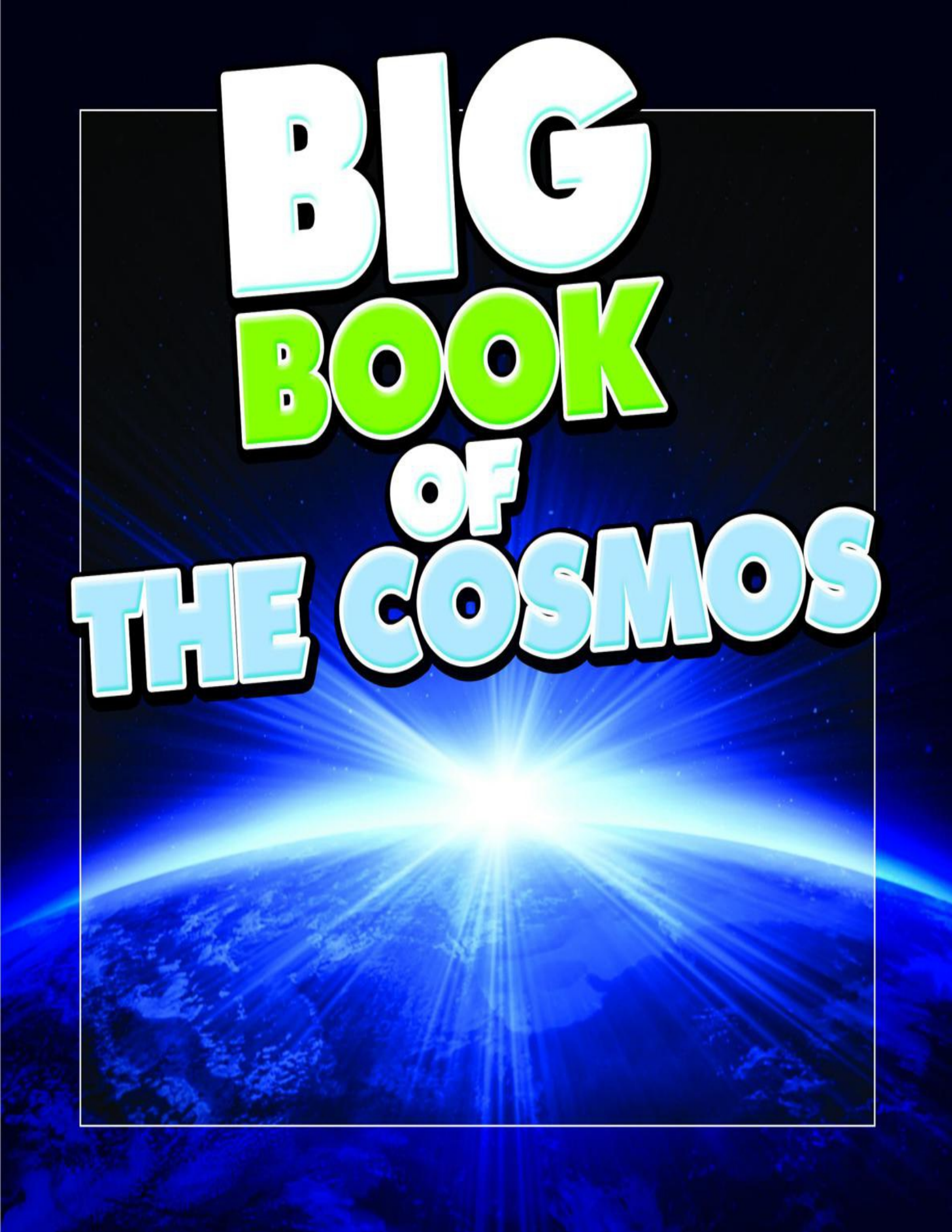
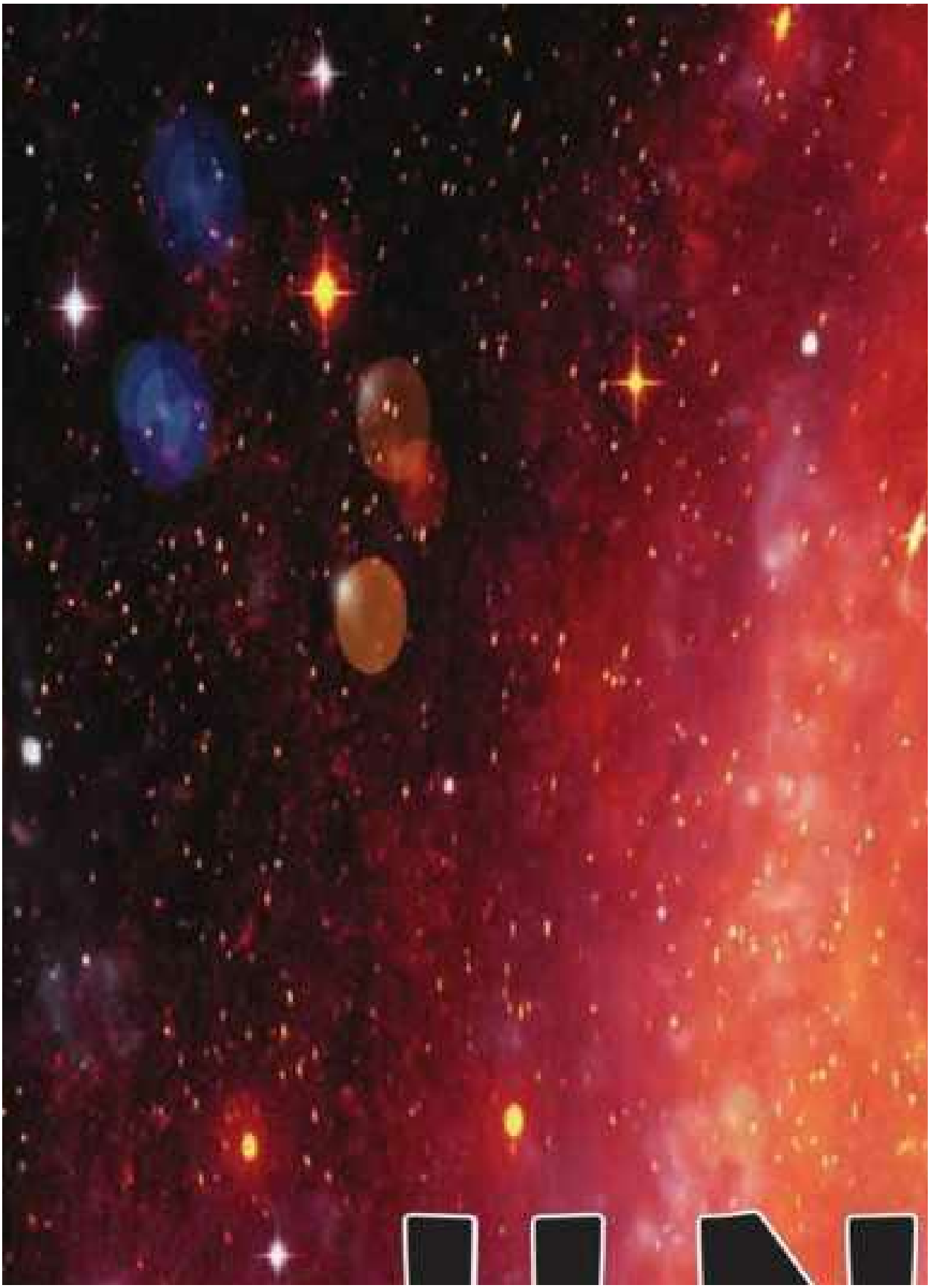
BIG BOOK OF THE COSMOS

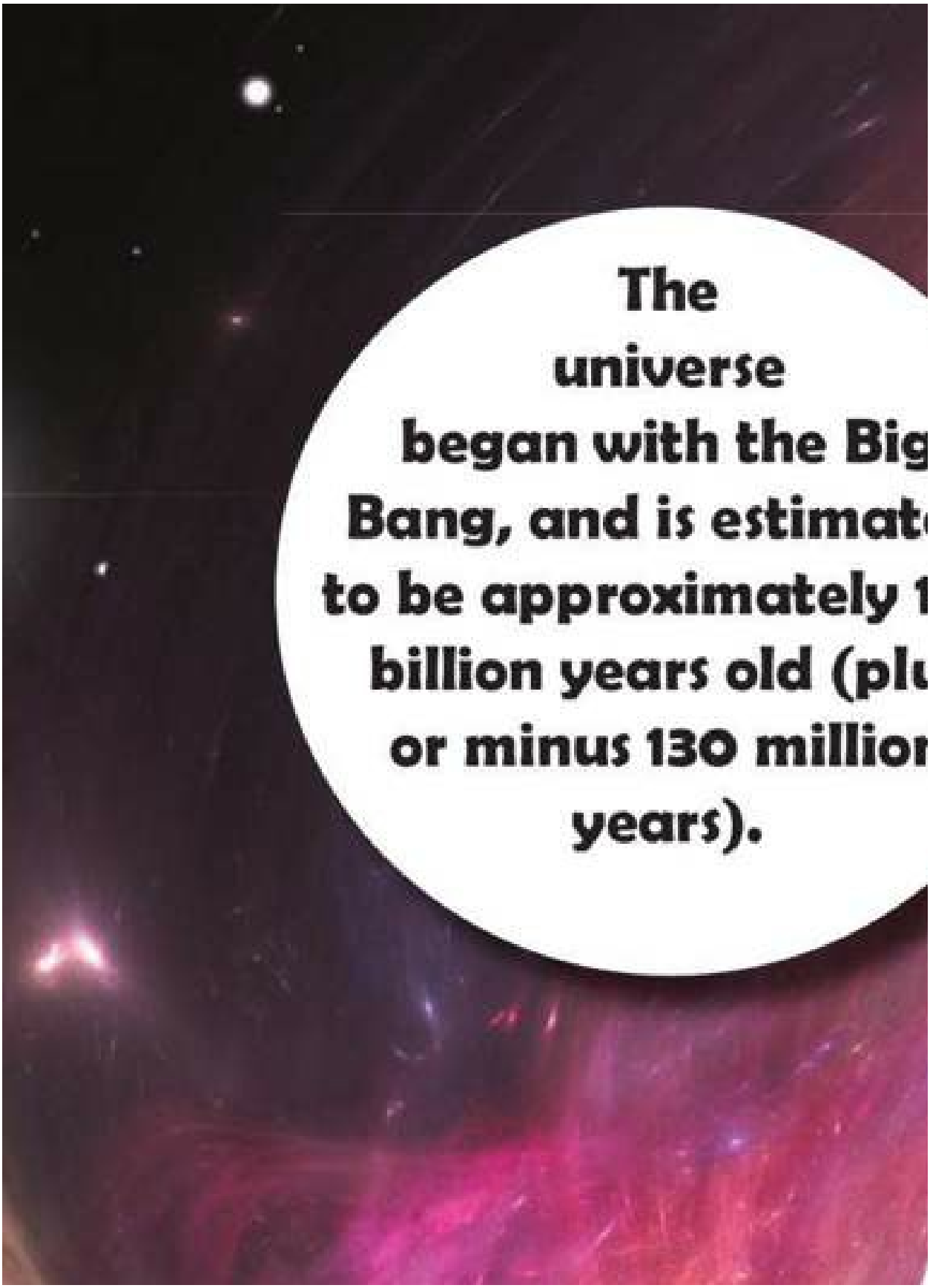


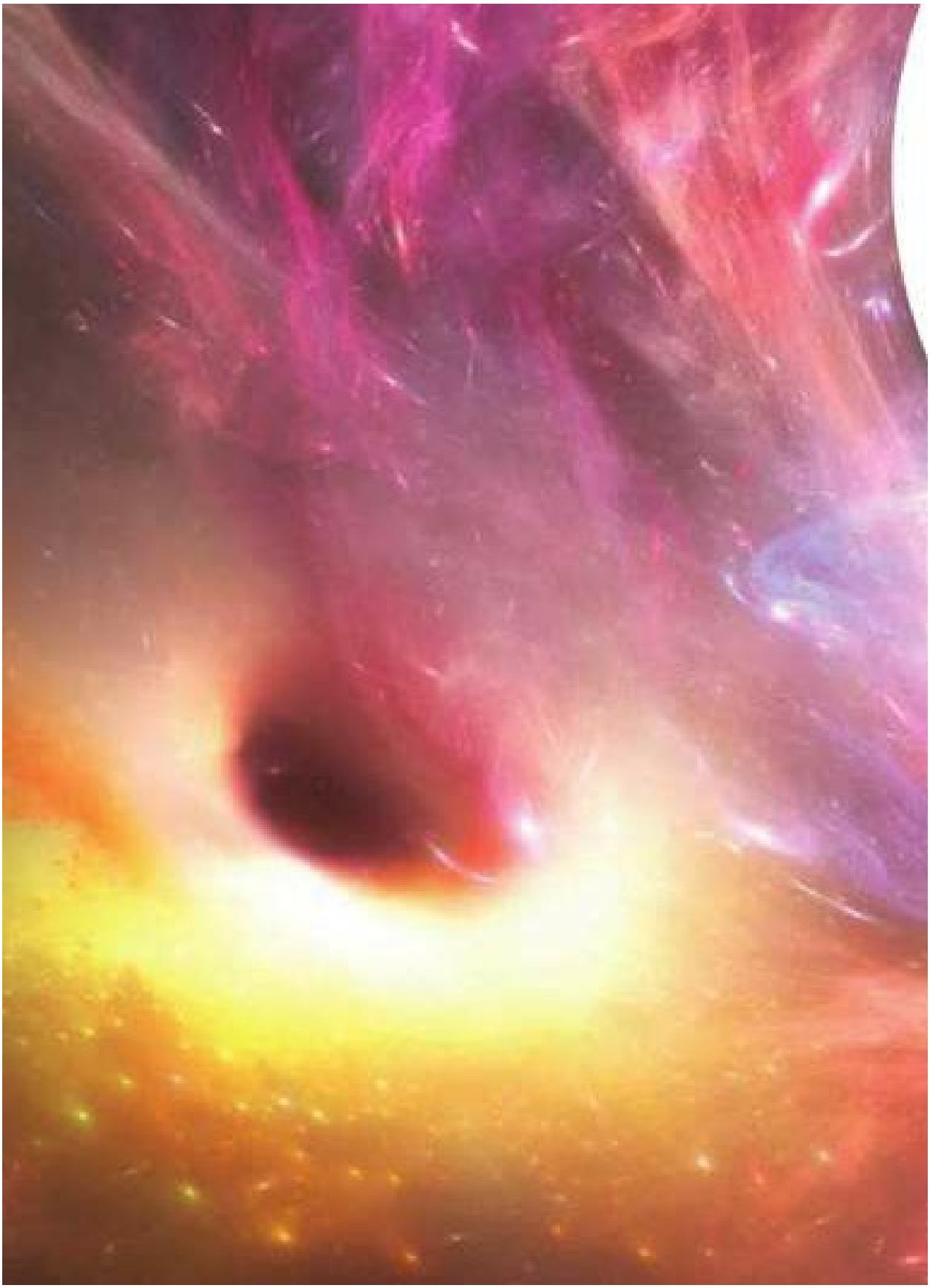
Big

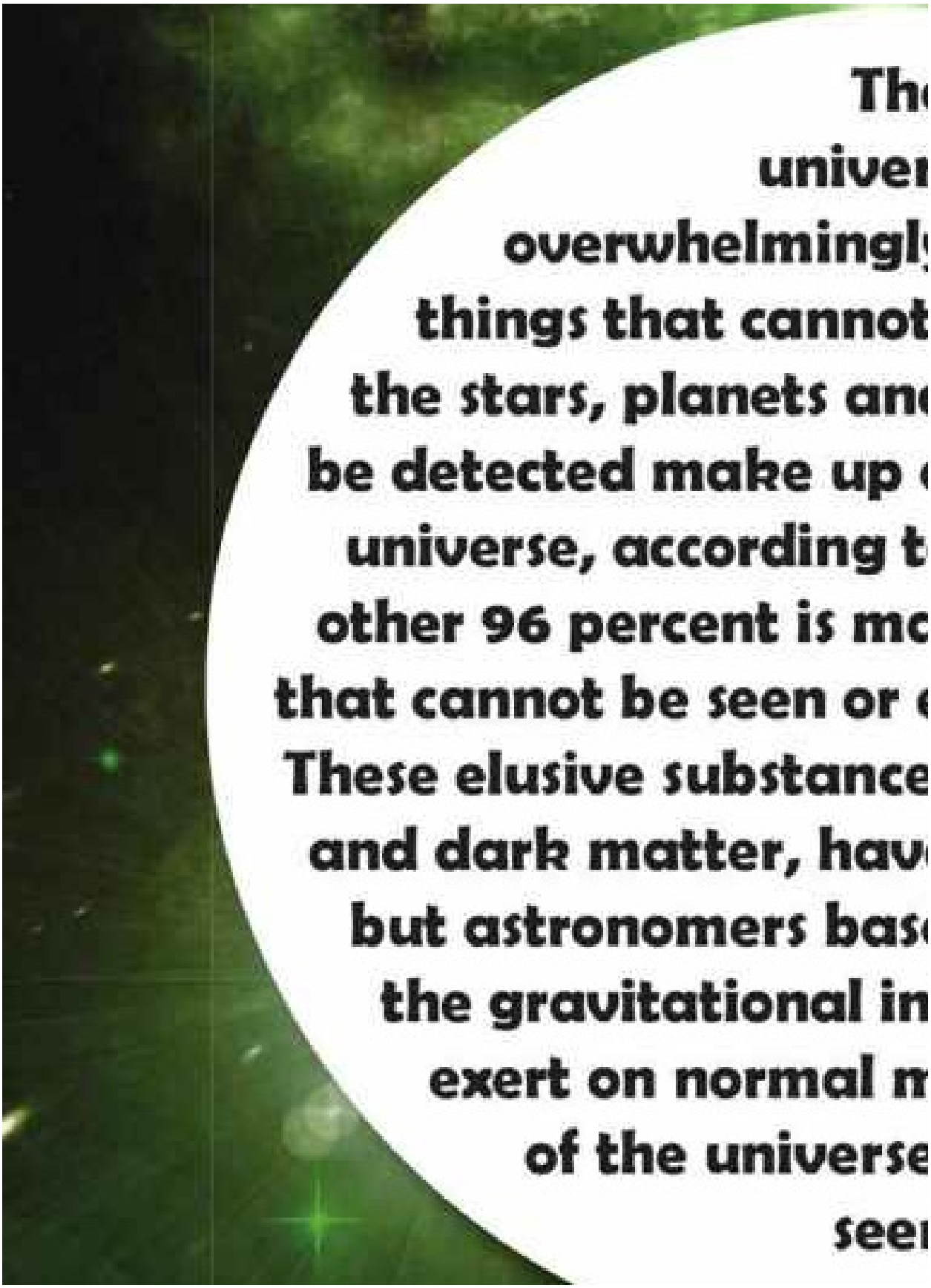
Cosm

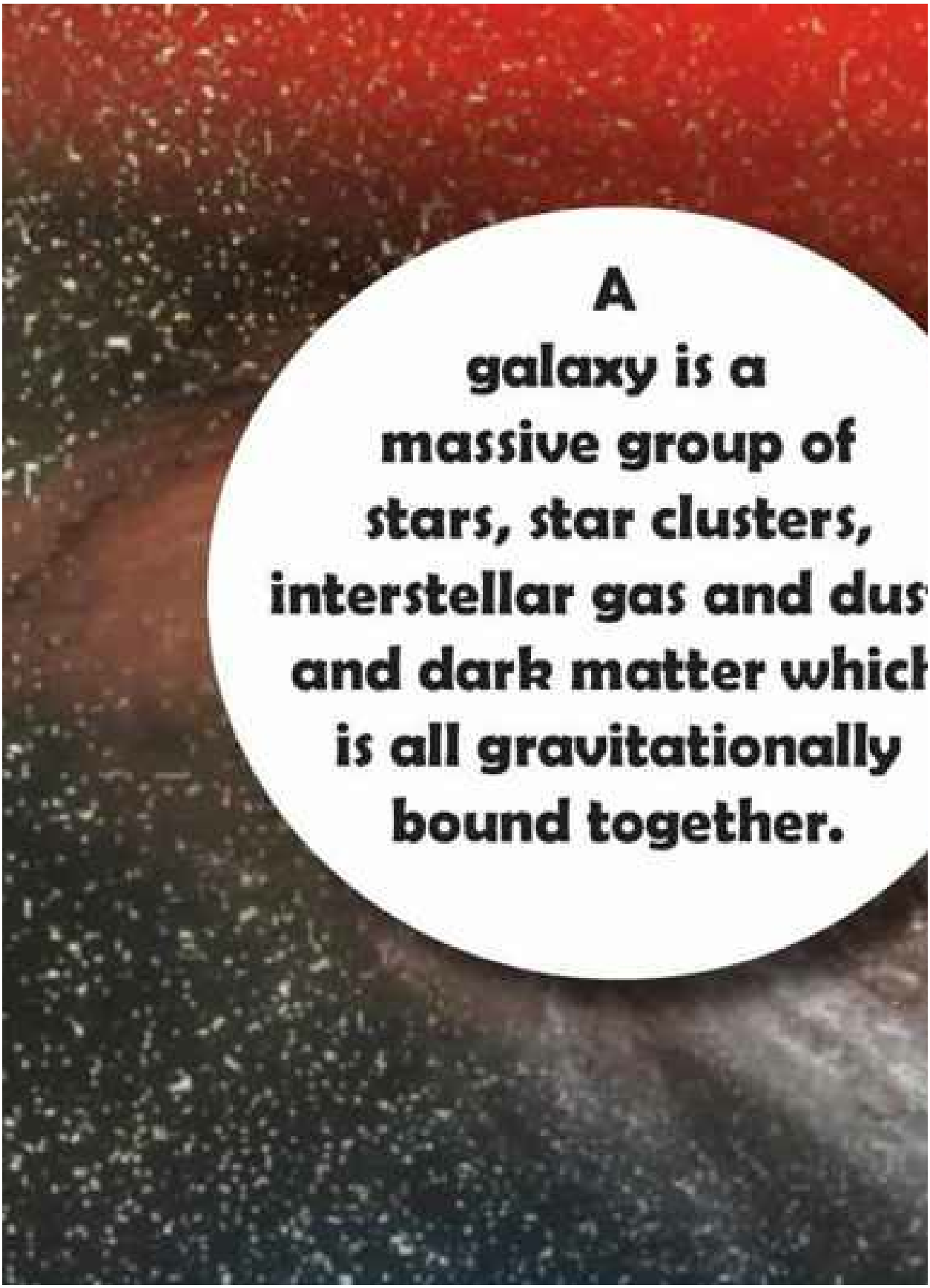


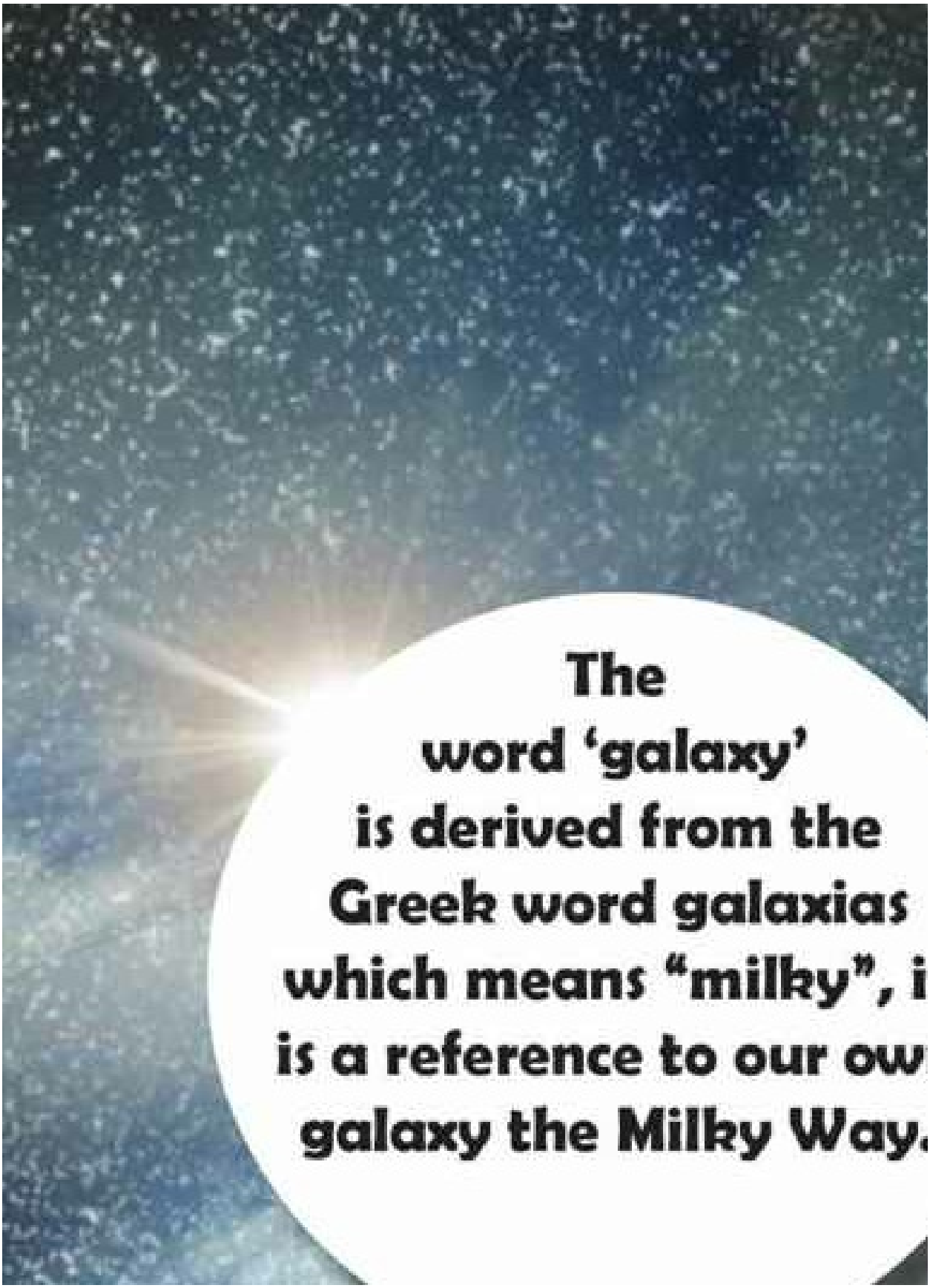

U N

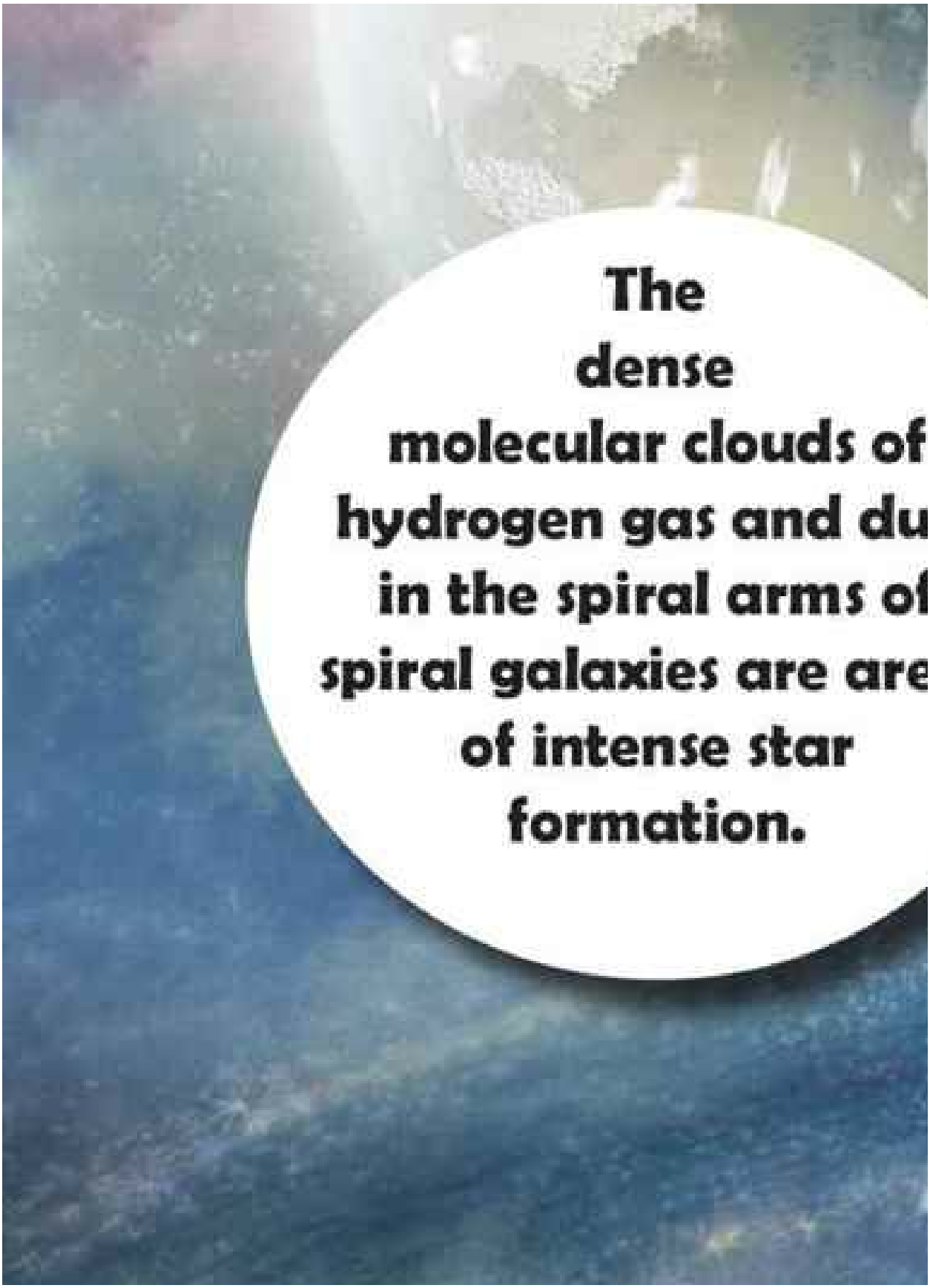

The
universe
began with the Big
Bang, and is estimat
to be approximately 1
billion years old (plu
or minus 130 million
years).



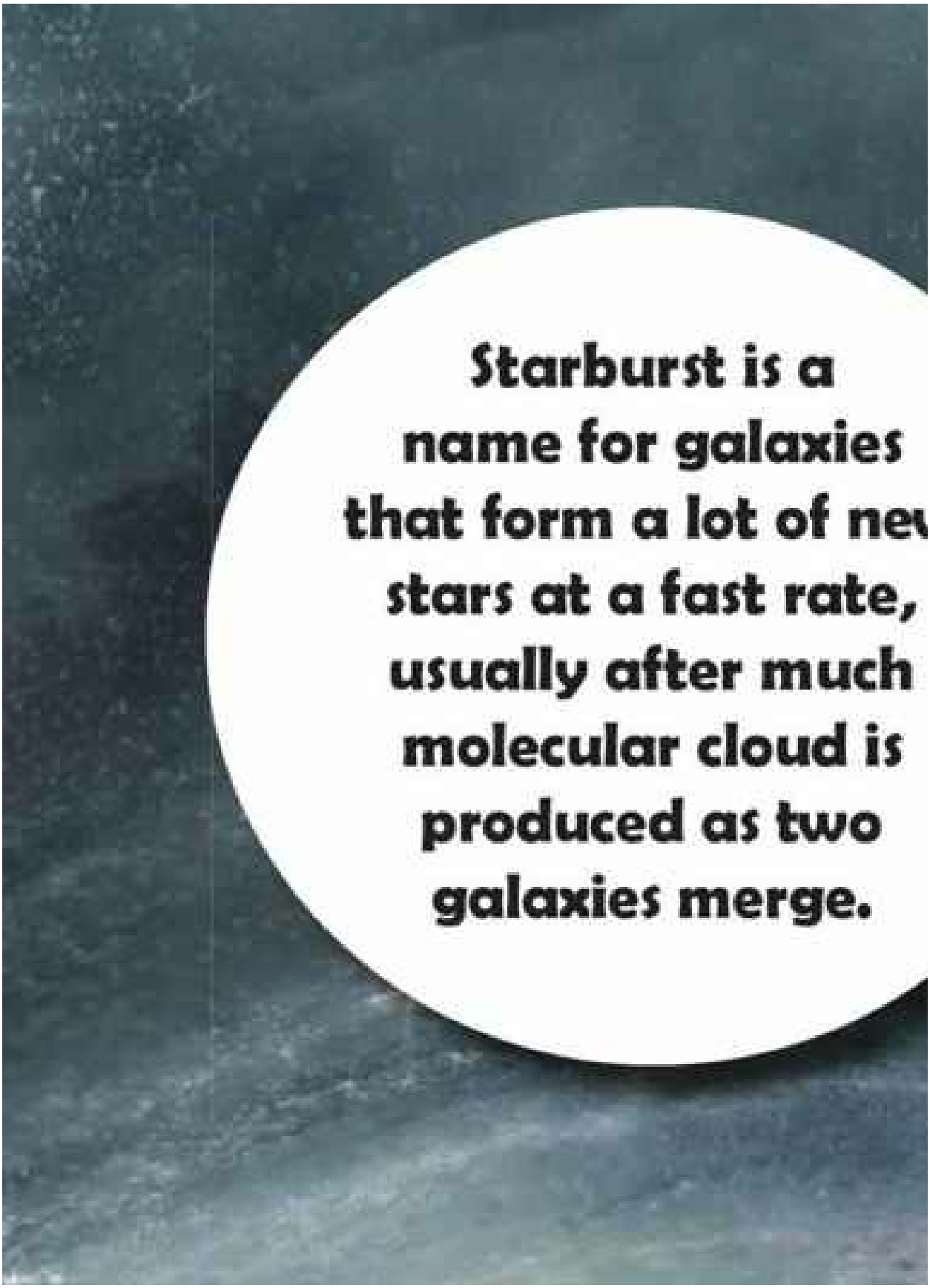

Th
univer
overwhelmingl
things that cannot
the stars, planets an
be detected make up
universe, according t
other 96 percent is m
that cannot be seen or
These elusive substance
and dark matter, hav
but astronomers bas
the gravitational in
exert on normal m
of the universe
see


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

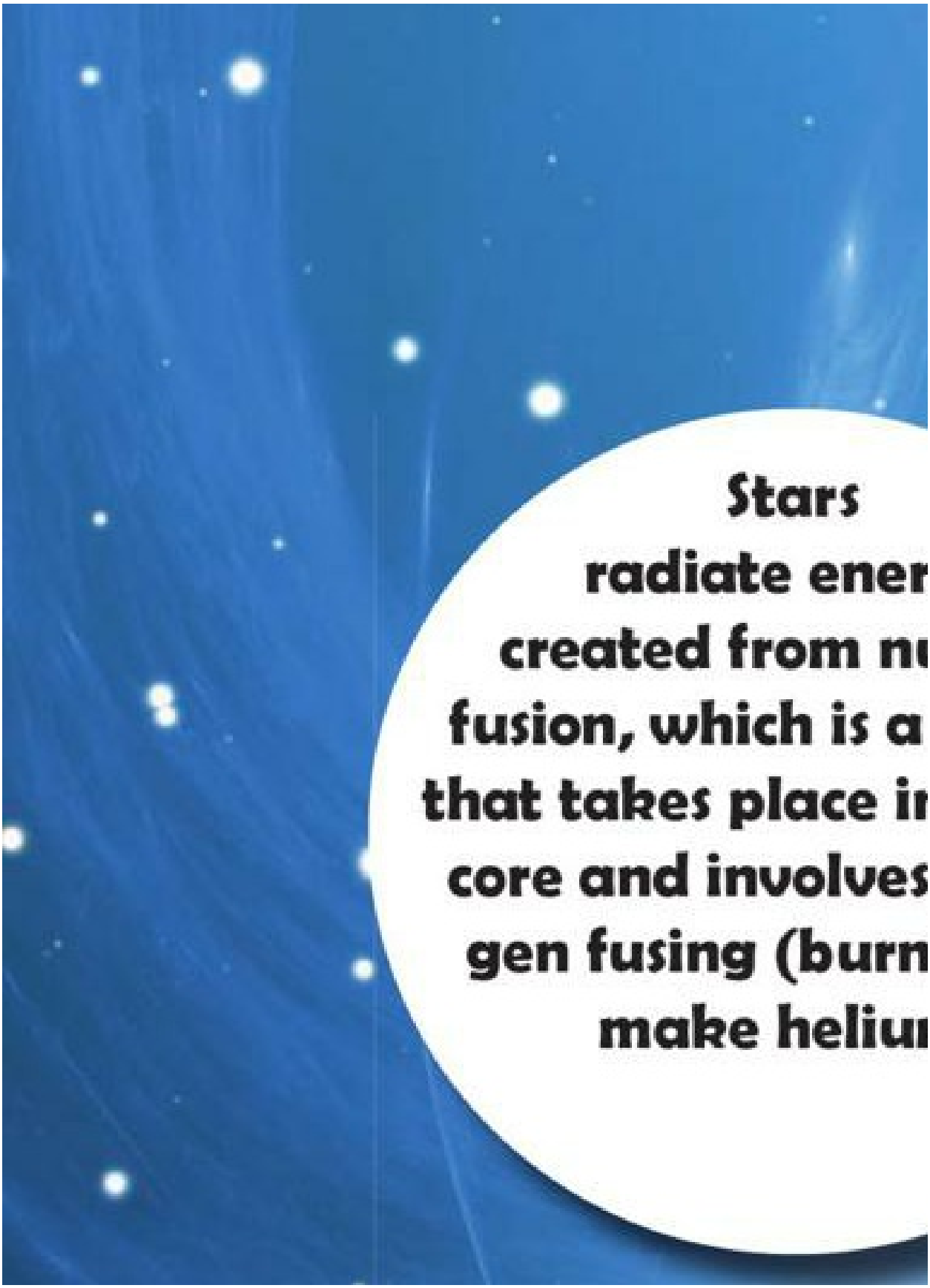

The
word 'galaxy'
is derived from the
Greek word galaxias
which means "milky", i
is a reference to our ow
galaxy the Milky Way.

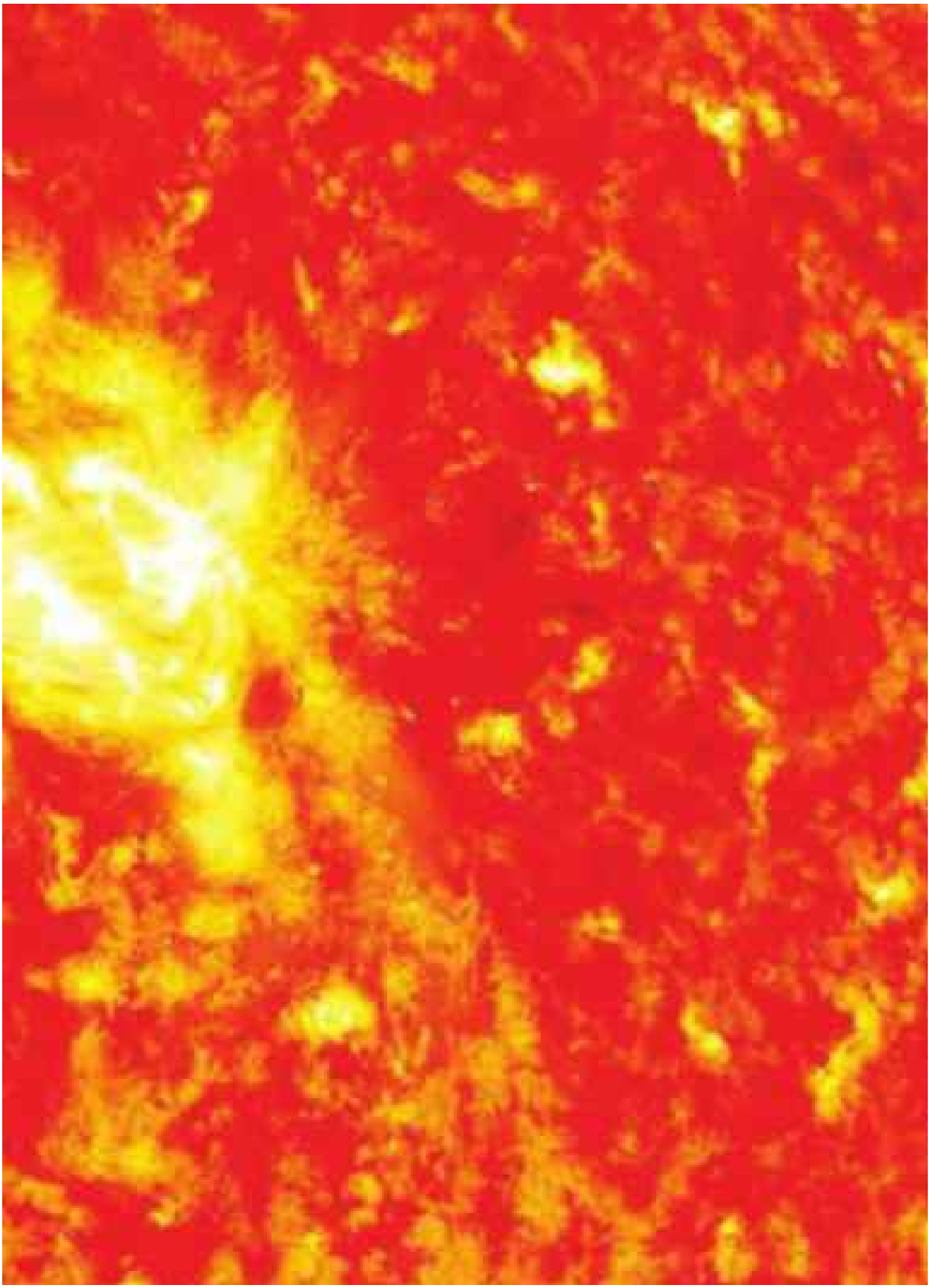

The
dense
molecular clouds of
hydrogen gas and du
in the spiral arms of
spiral galaxies are are
of intense star
formation.

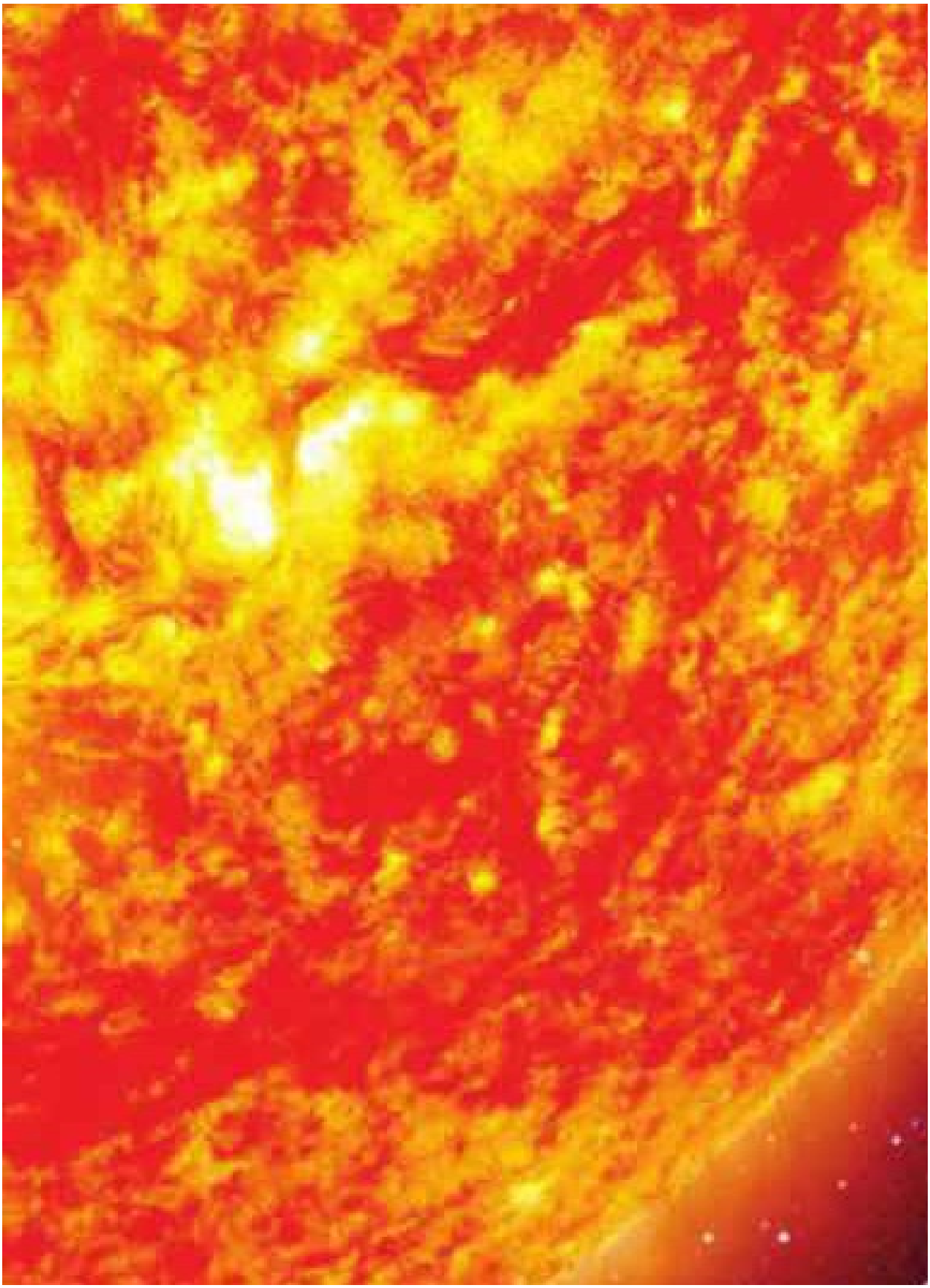

Our
Solar System is
located within the
disk of the Milky Way
Galaxy, around 27,000
light-years from the
Galactic Center of
the galaxy.

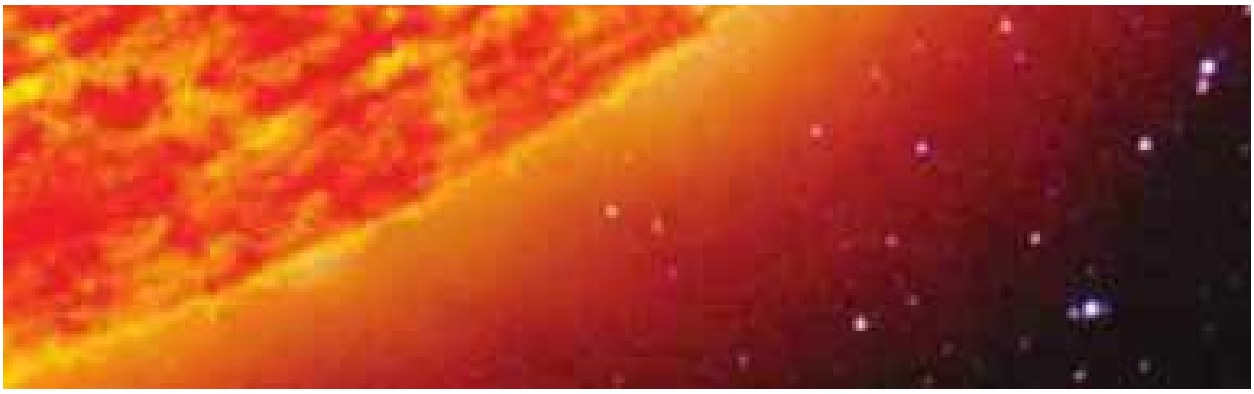

Starburst is a
name for galaxies
that form a lot of ne
stars at a fast rate,
usually after much
molecular cloud is
produced as two
galaxies merge.

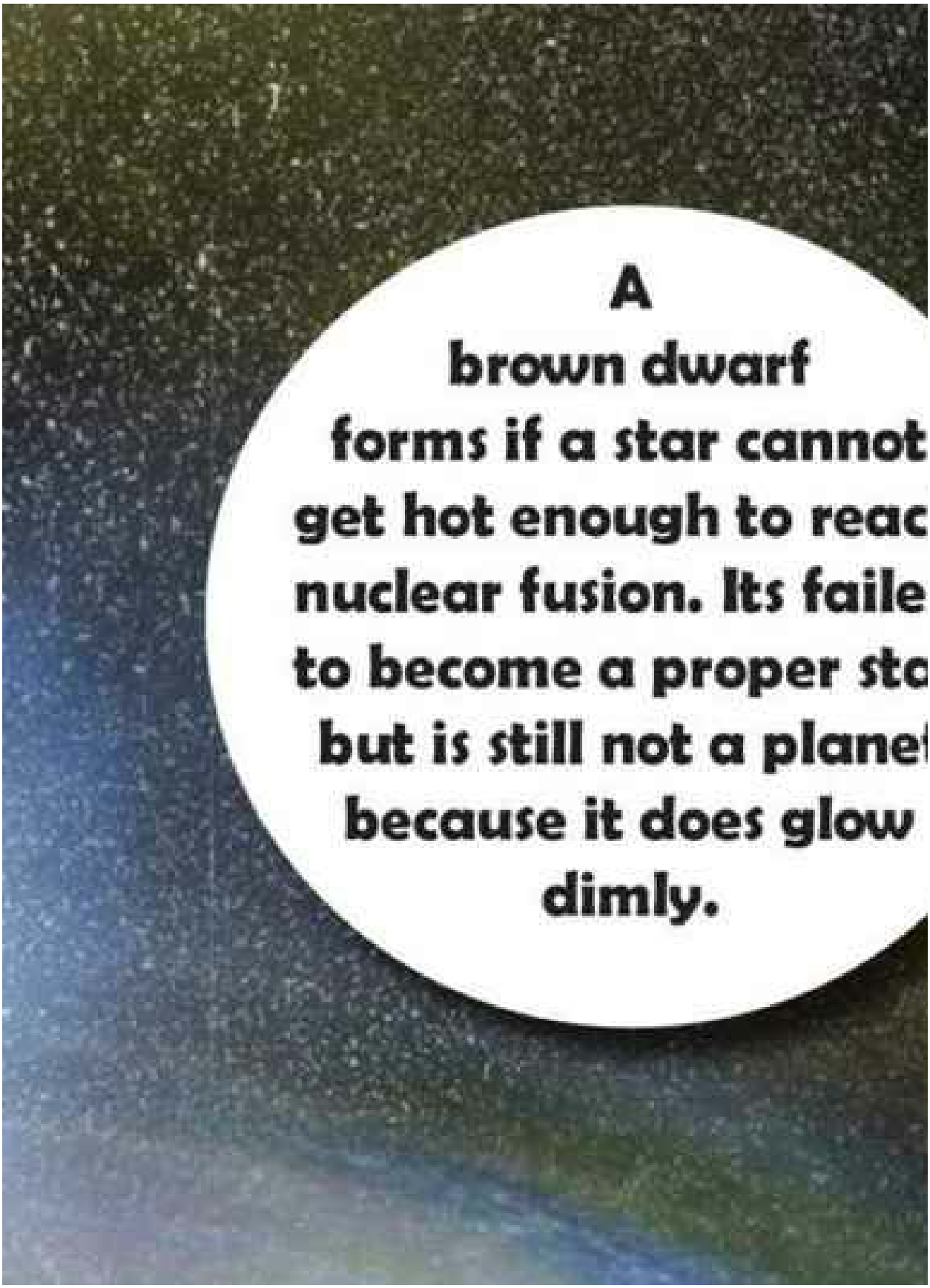

Stars
are usually
between 1 and 10
billion years old. Some
stars may even be close
the age of the observe
Universe at nearly 13.
billion years old.


Stars
radiate ener
created from nu
fusion, which is a
that takes place ir
core and involves
gen fusing (burn
make heliu



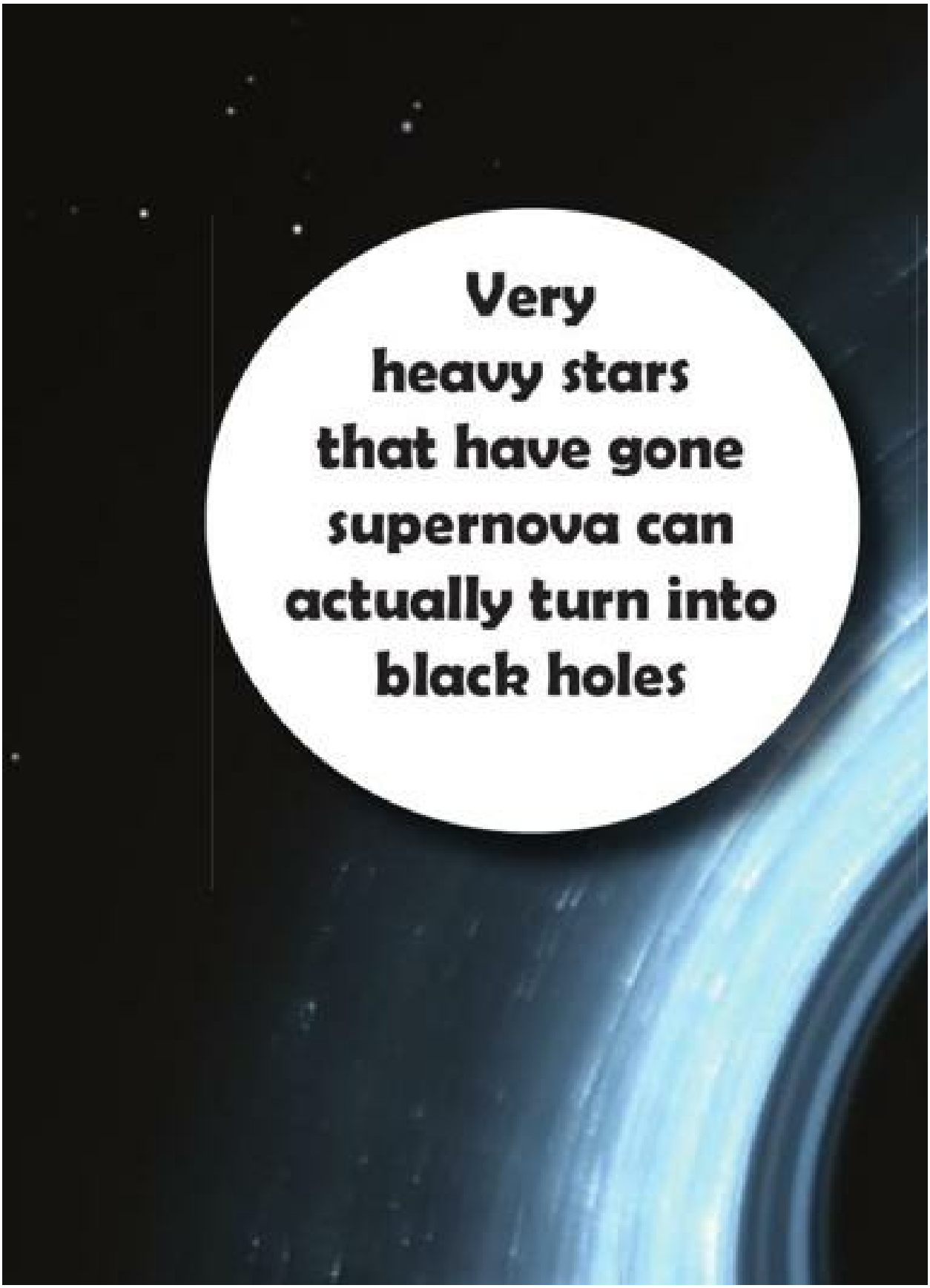


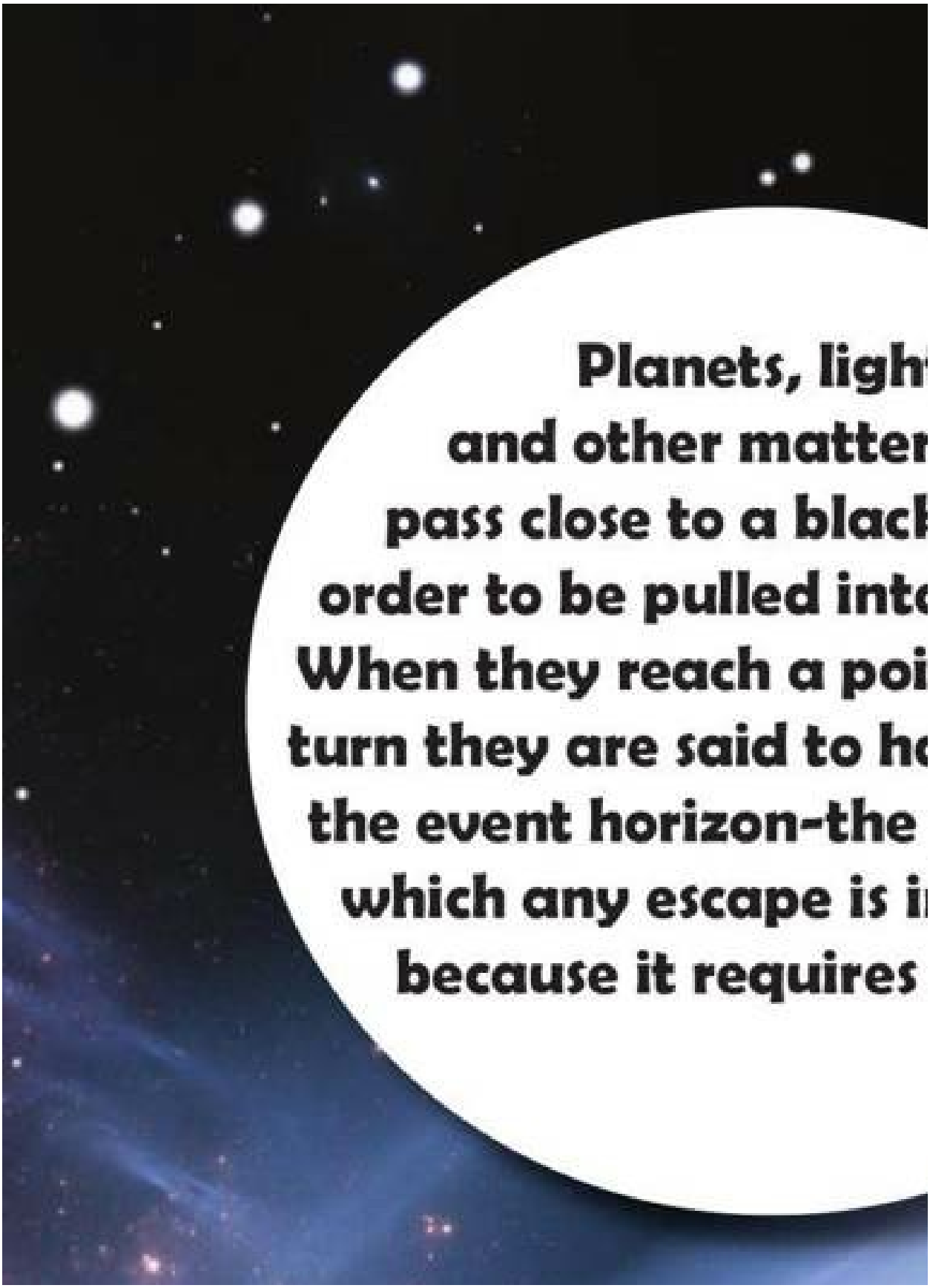


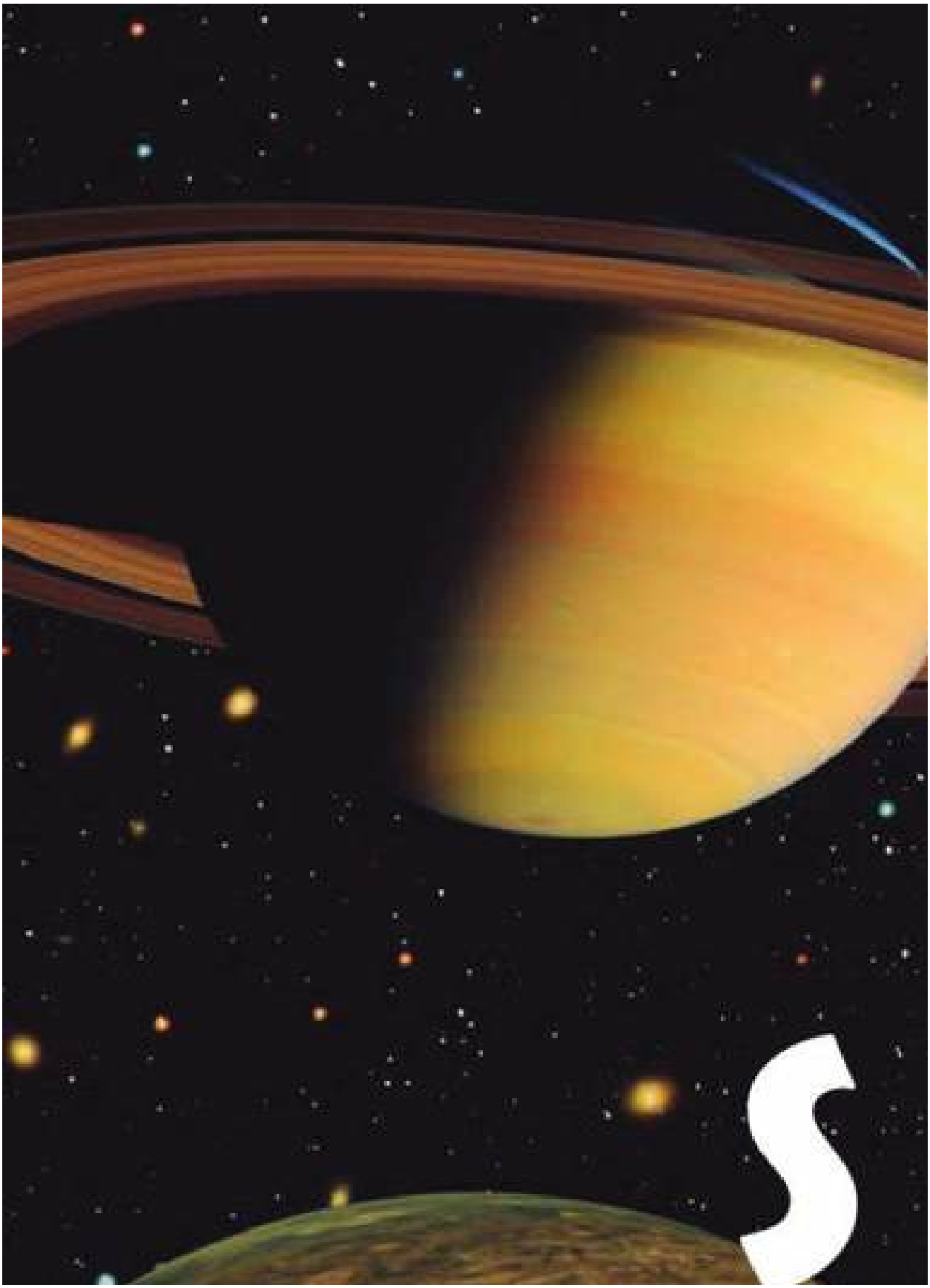

A
brown dwarf
forms if a star cannot
get hot enough to reac
nuclear fusion. Its faile
to become a proper sta
but is still not a planet
because it does glow
dimly.

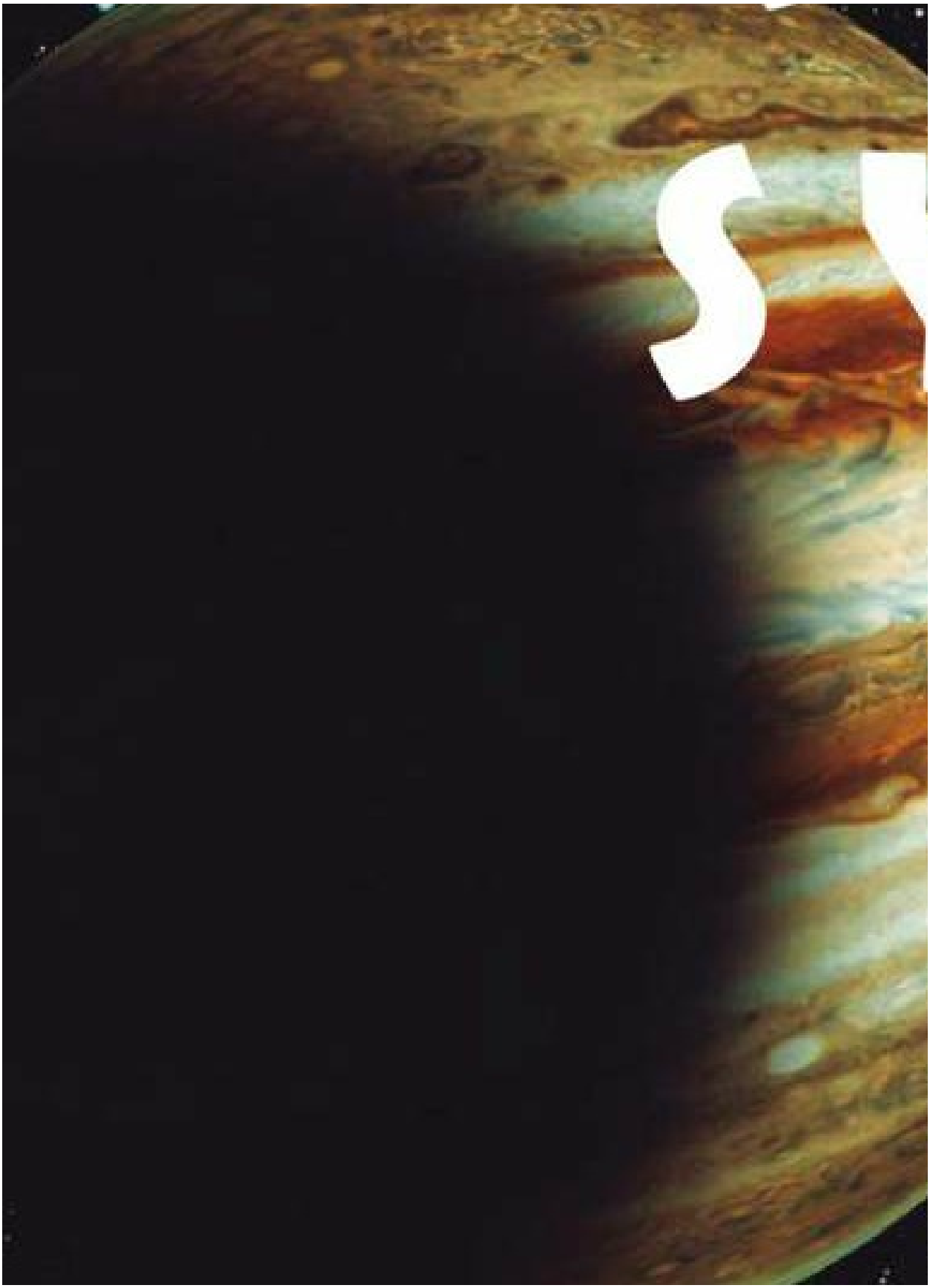

Big
stars like
supergiants and
hypergiants have sho
lives as they consume
fuel at a faster rate t
smaller stars. As these m
stars die they explod
massive bright
supernova.

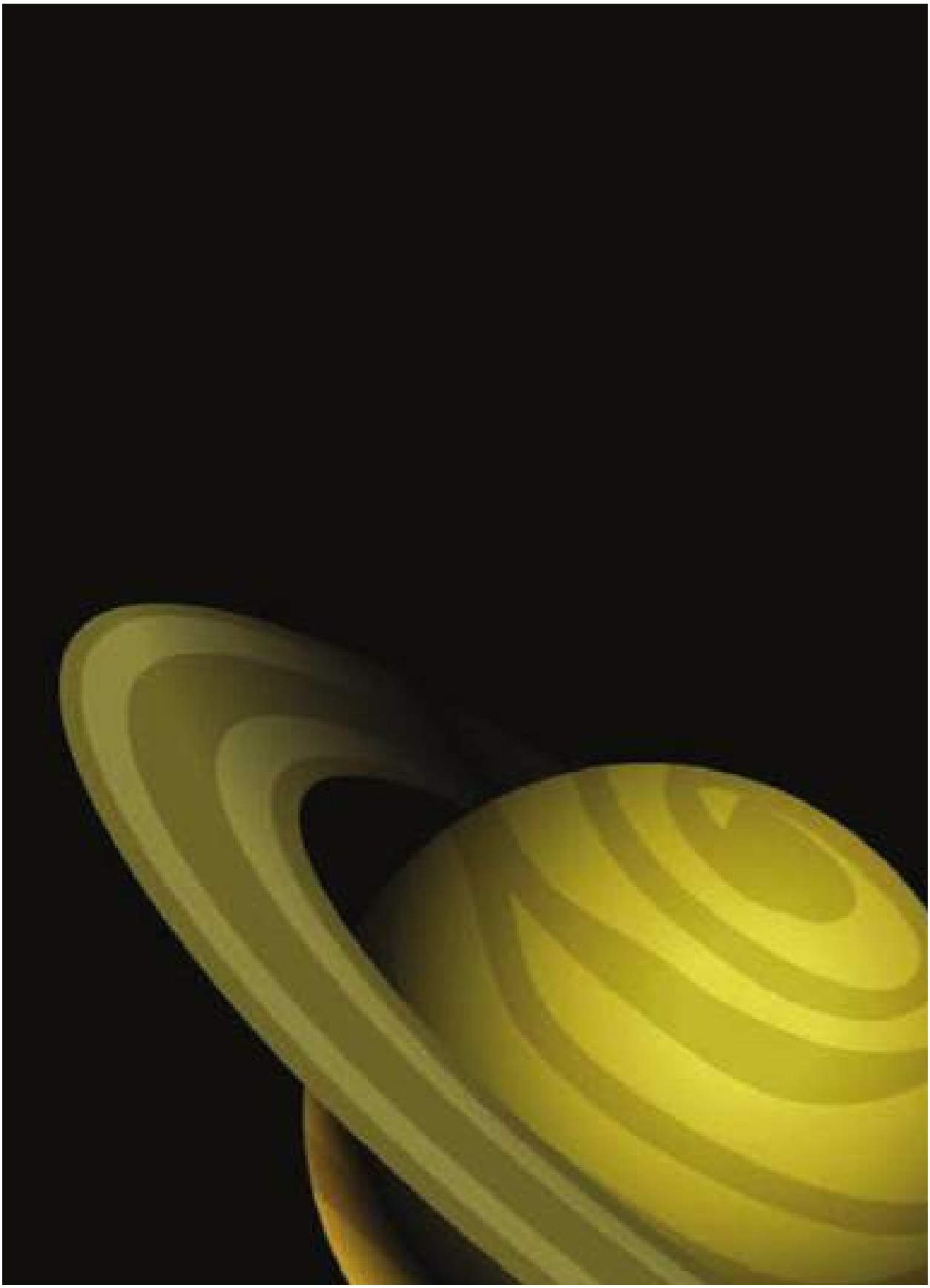

B

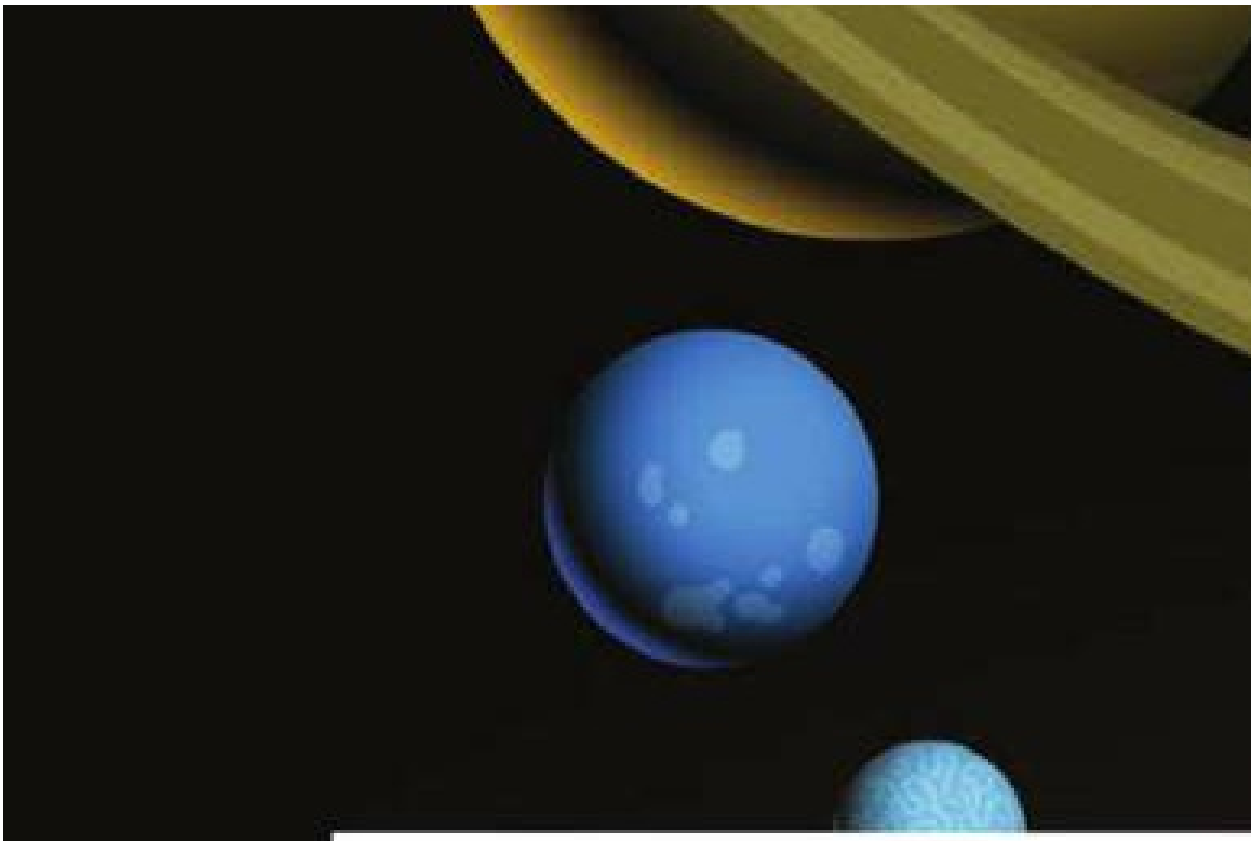

Very
heavy stars
that have gone
supernova can
actually turn into
black holes


Planets, ligh
and other matter
pass close to a black
order to be pulled into
When they reach a poi
turn they are said to ho
the event horizon-the
which any escape is i
because it requires

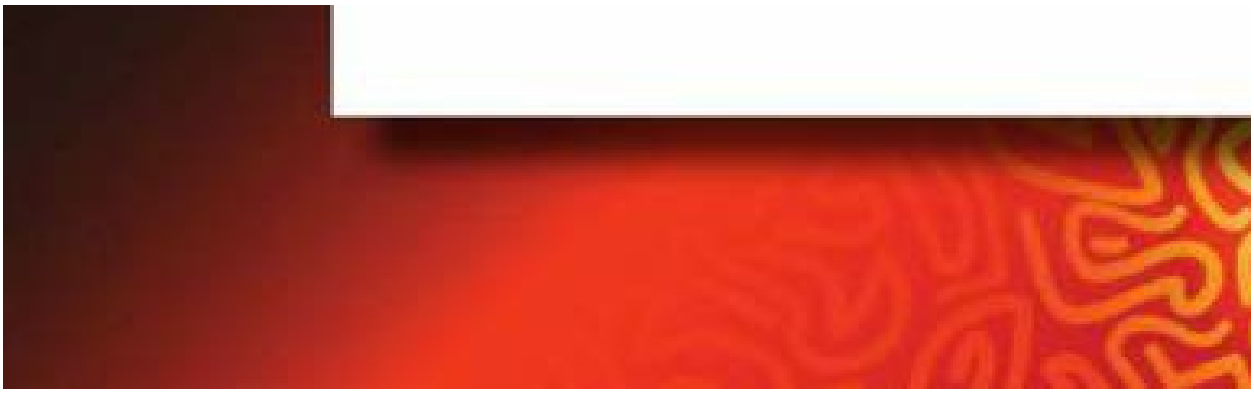

S

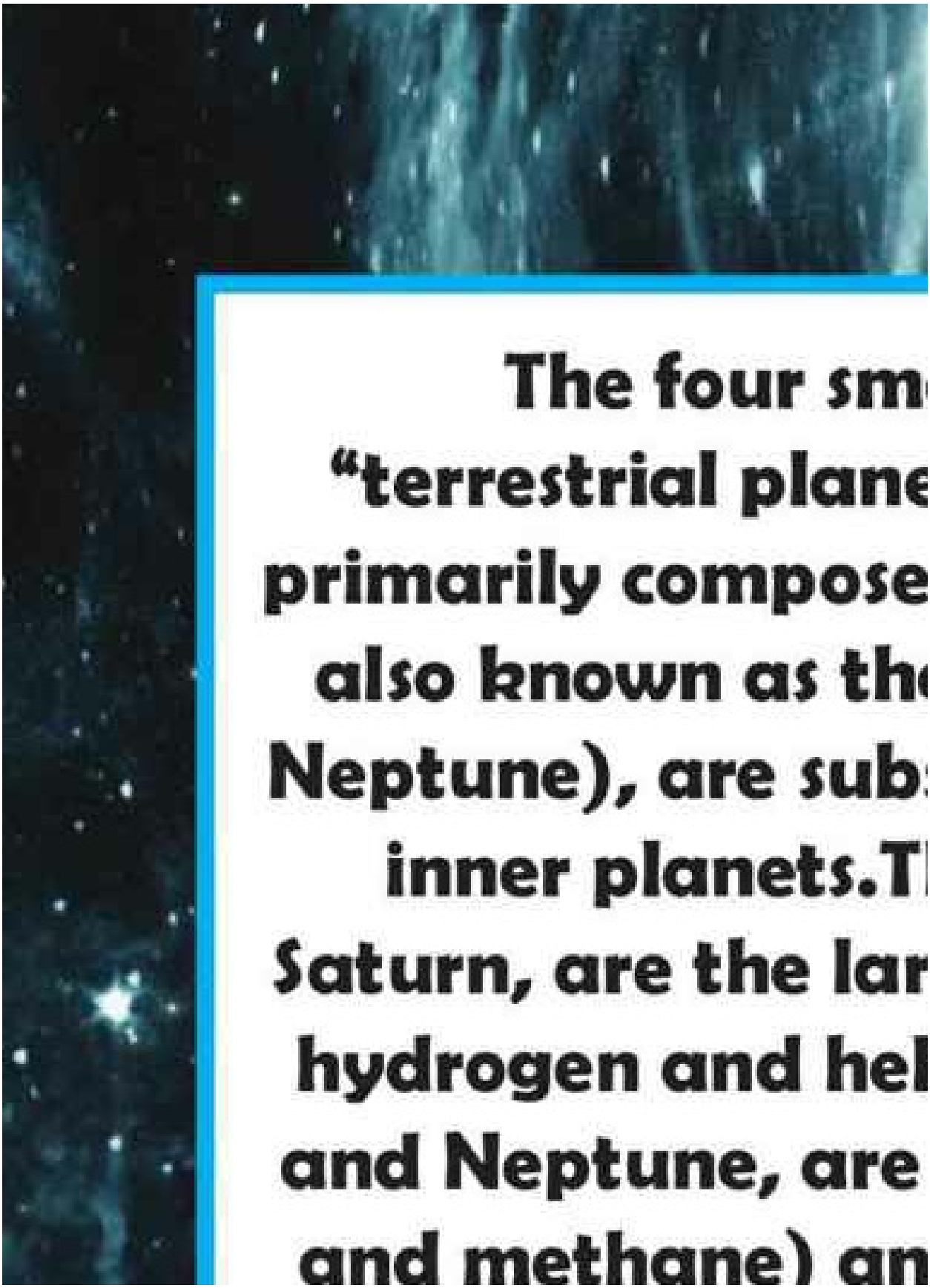


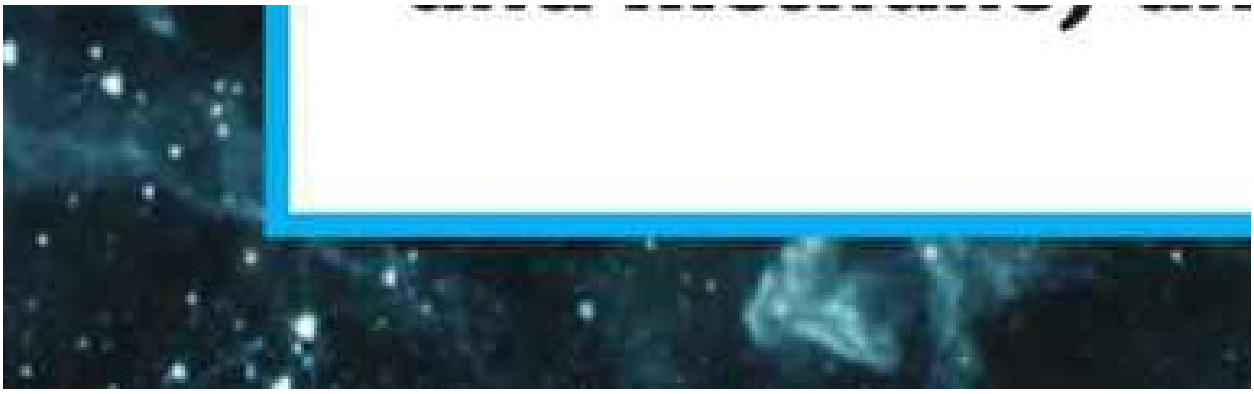




The Solar System
ago and consi
other astronomi
was cause by the
at the centre coll
around it which tl

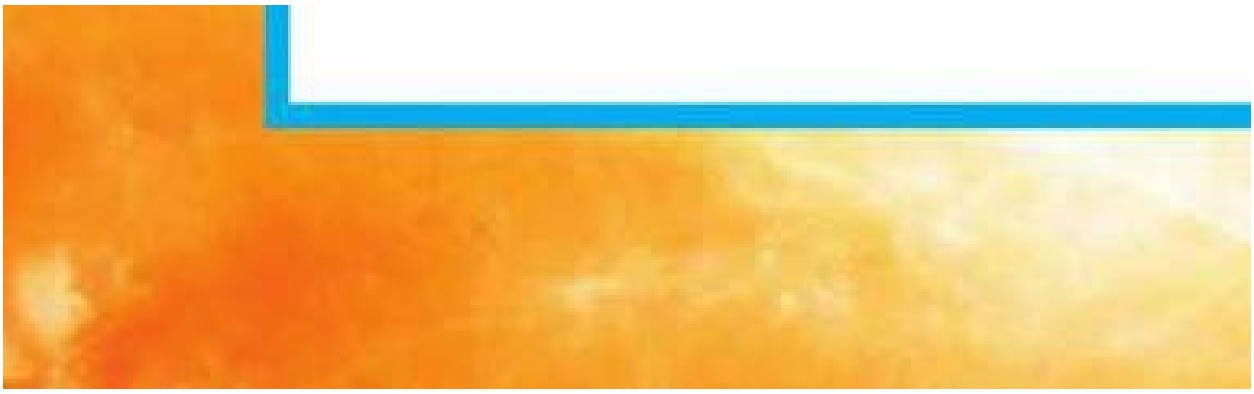


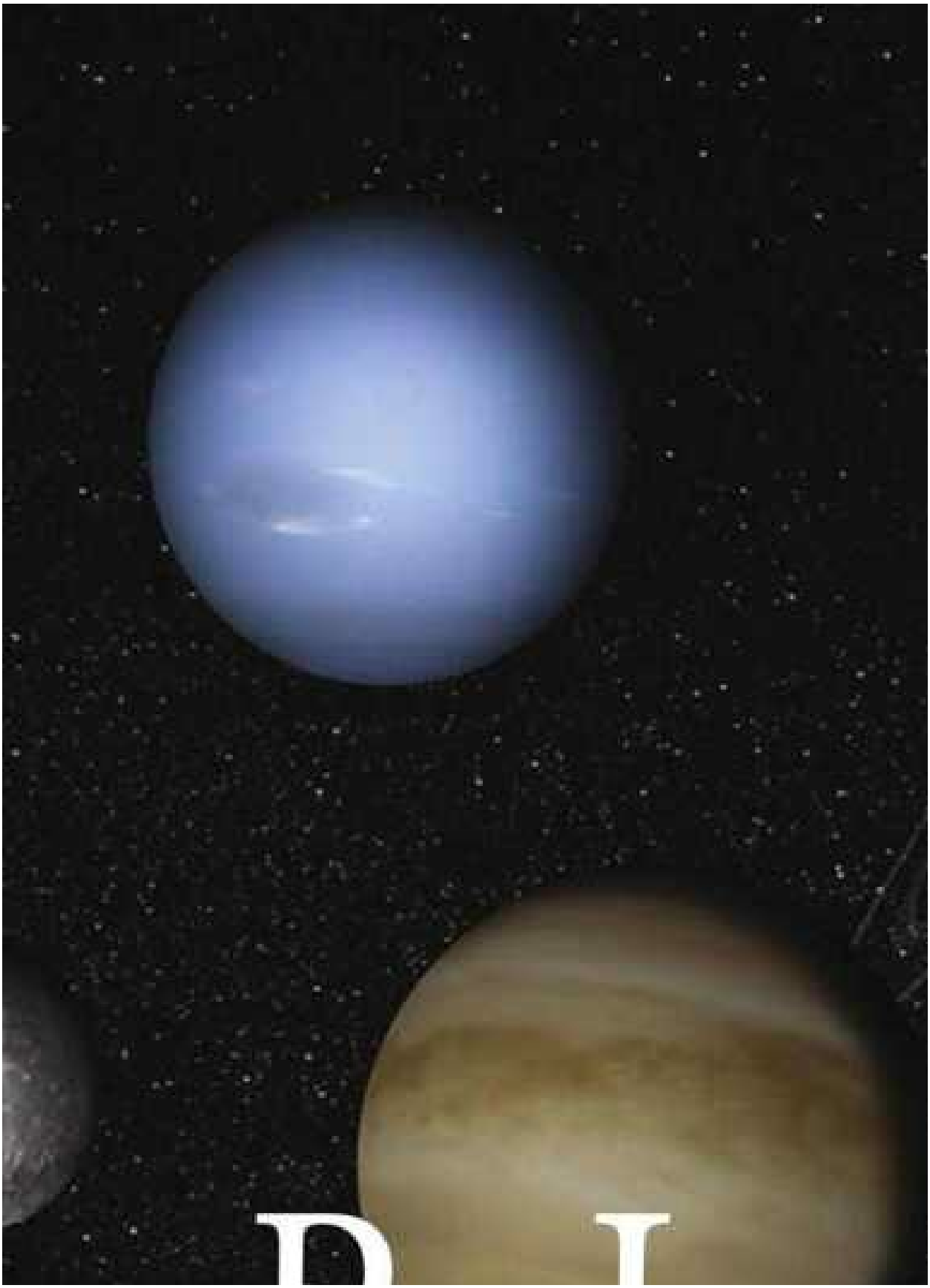

The four sm
“terrestrial plane
primarily compose
also known as the
Neptune), are sub
inner planets.T
Saturn, are the lar
hydrogen and hel
and Neptune, are
and methane) an

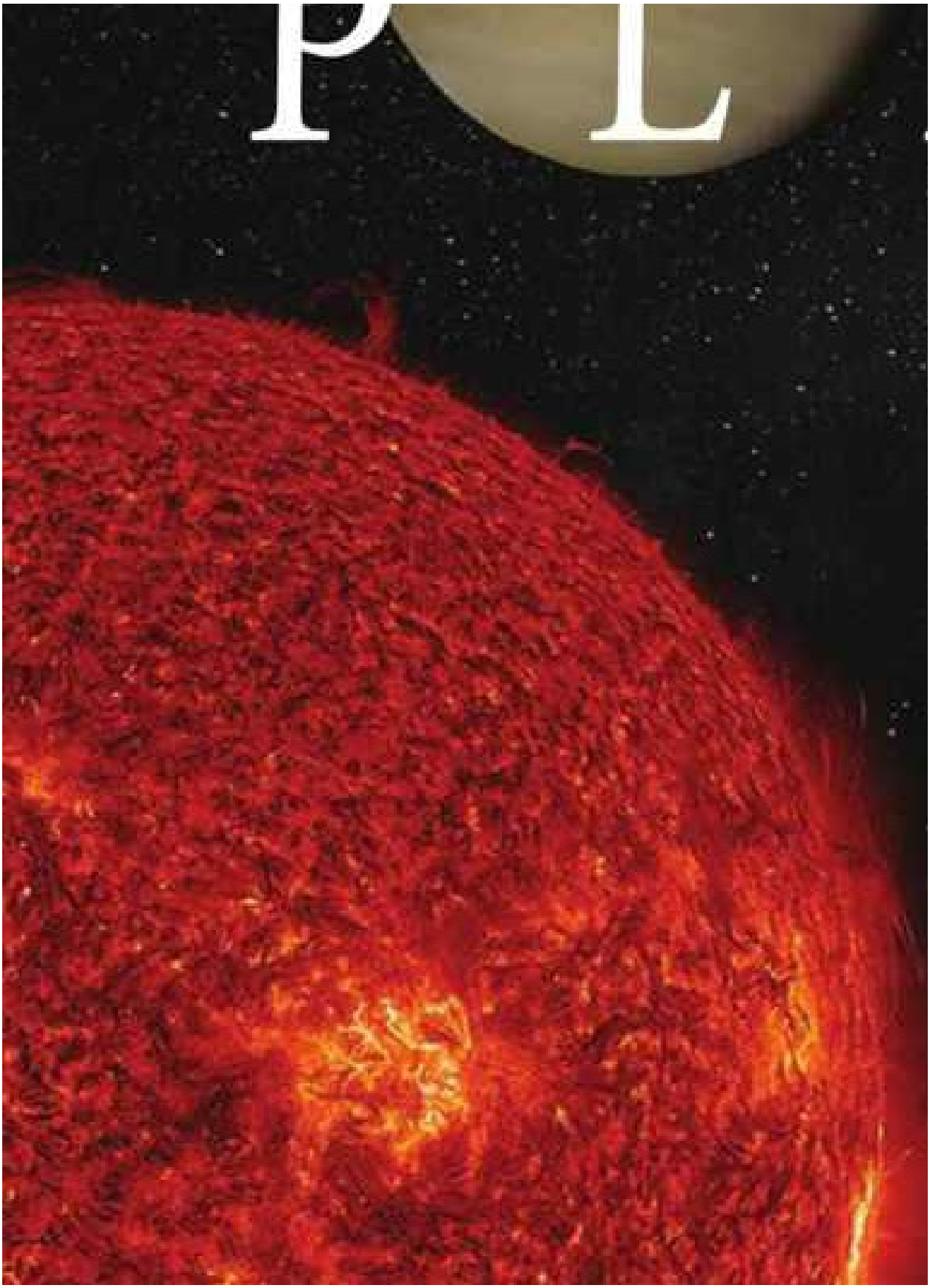


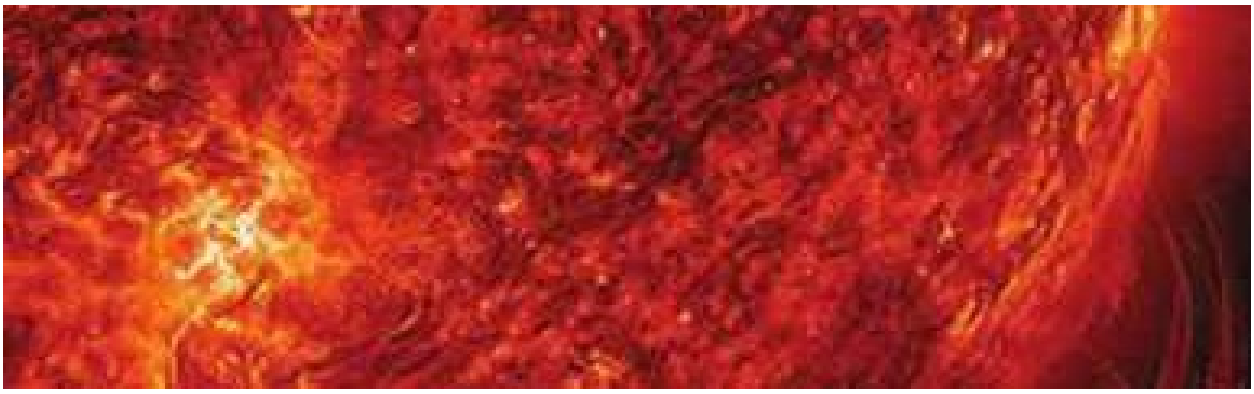

MERCURY

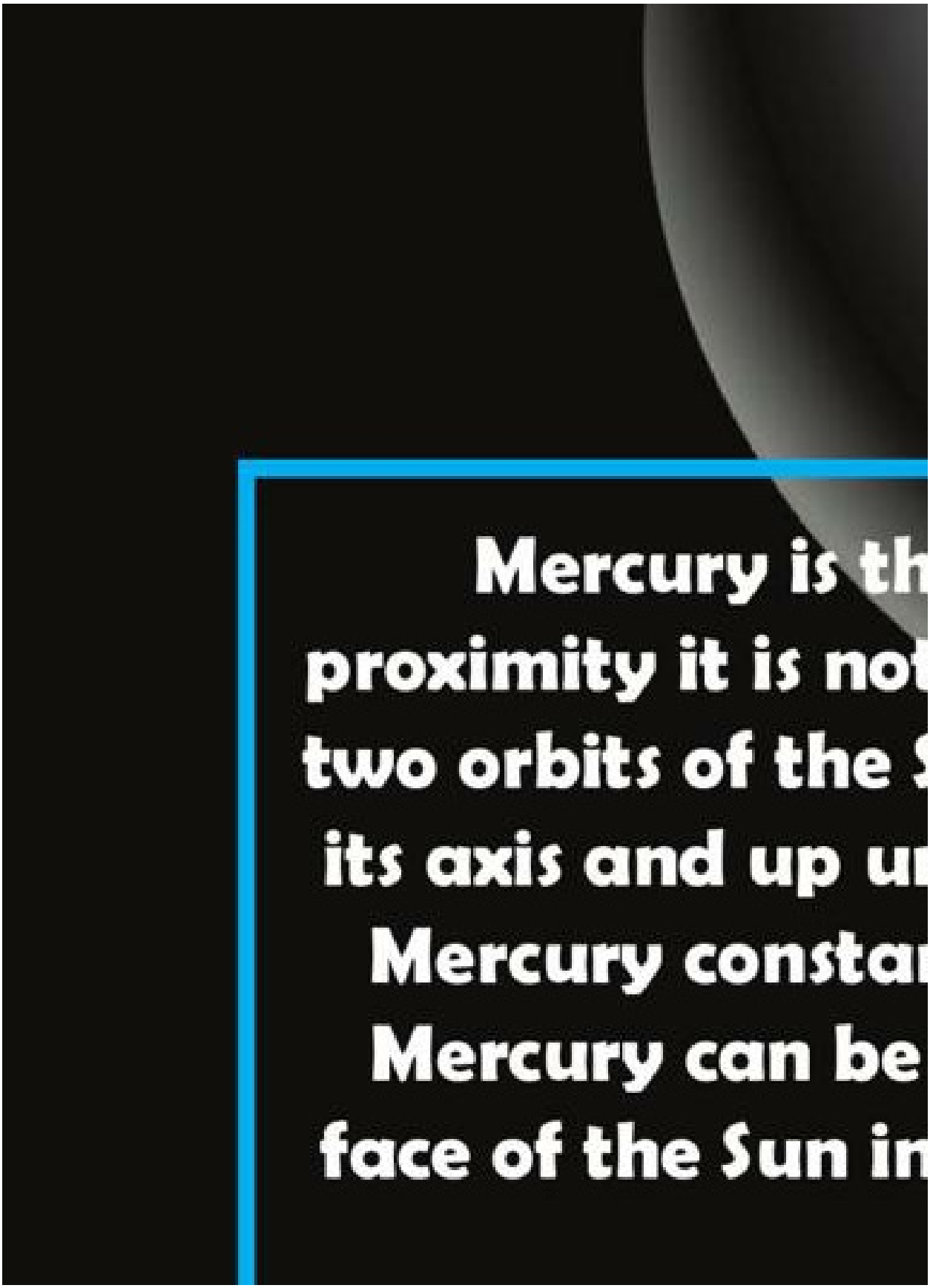

The Sun contains
mass, withJupiter
small inner plane
Mars make up a

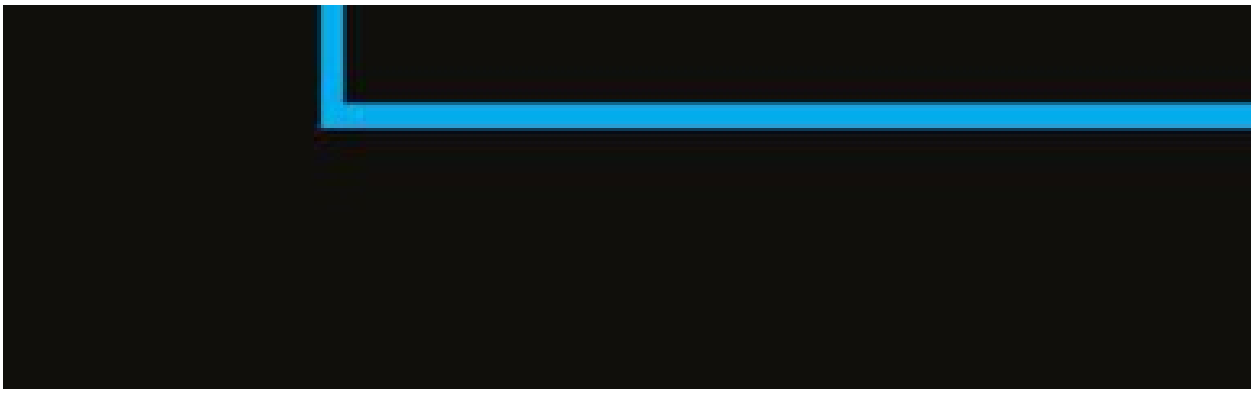









Mercury is th
proximity it is not
two orbits of the S
its axis and up ur
Mercury constar
Mercury can be
face of the Sun in



Facts:

Mass:

330,104,000,000,
billion kg (0.05!
Earth)

Moon:

None

Surface Temperat

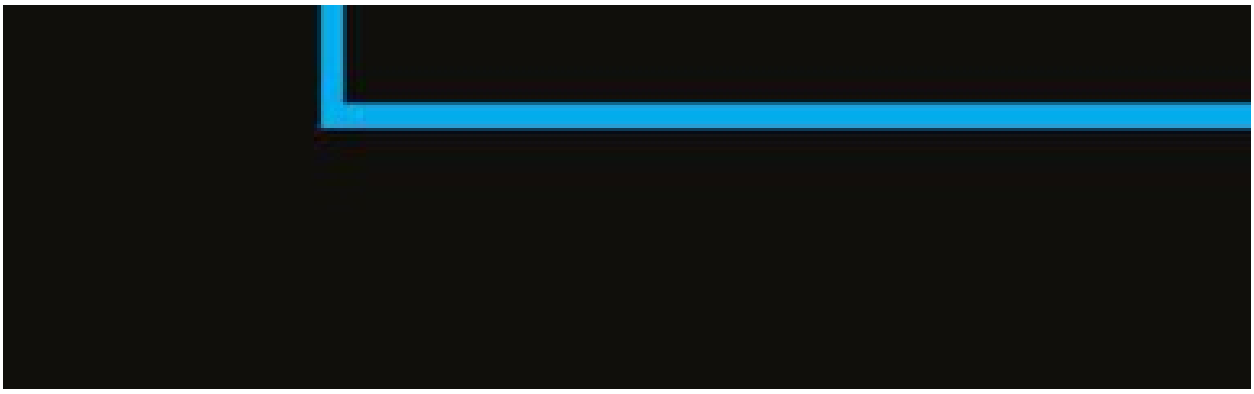
-173 to 427°C

First Record:
14th century B

Recorded By:
Assyrian astronor

A year in Mercury
88 days long. Me
is the smallest pla
the Solar Syster


Venus is the se
brightest object i
the Roman god
largest terrestri
Earth's sister pl
surface of the pl



Facts:

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

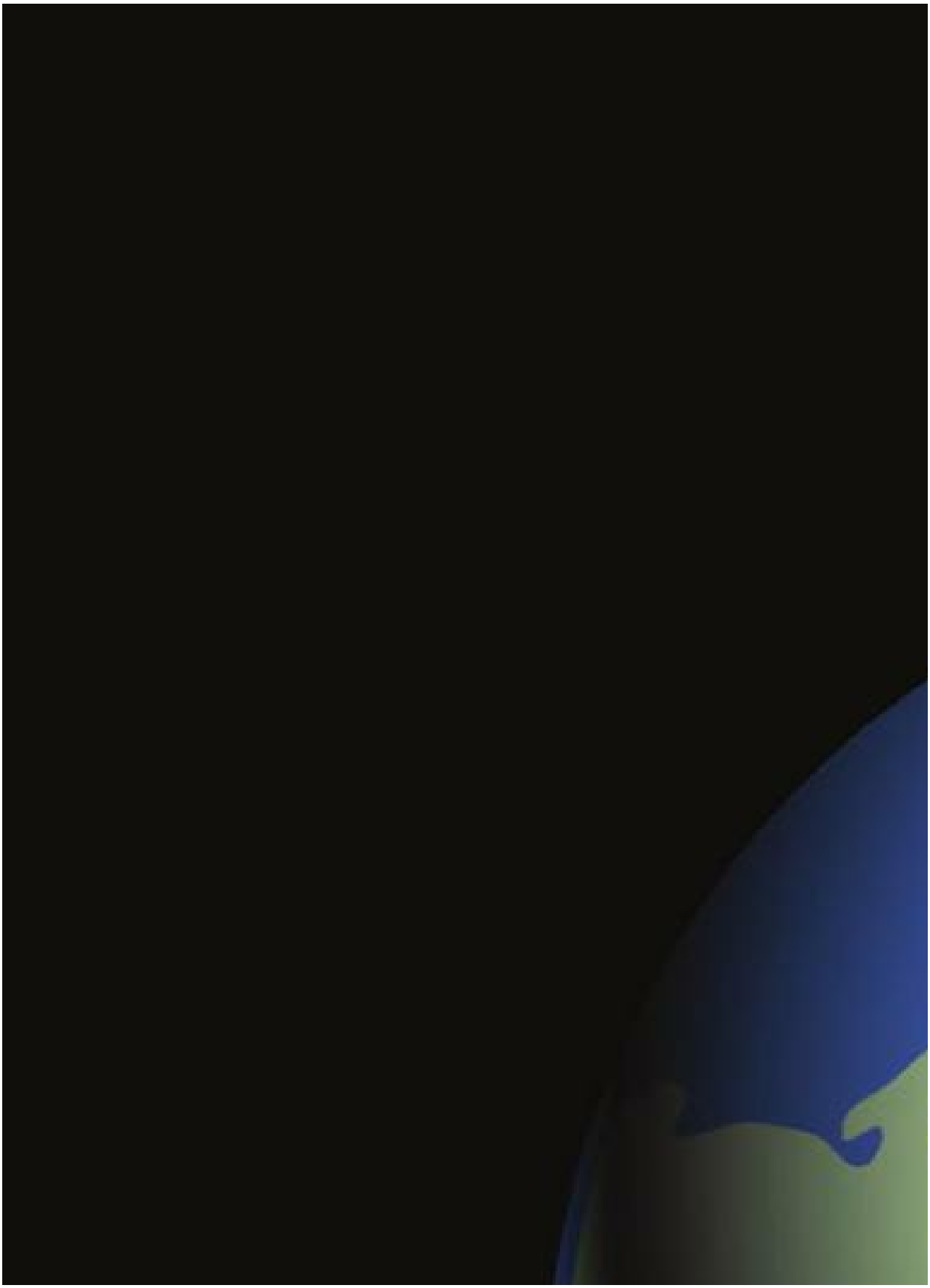
Moon:
None

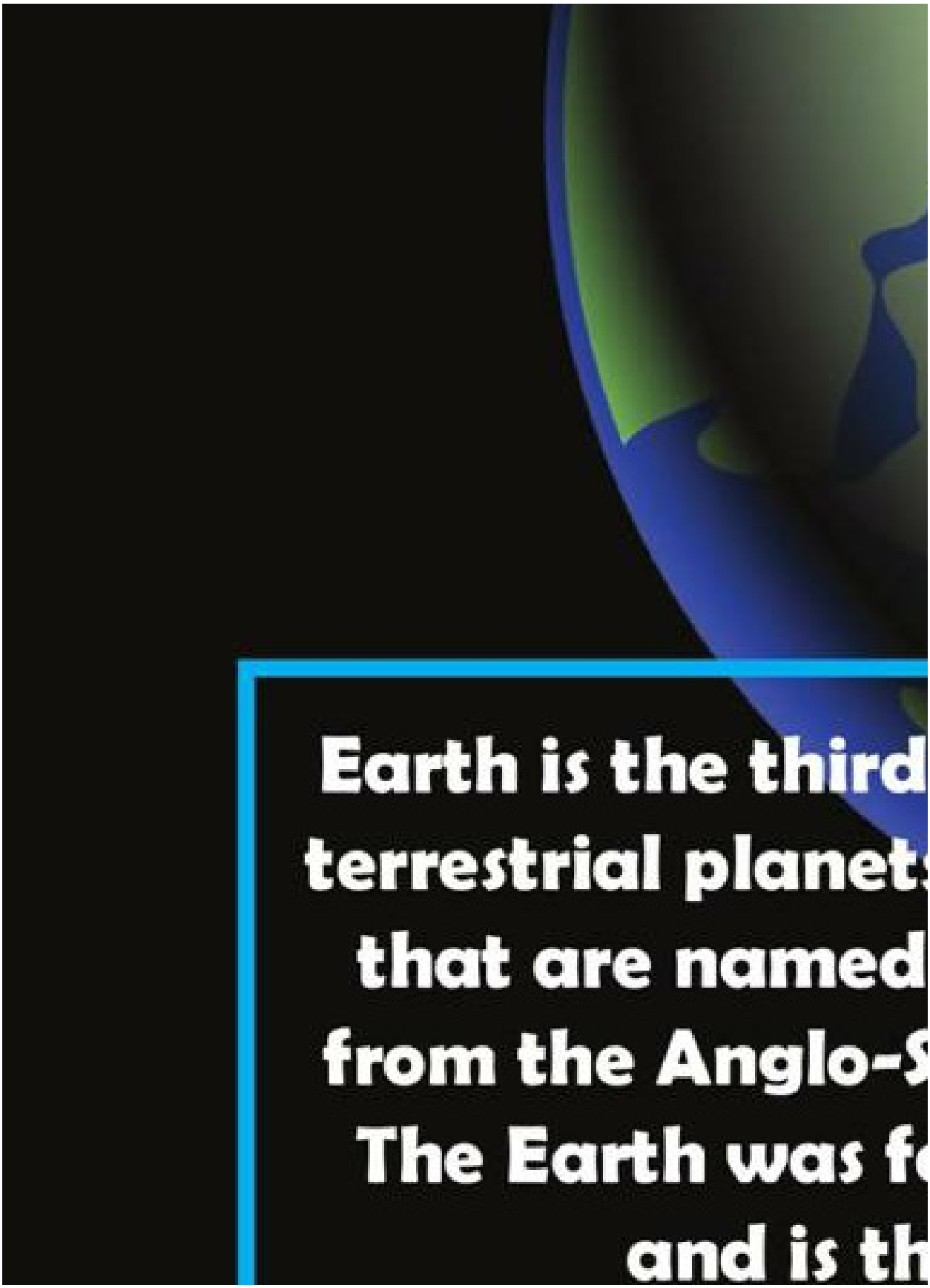
Surface Temperat
462 °C

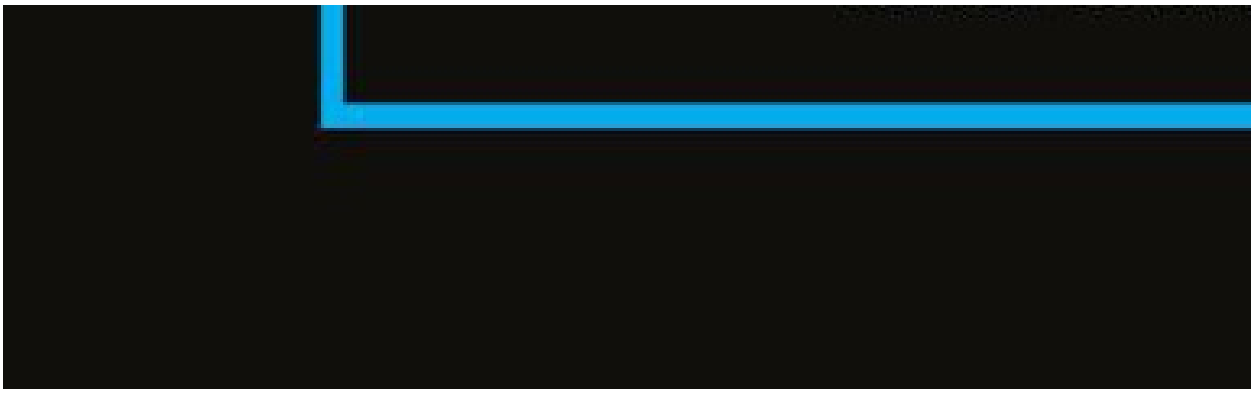
First Record:
17th century BC

Recorded By:
Babylonian astrono

The Earth and Venu
very similar in size
only a 638 km
difference in diam
Venus having 81.5%
Earth's mass.




Earth is the third
terrestrial planet
that are named
from the Anglo-S
The Earth was f
and is th



Facts:

Mass:

5,972,190,000,000
billion kg

Moon:

1

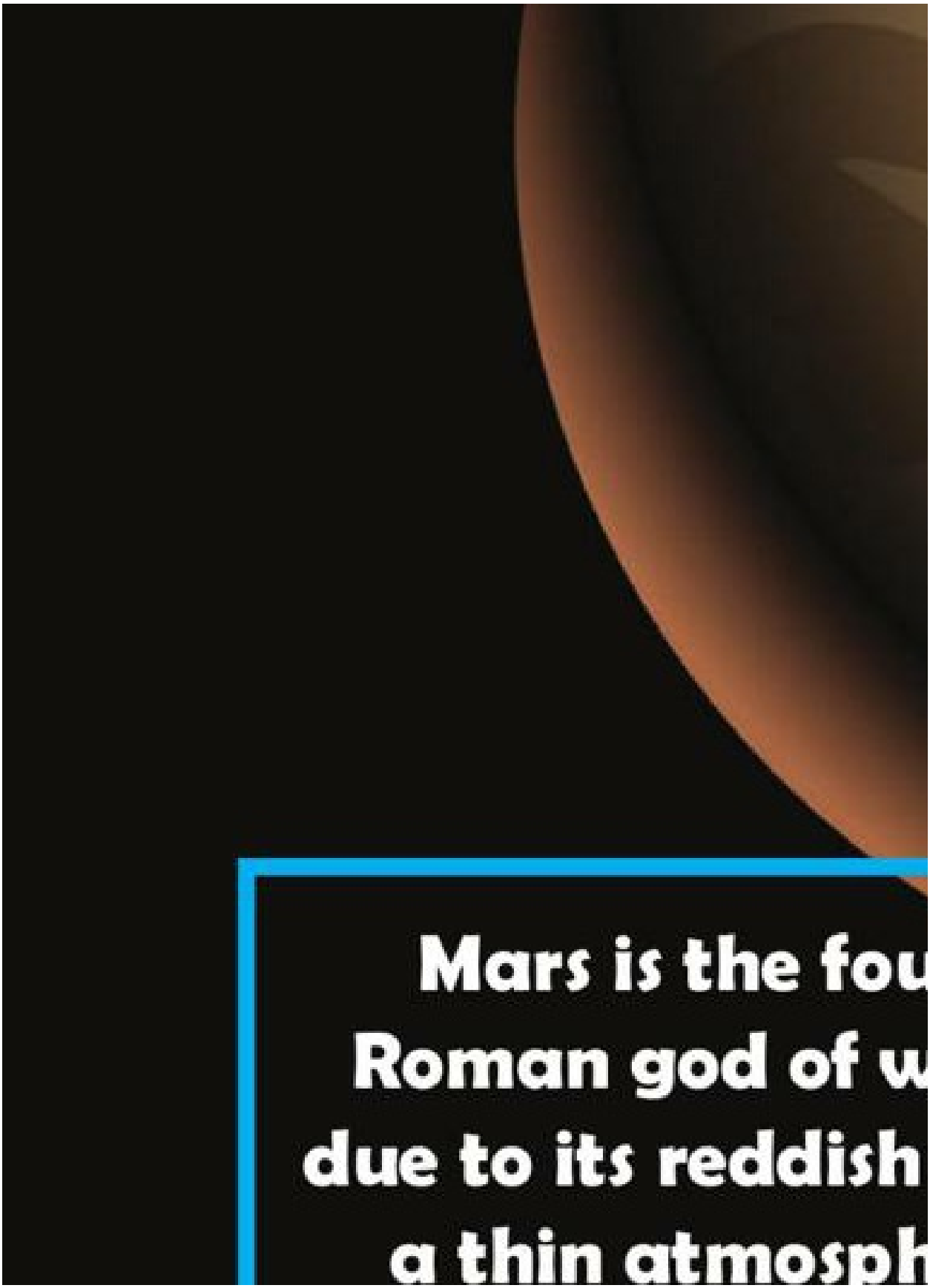
Surface Temperat

-88 to 58°C

First Recorded
NA

Recorded By:
NA

Earth has a powe
magnetic field. T
phenomenon is c
by the nickel-iron c
the planet, couplec
its rapid rotatic


Mars is the fou
Roman god of w
due to its reddish
a thin atmosph

Facts:

Mass:

641,693,000,000,
billion kg (0.107 x E

Moon:

2

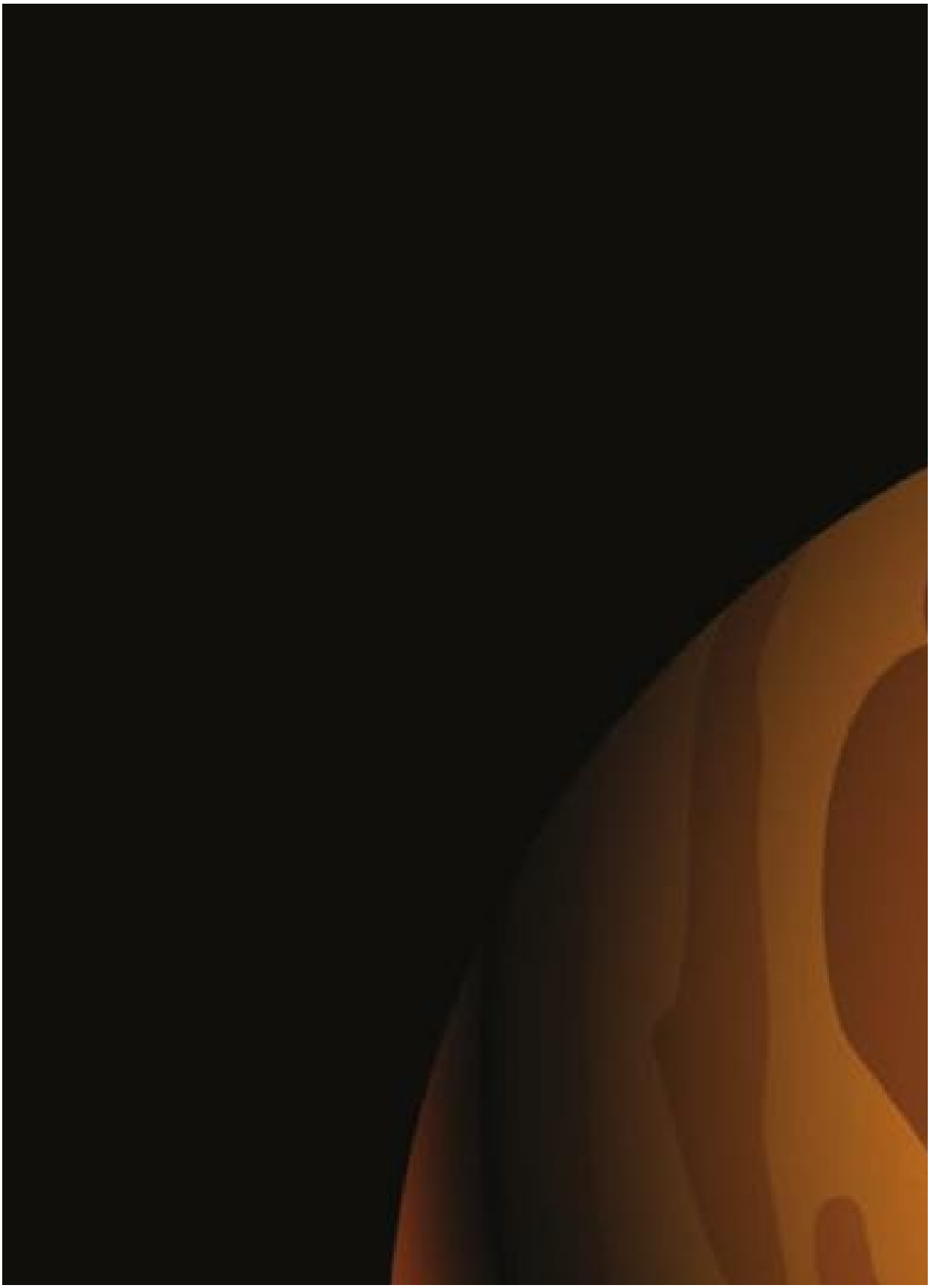
Surface Temperat

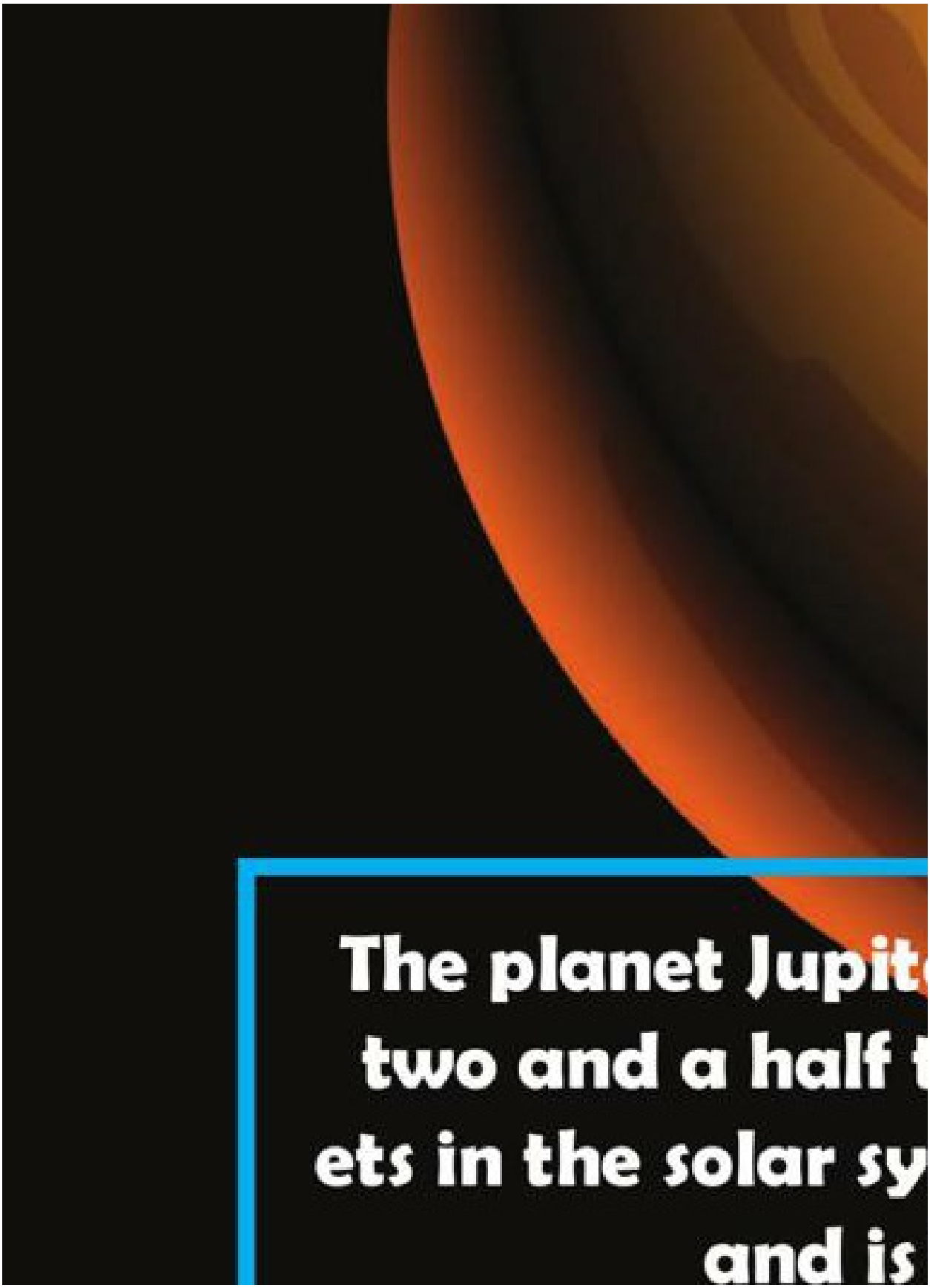
-87 to -5 °C

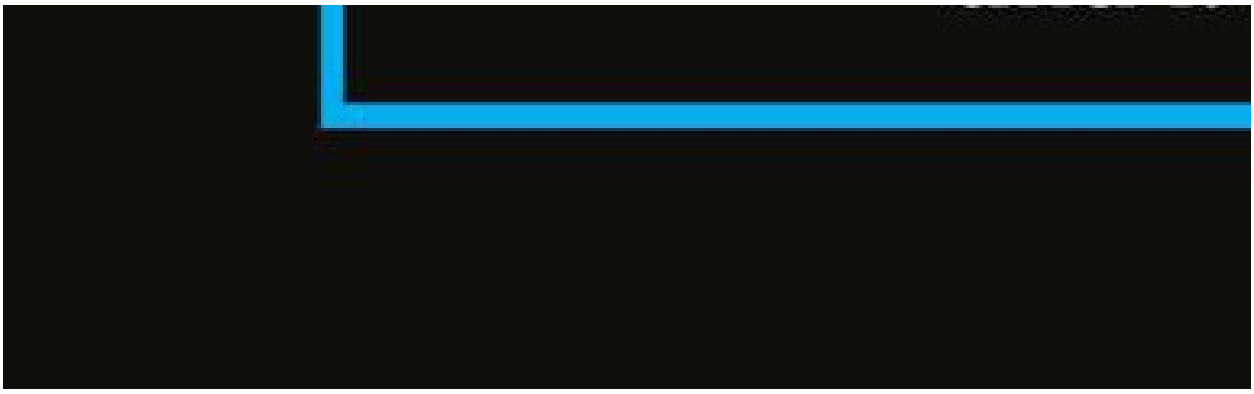
First Record:
2nd millenium I

Recorded By:
Egyptian astronor

Mars is home to t
tallest mountain in
solar system. Oly
Mons, a shield volca
21km high and 600
diameter.




The planet Jupit
two and a half
ets in the solar sy
and is



Facts:

Mass:

1,898,130,000,000,00
billion kg (317.83 x E

Moon:

67

Rings:

4

Surface Temperatu

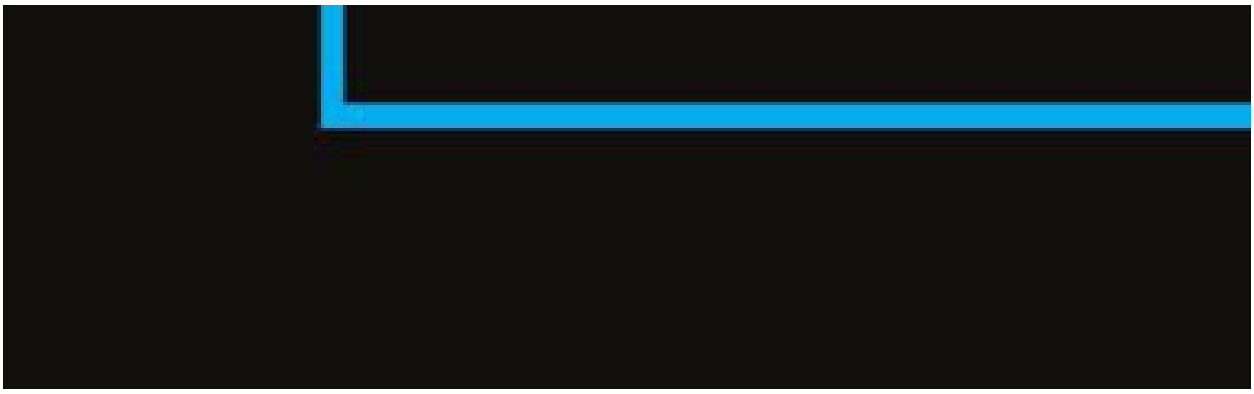
-108°C

First Record:
7th or 8th century

Recorded By:
Babylonian astronor

Jupiter is the fourt
brightest object in the
system. Only the Sun,
and Venus are brighte
one of five planets visi
the naked eye from E


Saturn is the sixt
that can be seen
fabulous ring



Facts:

Mass:

568,319,000,000,00(
billion kg (95.16 x E(

Moon:

62

Rings:

30+ (7 Groups)

Surface Temperatu

-139 °C

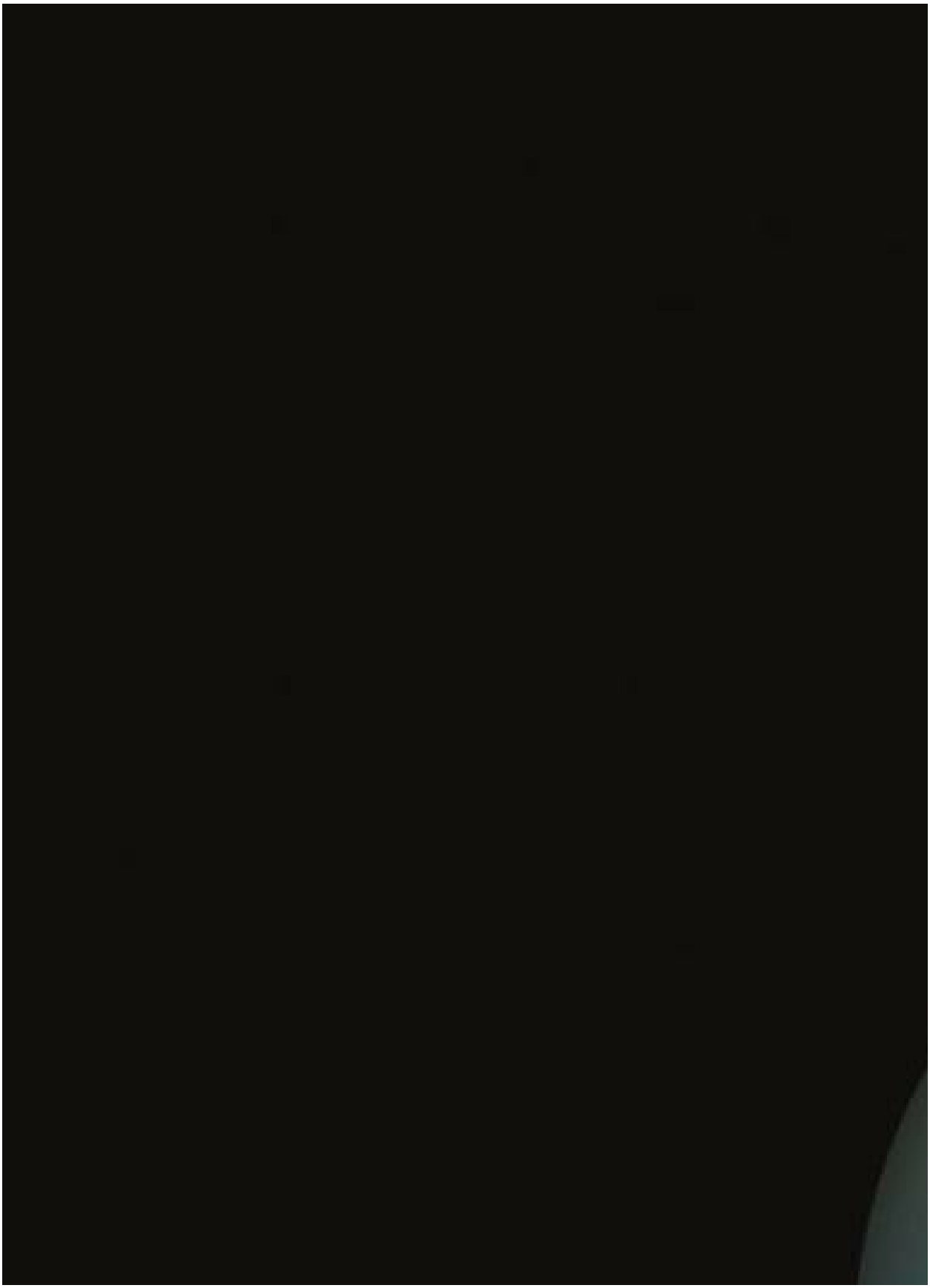
First Record:

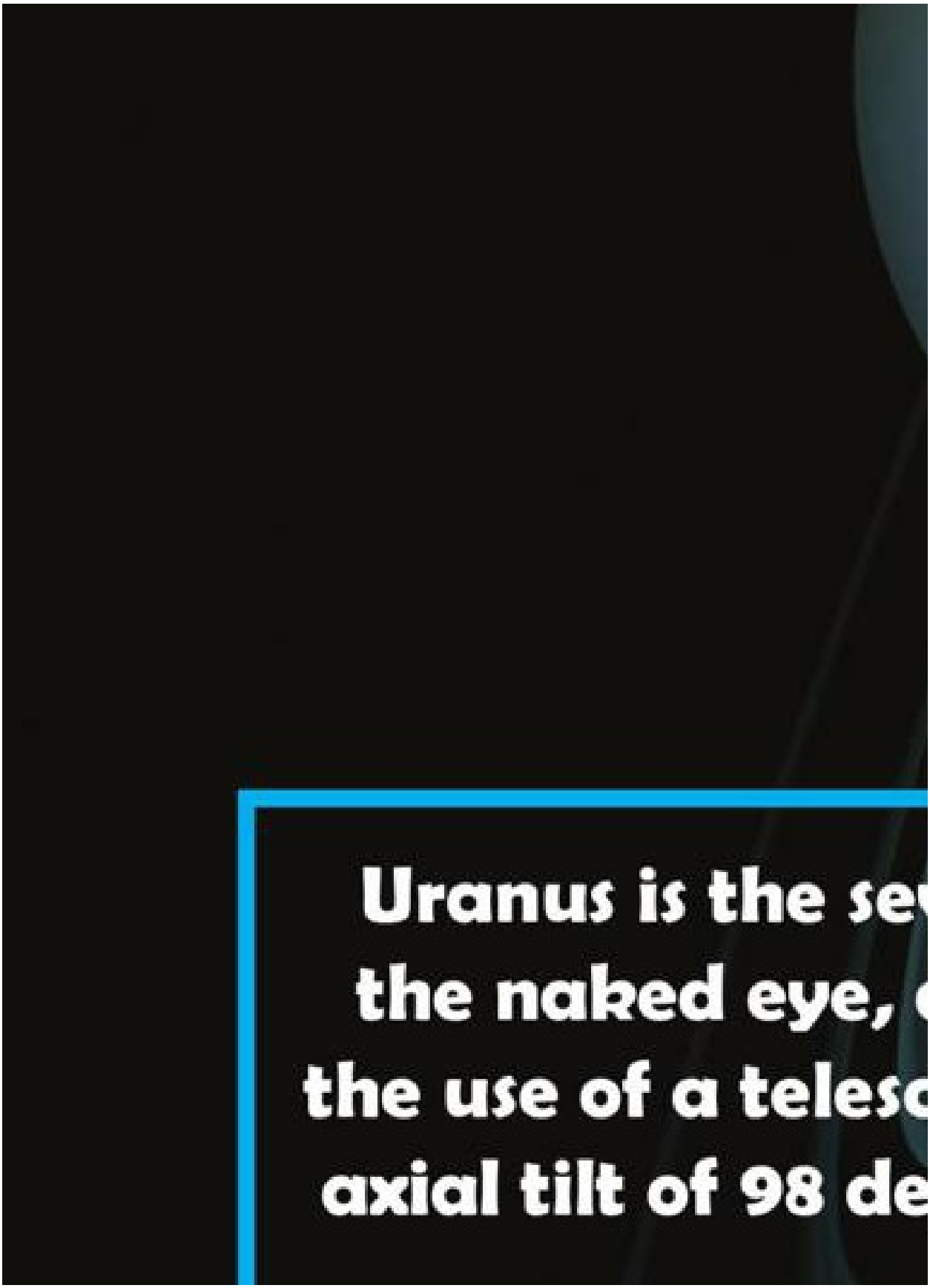
8th century BC

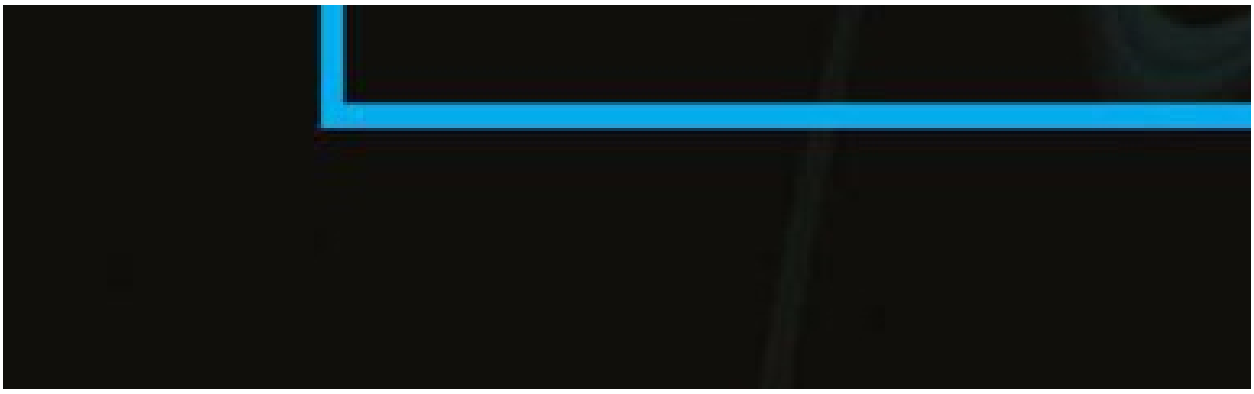
Recorded By:

Assyrians

Saturn can be seen wi
naked eye. It is th
brightest object in
solar system and i
easily studied throug
small telescope.




Uranus is the se
the naked eye,
the use of a teles
axial tilt of 98 de



Facts:

Mass:

86,810,300,000,00(
billion kg (14.536 x E

Moon:

27

Rings:

13

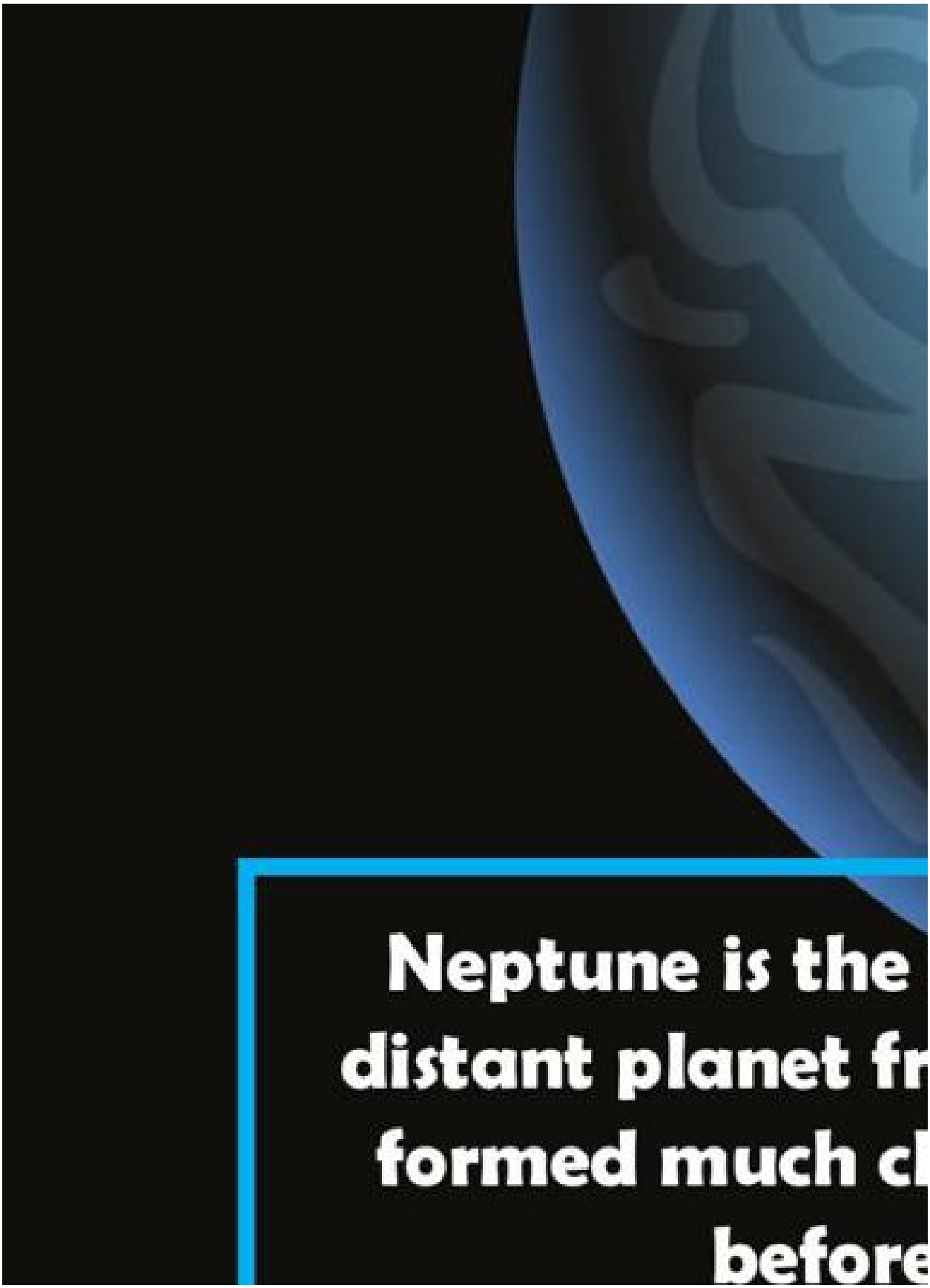
Surface Temperatu
-197 °C

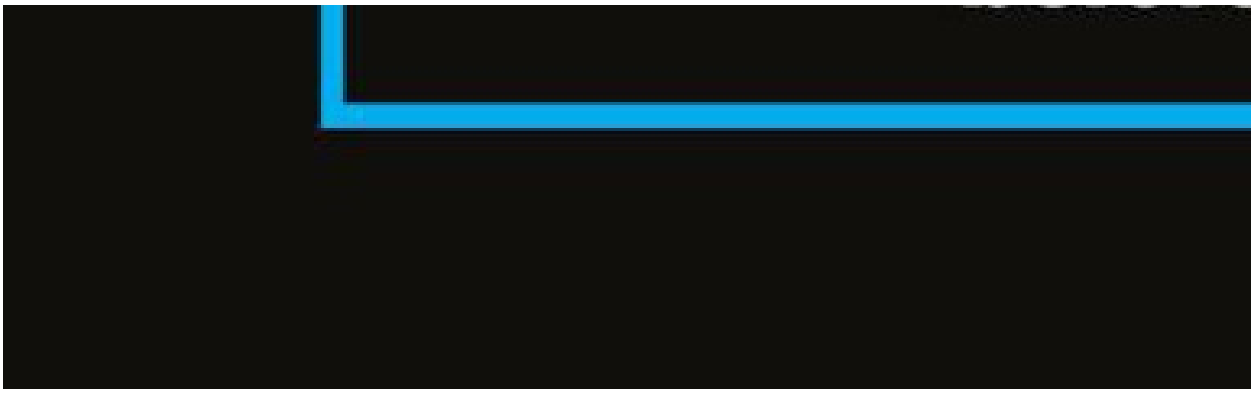
Discover Date:
March 13th 1781

Discovered By:
William Hersche

Uranus makes one
around the Sun eve
Earth years.

Uranus is often refer
as an "ice giant" plc


Neptune is the
distant planet fr
formed much cl
before



Facts:

Mass:

102,410,000,000,000

billion kg (17.15x Ea

Moon:

14

Rings:

5

Surface Temperatu

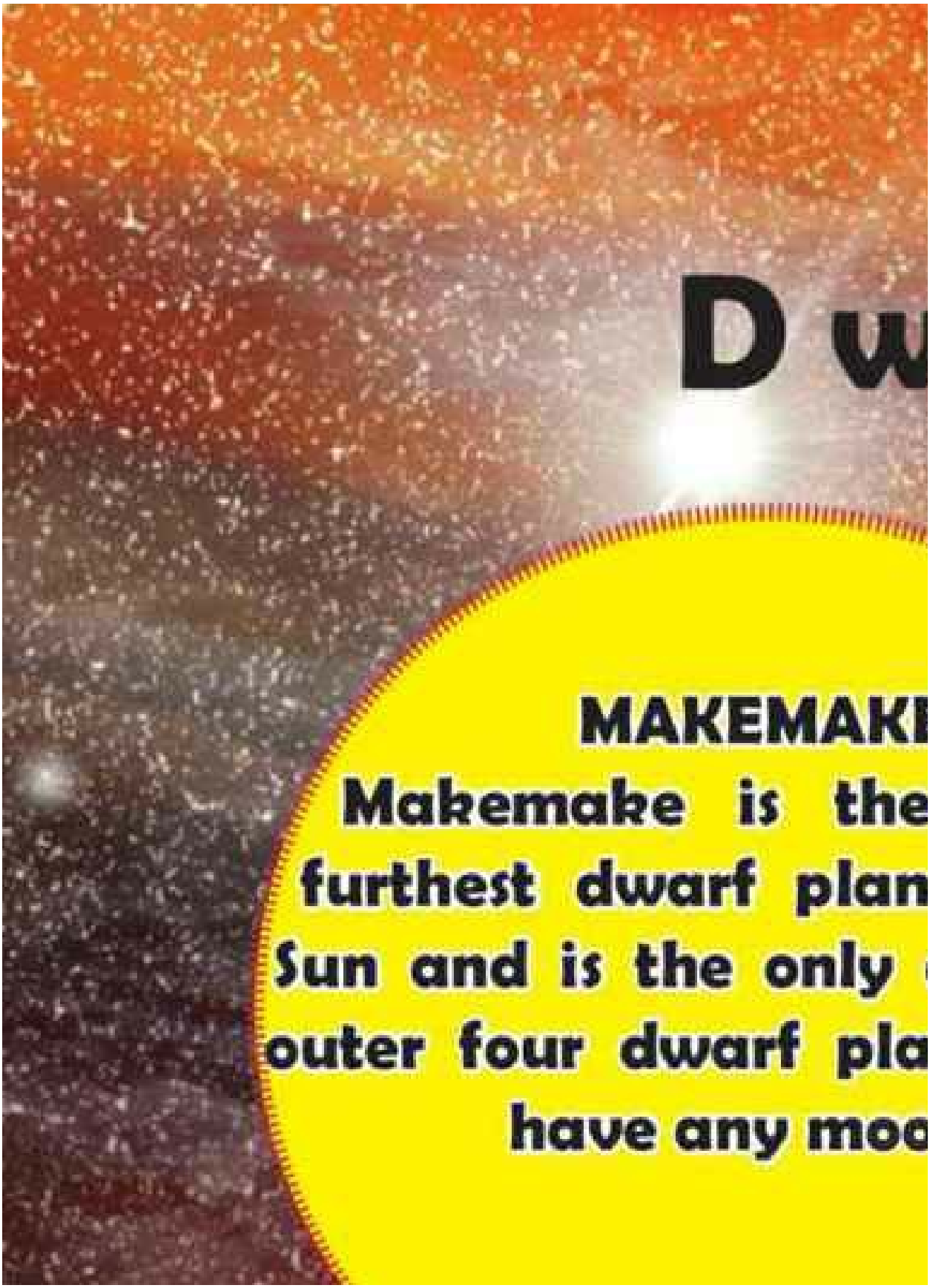
-201 °C

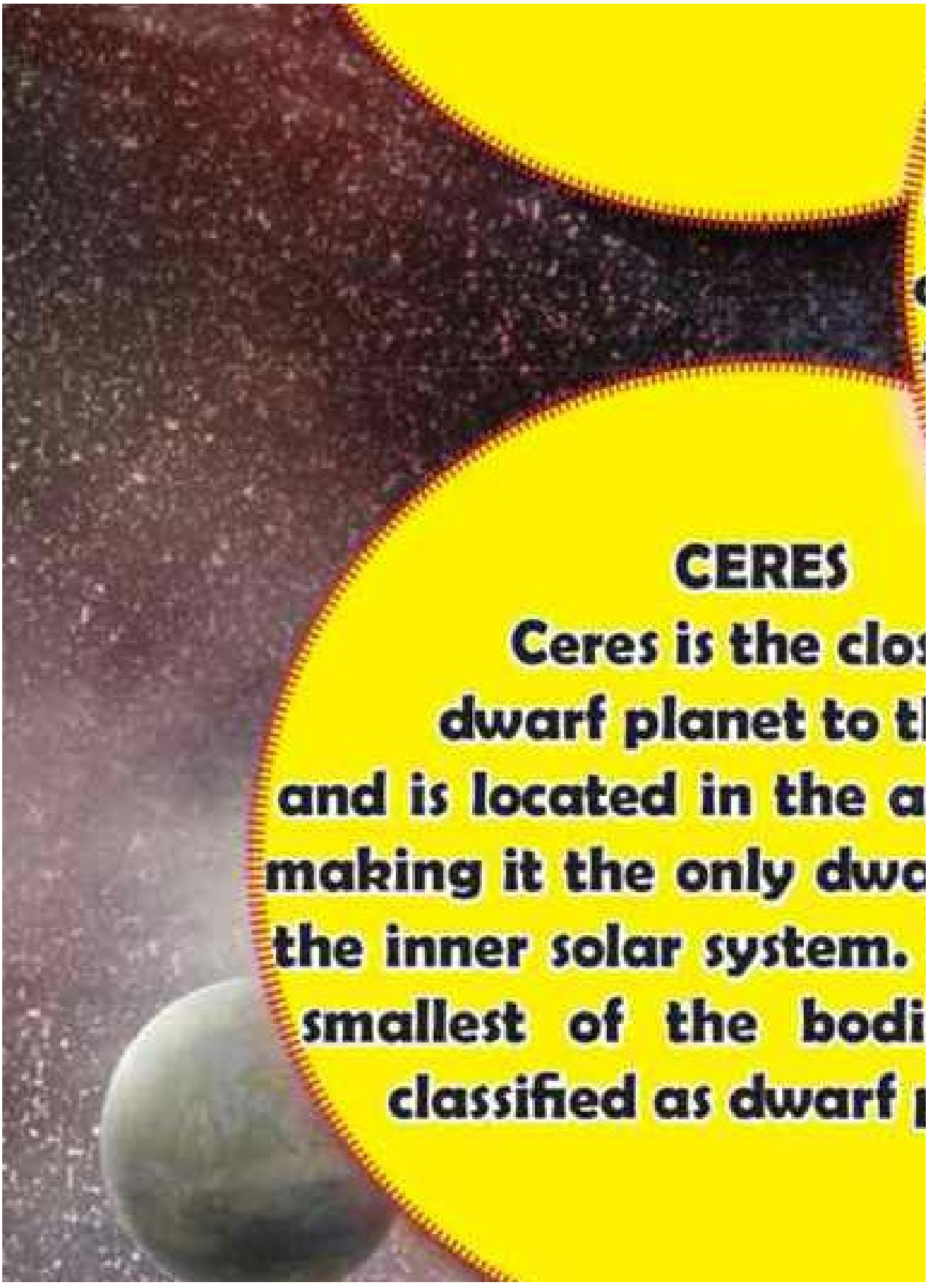
Discover Date:
September 23rd 18

Discovered By:
Urbain Le Verrier & Jo
Galle

Neptune is not visible
naked eye and was
observed in 1846. Its p
was determined usi
mathematical predicti
was named after the R
god of the sea

god of the sea.

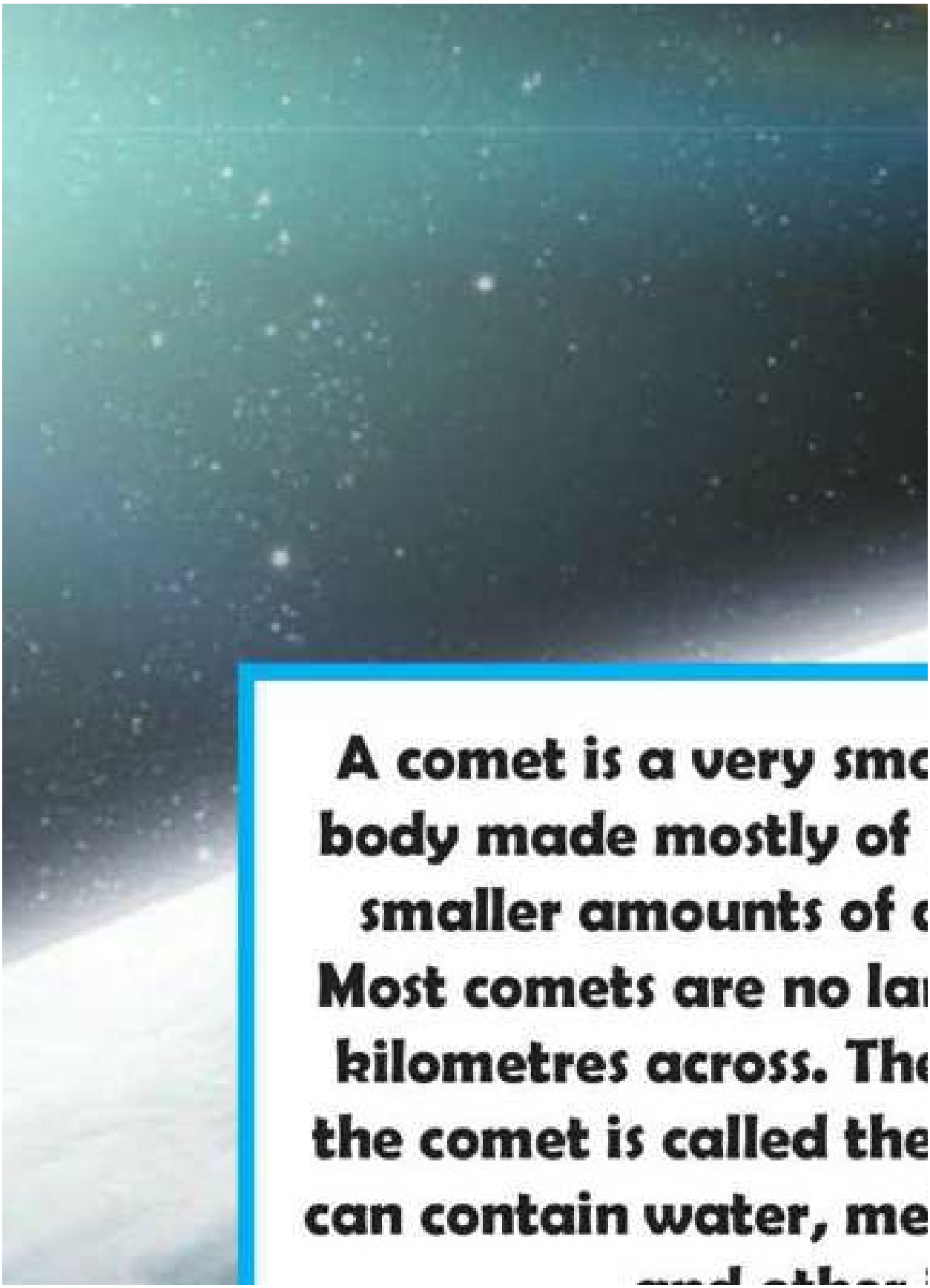

D w
MAKEMAKE
Makemake is the
furthest dwarf plan
Sun and is the only
outer four dwarf pla
have any moo

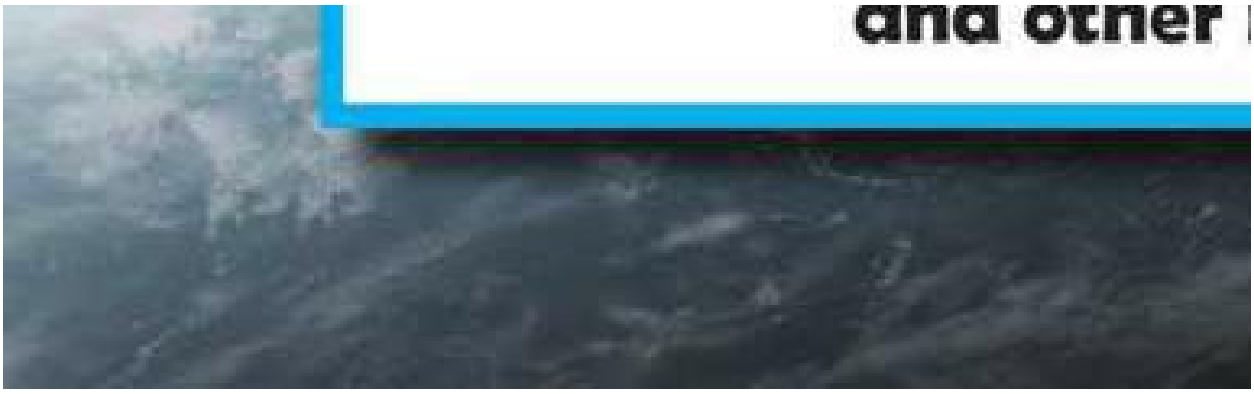

CERES
Ceres is the clos
dwarf planet to t
and is located in the a
making it the only dwa
the inner solar system.
smallest of the bodi
classified as dwarf


AS

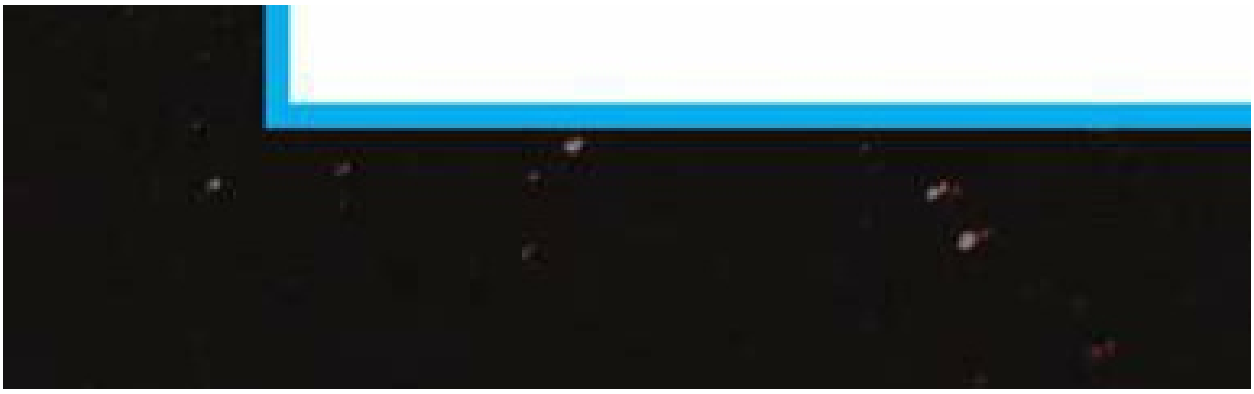
Asteroids are small, ro
bodies that populate
space out to the orbit
are millions of them, ar
grouped by their

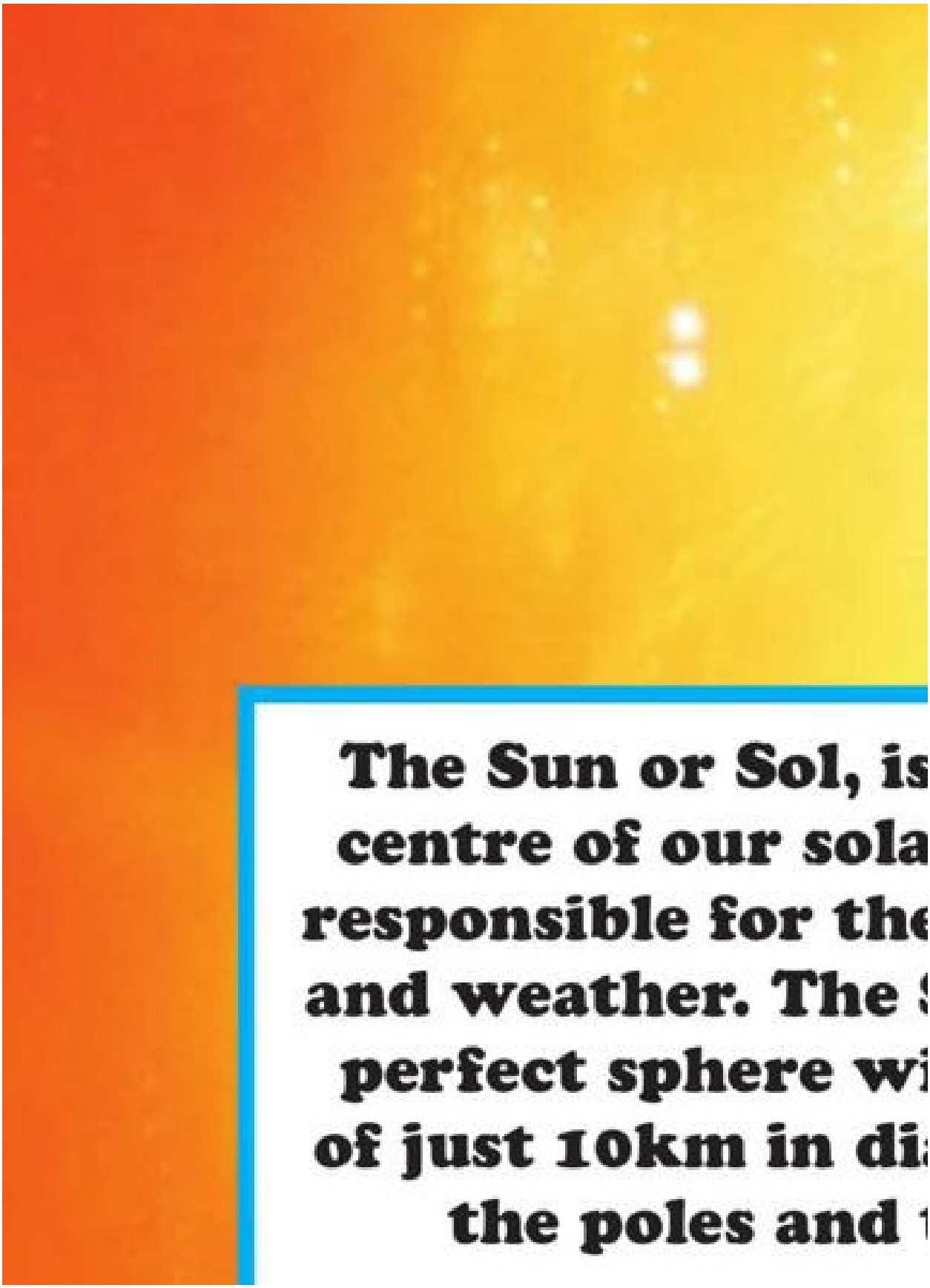

grouped by their


A comet is a very sm
body made mostly of
smaller amounts of
Most comets are no la
kilometres across. Th
the comet is called the
can contain water, me


and other

The Moon (or Luna)
natural satellite an
billion years ago ar
million years after the f
system. The Moon is in
with Earth meaning th
facing the




The Sun or Sol, is
centre of our sola
responsible for the
and weather. The
perfect sphere wi
of just 10km in di
the poles and