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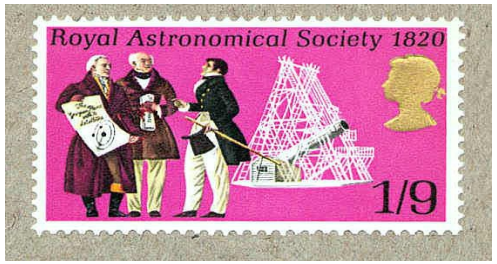
On Caroline and Comets

Dr Sheila Kanani

Royal Astronomical Society



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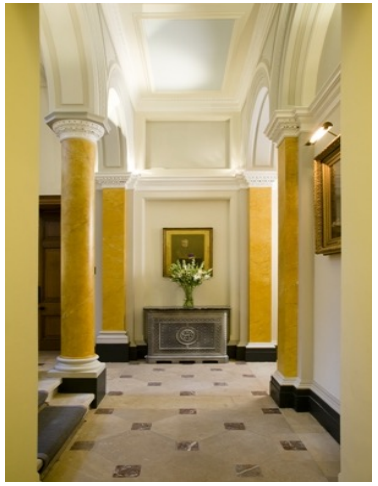
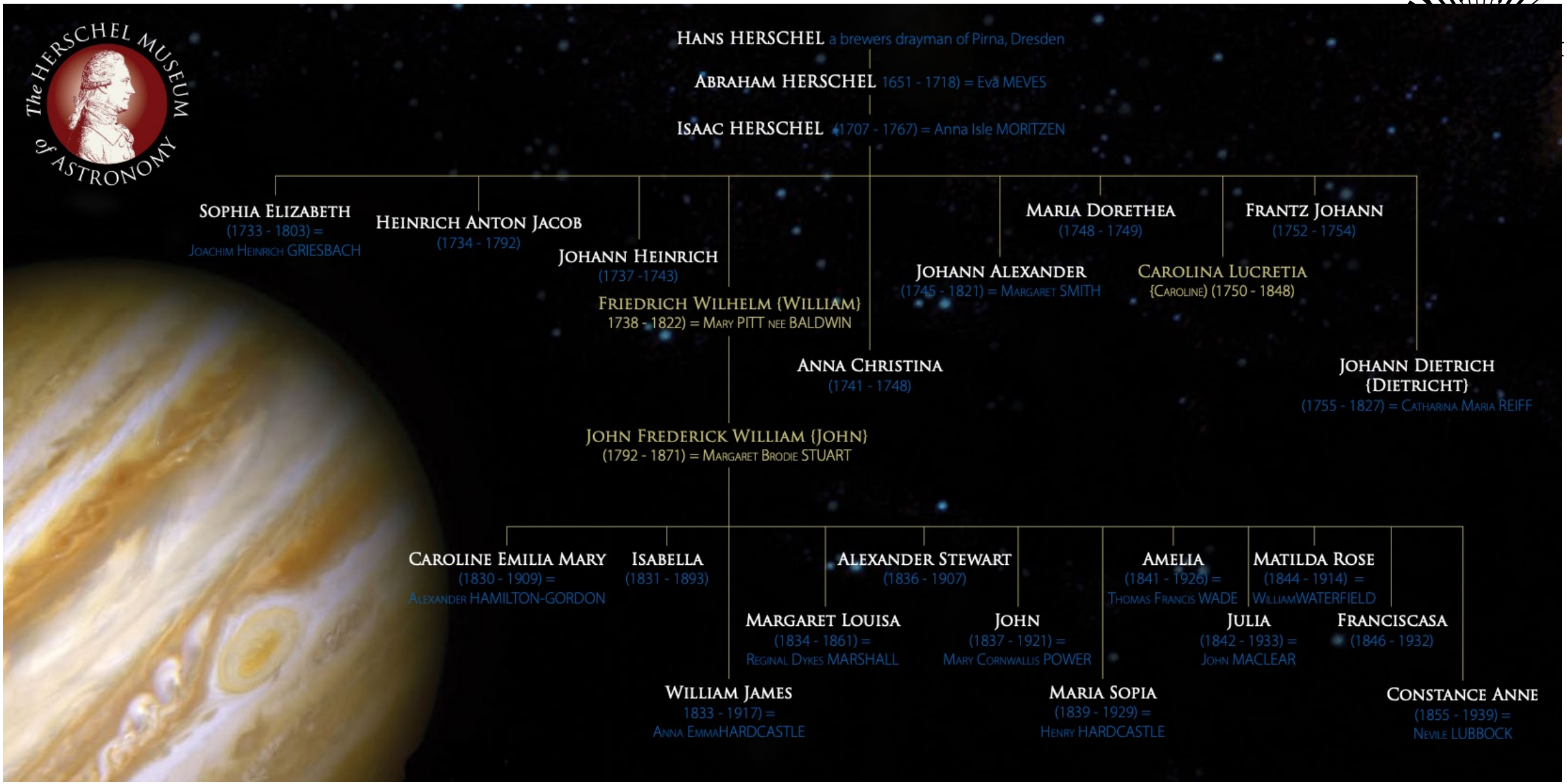
"Quicquid nitet notandum"





The Herschel Family Tree

Nebular Apoximations.

CAROLINE HERSCHEL
1750 - 1848

AS A STELLAR OBSERVER, DISCOVERED EIGHT COMETS.

HER REVISION OF FLAMSTEED'S BRITISH CATALOGUE OF STARS WAS THE KEY REFERENCE WORK FOR 19TH CENTURY ASTRONOMY.

TOGETHER WITH HER BROTHER WILLIAM, MAPPED THE NEBULAE OF THE NORTHERN SKY, CATALOGUING 2500 NEBULAR OBJECTS IN HALF A CENTURY OF OBSERVATION.

WAS THE FIRST PROFESSIONAL FEMALE ASTRONOMER AFTER GEORGE III GRANTED HER A YEARLY SALARY FOR HER WORK AS A COMPILER, CALCULATOR, AND OBSERVER.

www.womenyoushouldknow.net/category/women-in-science/

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From the Herschel Family Archive, this simple muslin dress would have been worn by Caroline when she was about fifty.

It is strikingly small for a grown woman, as Lina's height was stunted due to poor health when she was a child.

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al
onomical
ety

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19 New King Street.

The house has been fully restored in the authentic style of the period.

Dr Brian May is the Museum’s patron – like William Herschel before him, both a musician and an astronomer.

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The music room where William Herschel tutored his students is one of the highlights of the Herschel Museum of Astronomy.

A Catch

Sup pose - - - - - we sing a catch sup pose we sing a

with all - - - - - my heart, with all my heart, what shall we

No! no! we'll have no such stuff No no

Why not? Why not? Why not? Why not, A good - -

Catch we sing a Catch

have what shall we have

no no no we'll have no such stuff

- - - Catch is no bad thing

Landlord, Landlord, Landlord, Landlord, this is

A Catch

Sir Sir Sir Sir 'tis the

Tray, Tray, Tray Tray you're a

Kick him, kick him, kick him, kick him, kick him

very bad wine

best I have

dir - ty dirty Dog!

out, kick him out of the Room

A Catch

To day I am, I am I am I am I am I

Then let us drink many happy ma ny

I wish this waiter would bring - would bring - -

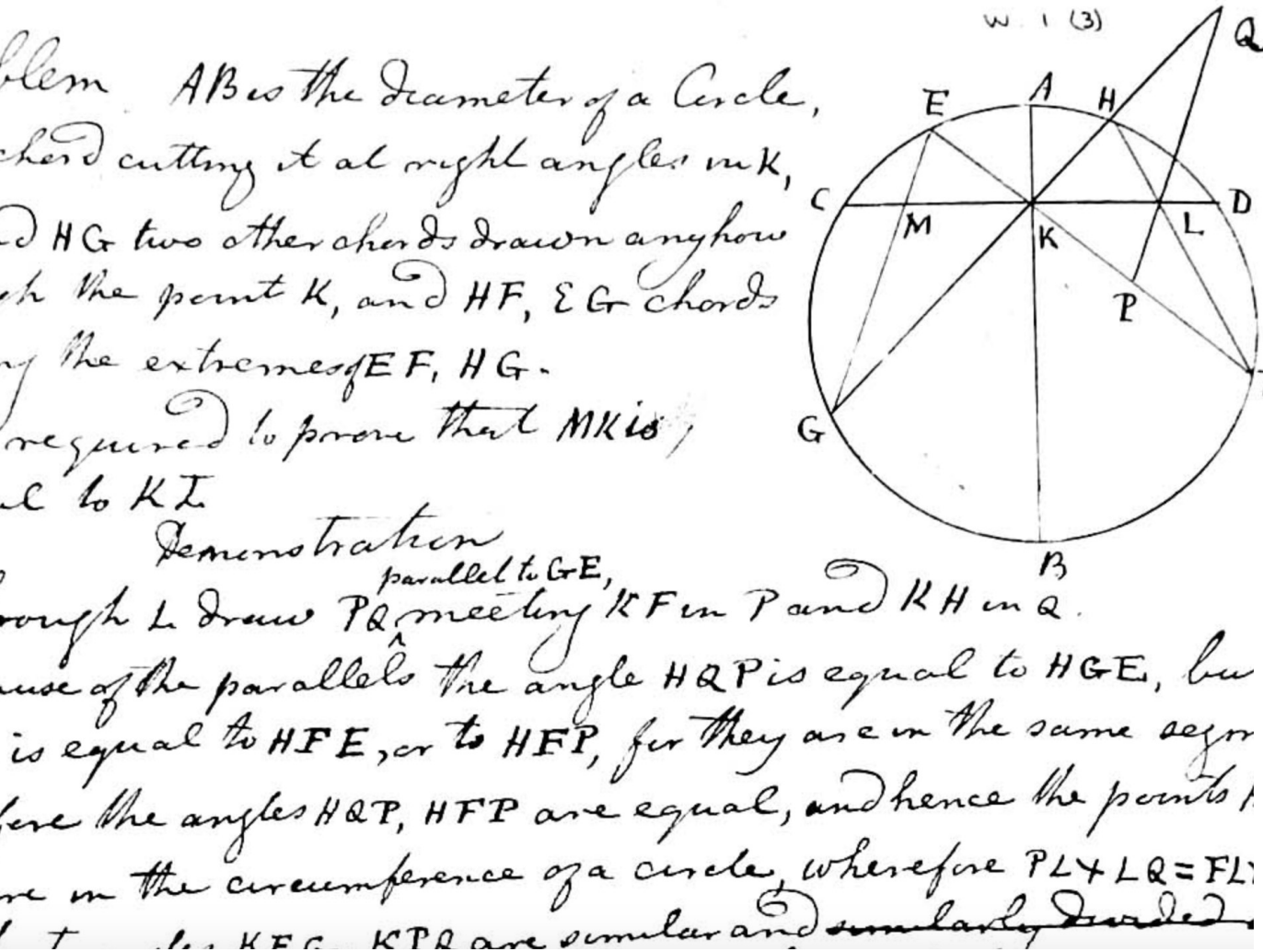
He is he, is a Scoundrel, a Scoundrel a Scoundrel

am I am - just thirty five

happi re turn of this glorious Day

- - would bring - - - would bring the Wine

a Scoundrel he is a Scoundrel for his Lazy ness!



W. 1 (3)

blem AB is the diameter of a Circle,
chord cutting it at right angles in K,
d HG two other chords drawn anyhow
ch the point K, and HF, EG chords
ng the extremes of EF, HG.
required to prove that MK is
l to KL

Demonstration

through L draw PQ parallel to GE, meeting KF in P and KH in Q.
use of the parallels the angle HQP is equal to HGE, bu
is equal to HFE, or to HFP, for they are in the same segm
here the angles HQP, HFP are equal, and hence the points
re in the circumference of a circle, wherefore PL + LQ = FL
l to KEG, KPQ are similar and similarly divided

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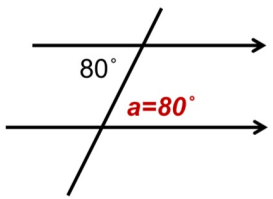
Z Angles

Copy each Picture. Draw on a big Z. Find all the missing angles

1.



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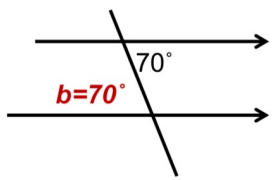

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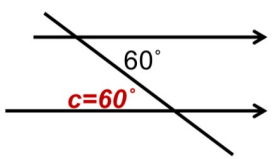

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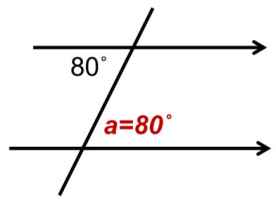

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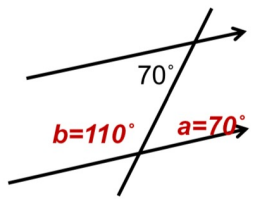

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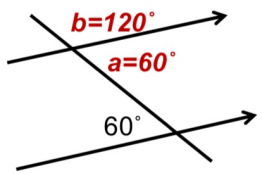

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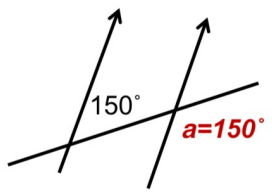

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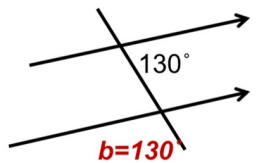

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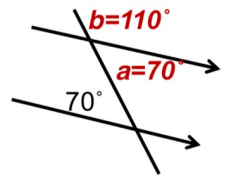

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Globes, telescopes and lens making equipment at the Herschel Museum

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The workshop in Bath

Mirror polishing machine

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Caroline Herschel taking notes as her brother William observes, the night William discovered Uranus. Credit: **Paul Fouché**

CAROLINE (LINA) LUCRETIA HERSCHEL

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Caroline Herschel as
Portrayed By K. Lynn King

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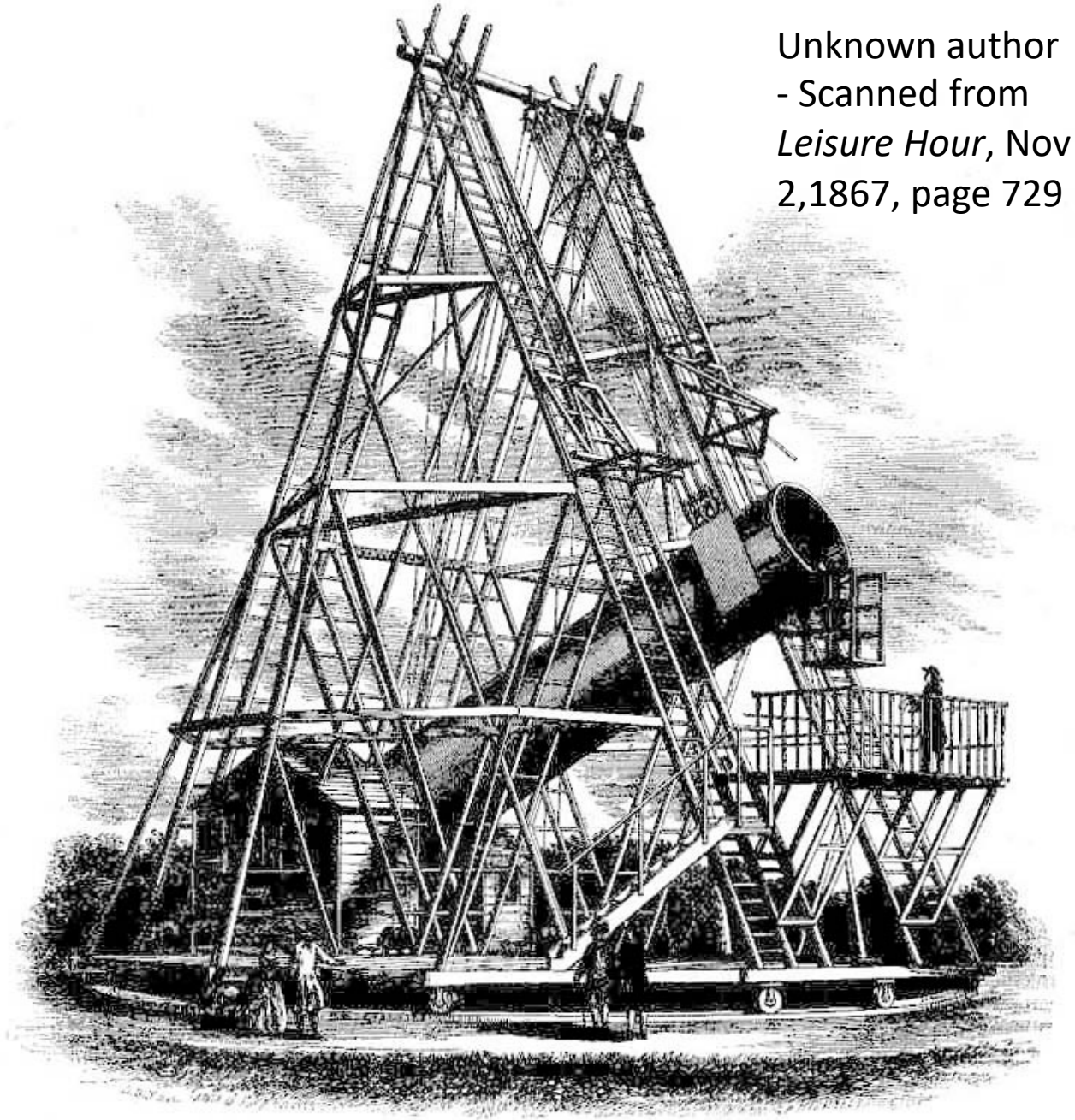


Unknown author - Scanned from *Leisure Hour*, Nov 2,1867, page 729

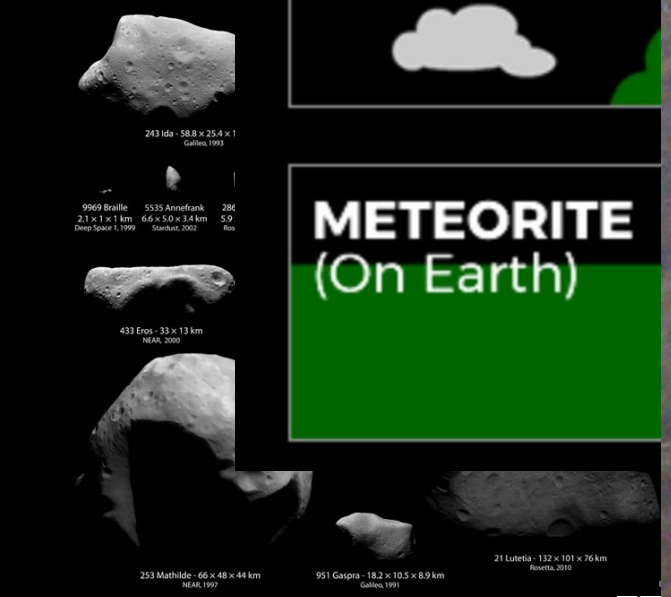

SDSS9 colored
NGC 205
1'
Powered by Aladin
23.83' x 19.68'
N
E

METEORS,

METEOROID
(In Space)

METEOR
(In Atmosphe

METEORITE
(On Earth)



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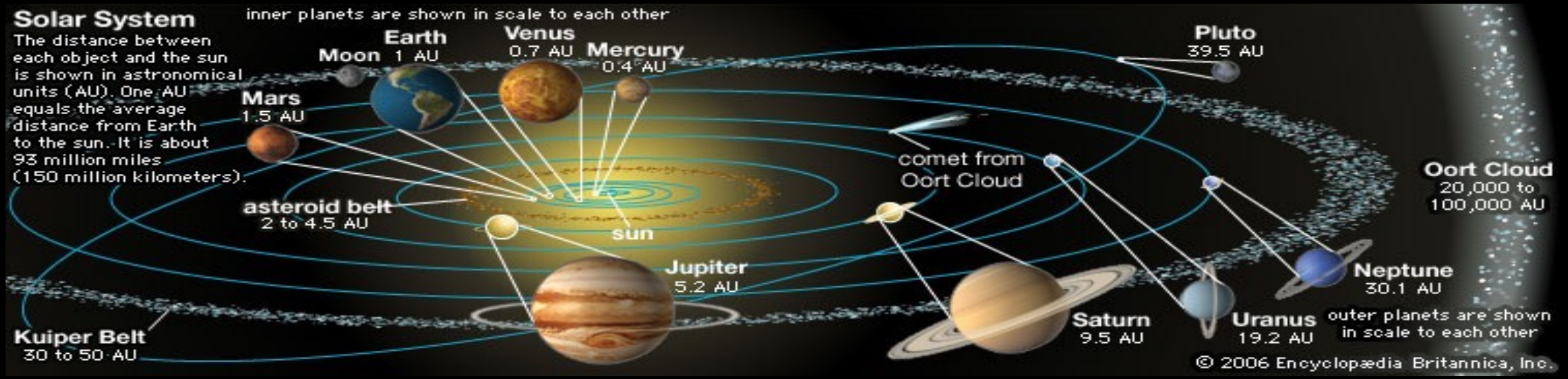


The Oort Cloud

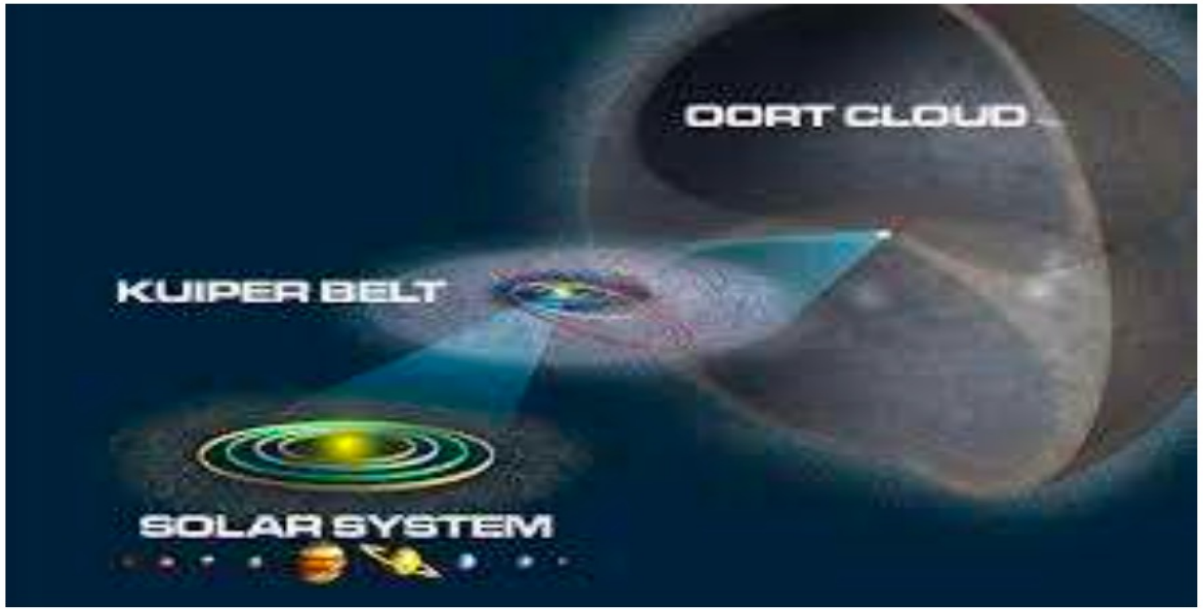
- Objects found in the Oort Cloud are known as trans-Neptunian objects. This applies to all objects beyond the orbit of Neptune and includes the Kuiper Belt objects as well.

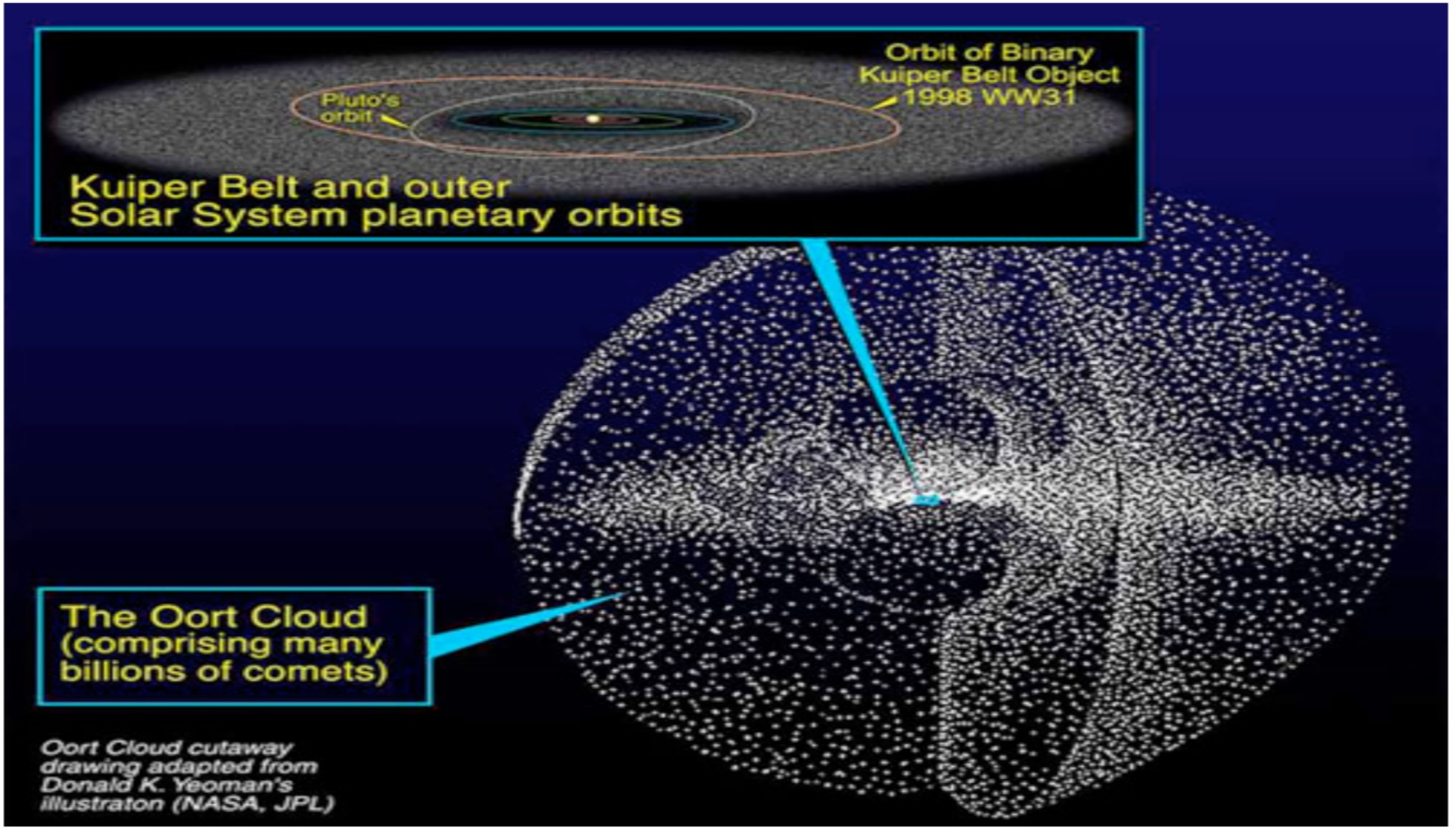
- The Oort cloud comprises two regions. There is a spherical outer Oort cloud, and a disc shaped inner cloud called the Hills cloud.

- Objects in the Oort Cloud are mostly composed of water ice, ammonia and methane.

- The estimated number of objects believed to be in the Oort Cloud is around 2 trillion – although there is currently no way to verify this theory.

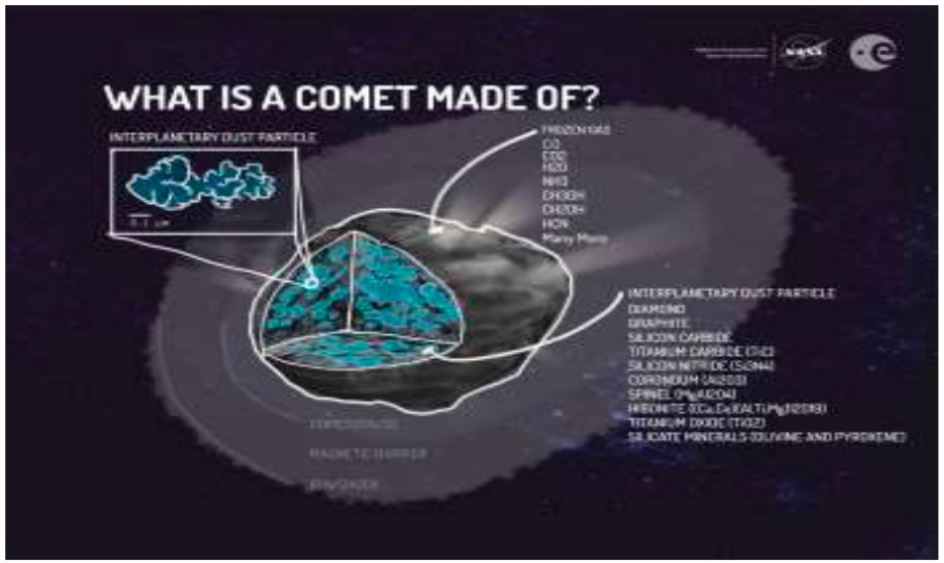
- Long-period comets (with orbit paths of over 200 years) are believed to originate from the Oort Cloud, according to many astronomers.

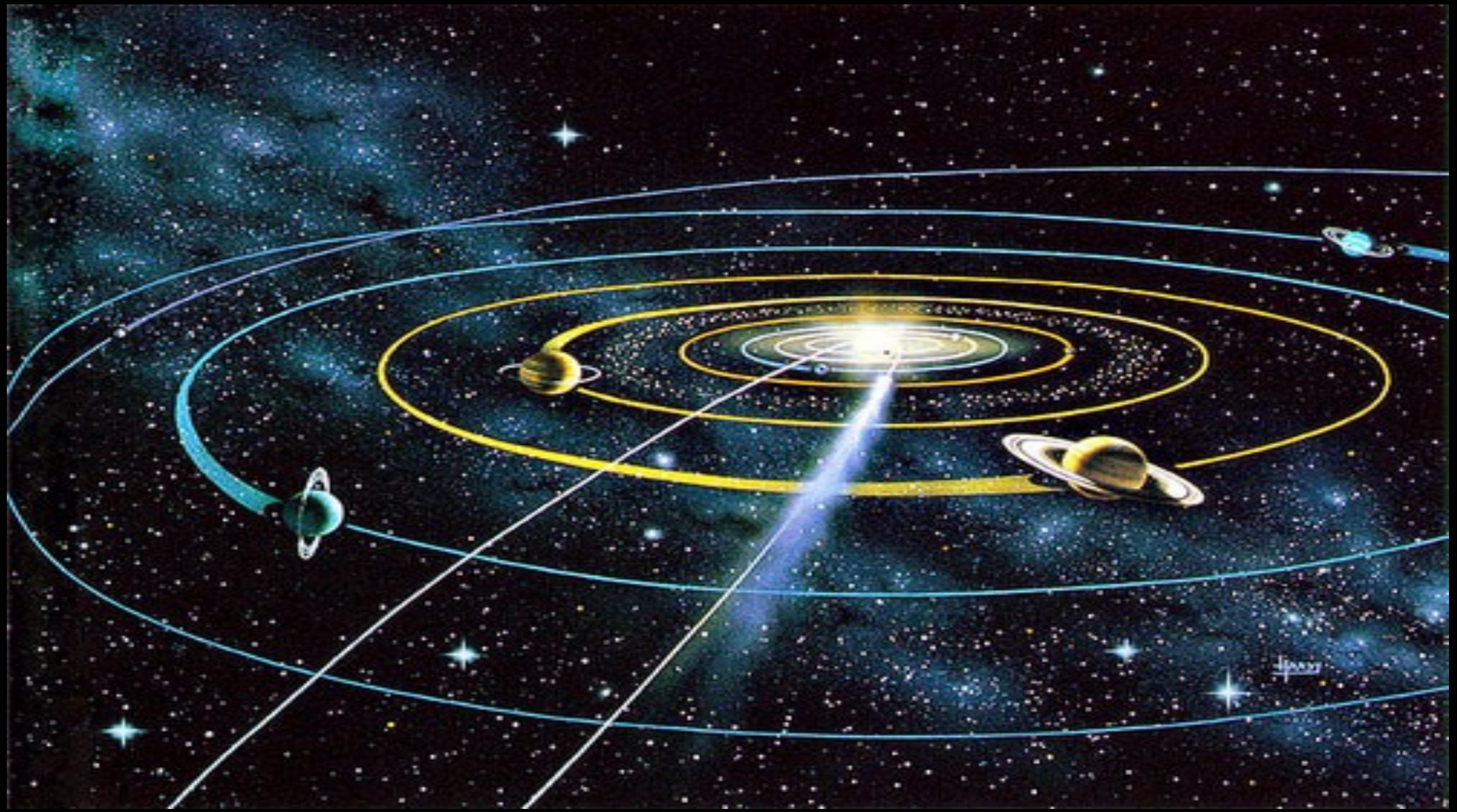



Orbit of Binary
Kuiper Belt Object
1998 WW31
Pluto's
orbit
Kuiper Belt and outer
Solar System planetary orbits
The Oort Cloud
(comprising many
billions of comets)
Oort Cloud cutaway
drawing adapted from
Donald K. Yeoman's
illustraton (NASA, JPL)

What are comets?

- Comets are often referred to as "dirty snowballs."
- They are left over from the formation of stars and planets billions of years ago.
- They are composed of rock, dust, ice and frozen gases such as carbon monoxide, carbon dioxide, methane, and ammonia.



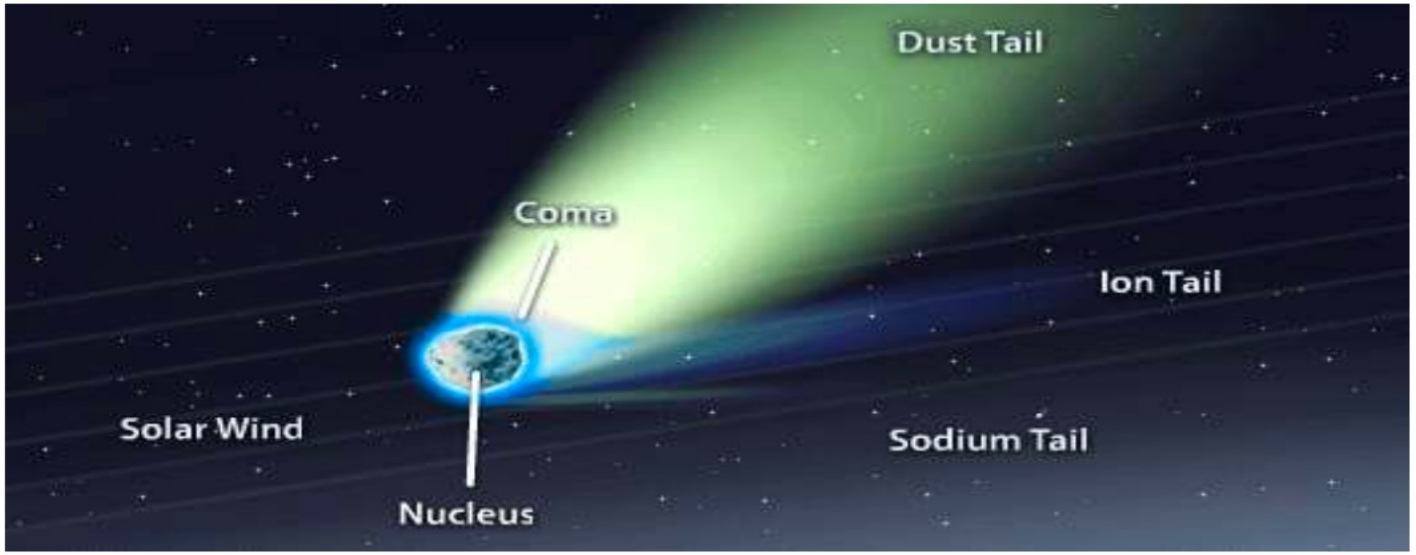


Comets tails

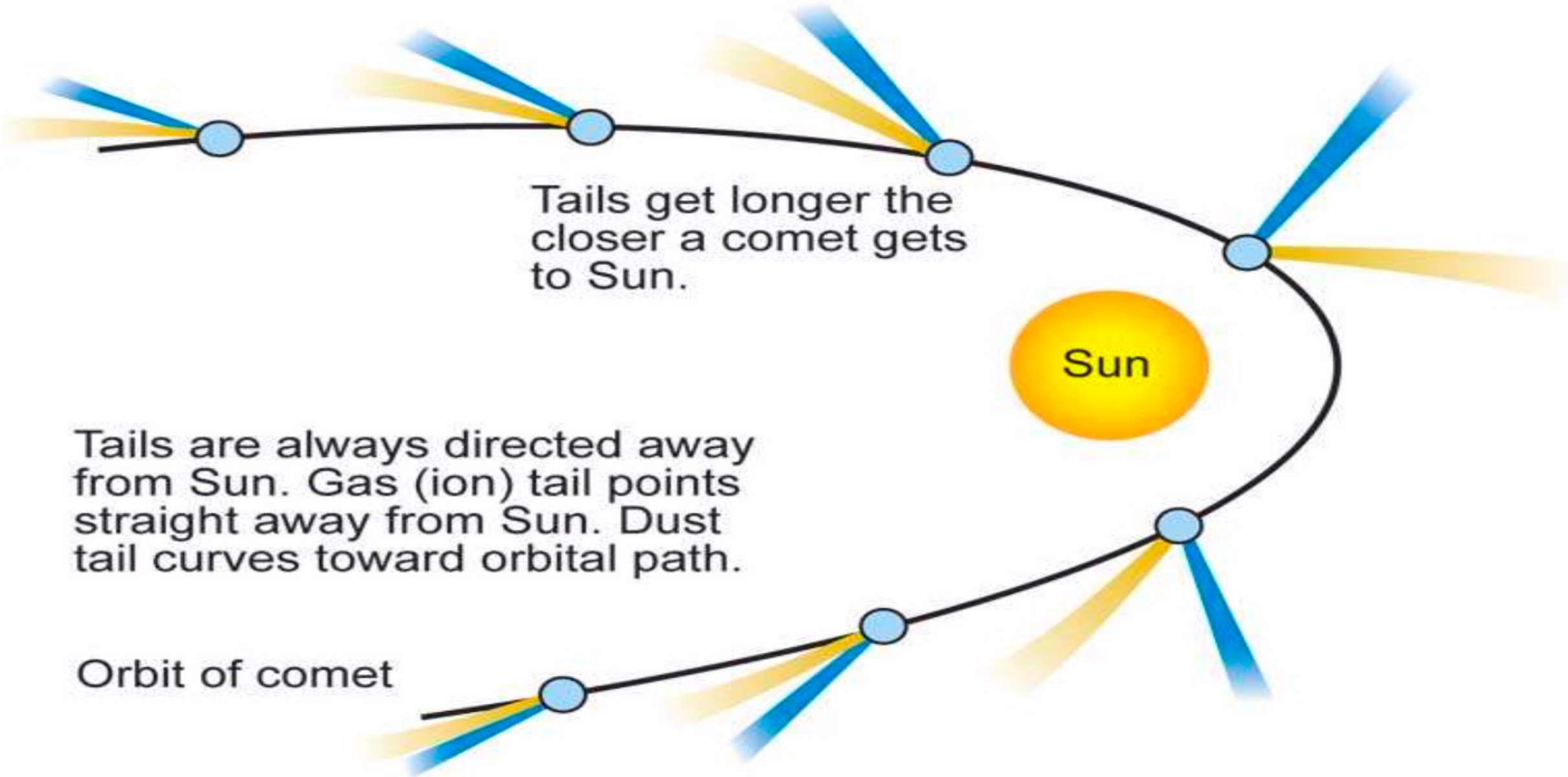
Comets have two tails:

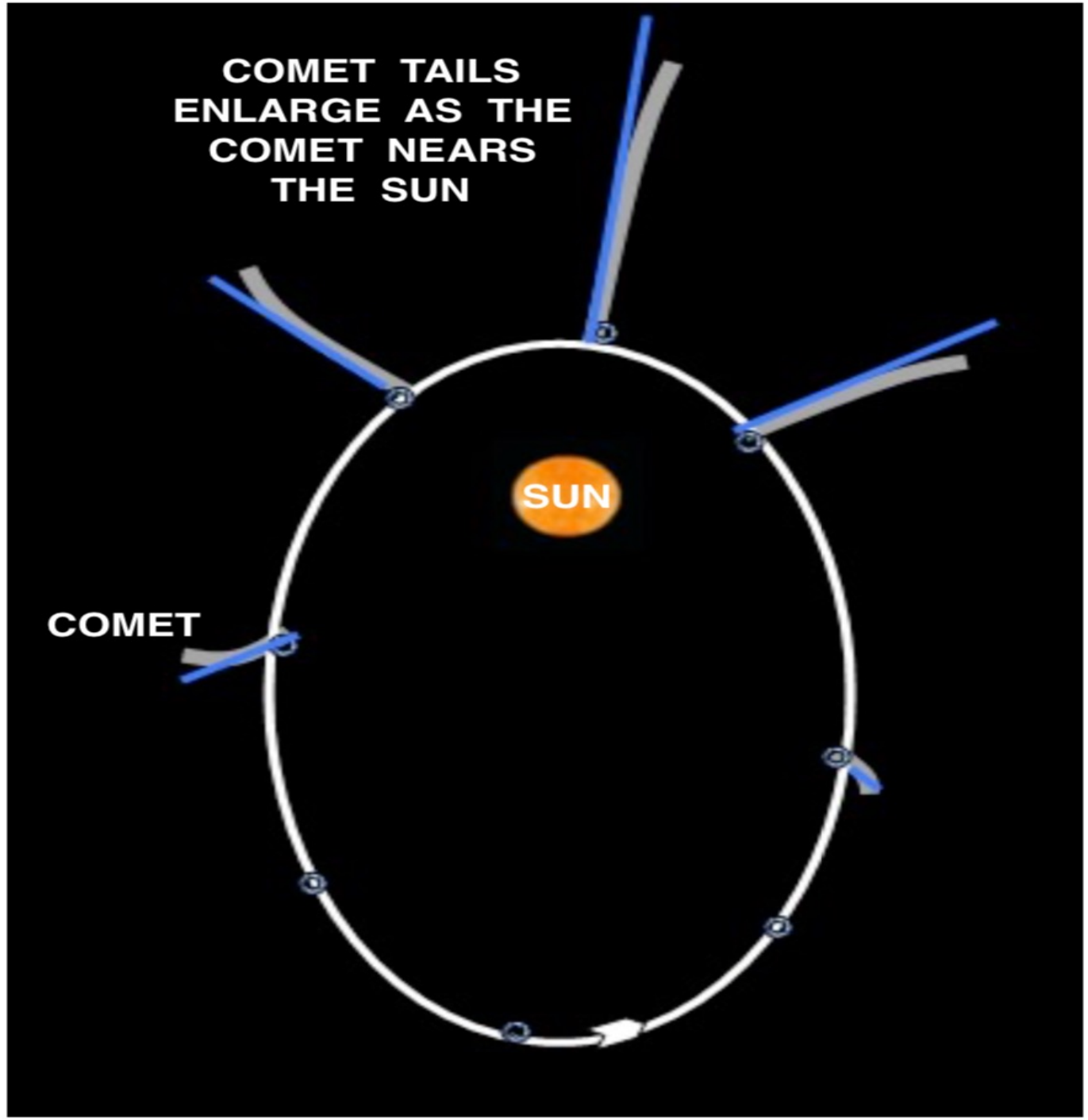
- Dust tail
- Ion tail

As a comet gets closer to the sun, the ice on the surface of the nucleus begins turning into gas, forming a cloud known as the coma. Radiation from the sun pushes dust particles away from the coma, forming a dust tail.



while charged particles from the sun convert some of the comet's gases into ions, forming an ion tail


Tails get longer the closer a comet gets to Sun.
Sun
Tails are always directed away from Sun. Gas (ion) tail points straight away from Sun. Dust tail curves toward orbital path.
Orbit of comet



COMET FAST MOVING WHEN CLOSE TO THE SUN

COMET SLOW MOVING WHEN FAR FROM THE SUN

Picture credit : (Sun) SOHO/ESA&NASA

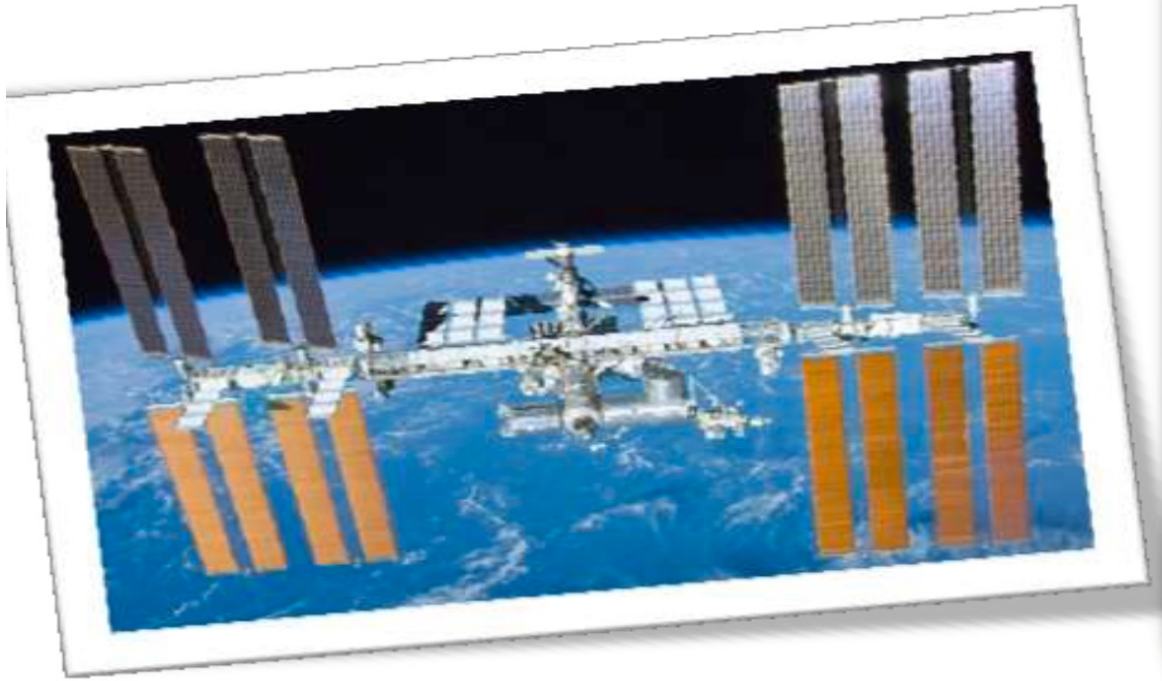
kometes = ‘the hairy one’

Bringers of doom or a good omen?

© Geraint Jones MSSL-UCL

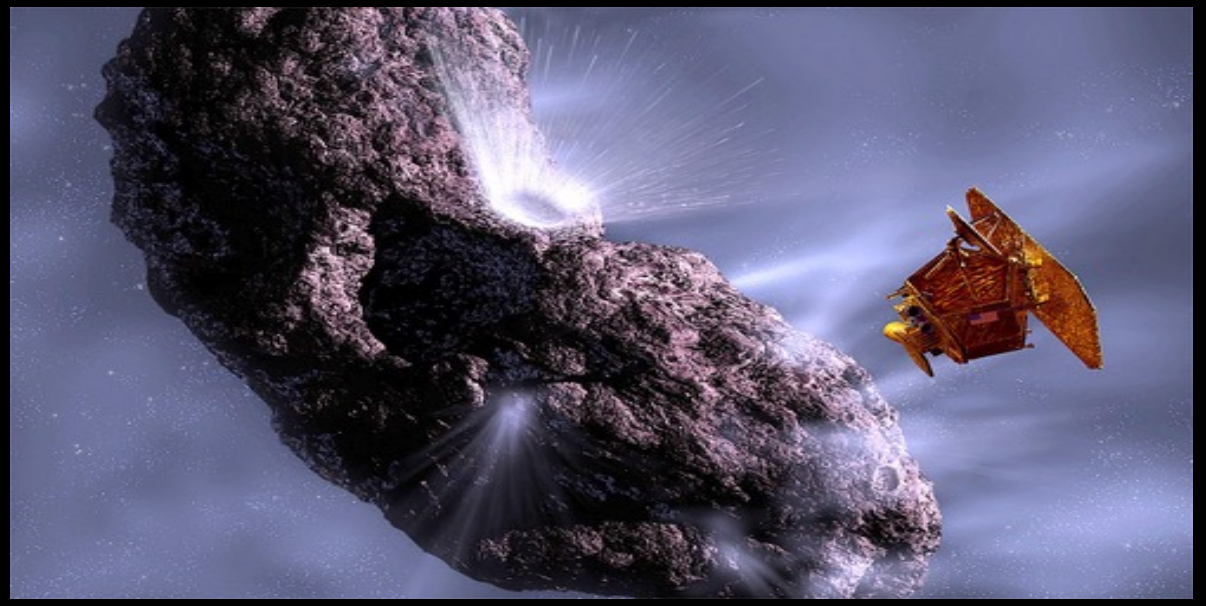
© Wikipedia

Comet Lovejoy is visible near Earth's horizon in this night time image photographed by NASA astronaut Dan Burbank, Expedition 30 commander, on board the International Space Station on Dec. 22, 2011



Giotto

Star Dust



Deep Impact

©http://www.universetoday.com/wp-content/uploads/2009/04/dinosaur_asteroid.jpg

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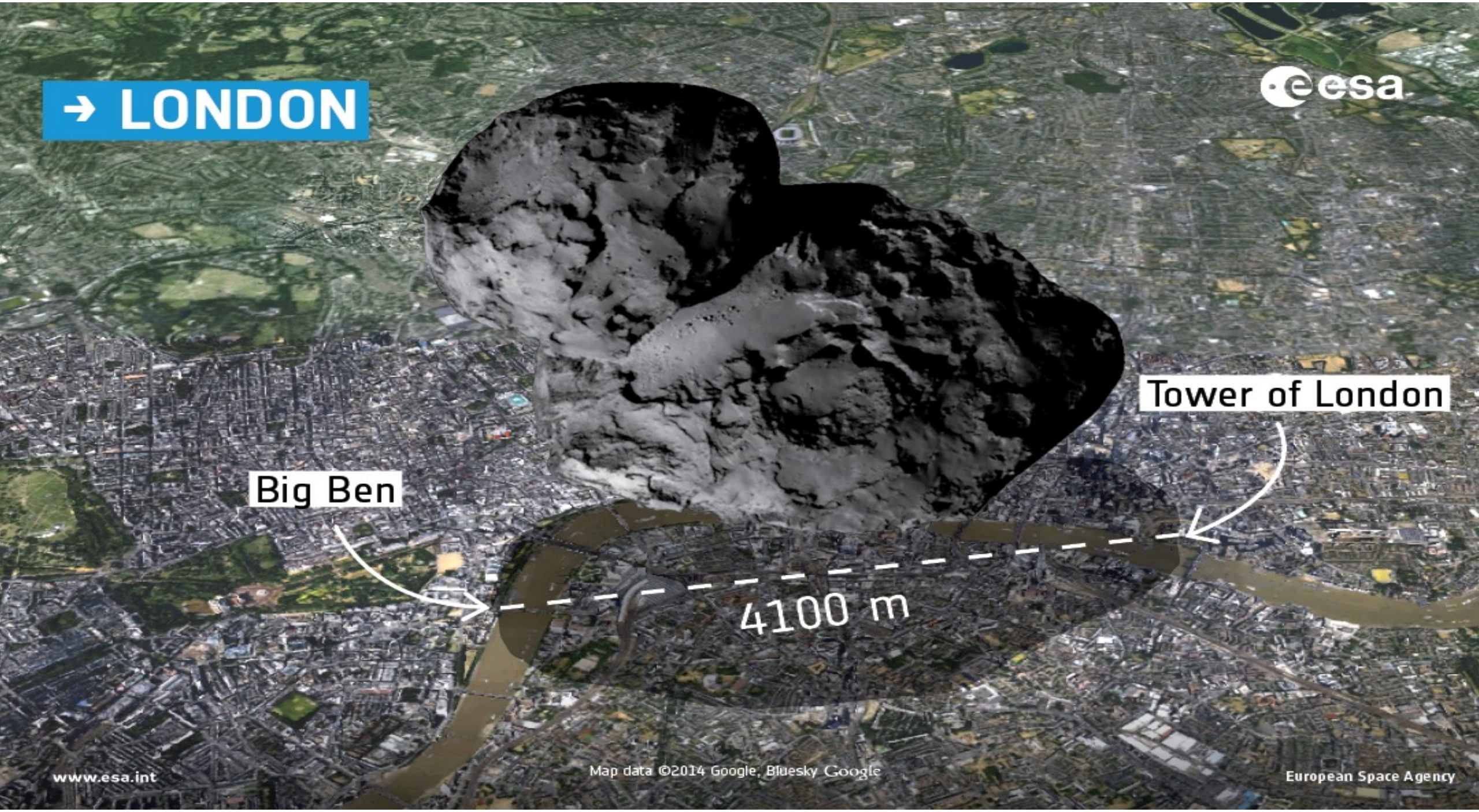
© NASA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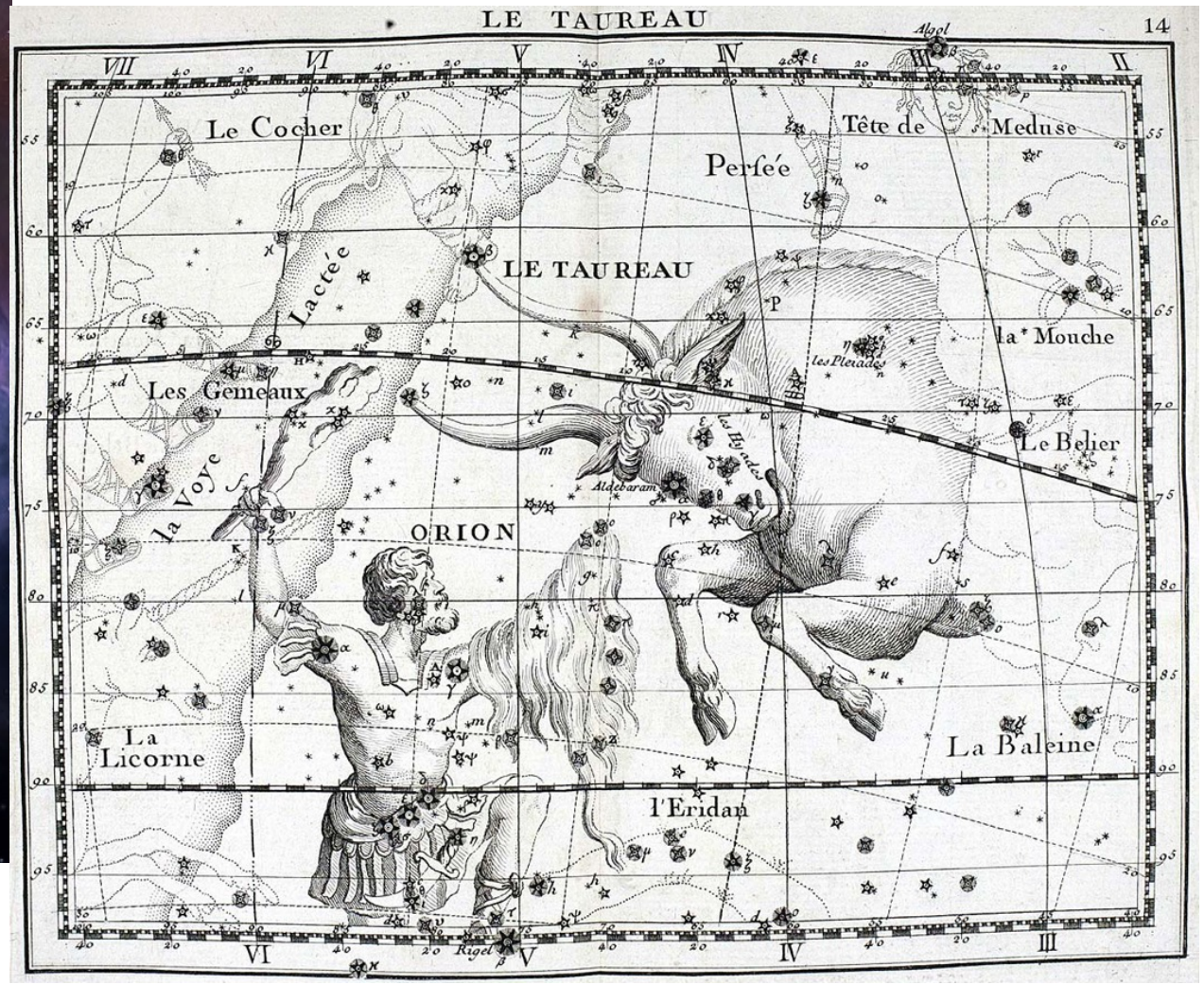
European Space Agency

M42: Orion Nebula

Orion and Taurus from John Flamsteed's Atlas Coelestis



Sally Kindberg, from The Comic Book History of Space

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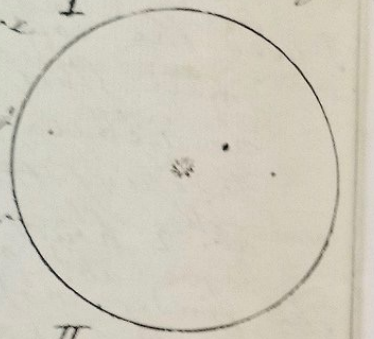
Aug.t 1.st 1786. [illegible] 1.st Comet

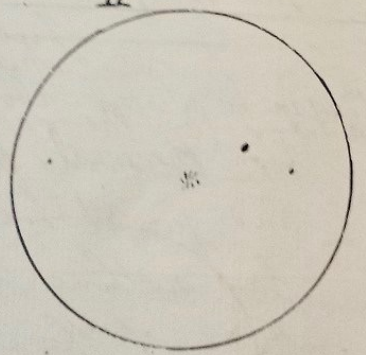
9h 50' I saw the object in the center of fig I like a star out of focus while the others were perfectly clear. the fore. star is very faint but the weather is hazy, and in a clearer night undoubtedly some more will be visible

I

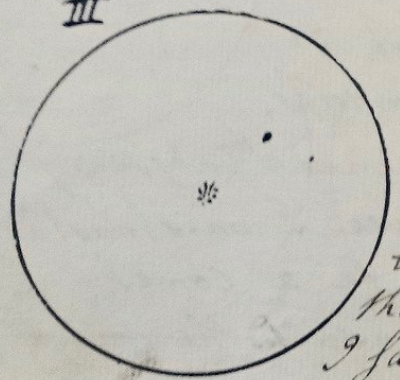


10h 33' They make now a perfect fee Journal this figure is right

II



11h 10' III



I think the situation is now like in Fig 3 but it is so hazy that I could only imagine I saw the second star &

the preceding I could not see at all the comet is ab.t half way between 53 & 54 Ursæ maj. and some stars which I found after looking over the map at leisure, to be 14. 15. & 16 Comæ Ber. by the obtuse angle it makes with those stars in Fl. I conclude it to be ab.t 1° above the parallel of the 15 of Comæ.

Aug.t 2 1786.

10h 9' I saw the red star in the center with the following faint one, in the same posit.

Fig I

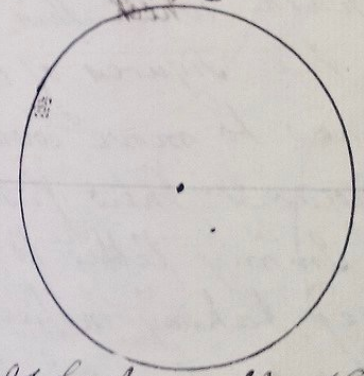
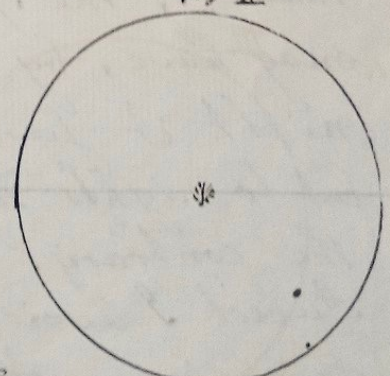


Fig II



as last night, the comet was just

Caroline Herschel

German/British. 1750-1848. Astronomer.

Innovation	4
Impact	6
Obscurity	6
Badassery	6

When Caroline was 22 her brother William took her to Bath to work as his housekeeper. William trained her to become a music teacher and taught her mathematics as well as sharing his love of astronomy. Caroline worked with William on all of his astronomy projects, sometimes taking the lead in the calculations to catalogue the position of the stars. She was awarded The Royal Astronomical Society Gold Medal in 1828 for her work cataloguing nebulae, and was the first woman ever to discover a comet.

Made by the Science Hour on XpressionFM at Exeter University

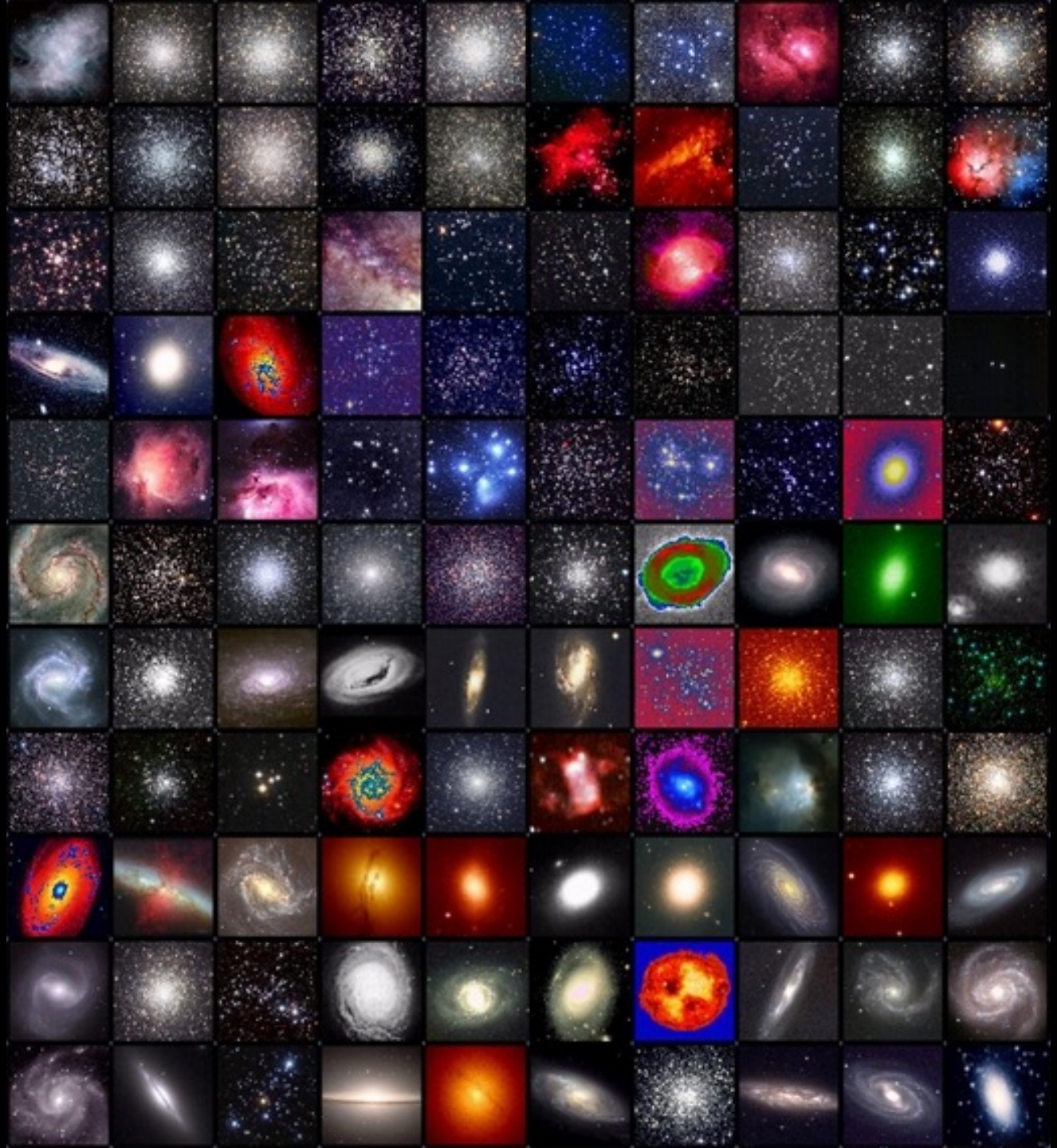
Royal Astronomical Society

DC Wonder Woman comic strip featuring Caroline Herschel

Comet 2P Encke, a periodic comet which Caroline observed on November 7, 1795 © 2003 by Gerald Rhemann and Michael Jäger

NGC 253, which Caroline discovered

A comic poking fun at Caroline "smelling out" a comet. At the time of its publishing, she was by far the most famous female astronomer in the world.



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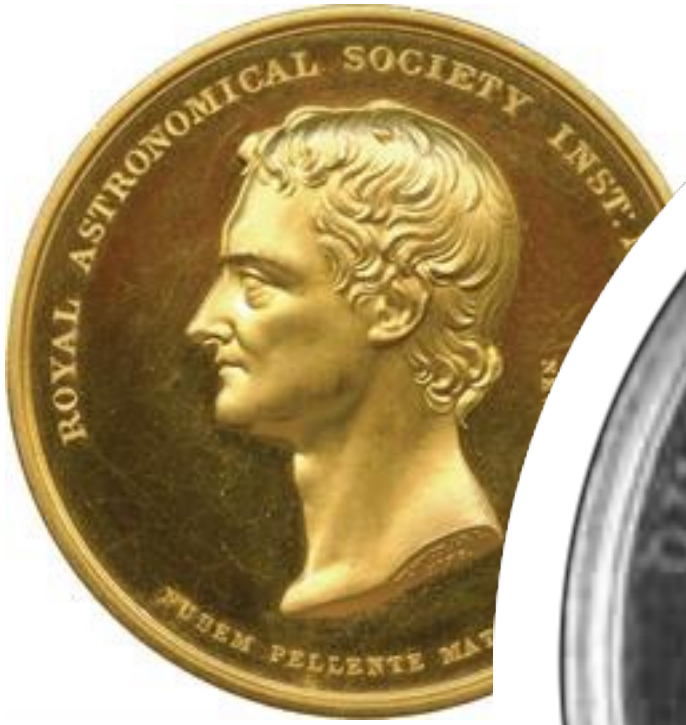
Caroline Herschel at 78, one year after winning the Gold Medal of the Royal Astronomical Society in 1828



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The Gold Medal is the hig
Council complete freedom
past the Council has taken
in the fields of astronomy, b
often been awarded as recog
for a specific piece of research.

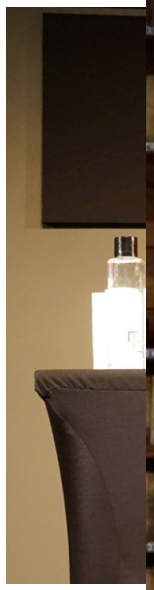
The Herschel Mea
observational astrop
outstanding piece of wor
candidates for this award.

Royal Astronomical Society

1847 lithograph of Caroline Herschel around 97 years of age.

(Caroline Herschel, geb. d. 16ten März 1750. Nach dem Leben gez.und gest. v. G. Busse, Hannover 1847)


Google



Advancing Astronomy and Geophysics

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