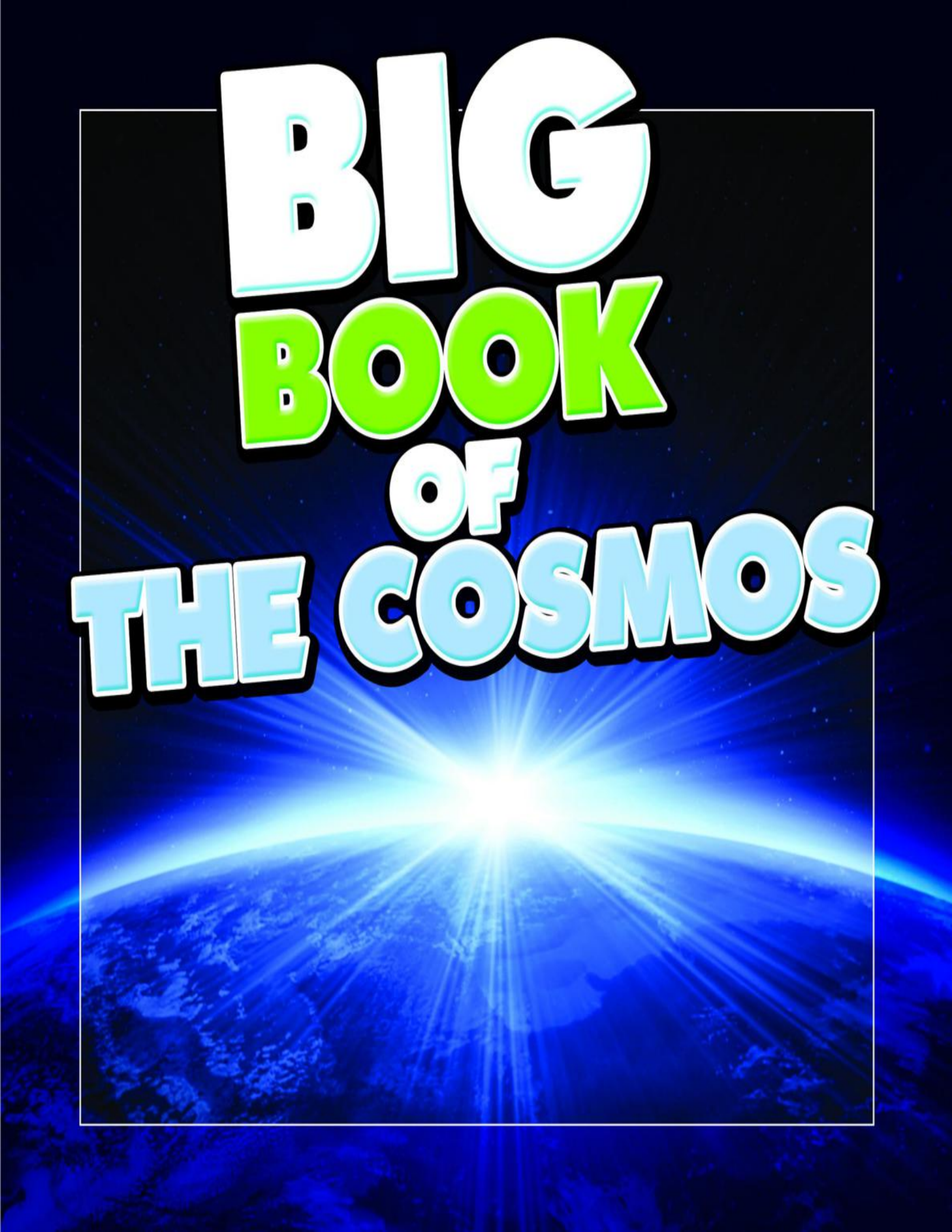
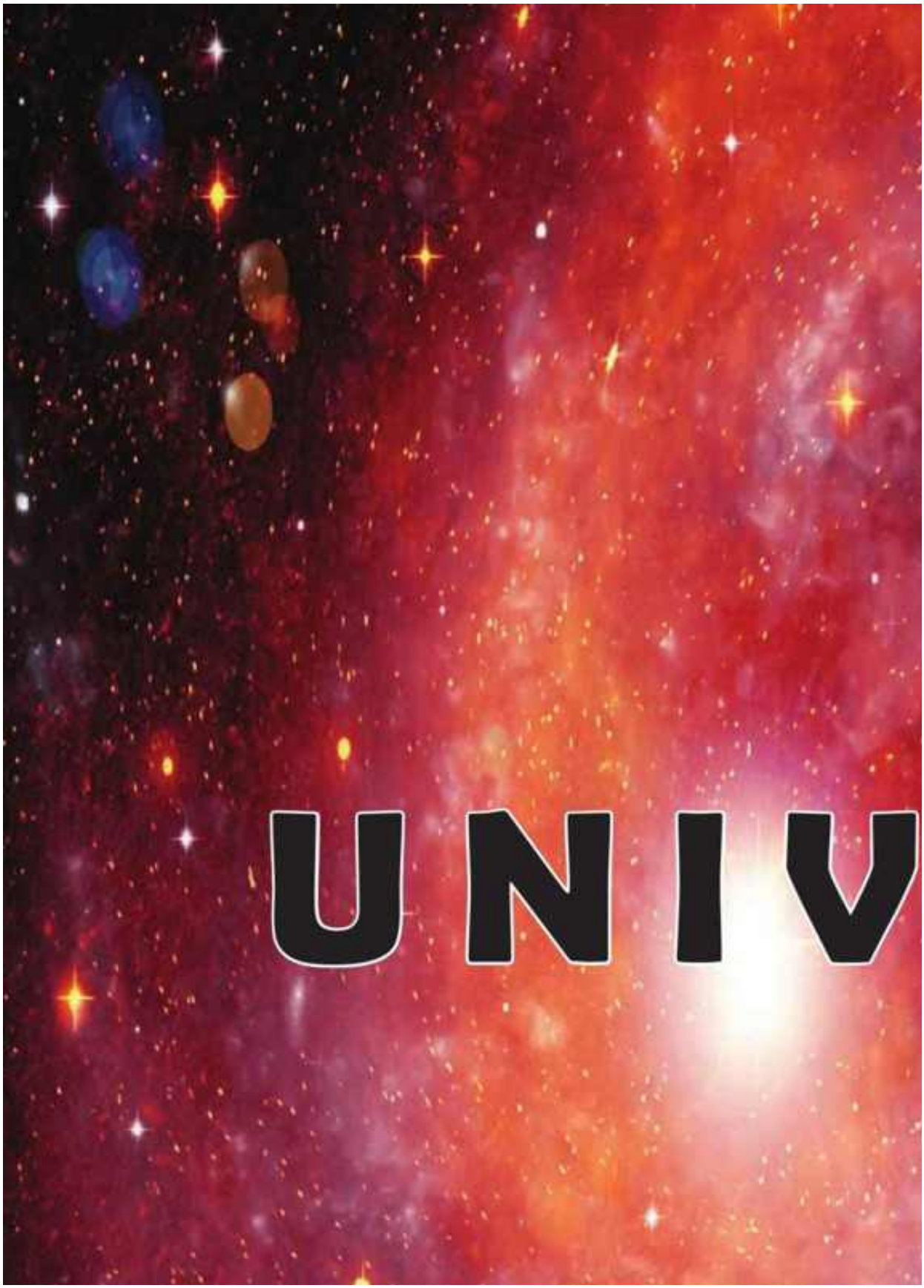

BIG
BOOK
OF
THE COSMOS

Big Boo
Cosmos

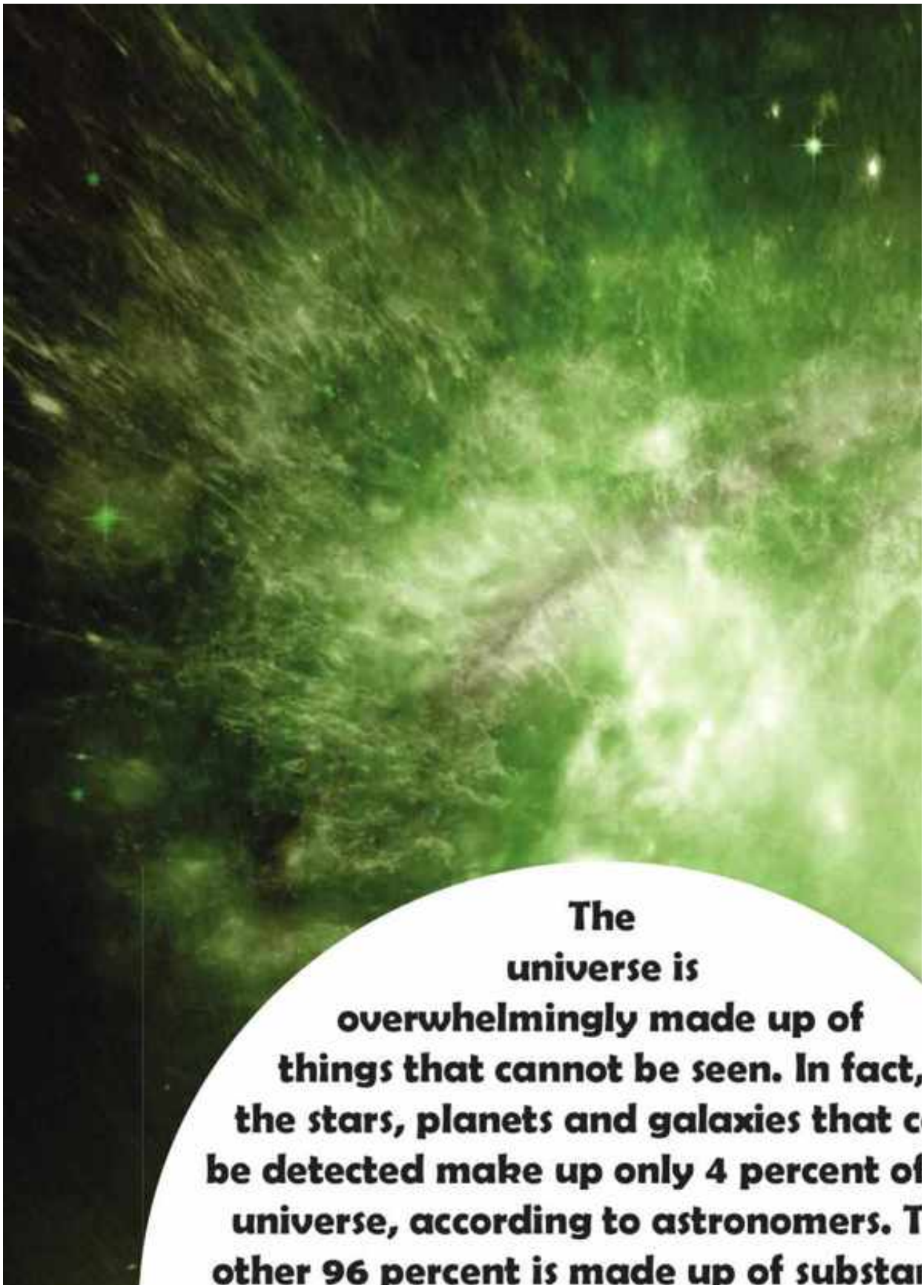
Speedy Pub
40 E. Mair
Newark, D

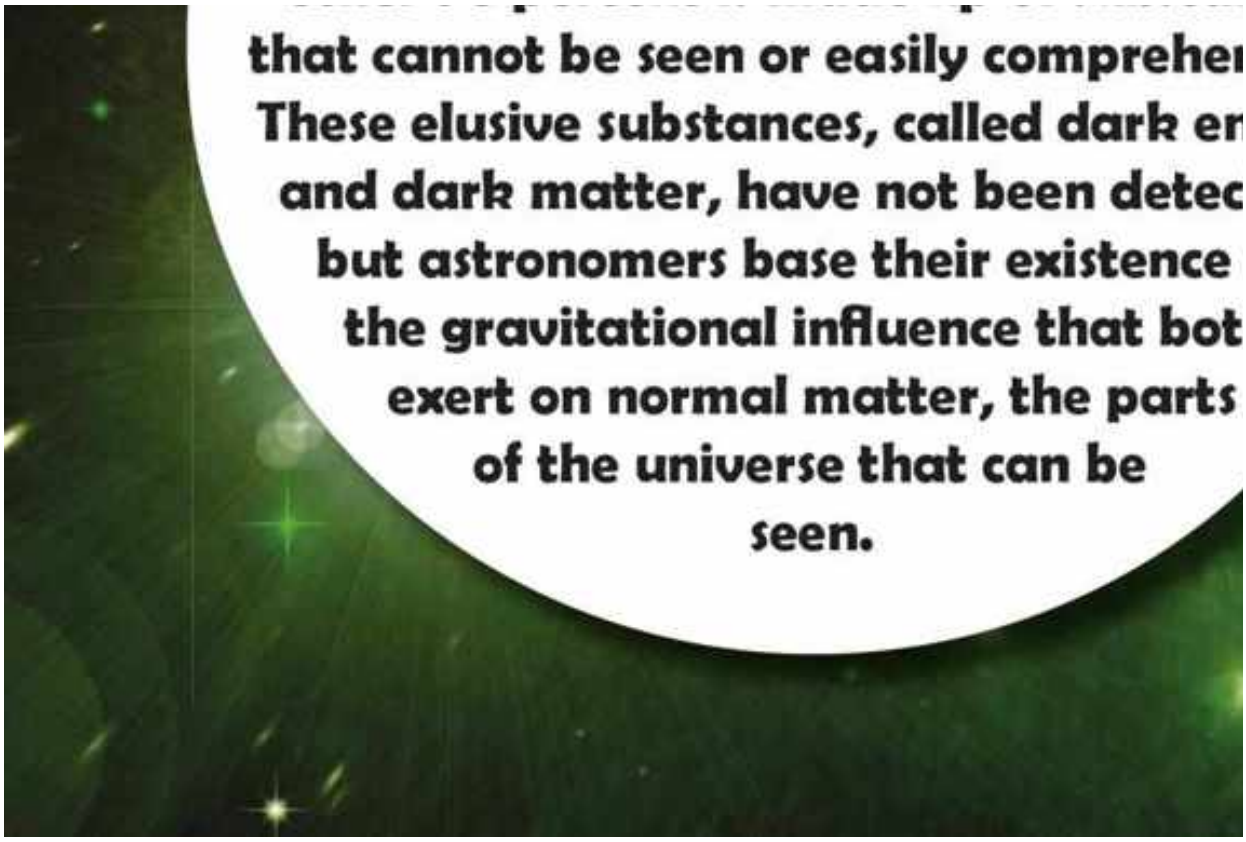
www.speedyp

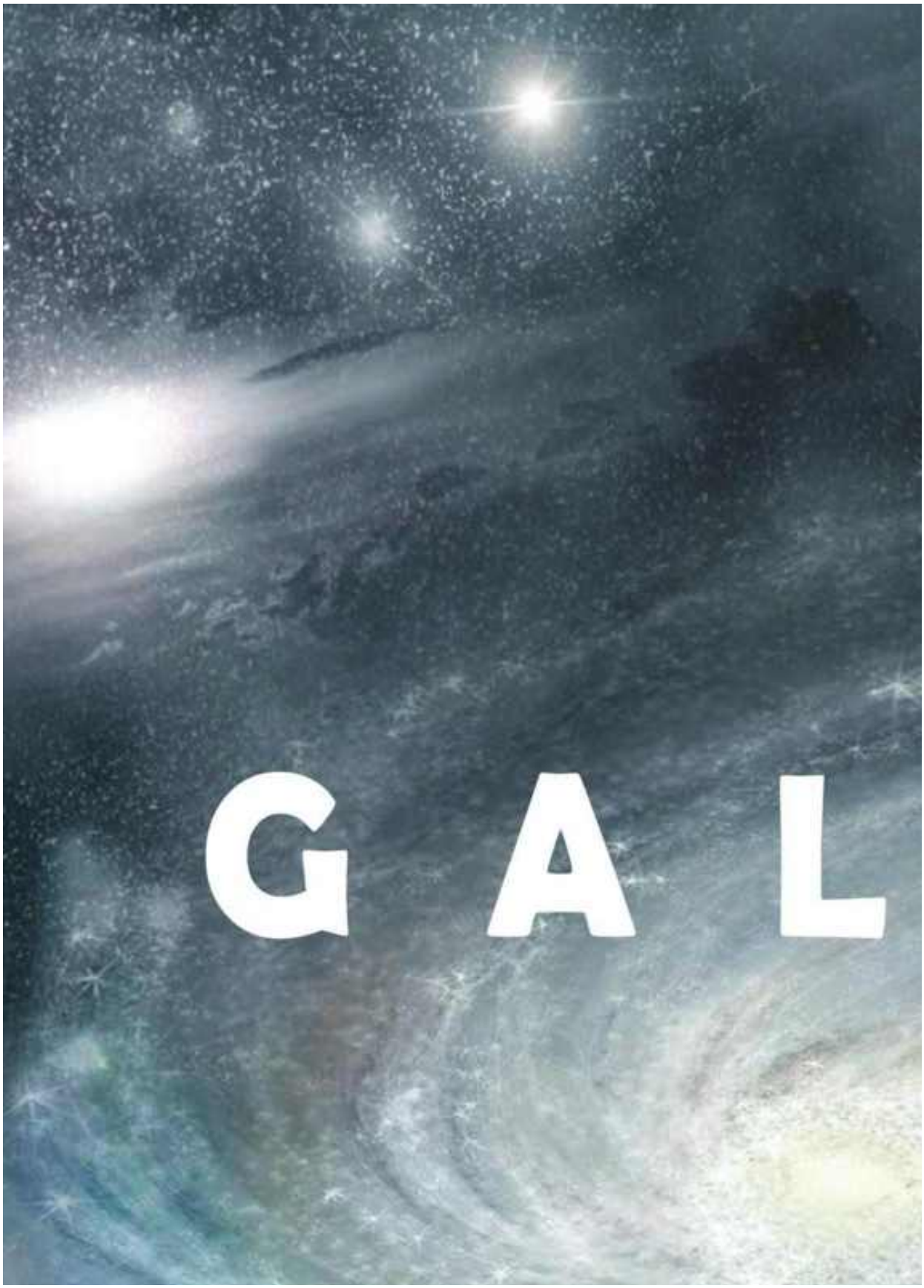
9781634
First Printed Sep

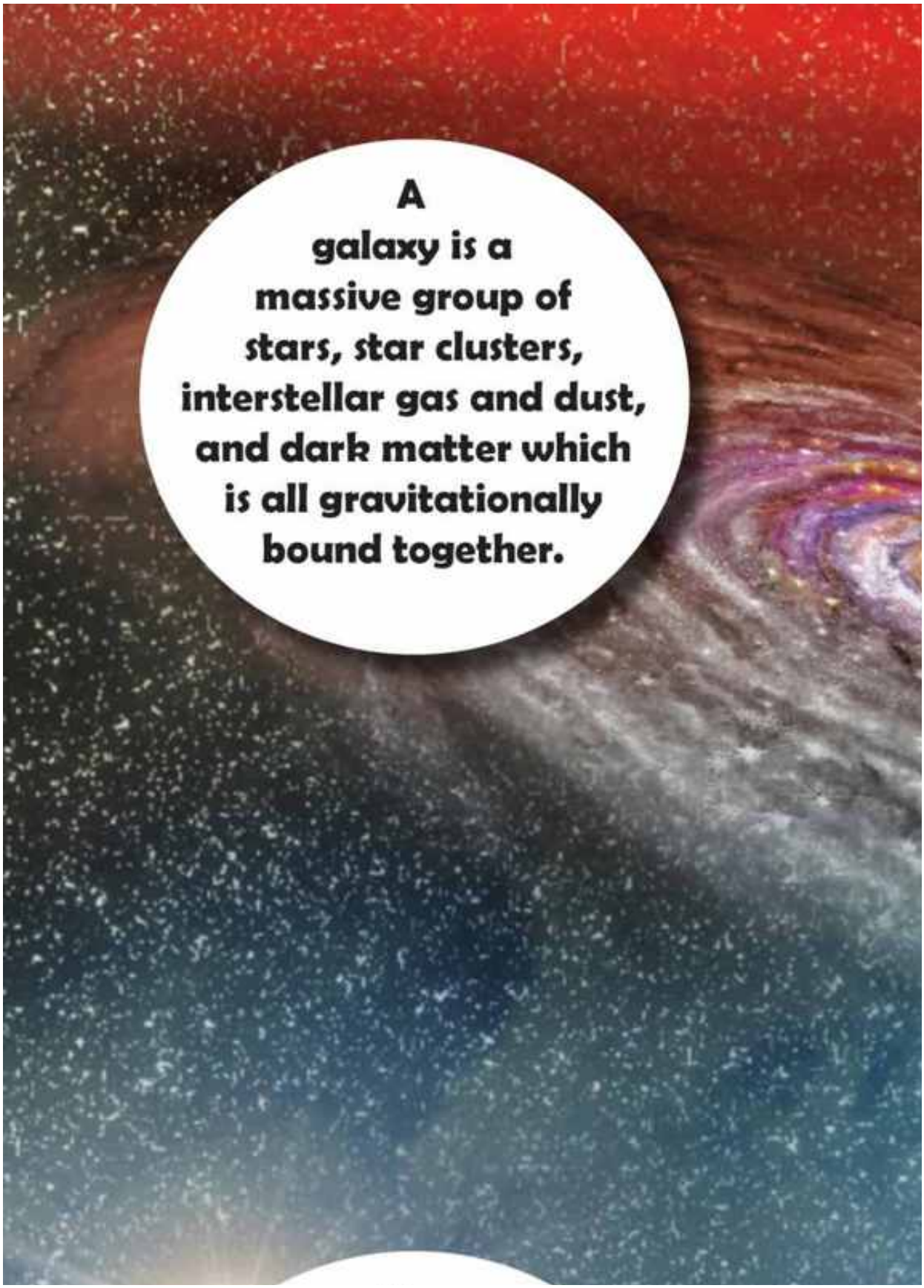

UNIV

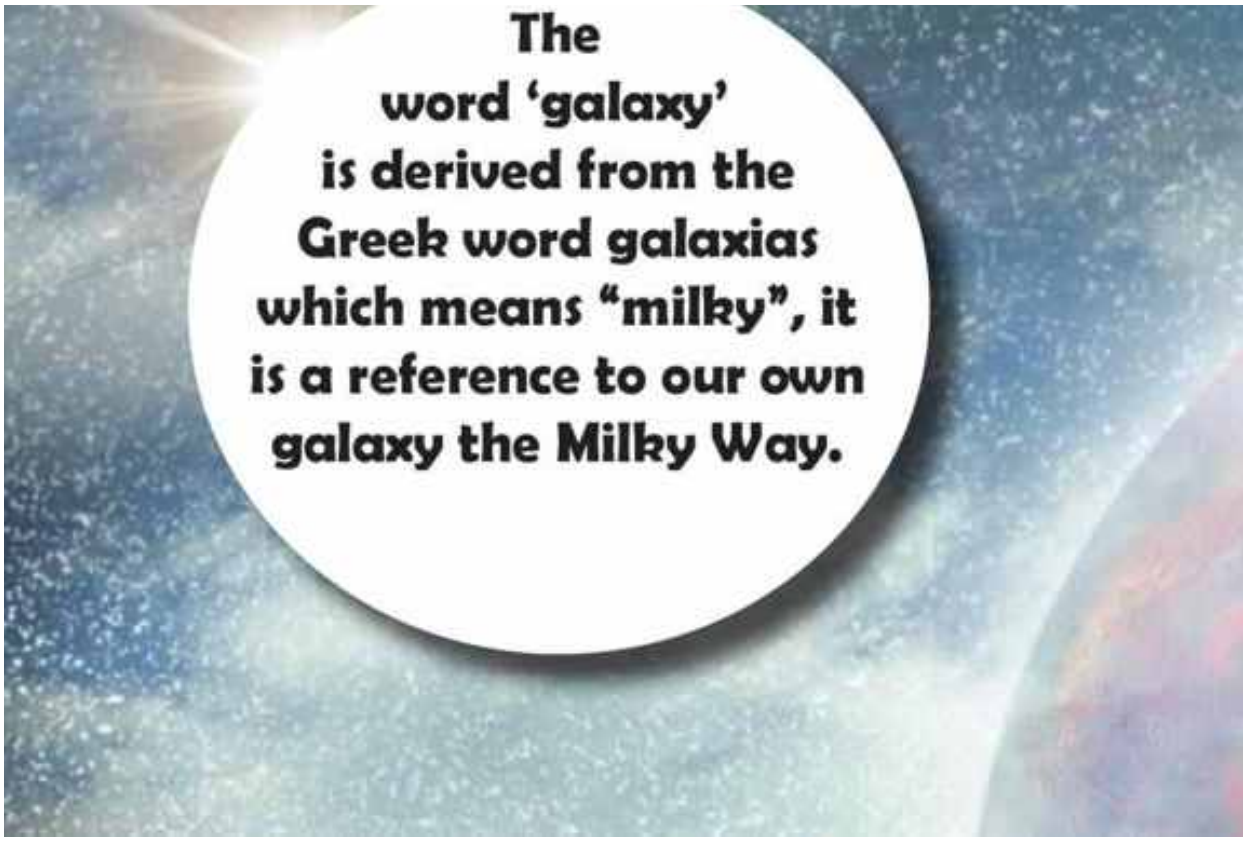

The
universe
began with the Big
Bang, and is estimated
to be approximately 13.7
billion years old (plus
or minus 130 million
years).
the
astrono
Hubble
revolutionar
the universe
rather is expa
long thought t
matter in the
slow this exp
cau
cor

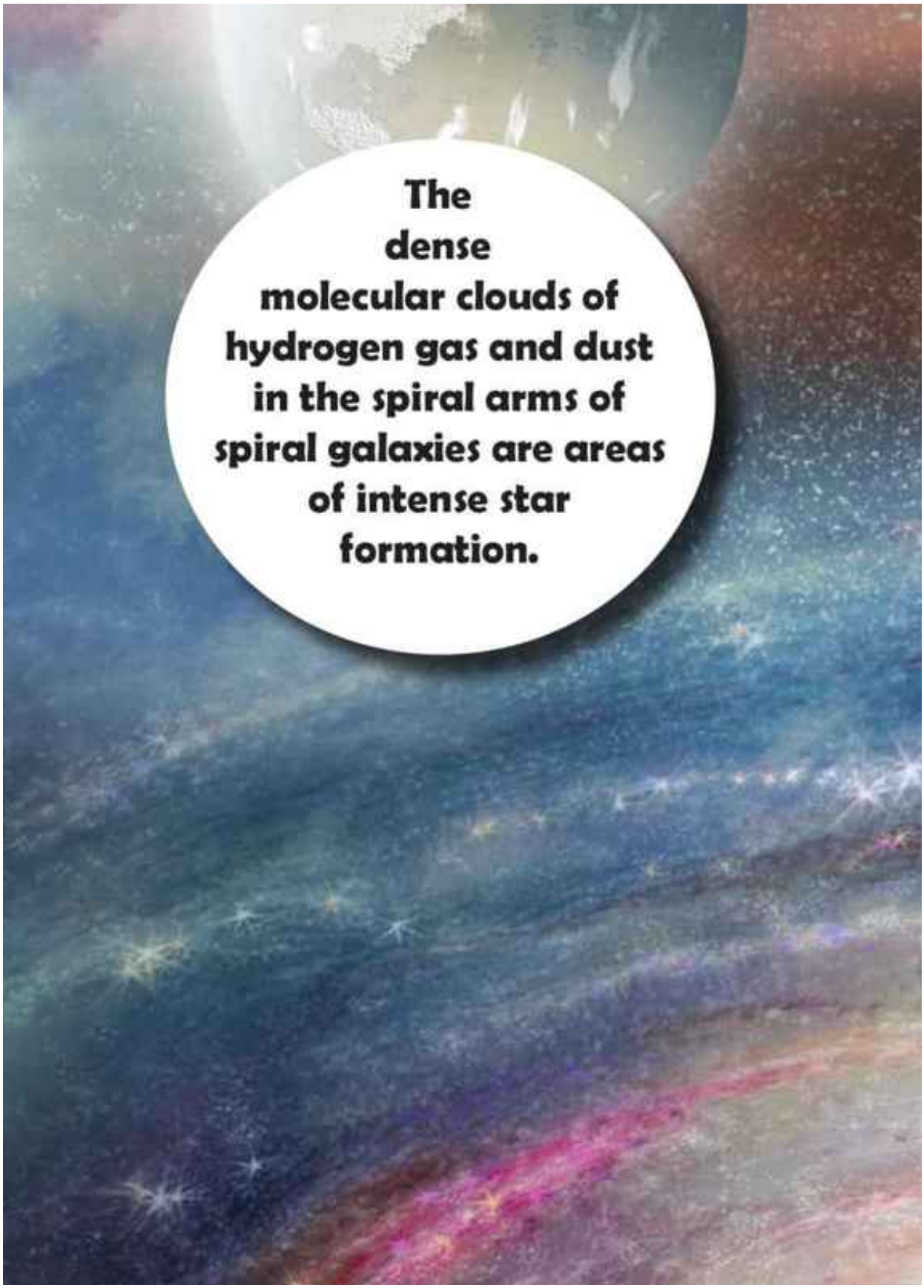

The
universe is
overwhelmingly made up of
things that cannot be seen. In fact,
the stars, planets and galaxies that c
be detected make up only 4 percent of
universe, according to astronomers. T
other 96 percent is made up of substa

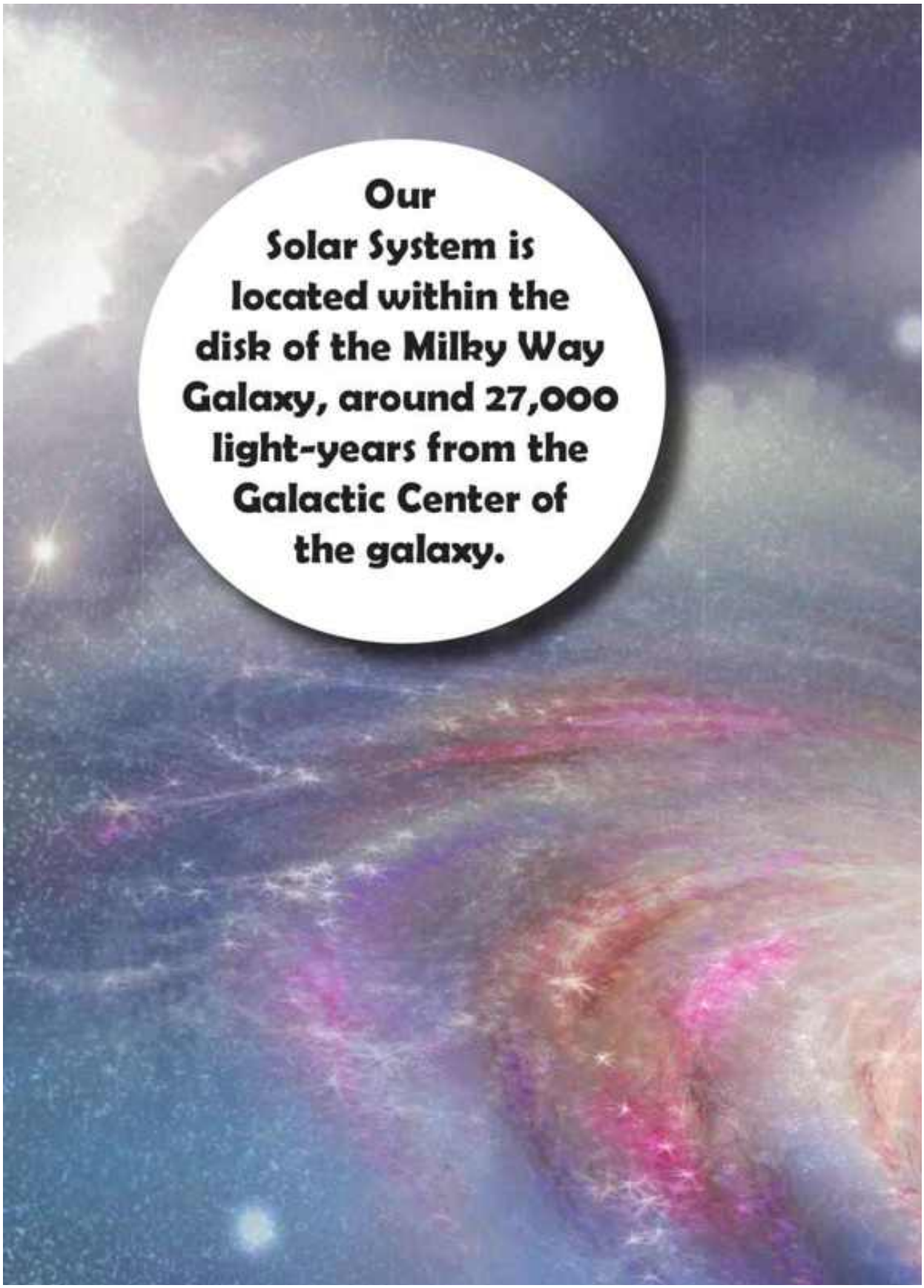

that cannot be seen or easily compreher
These elusive substances, called dark er
and dark matter, have not been detec
but astronomers base their existence
the gravitational influence that bot
exert on normal matter, the parts
of the universe that can be
seen.


G A L

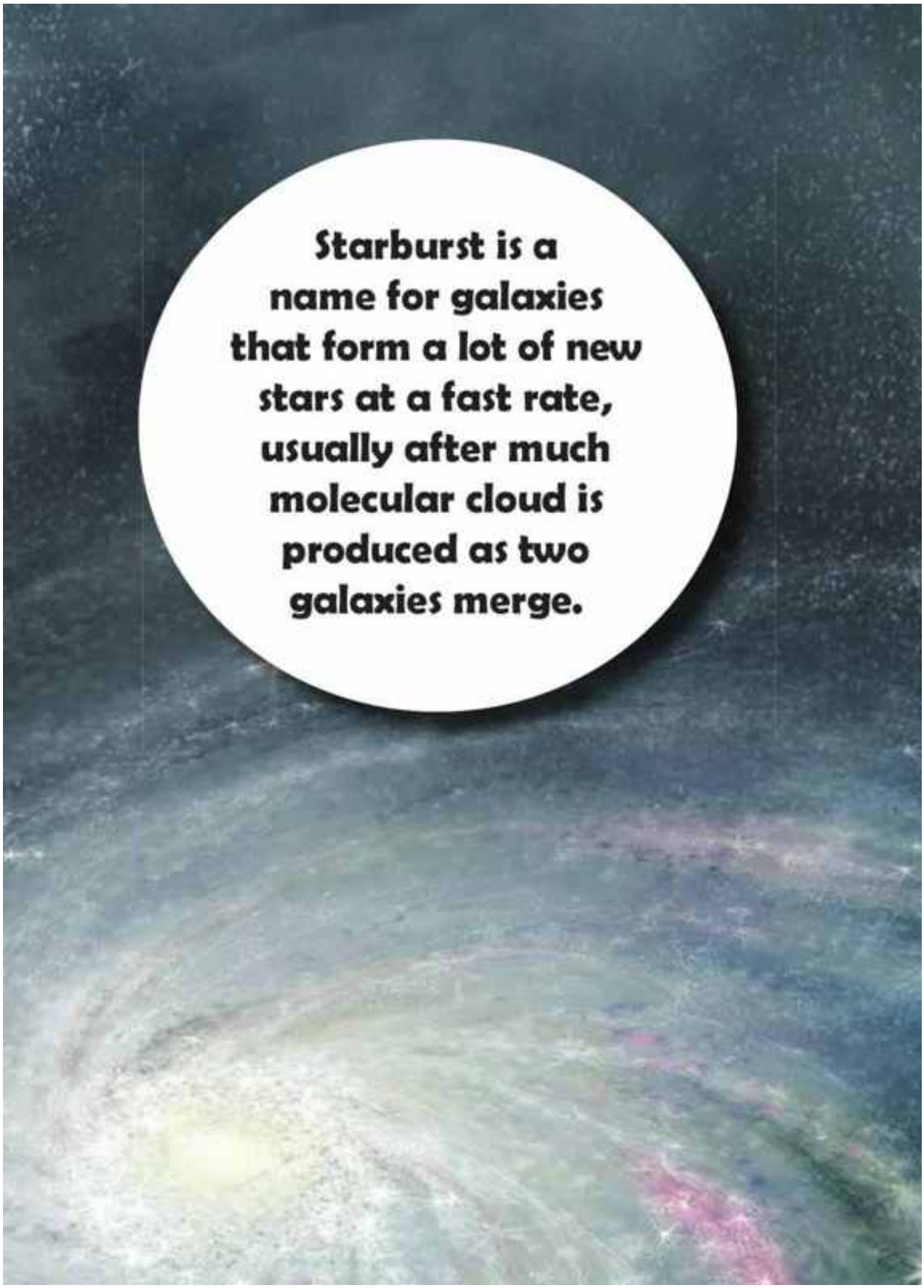

A
galaxy is a
massive group of
stars, star clusters,
interstellar gas and dust,
and dark matter which
is all gravitationally
bound together.

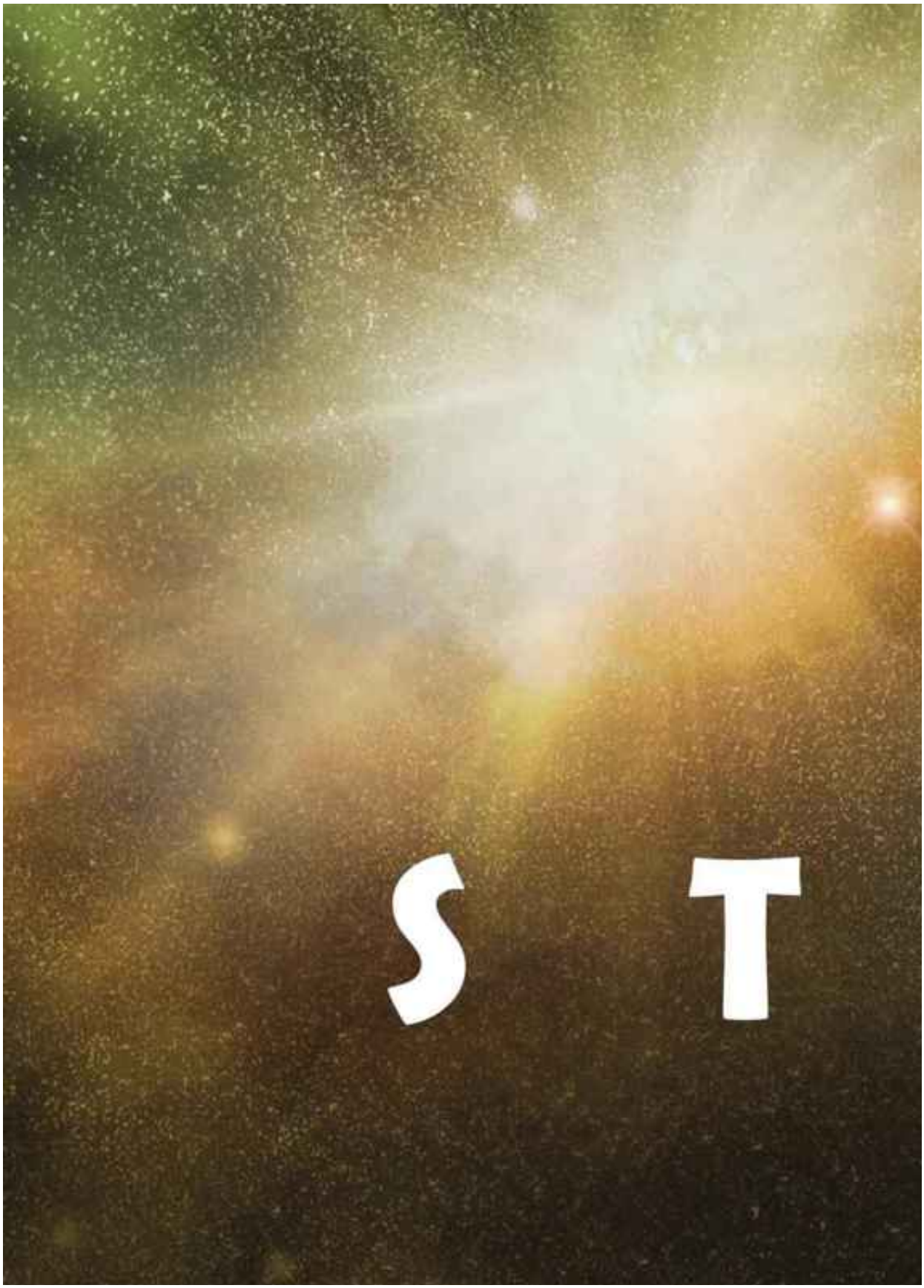

The
word 'galaxy'
is derived from the
Greek word galaxias
which means "milky", it
is a reference to our own
galaxy the Milky Way.


The
dense
molecular clouds of
hydrogen gas and dust
in the spiral arms of
spiral galaxies are areas
of intense star
formation.

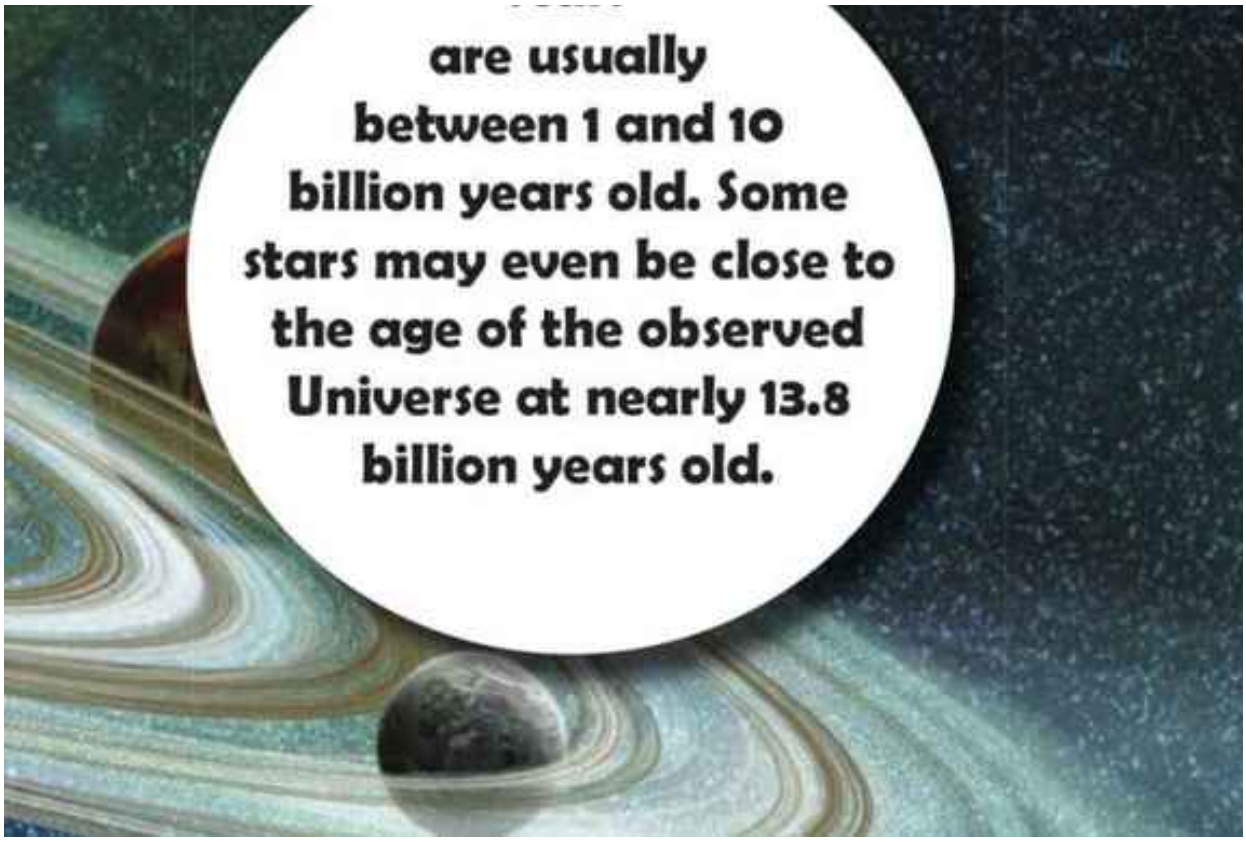

Our
Solar System is
located within the
disk of the Milky Way
Galaxy, around 27,000
light-years from the
Galactic Center of
the galaxy.

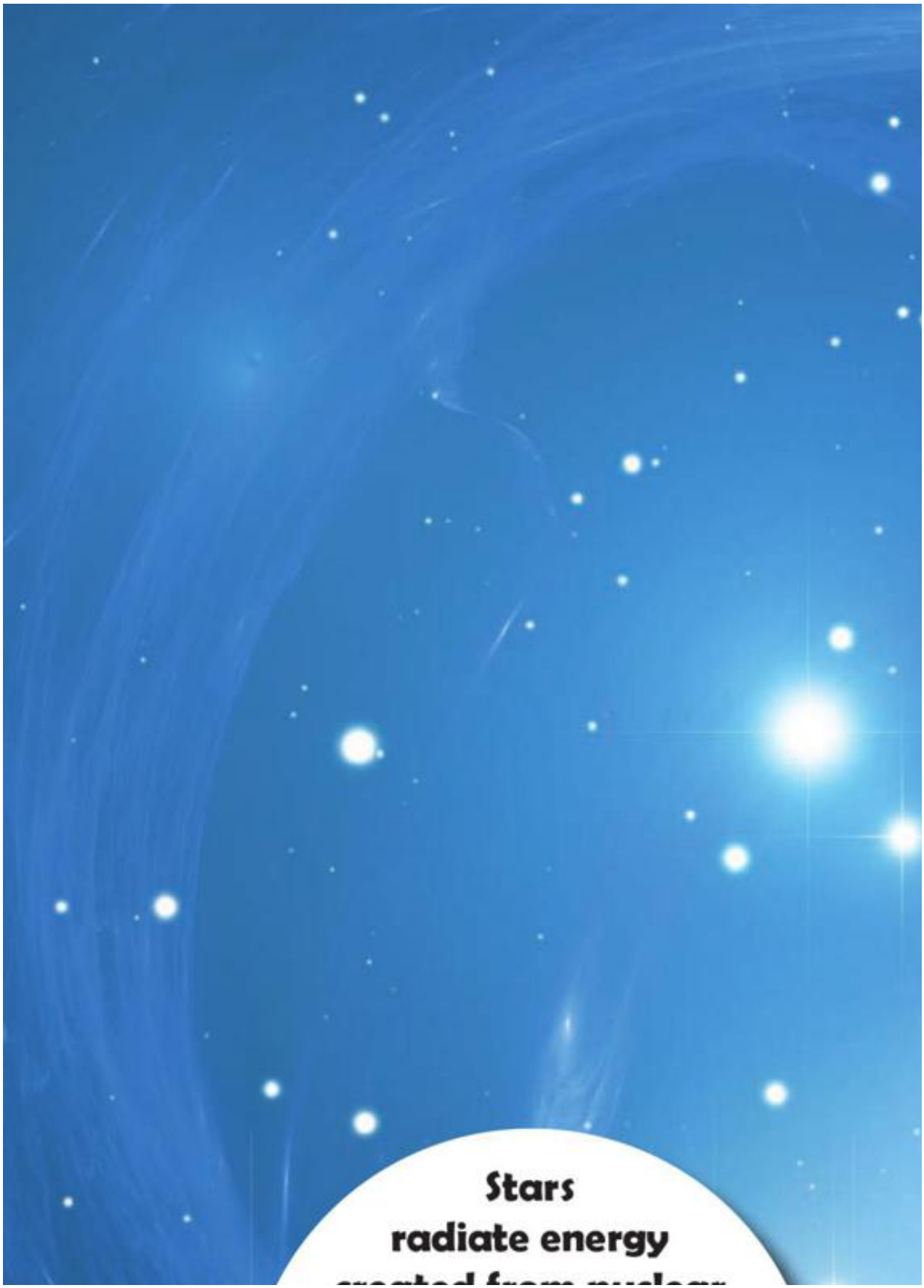

Sup
blac
believe
cent
g

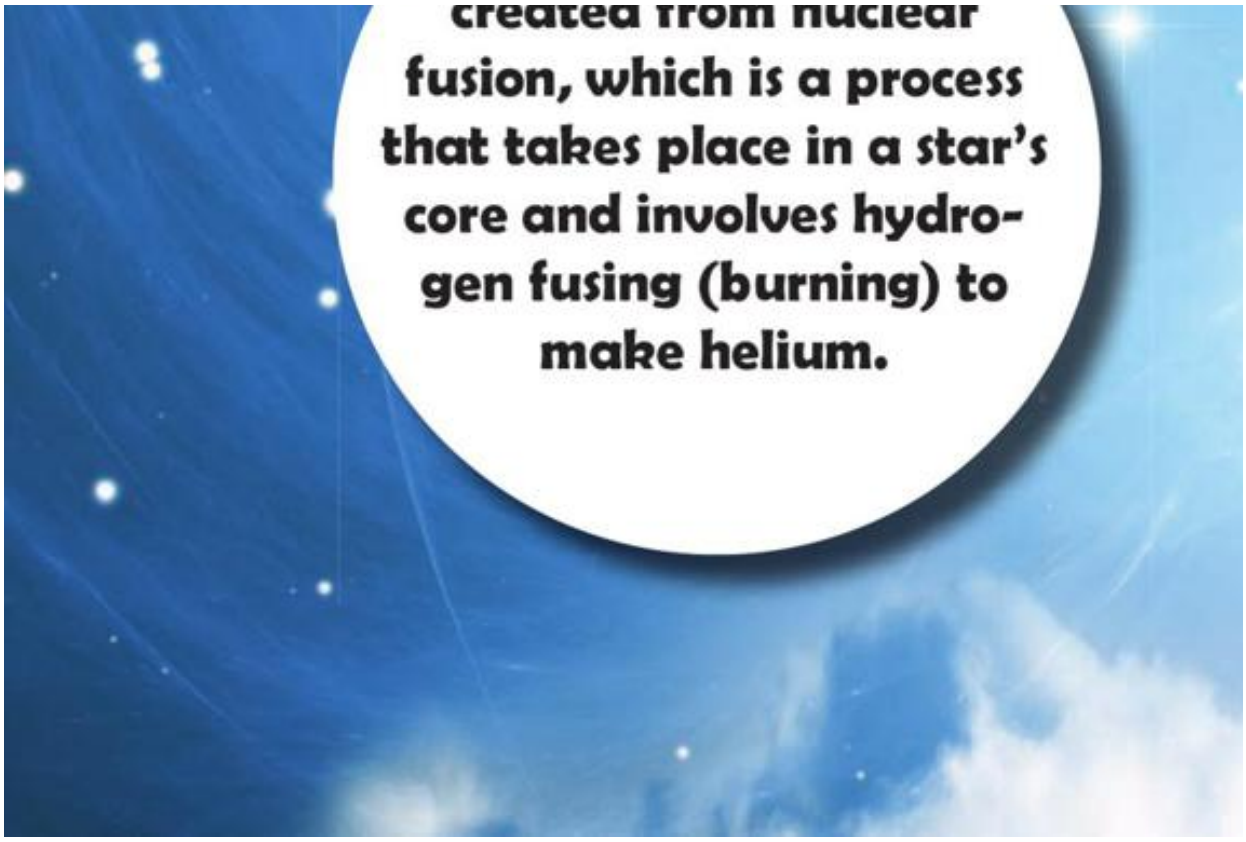

Starburst is a
name for galaxies
that form a lot of new
stars at a fast rate,
usually after much
molecular cloud is
produced as two
galaxies merge.

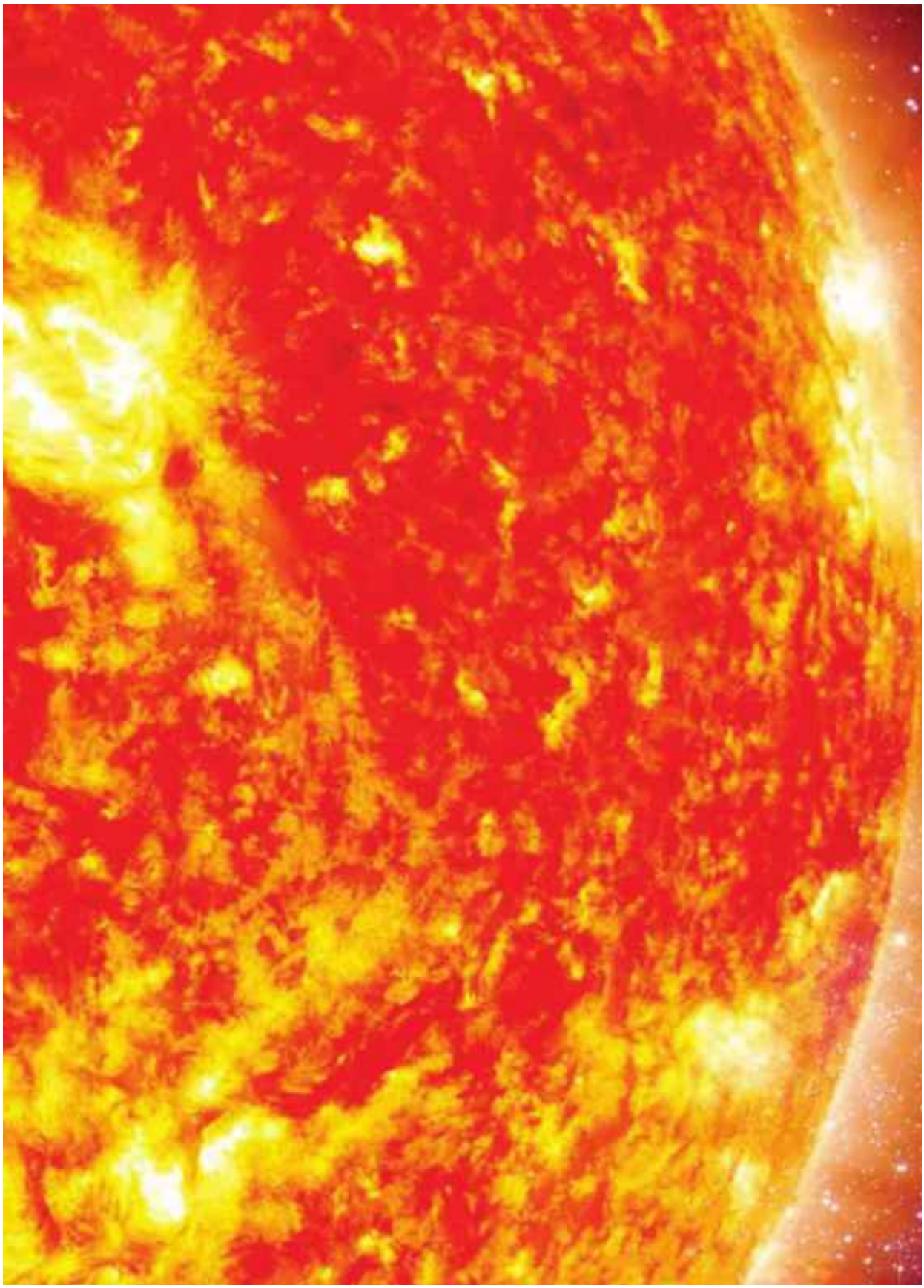

S T

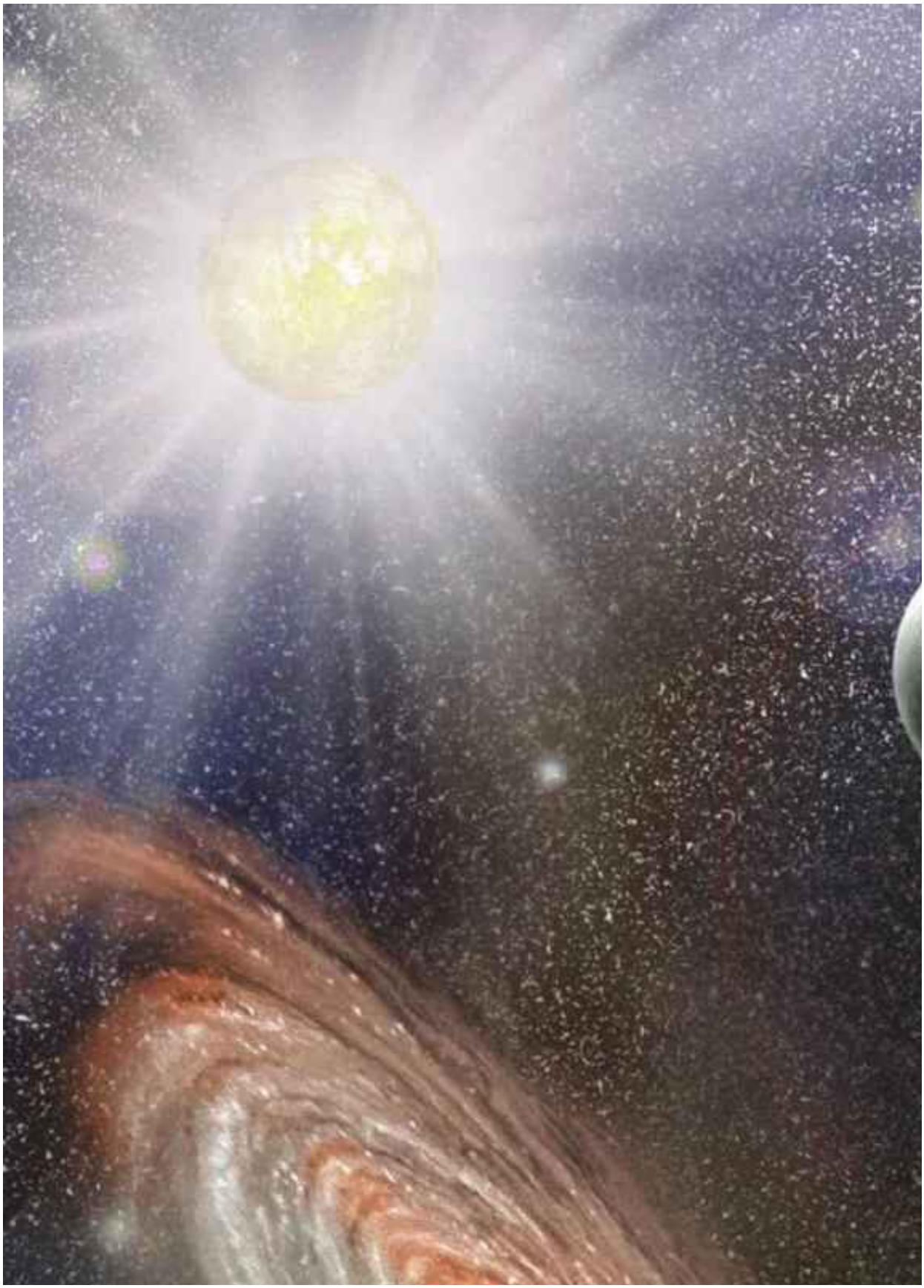
Stars

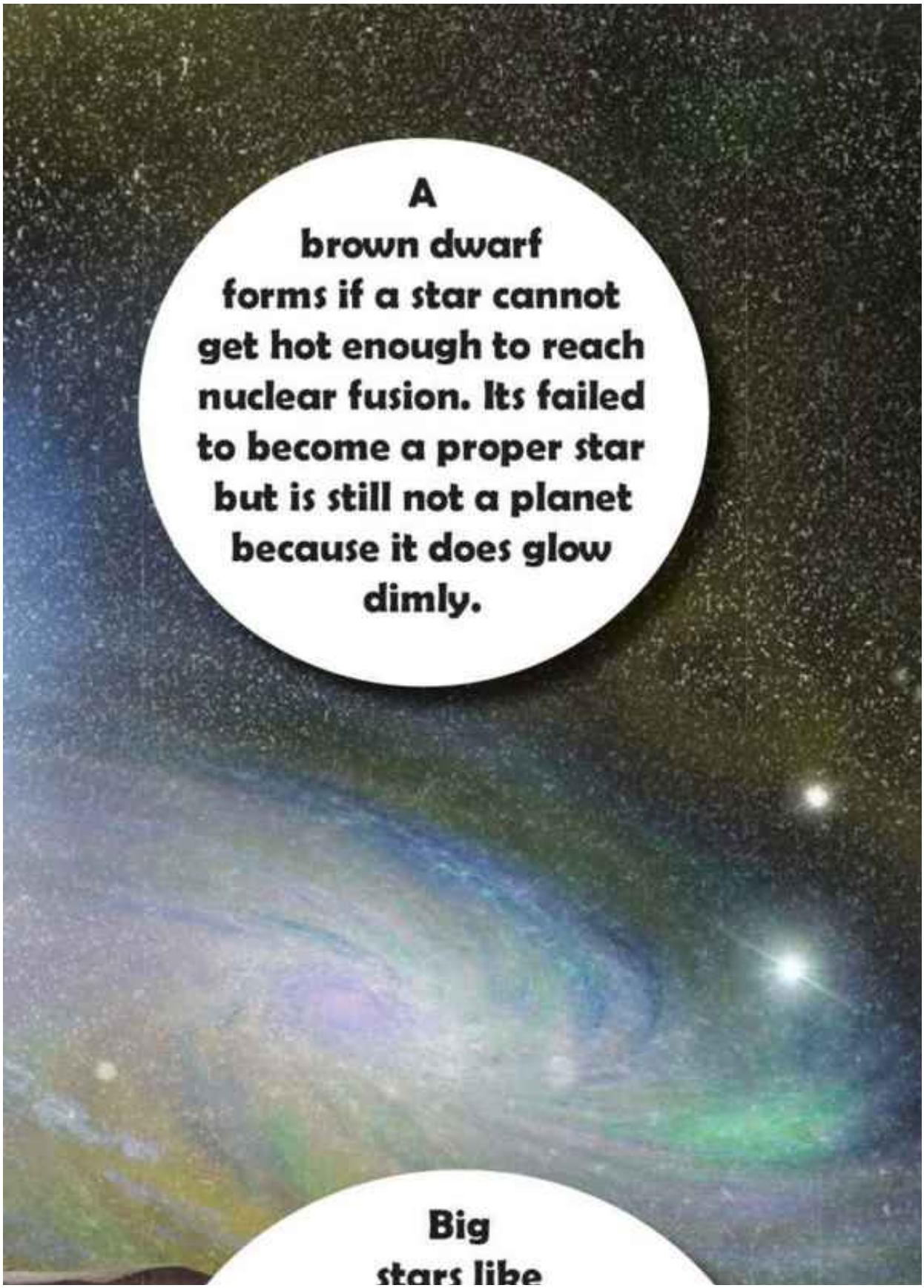

are usually
between 1 and 10
billion years old. Some
stars may even be close to
the age of the observed
Universe at nearly 13.8
billion years old.

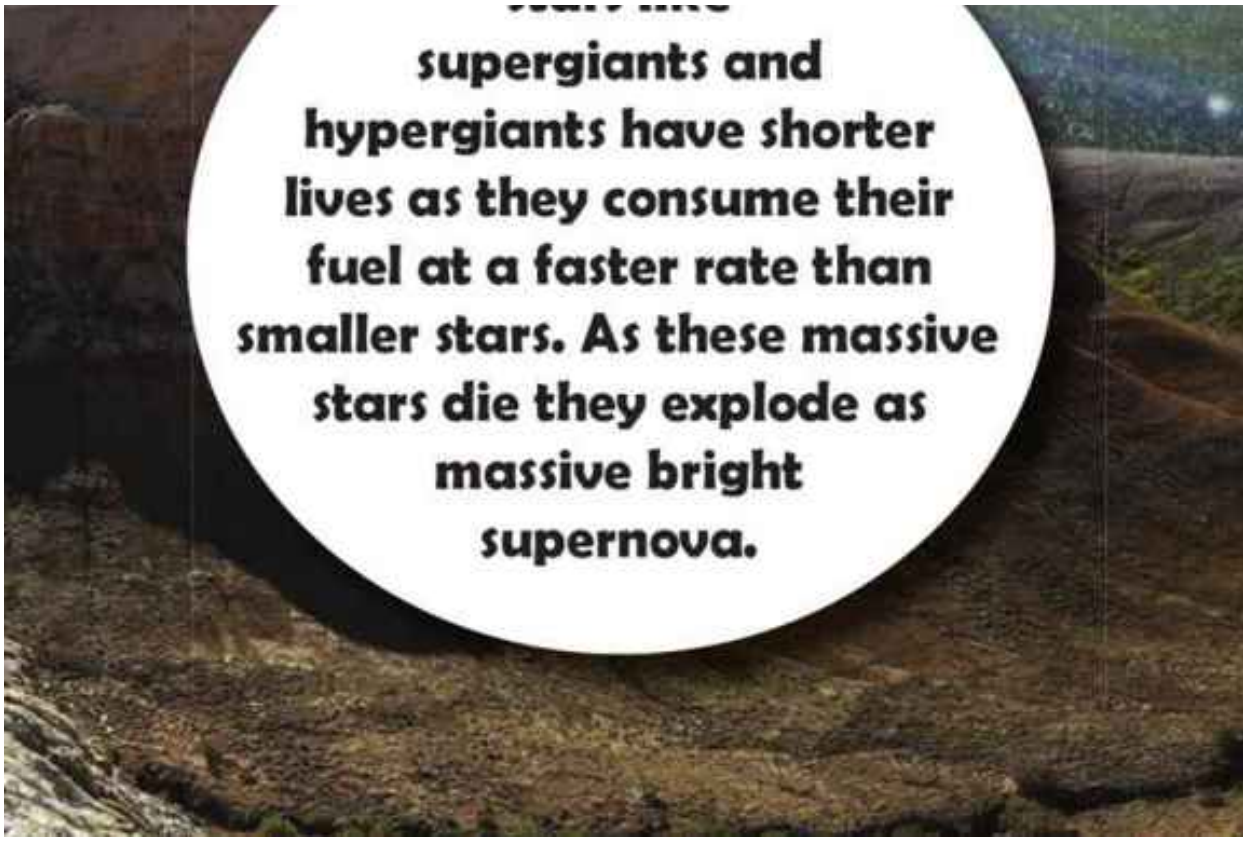

Stars
radiate energy


created from nuclear
fusion, which is a process
that takes place in a star's
core and involves hydro-
gen fusing (burning) to
make helium.

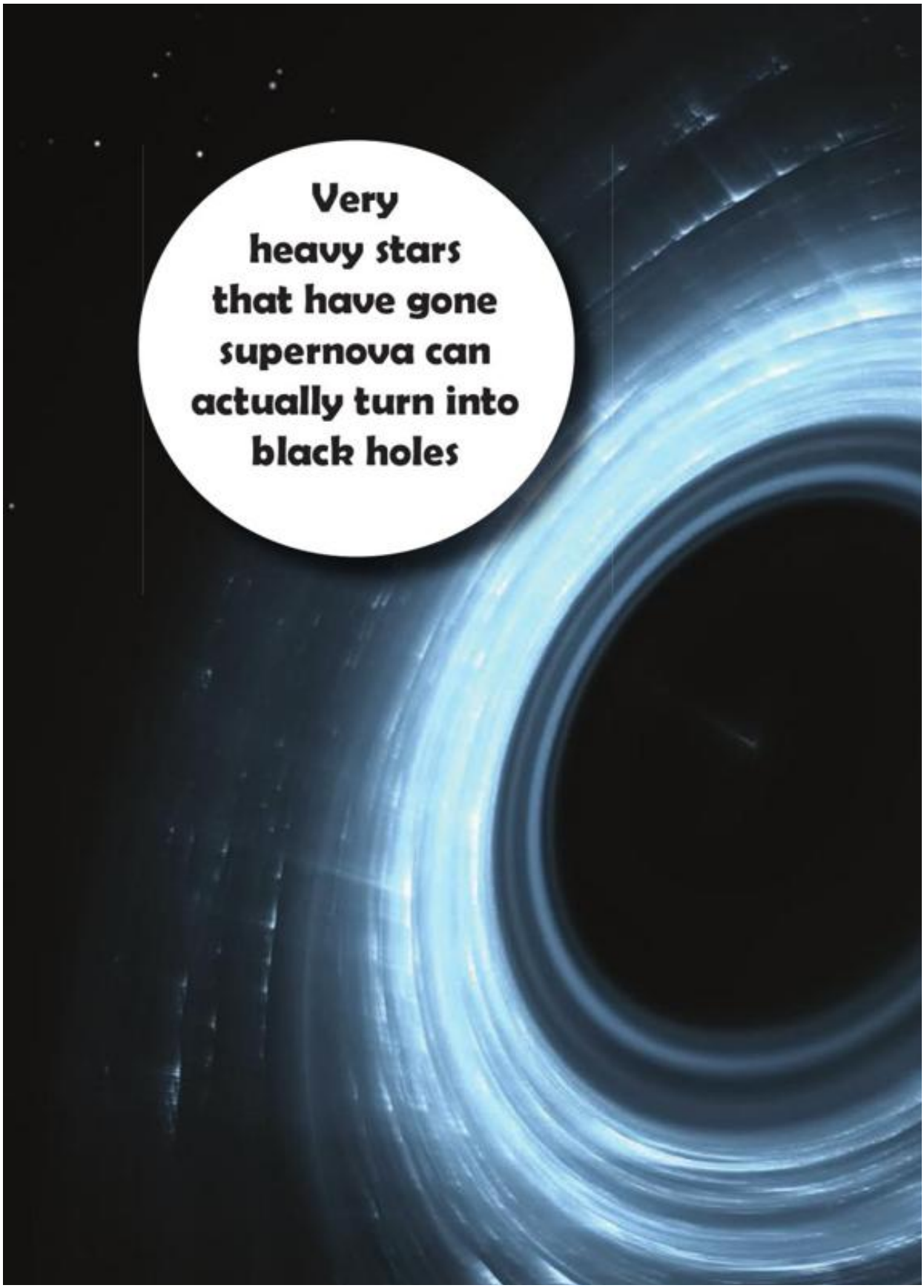




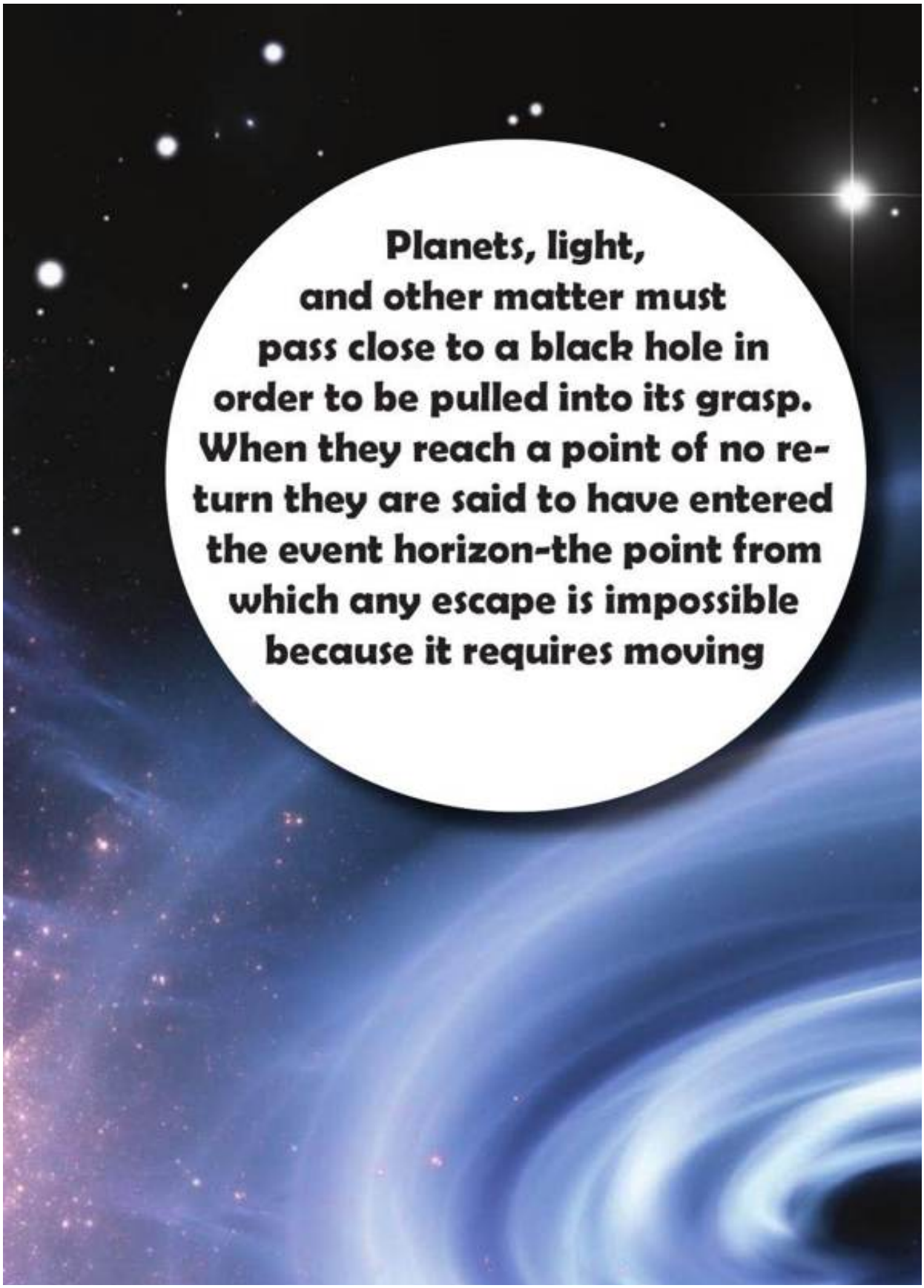

A
brown dwarf
forms if a star cannot
get hot enough to reach
nuclear fusion. Its failed
to become a proper star
but is still not a planet
because it does glow
dimly.
Big
stars like

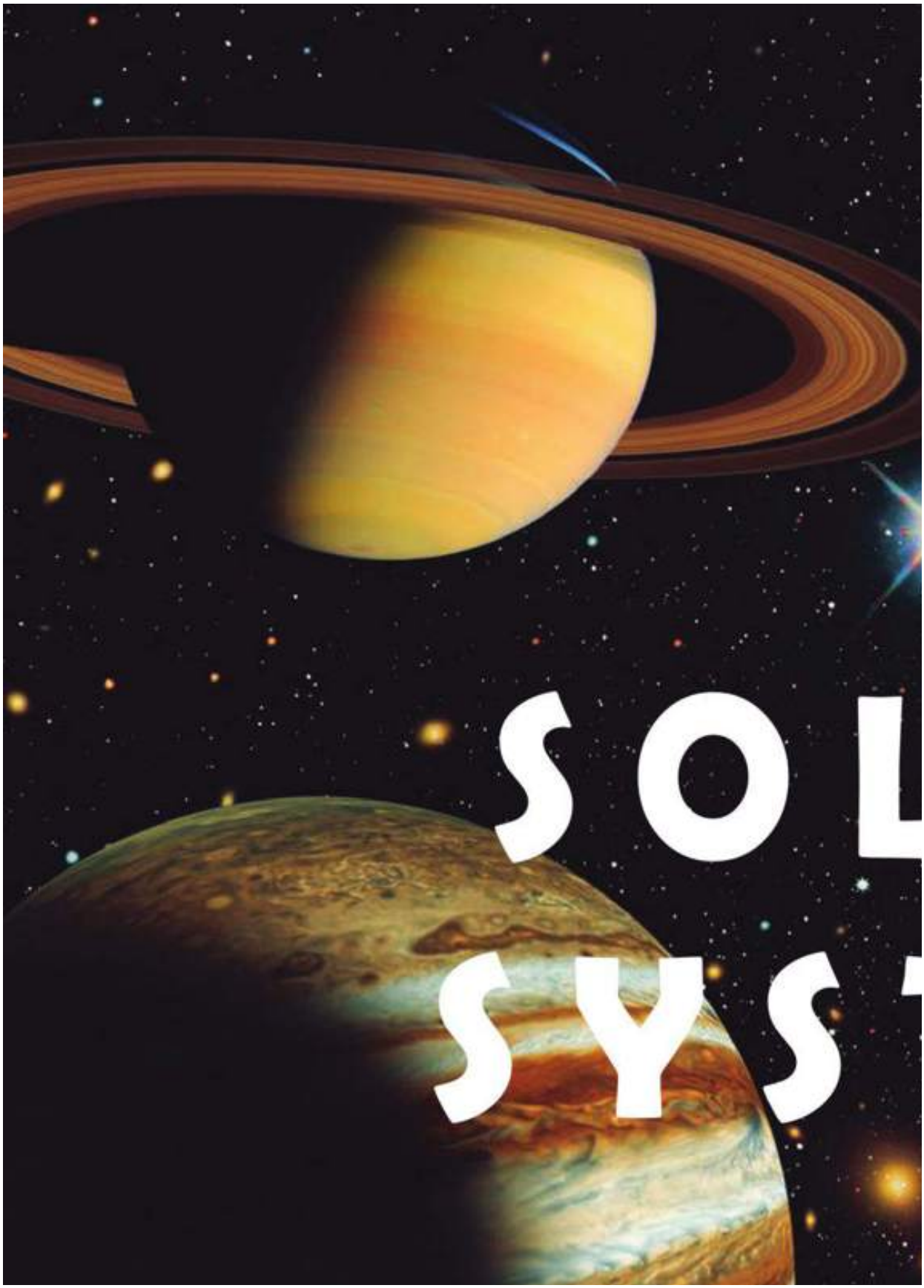

supergiants and
hypergiants have shorter
lives as they consume their
fuel at a faster rate than
smaller stars. As these massive
stars die they explode as
massive bright
supernova.

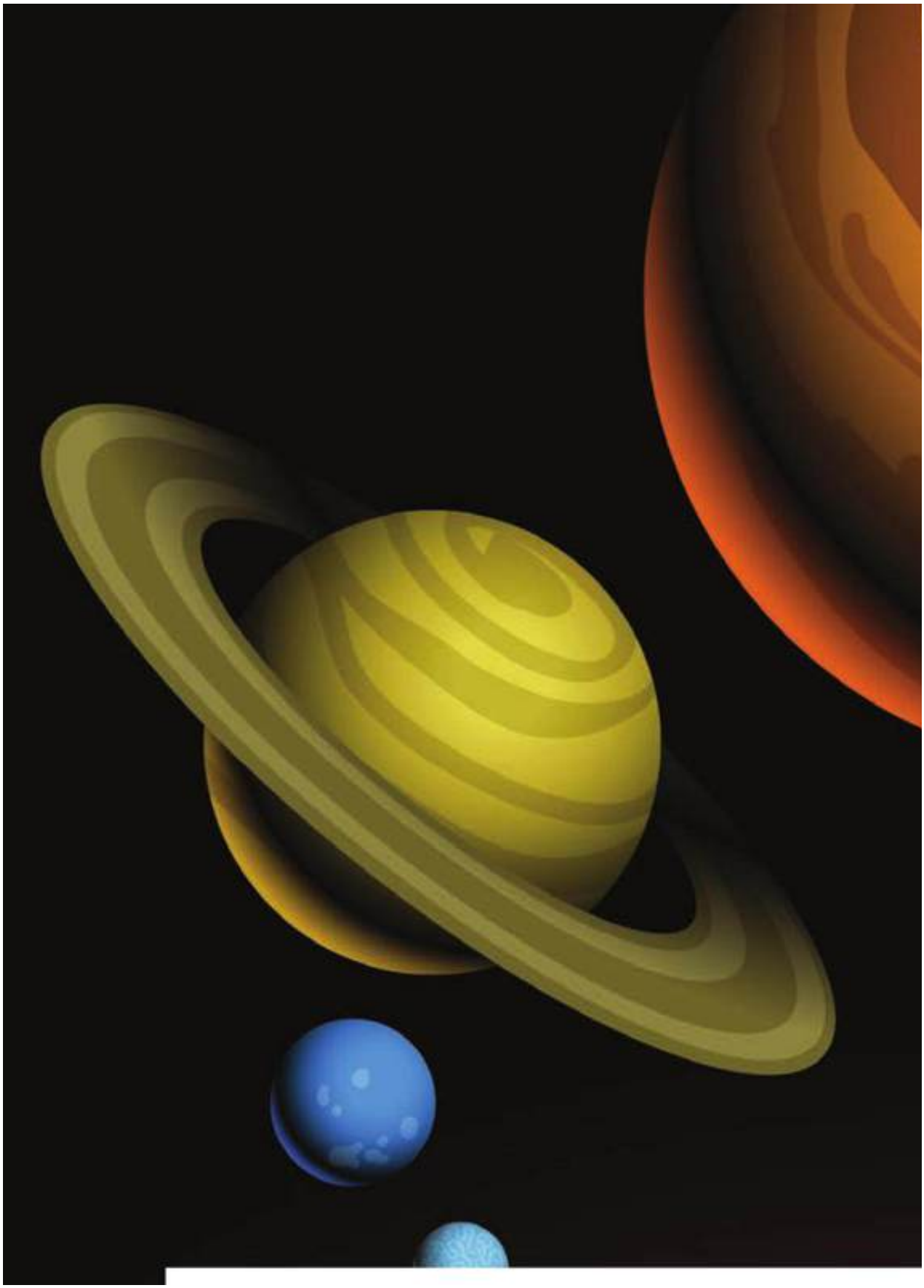

BL
HO

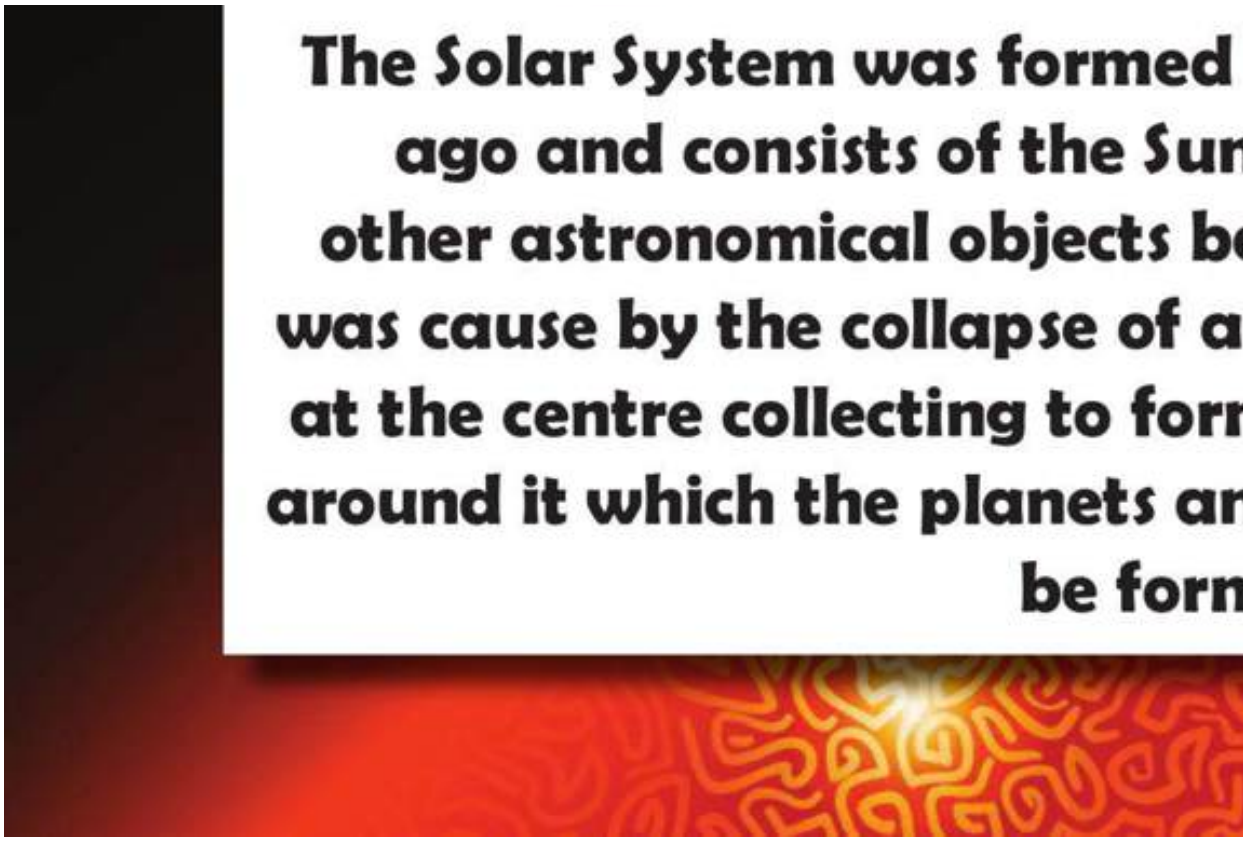

Very
heavy stars
that have gone
supernova can
actually turn into
black holes

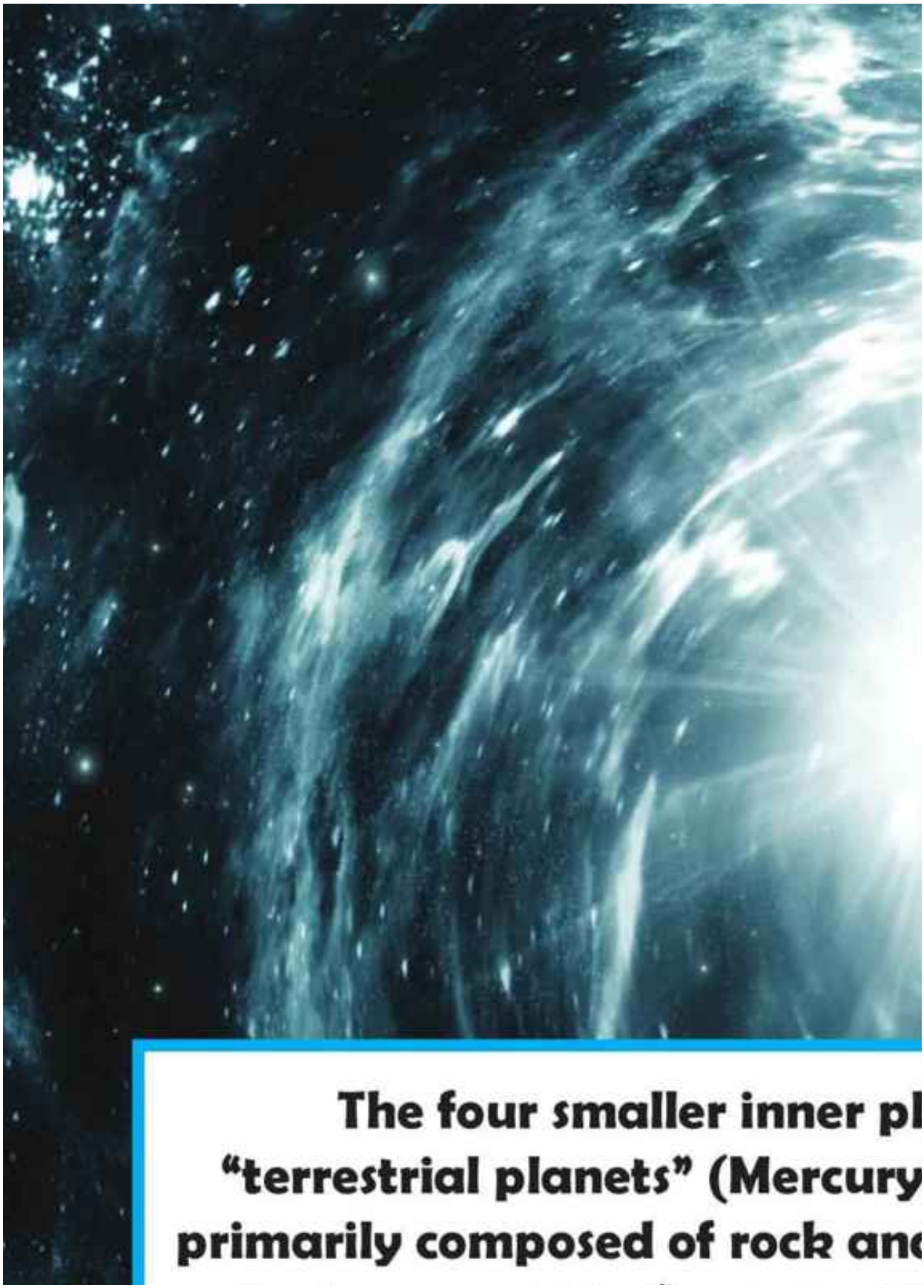

blac
region
from v
preven
includi
es


Planets, light,
and other matter must
pass close to a black hole in
order to be pulled into its grasp.
When they reach a point of no re-
turn they are said to have entered
the event horizon-the point from
which any escape is impossible
because it requires moving

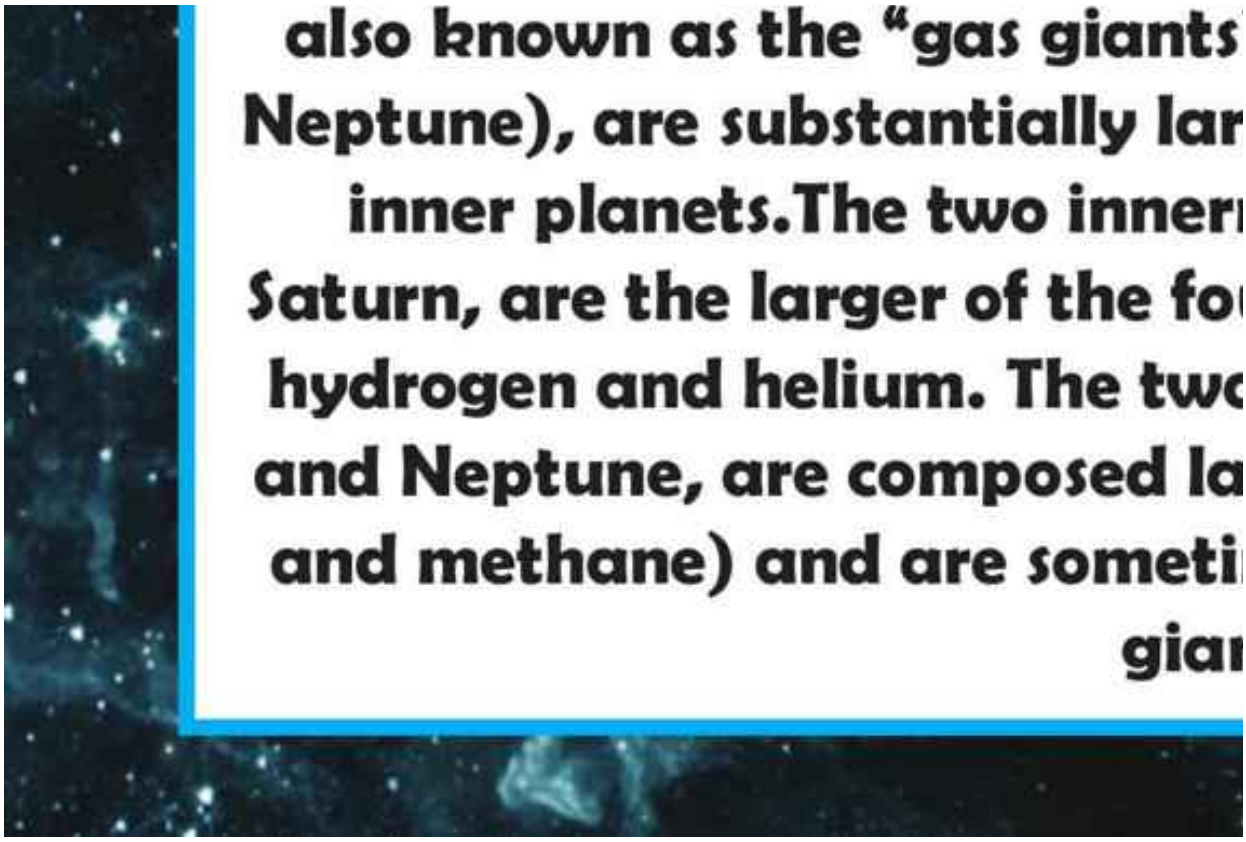

SOL
SYST




The Solar System was formed
ago and consists of the Sur
other astronomical objects b
was cause by the collapse of a
at the centre collecting to forr
around it which the planets ar
be forn

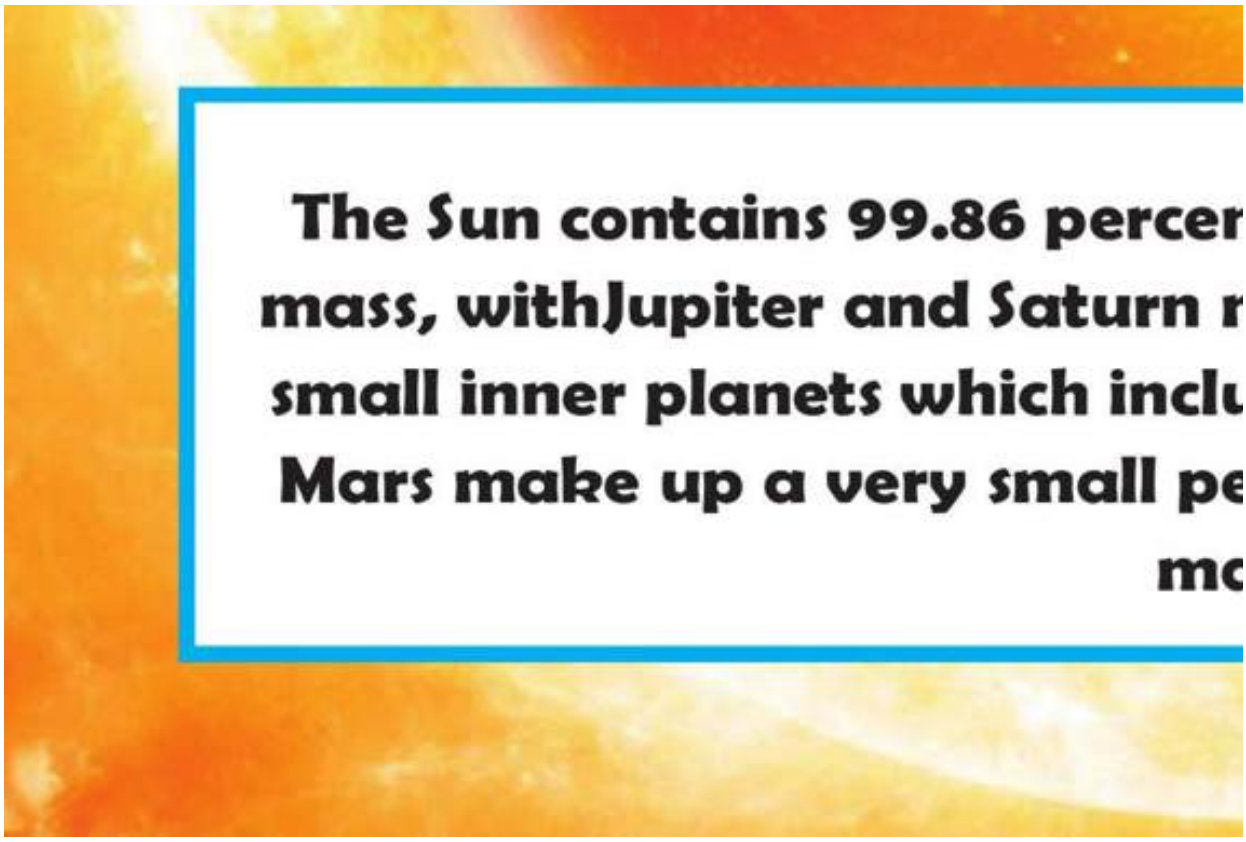


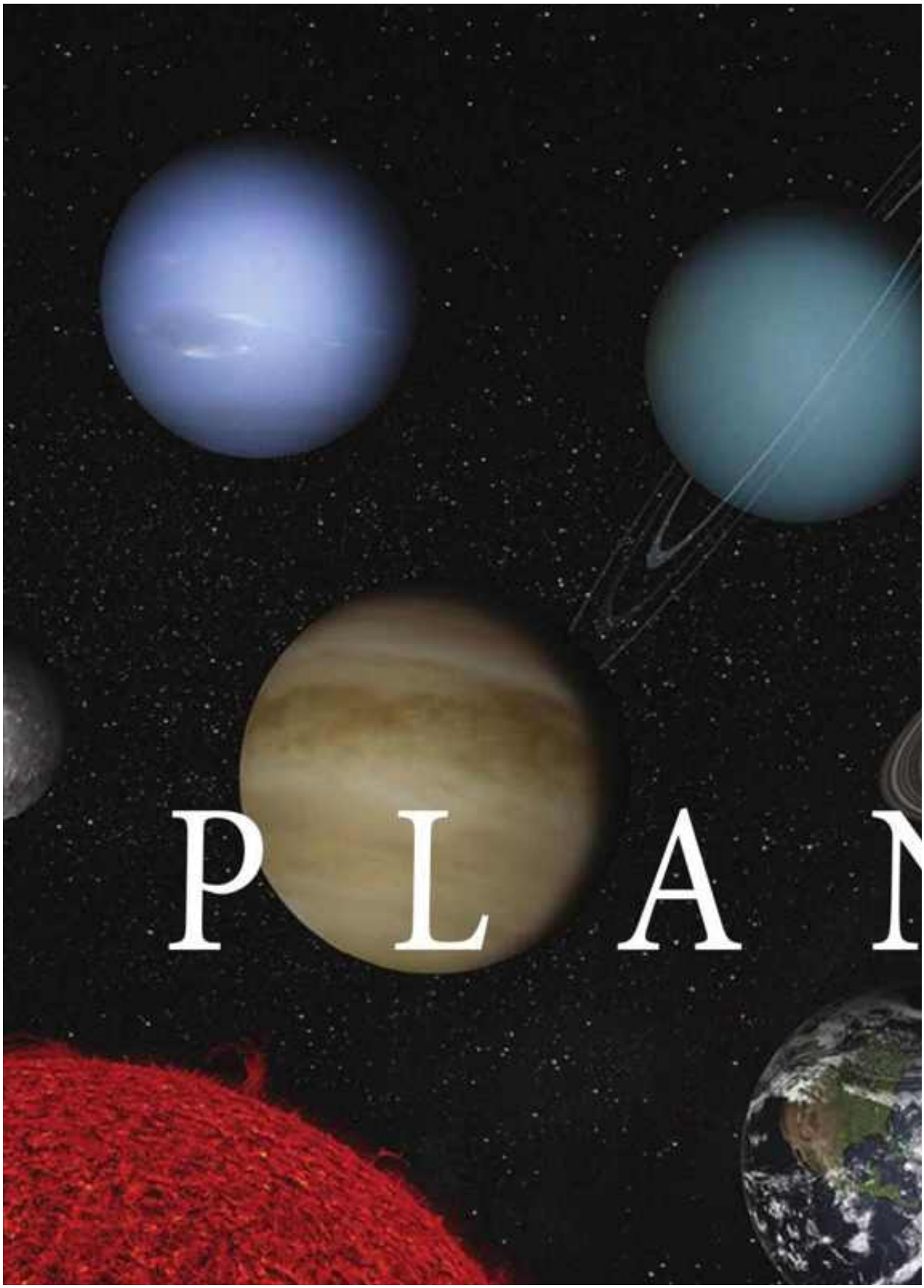
The four smaller inner pl
"terrestrial planets" (Mercury
primarily composed of rock and

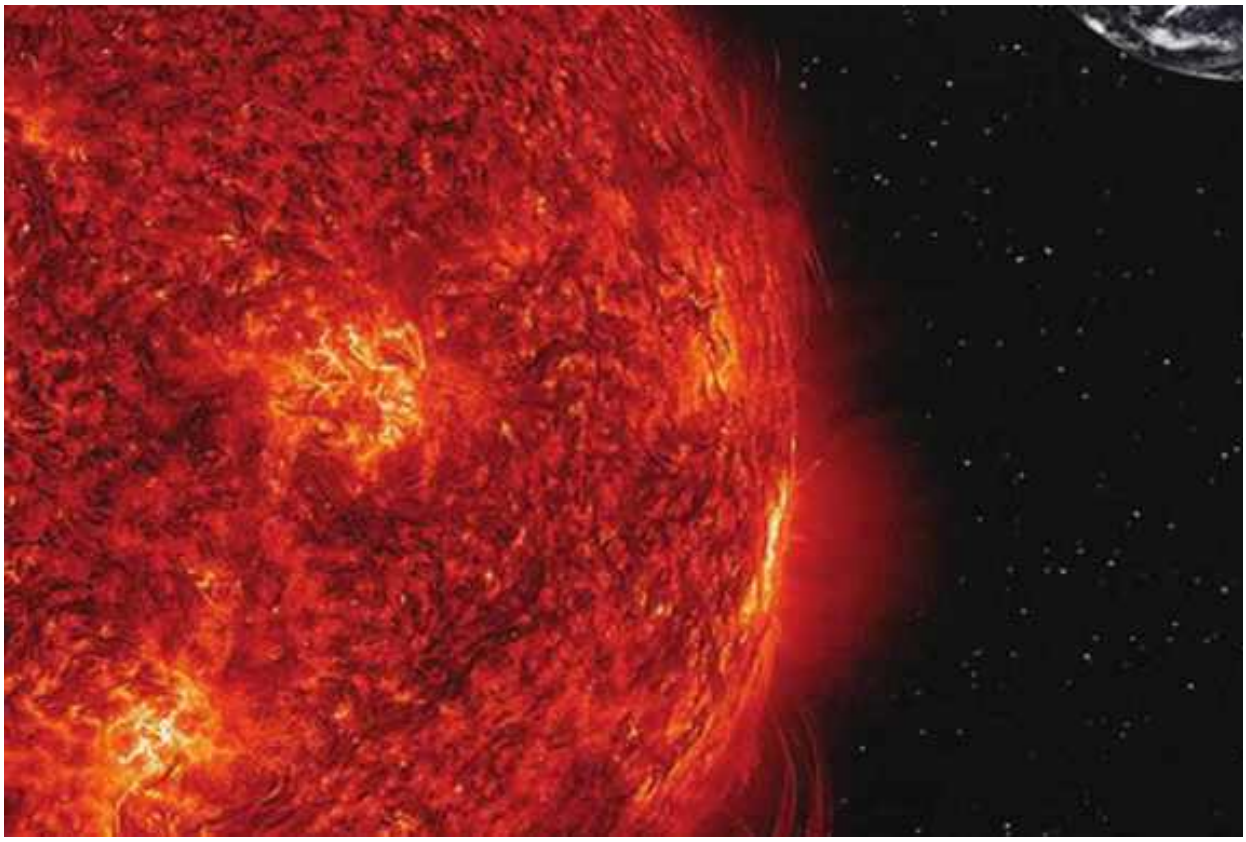

also known as the “gas giants
Neptune), are substantially lar
inner planets.The two innerr
Saturn, are the larger of the fou
hydrogen and helium. The two
and Neptune, are composed la
and methane) and are sometim
giar

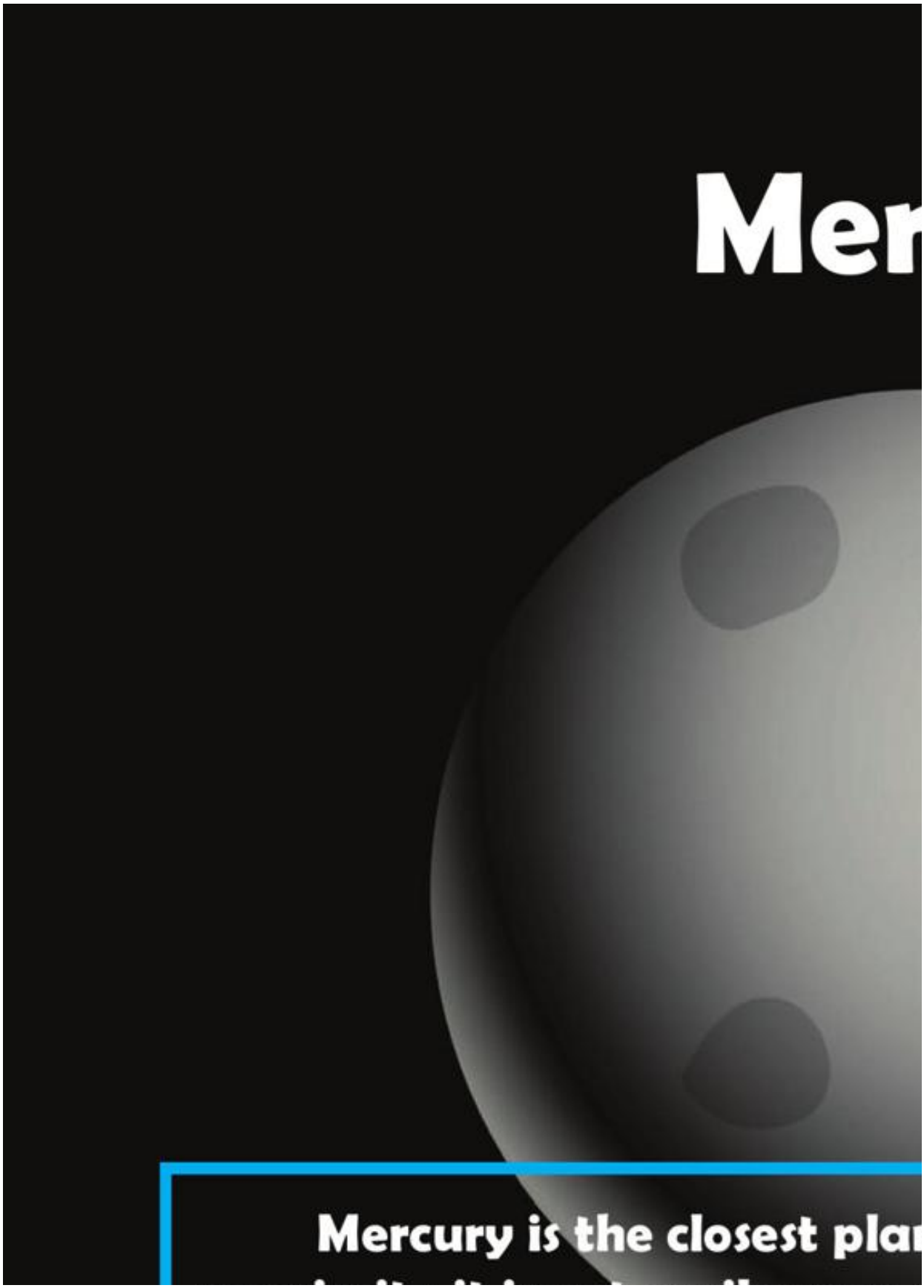

MERCURY

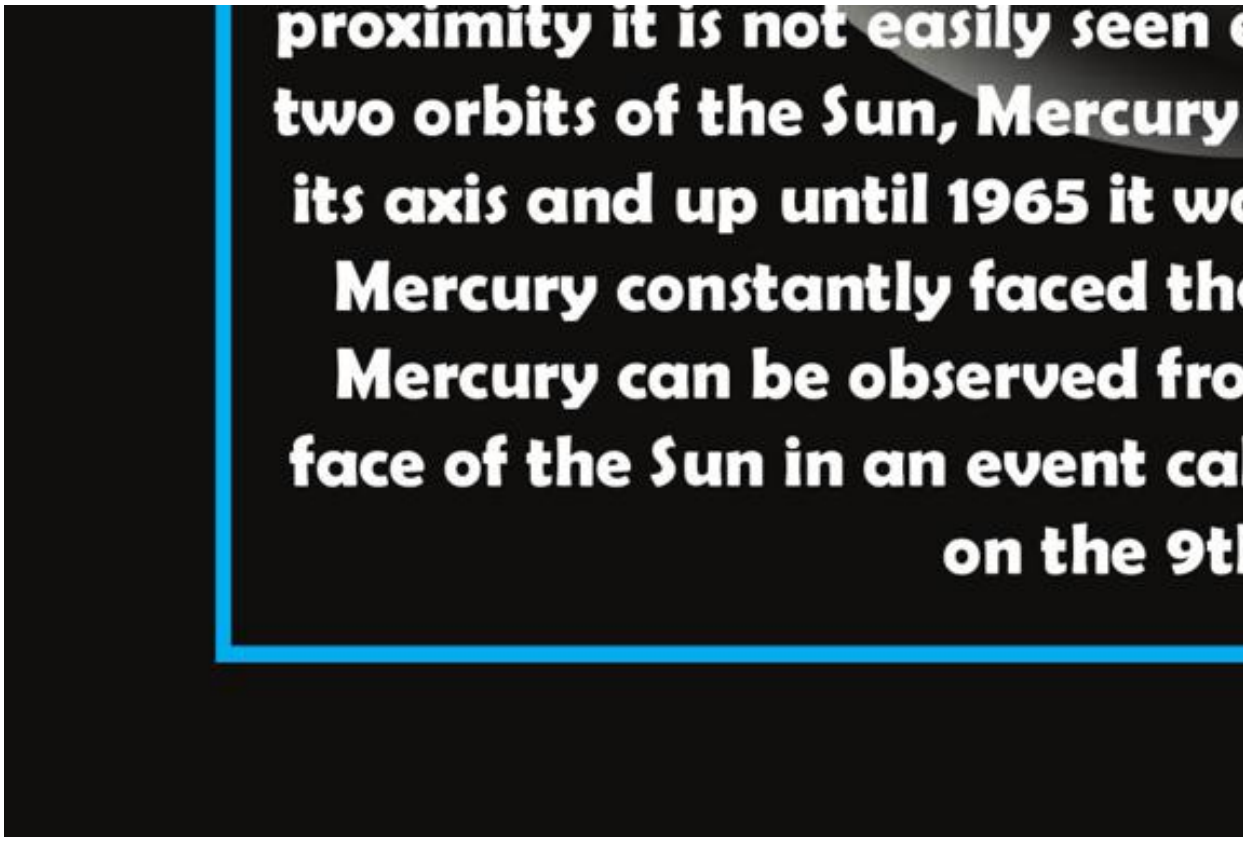

EARTH


The Sun contains 99.86 percer
mass, withJupiter and Saturn r
small inner planets which inclu
Mars make up a very small pe
mc


P L A N




Mer
Mercury is the closest plan


proximity it is not easily seen
two orbits of the Sun, Mercury
its axis and up until 1965 it w
Mercury constantly faced th
Mercury can be observed fro
face of the Sun in an event ca
on the 9t

Facts:

Mass:
330,104,000,000,000 billion kg (0.055 x Earth)

Moon:
None

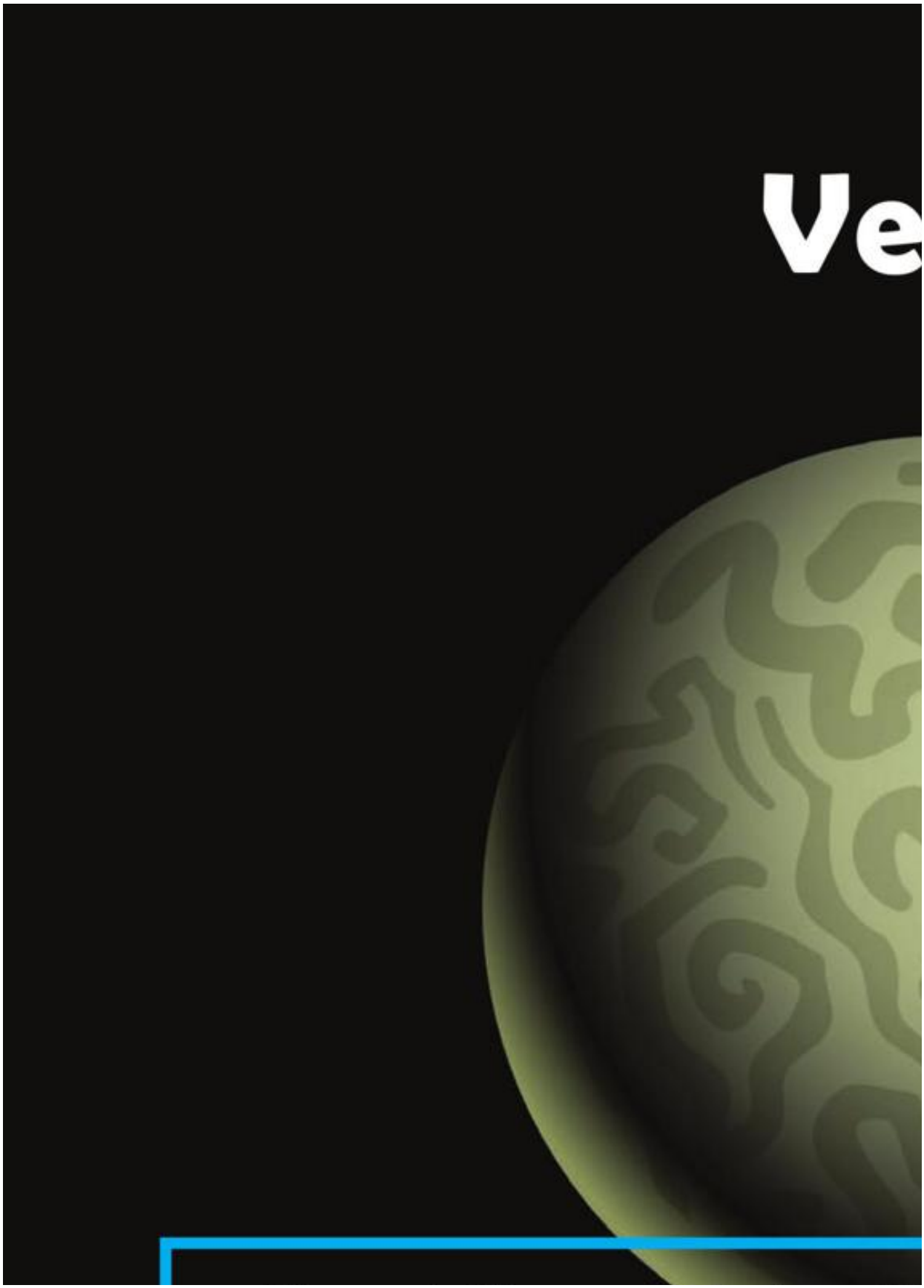
Surface Temperature:
-173 to 427°C

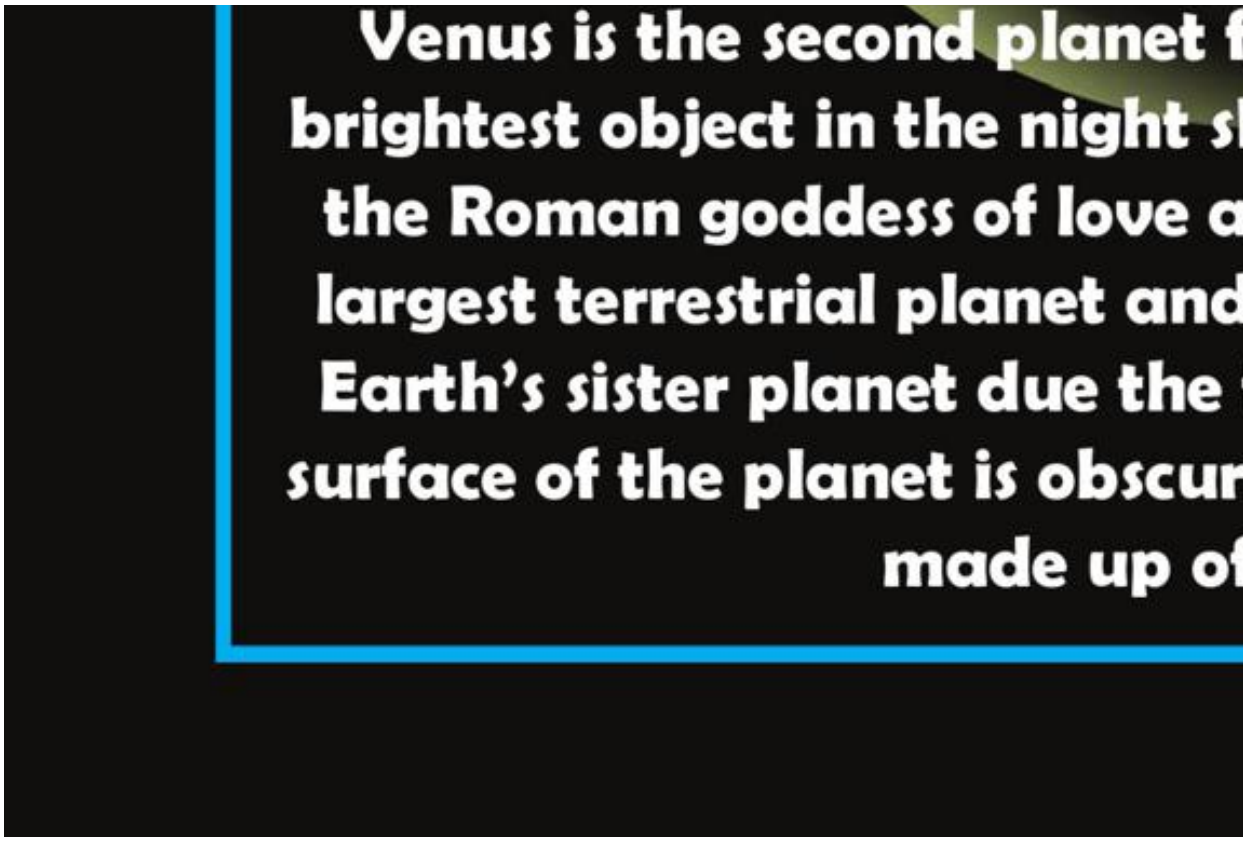
First Record:
14th century BC

Recorded By:
Assyrian astronomers

Assyrian astronomers

A year in Mercury is just 88 days long. Mercury is the smallest planet in the Solar System.


Ve


Venus is the second planet f
brightest object in the night s
the Roman goddess of love a
largest terrestrial planet and
Earth's sister planet due the
surface of the planet is obscur
made up of

Facts:

Mass:
4,867,320,000,000,000 billion kg (0.815 x Earth)

Moon:
None

Surface Temperature:
462 °C

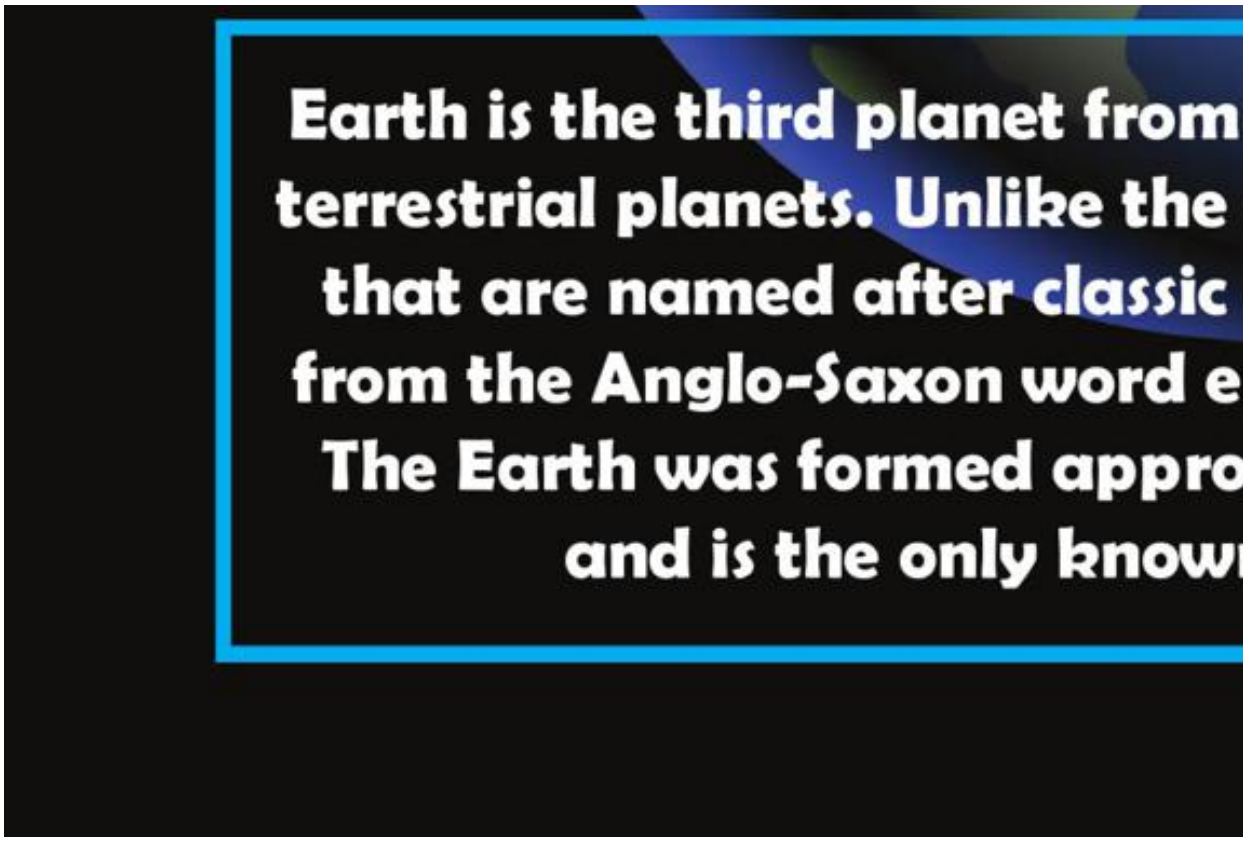
First Record:
17th century BC

Recorded By:
Babylonian astronomers

The Earth and Venus are

The Earth and Venus are very similar in size with only a 638 km difference in diameter, Venus having 81.5% of the Earth's mass.

Ea


Earth is the third planet from
terrestrial planets. Unlike the
that are named after classic
from the Anglo-Saxon word e
The Earth was formed appro
and is the only know

Facts:

Mass:
5,972,190,000,000,000 billion kg

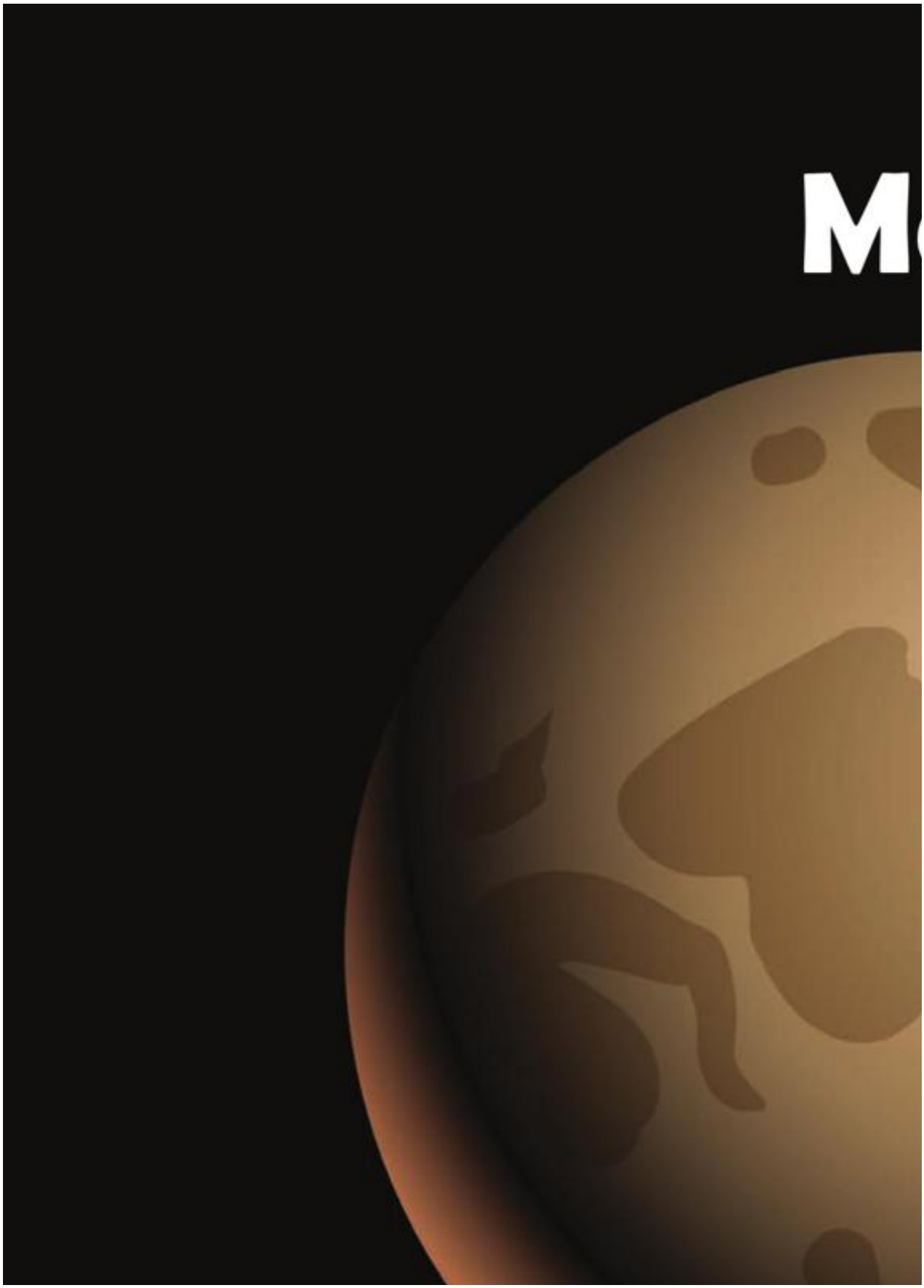
Moon:
1

Surface Temperature:
-88 to 58°C

First Recorded:
NA

Recorded By:
NA

Earth has a powerful magnetic field. This phenomenon is caused by the nickel-iron core of the planet, coupled with its rapid rotation.


M


Mars is the fourth planet fr
Roman god of war, and ofte
due to its reddish appearance
a thin atmosphere compose

Facts:

Mass:
641,693,000,000,000 billion kg (0.107 x Earth)

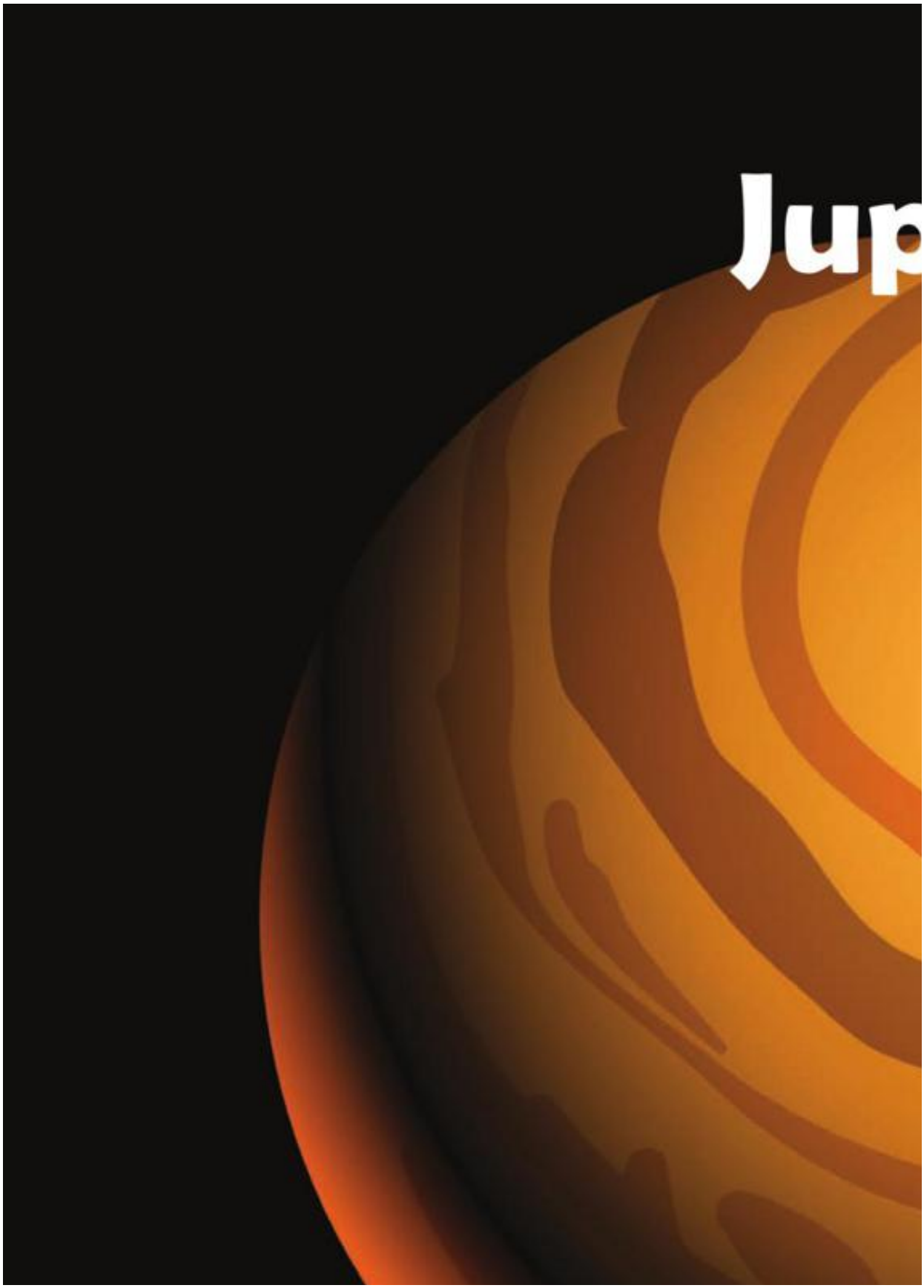
Moon:
2

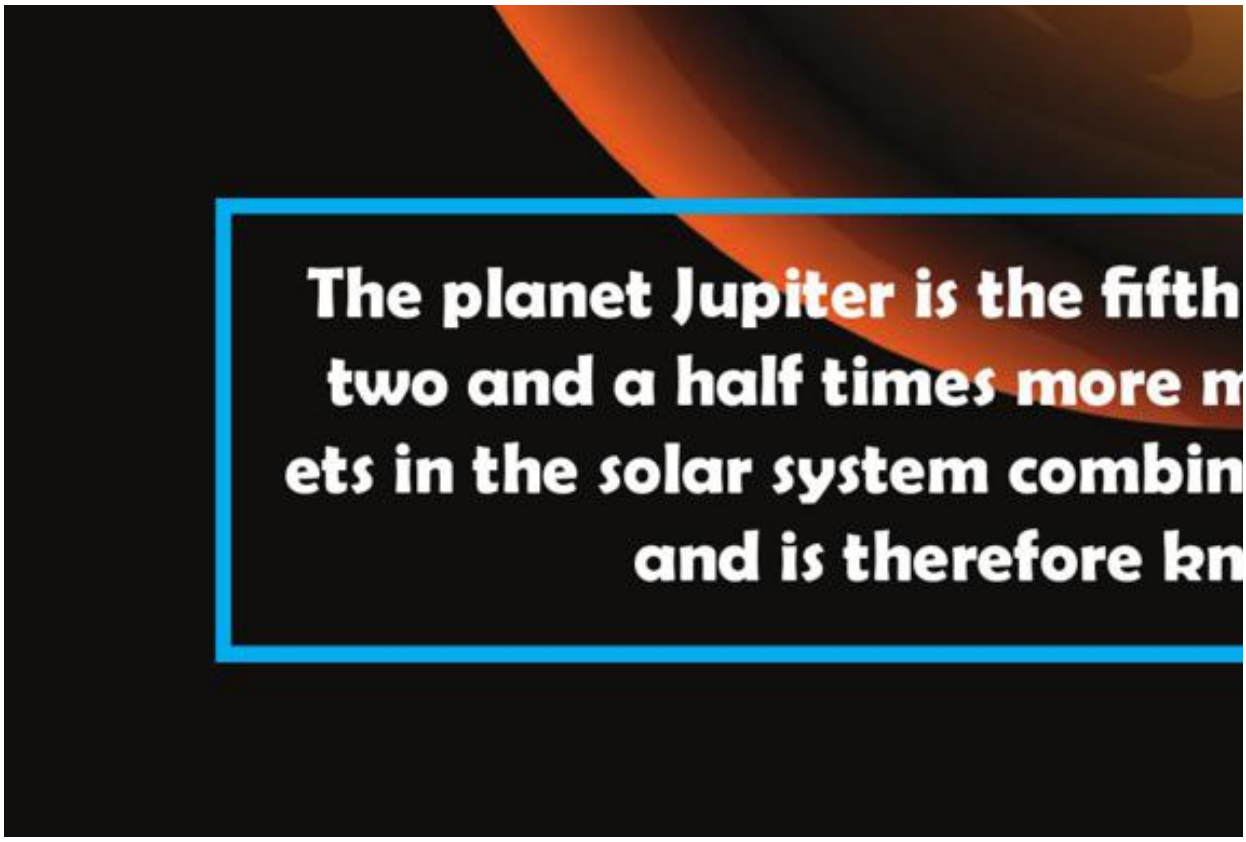
Surface Temperature:
-87 to -5 °C

First Record:
2nd millenium BC

Recorded By:
Egyptian astronomers

Mars is home to the tallest mountain in the solar system. Olympus Mons, a shield volcano, is 21km high and 600km in diameter.


Jup


The planet Jupiter is the fifth
two and a half times more m
ets in the solar system combin
and is therefore kn

Facts:

Mass:
1,898,130,000,000,000,000 billion kg (317.83 x Earth)

Moon:
67

Rings:
4

Surface Temperature:
-108°C

First Record:
7th or 8th century BC

Recorded By:
Babylonian astronomers

Jupiter is the fourth brightest object in the solar system. Only the Sun, Moon and Venus are brighter. It is one of five planets visible to the naked eye from Earth.


Sat


Saturn is the sixth planet fro
that can be seen with the na
fabulous ring system that
astronomer

Facts:

Mass:
568,319,000,000,000,000 billion kg (95.16 x Earth)

Moon:
62

Rings:
30+ (7 Groups)

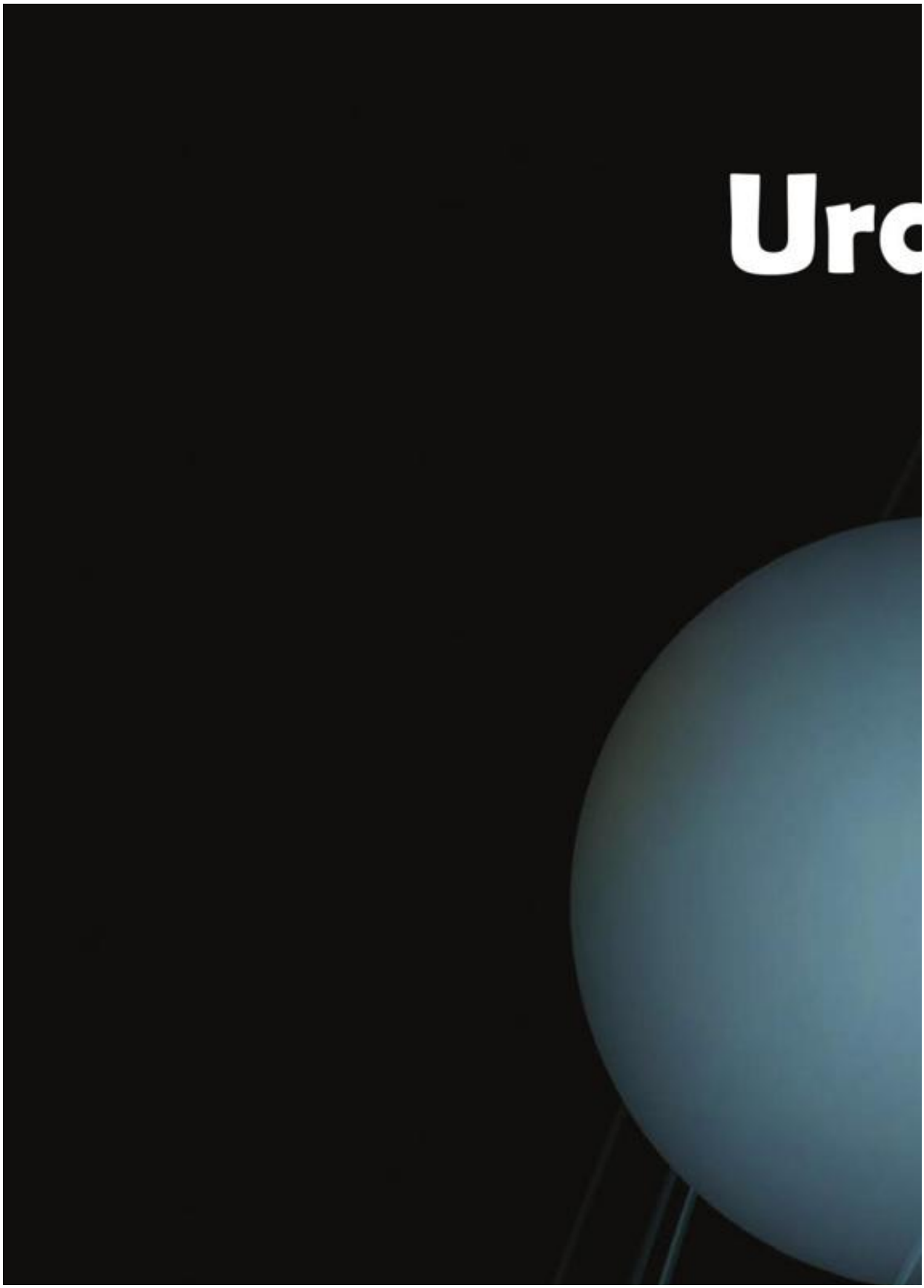
Surface Temperature:
-139 °C

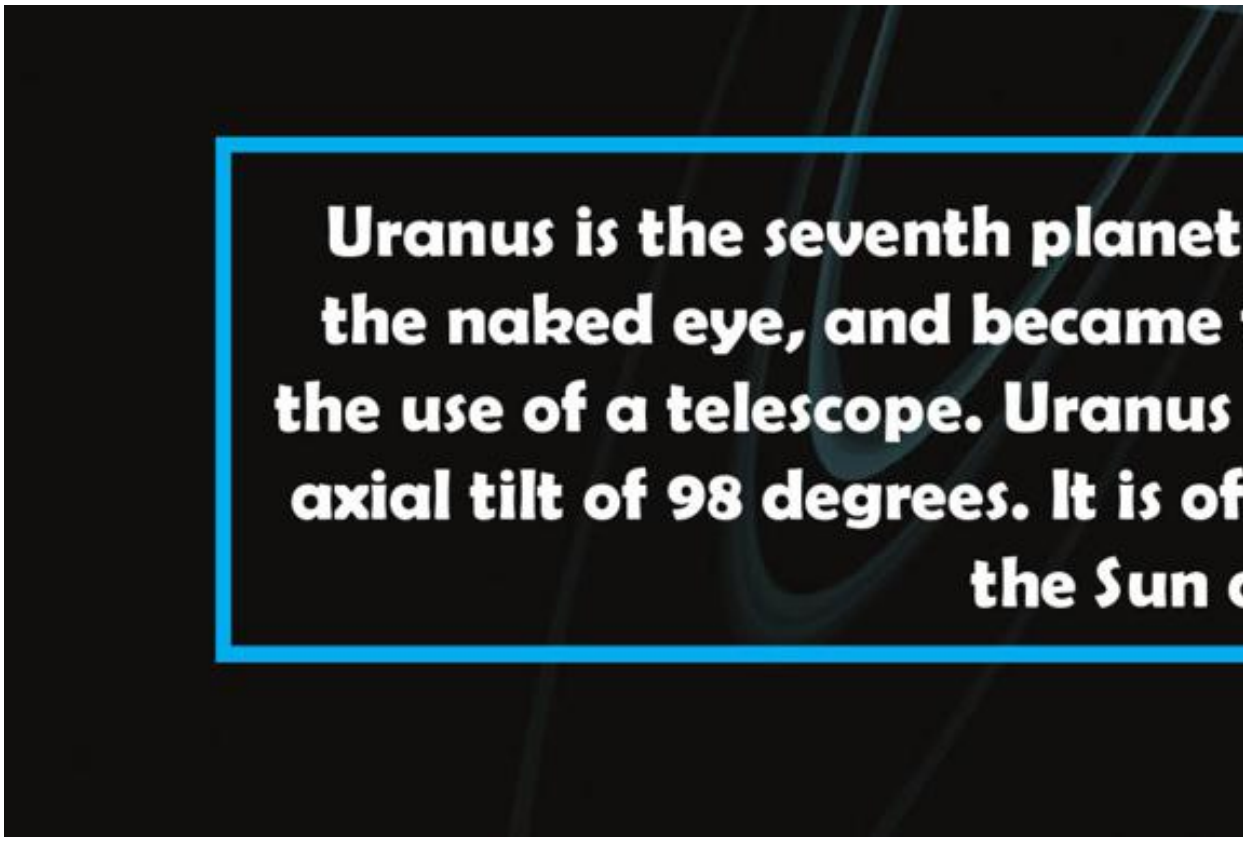
First Record:
8th century BC

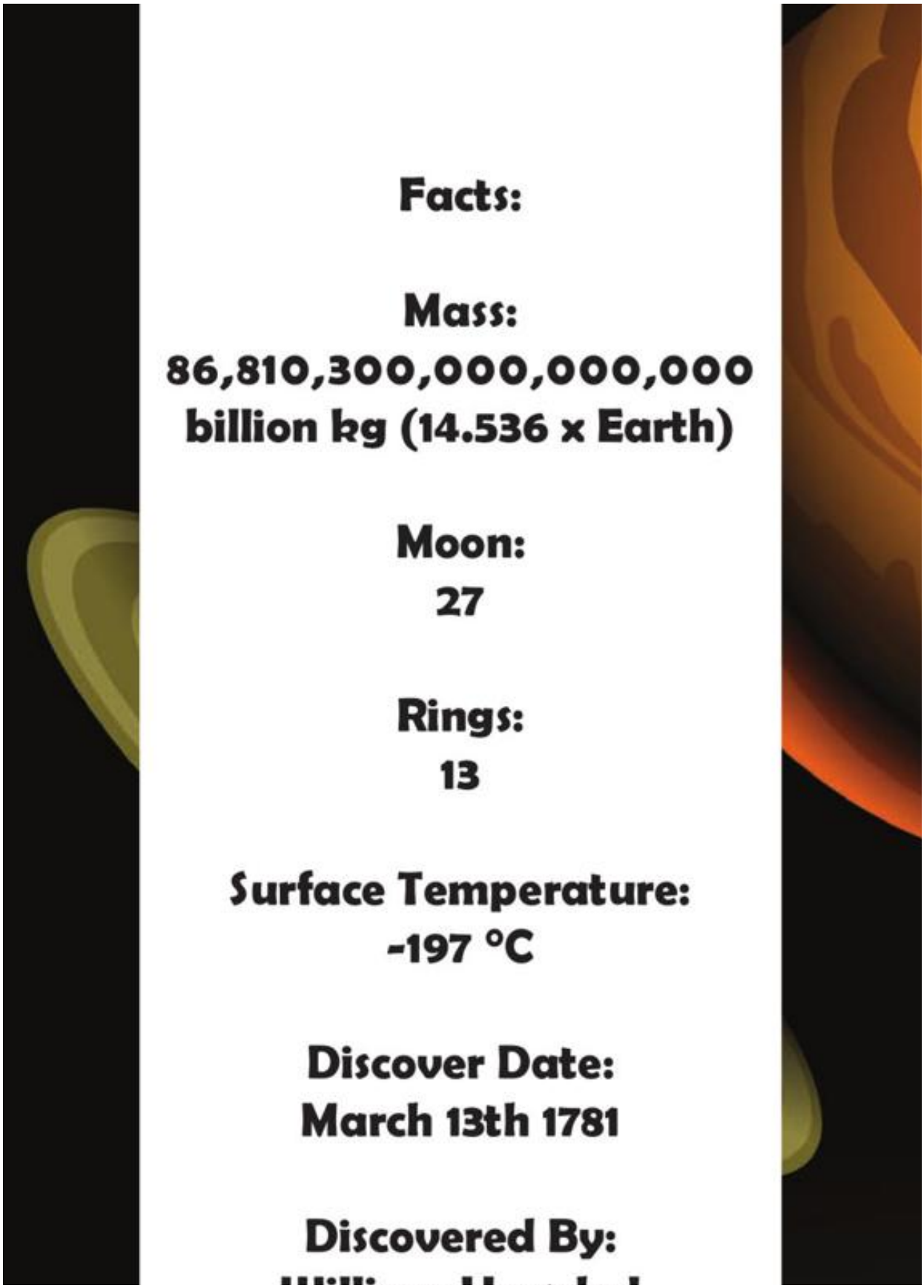
Recorded By:

Assyrians

Saturn can be seen with the naked eye. It is the fifth brightest object in the solar system and is also easily studied through or a small telescope.


Ura


Uranus is the seventh planet
the naked eye, and became
the use of a telescope. Uranus
axial tilt of 98 degrees. It is of
the Sun



Facts:

Mass:
86,810,300,000,000,000 billion kg (14.536 x Earth)

Moon:
27

Rings:
13

Surface Temperature:
-197 °C

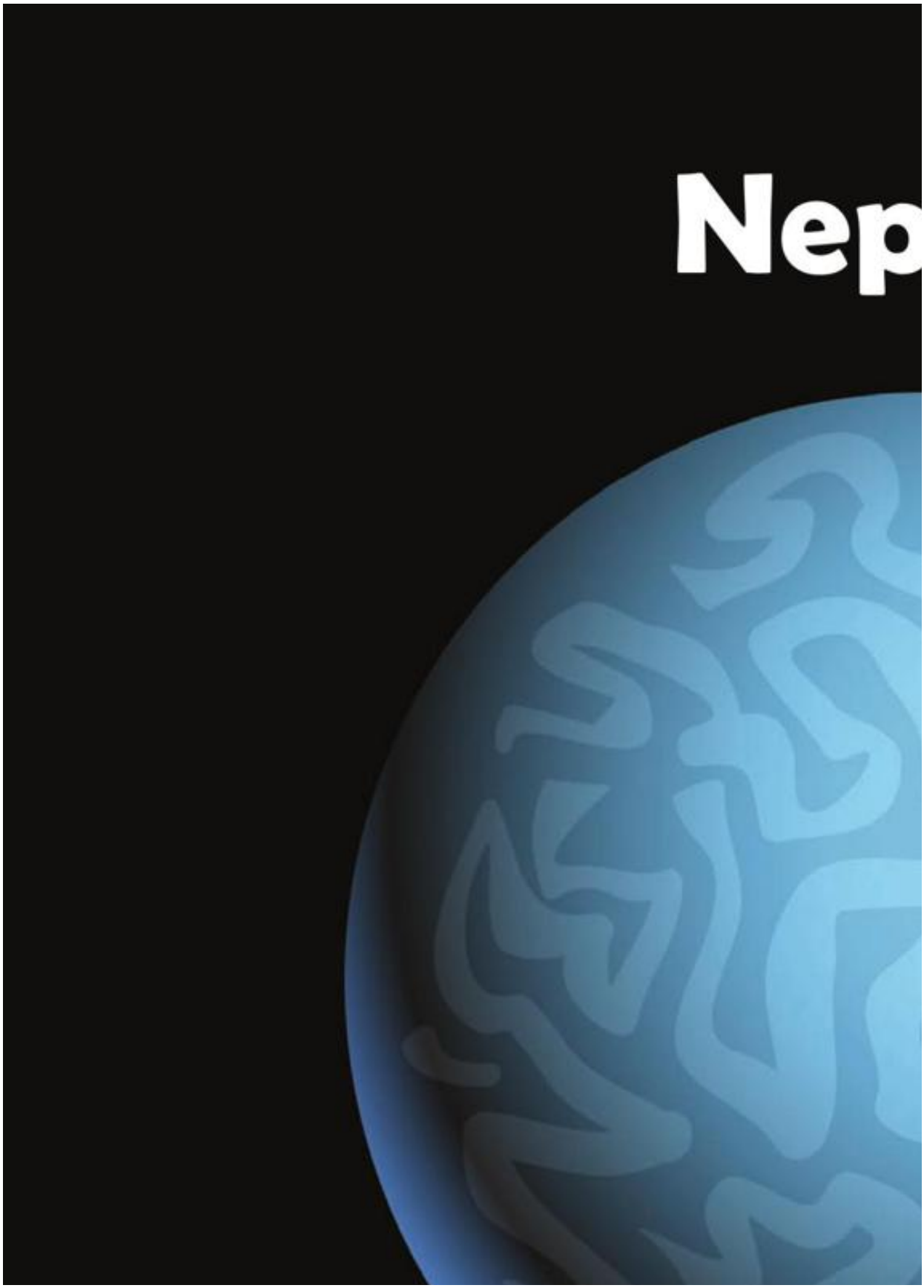
Discover Date:
March 13th 1781

Discovered By:

William Herschel

Uranus makes one trip around the Sun every 84 Earth years.

Uranus is often referred to as an "ice giant" planet.


Nep


Neptune is the eighth plane
distant planet from the Sun.
formed much closer to the Su
before migrating t

Facts:

Mass:
102,410,000,000,000,000 billion kg (17.15x Earth)

Moon:
14

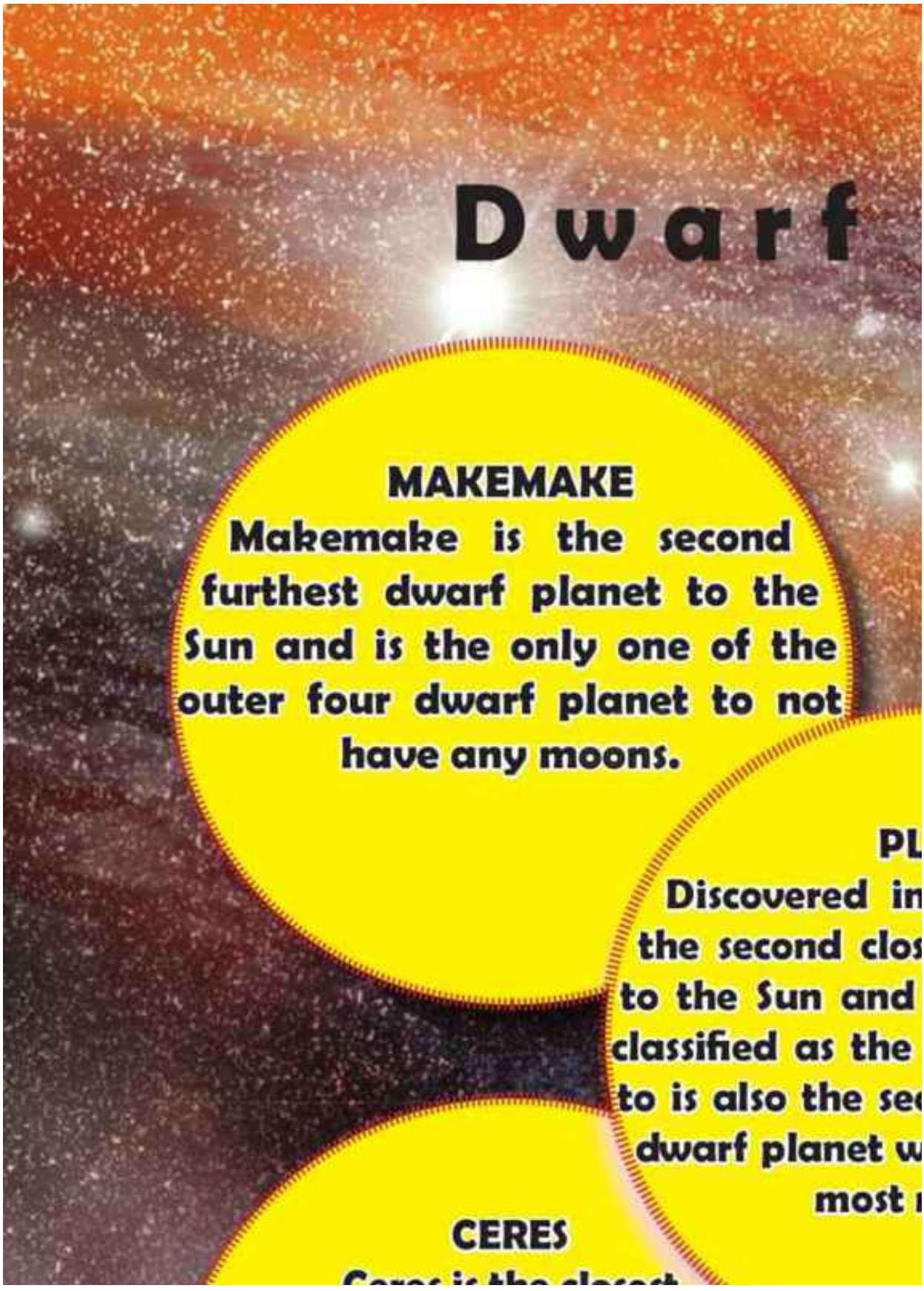
Rings:
5

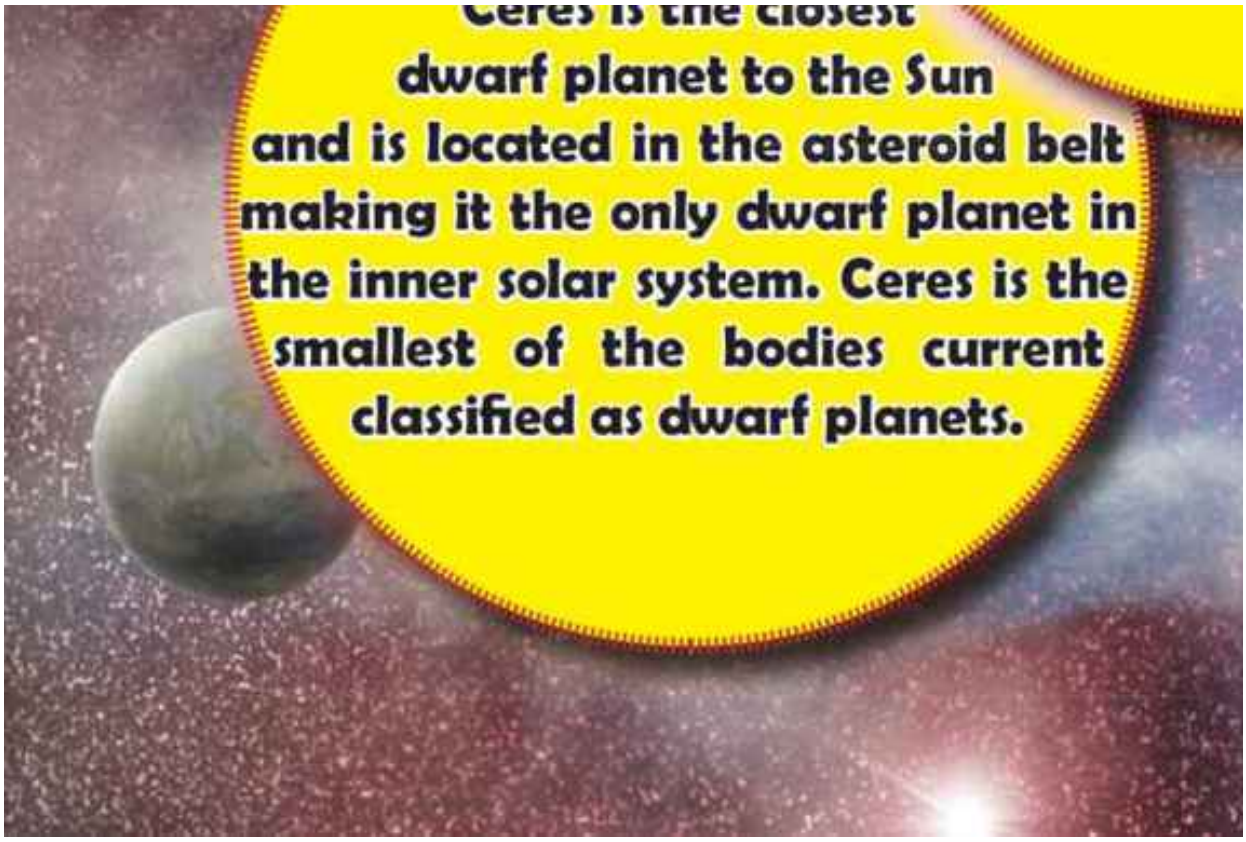
Surface Temperature:
-201 °C

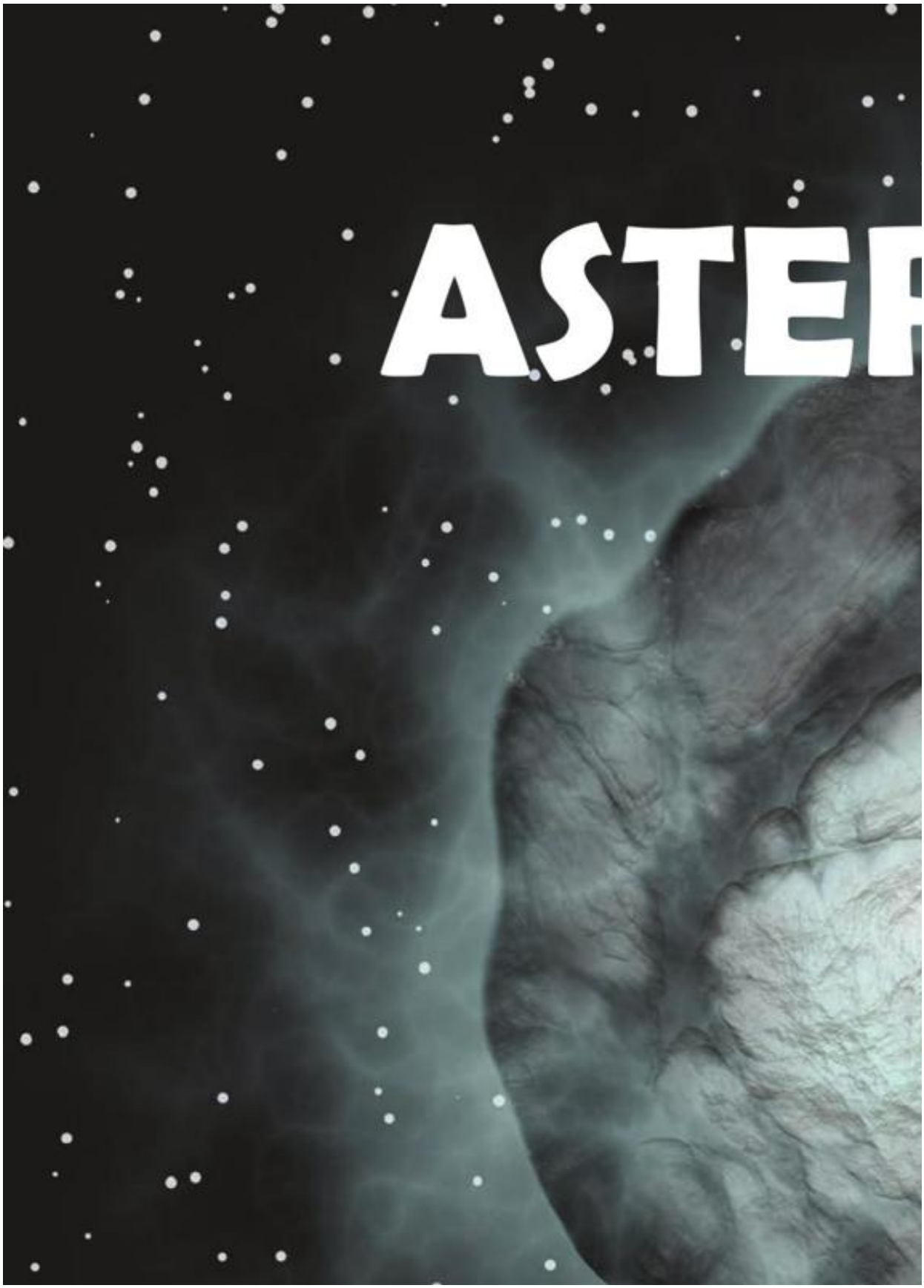
Discover Date:
September 23rd 1846

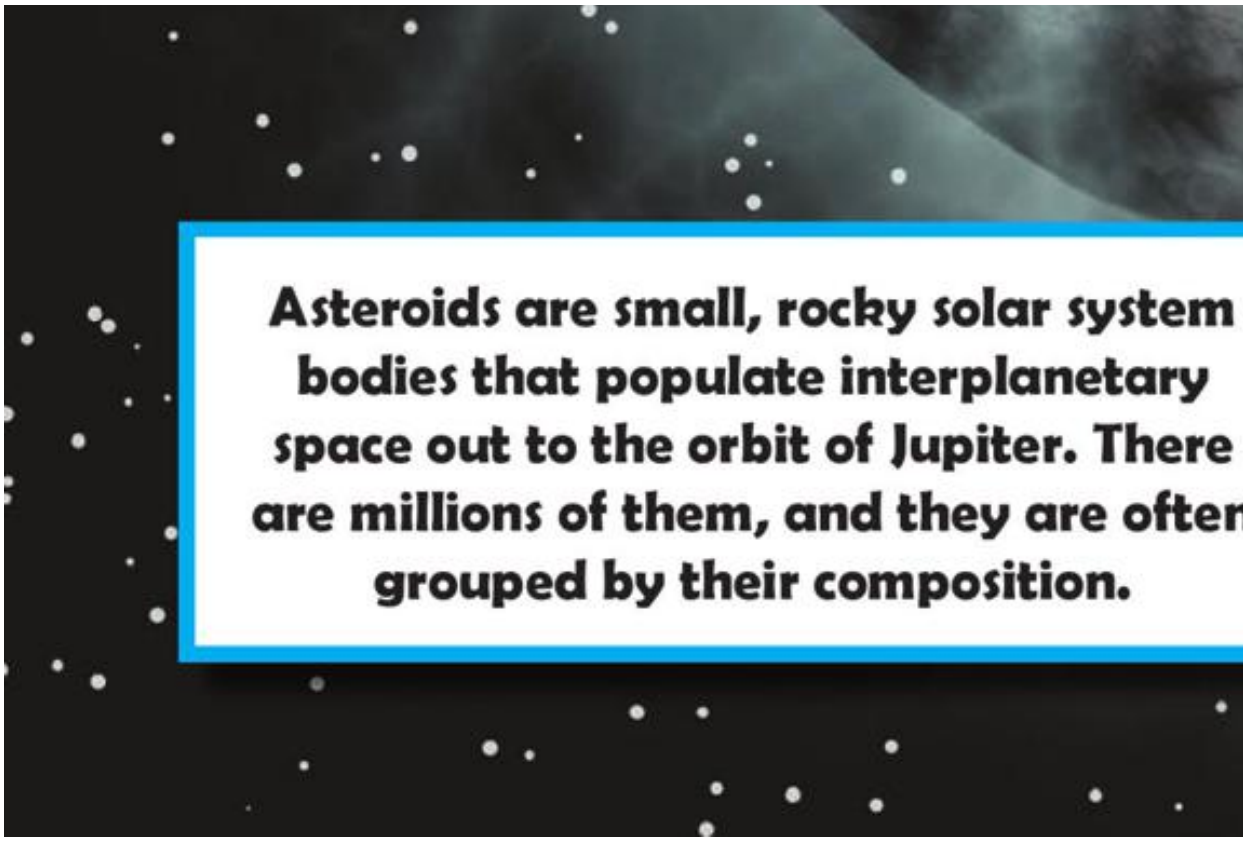
Discovered By:
Urbain Le Verrier & Johann Galle

Neptune is not visible to the naked eye and was first observed in 1846. Its position was determined using mathematical predictions. It was named after the Roman god of the sea.

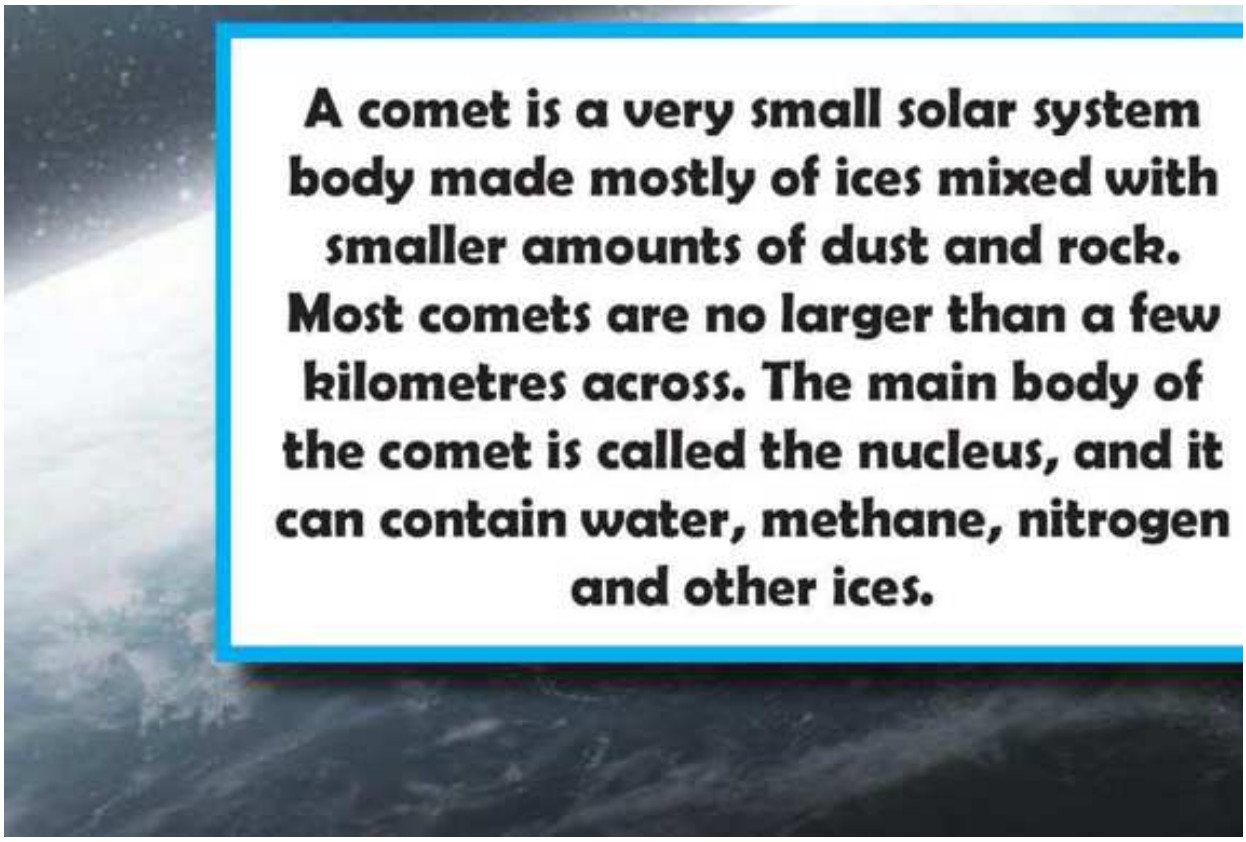

Dwarf
MAKEMAKE
Makemake is the second furthest dwarf planet to the Sun and is the only one of the outer four dwarf planet to not have any moons.
PL
Discovered in
the second clos
to the Sun and
classified as the
to is also the se
dwarf planet w
most
CERES


Ceres is the closest
dwarf planet to the Sun
and is located in the asteroid belt
making it the only dwarf planet in
the inner solar system. Ceres is the
smallest of the bodies current
classified as dwarf planets.

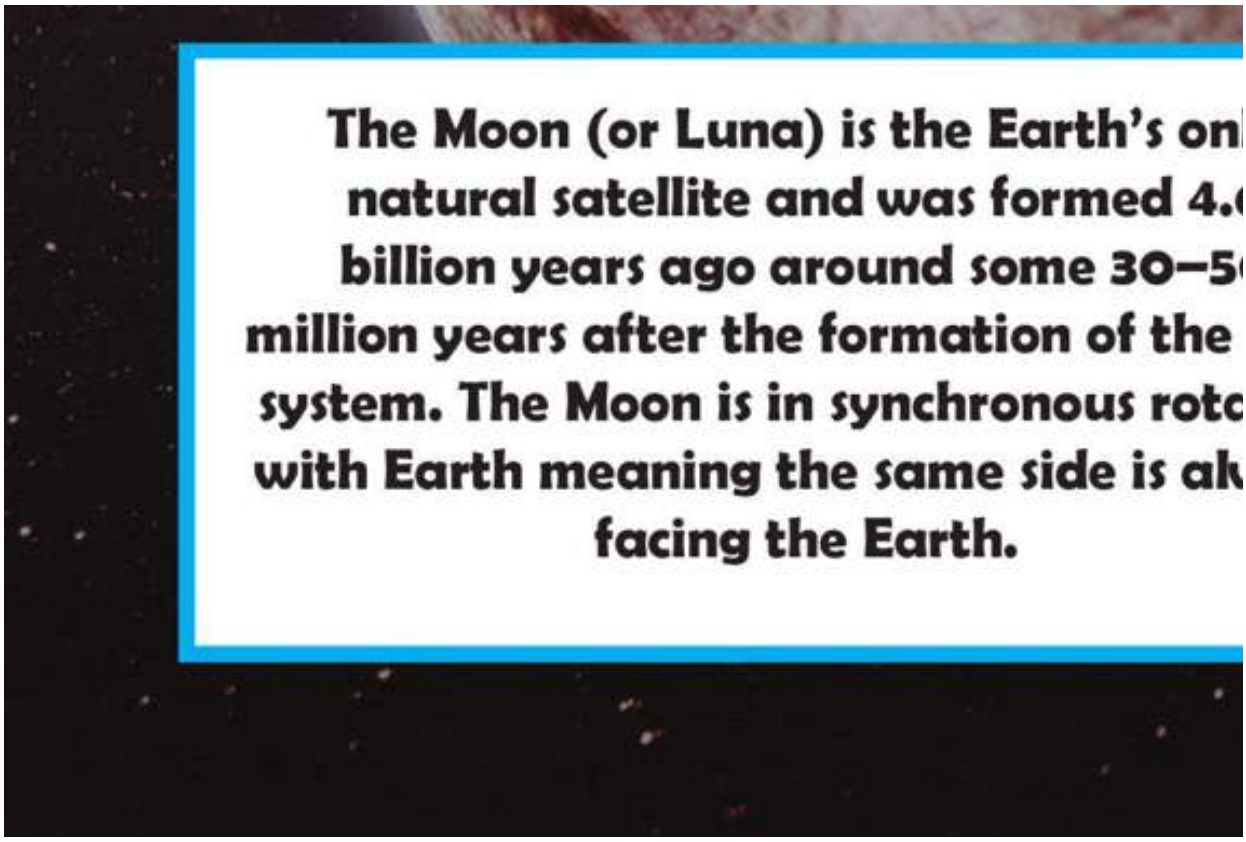

ASTER


Asteroids are small, rocky solar system bodies that populate interplanetary space out to the orbit of Jupiter. There are millions of them, and they are often grouped by their composition.


CO


A comet is a very small solar system body made mostly of ices mixed with smaller amounts of dust and rock. Most comets are no larger than a few kilometres across. The main body of the comet is called the nucleus, and it can contain water, methane, nitrogen and other ices.


MO


The Moon (or Luna) is the Earth's on
natural satellite and was formed 4.
billion years ago around some 30–5
million years after the formation of the
system. The Moon is in synchronous rota
with Earth meaning the same side is al
facing the Earth.


SU

The Sun or Sol, is the star at th
centre of our solar system and
responsible for the Earth's clim
and weather. The Sun is an alm
perfect sphere with a differen
of just 10km in diameter betwe
the poles and the equator.