

WHY WAS PLUTO A PLANET FOR 76 YEARS?

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Until 2006, we thought of Pluto as the ninth planet in the solar system. Many of us learnt this ‘fact’ from our school textbooks. But our students learn that the solar system has only eight planets. Why did scientists believe Pluto was a planet for so long? Was this belief supported by any evidence?

Chapter 12 (‘Beyond Earth’) of the Grade VI science textbook (NCERT, 2024-2025) introduces students to the concept of a planet as being: “...a large, nearly spherical object that revolves around the Sun”. In the same chapter, students learn about the eight planets in the solar system. They also learn how an object that scientists believed to be the ninth planet of the solar system for nearly 76 years is now seen as a dwarf planet. According to the textbook, this change in Pluto’s status happened when in 2006, “the International Astronomical Union (IAU)... redefined the requirements of an object to be called a planet”.¹ This brief description may leave curious students and teachers with questions like: What led scientists to believe Pluto was a planet? Was this belief supported by any evidence? The answer to this question is linked to the story of its discovery (see Box 1).

The search begins

By the early 19th century, the first seven planets of the solar system had been discovered.² But astronomers observed that the actual path (orbit) that Uranus took around the Sun did not match their predictions. What could be causing this difference? In 1841, the British astronomer John Couch Adams proposed that Uranus may be pulled from its predicted path around the Sun by another, yet to be discovered, planet in the solar system.³

In 1846, the French astronomer Urbain Le Verrier used mathematical calculations to predict the likely position of such a planet. He sent these details to the German astronomer Johann Gottfried Galle. On the night he received Verrier’s letter, Galle and his student Heinrich Louis d’Arrest were able to locate this planet within a degree of its predicted position. This planet was named Neptune.³

Box 1. Connections to the curriculum:

Discussions around this story can help teachers meet two of the nine curricular goals that the National Curriculum Framework for School Education (NCF-SE) 2023 recommends for the middle stage (see **Teacher's Guide: Pluto in the Classroom**):

- CG-6: *"Explores the nature and processes of science through engaging with the evolution of scientific knowledge and conducting scientific inquiry".* Specifically, it can help students develop the competency to: *"Illustrate how scientific knowledge and ideas have changed over time (description of motion of objects and planets, number of planets) and identify the scientific values that are inherent and common across the evolution of scientific knowledge (scientific temper, science as a collective endeavour...)"*.
- CG-9: *"Develops awareness of the most current discoveries, ideas, and frontiers in all areas of scientific knowledge in order to appreciate that Science is ever evolving and that there are still many unanswered questions"*.

But observations of Neptune and calculations of its mass did not fully explain Uranus' deviations from its predicted orbit. In fact, Neptune's path around the Sun was also slightly different from what astronomers had predicted for it. Could these differences be caused by the presence of another object? In 1902, the wealthy American astronomer Percival Lowell proposed that this object was the ninth planet of the solar system. He called it 'Planet X' ('X' here is the English alphabet, not the Roman numeral).⁵

Lowell's Planet X

Born in 1855, Lowell was the son of a wealthy businessman. In 1876, he graduated from Harvard College, with a distinction in mathematics. In 1893, Lowell read a description of 'canals'

on the surface of Mars in the book *'La planète Mars'* written by the French astronomer Camille Flammarion. His determination to explore these canals led Lowell to a career in astronomy.^{6,7} Within a year, he had used his personal wealth and influence to establish the Lowell Observatory at Flagstaff, Arizona, USA. It was here, in 1906, that he started a search for Planet X.

In the first phase of this search, Lowell, like Verrier, used mathematical calculations to identify the most likely position of the new planet. Astronomers at the Lowell Observatory used its 42-inch telescope to photograph these specific regions of the sky on different days. Lowell used a hand magnifier to

painstakingly examine every inch of these photographic glass plates (see **Box 2**). By 1910, Lowell's team had taken close to 200 photographs and recorded the positions of thousands of stars. But had found no evidence for Planet X.

Lowell decided to change his approach. First, he hired a team of 'human computers'. Human computers were people, often women, who performed complex mathematical calculations. Led by the American astronomer Elizabeth Williams, this team's work allowed Lowell to more accurately predict regions of the sky where Planet X was likely to be found. Second, Lowell borrowed a 9-inch telescope from Sproul Observatory, Pennsylvania. He



Fig. 1. A blink comparator. Lowell and Tombaugh sat in front of this instrument for hours, comparing photographs of the night sky for movements of Lowell's Planet X.

Credits: Pretzelpaws, Wikimedia Commons. URL: https://en.wikipedia.org/wiki/File:Lowell_blink_comparator.jpg. License: CC-BY-SA 3.0 Unported DEED.

Box 2. What was Lowell looking for?

Lowell was examining photos of the night sky on different days to spot objects that had changed their position. Let us assume that he found such an object. How would he know it was a planet and not a star? Stars move too. The answer lies in the fact that our ability to spot distant objects in the sky depends on the tools we use. Lowell may have counted on the possibility that the telescopes he was using to search for Planet X were powerful enough to capture the movement of another planet in our solar system. Even one he believed to be farther away from all the planets we knew of at the time. But these instruments were not powerful enough to capture the movement of stars, which are much farther away from us.

believed that the smaller telescope would be better suited to observing finer details of the night sky. Lastly, Lowell bought a specialized stereo microscope, popularly called a 'blink comparator' (see Fig. 1). This instrument allowed him to examine and compare two photographic plates one after the other in short order. This process was popularly called 'blinking' (see Box 3).

Box 3. What is a blink comparator?

How would you compare two images of the night sky to see if any objects in them had moved? You could do this by looking at each object in the first image and checking its position in the second image. This would likely be a slow process. Imagine you were doing this every day for months at a stretch with many images (like that of the night sky) and each image had many small and similar-looking objects! It would quickly get tiring. A blink comparator allows you to flip between two images very, very quickly. Our short-term memory of the two images allows us to spot differences between them much more easily.⁸

Early versions of this instrument could hold 6-inch x 7-inch plates. But Lowell's team found that viewing 14-inch x 17-inch plates would be better suited to their purpose. The American astronomer Carl Lampland, who was part of this team, modified the blink comparator to include slip frames that allowed Lowell to compare a quarter of the larger plates at a time.⁵

Lowell used this combined mathematical and observational approach to scan the night sky for Planet X till his sudden death from a stroke in 1916.⁷ His wife contested his decision to leave most of his million-dollar estate to the observatory. This led to a long legal battle, during which the Lowell Observatory's search for Planet X was put on hold. In 1927, the litigation was resolved in the observatory's favour and the search for Planet X resumed.^{7,9} In 1929, the American astronomer Dr Vesto Slipher, the acting director of the observatory, assigned the task of finding Planet X to a 23-year-old man called Clyde Tombaugh.

Enter Tombaugh

Tombaugh was the son of a farmer. Born in the year Lowell started his search for Planet X, Tombaugh graduated from high school in 1925. He was unable to afford a college education. In 1924, Tombaugh read a magazine article titled 'The Drift of Jupiter's Markings' written by the amateur astronomer Latimer J Wilson. Fascinated by Wilson's drawings of the markings on the surface of Jupiter, Tombaugh wanted to see these features himself. So, in 1926, at the age of 20, Tombaugh built his first telescope with discarded car parts and farm machinery. Not satisfied with it, he spent the next two years honing the skill of building telescopes, grinding his own mirrors and lenses for them. In 1928, Tombaugh built a telescope that allowed him to observe markings on the surface of Jupiter and Mars (see Fig. 2). To control temperature and air flow, Tombaugh operated this telescope from a 24 feet long, 8 feet deep, and 7 feet wide pit that he dug himself. He sent detailed drawings of his observations to

the Lowell Observatory.^{10,11} Impressed with his keen observation skills, Slipher offered Tombaugh a position with a three-month trial period.

At the observatory, Tombaugh began a systematic survey of the night sky. Learning from Lowell's efforts, Tombaugh would fit a 14-inch x 17-inch photographic plate in a powerful 13-inch telescopic camera and take long exposures of the night sky (see Box 4). He focused on observing regions where Lowell had predicted Planet X's presence. Often, he would need three hours to take one photo. He would then fix a fresh plate in the camera, focus on an adjacent region of the sky, and take another photo. Every few days, he would revisit the same regions of the sky and photograph them. In the day, he would develop the plates and use the blink comparator to compare photos of the same region.⁵ Like Lowell, he would examine each inch of these photos for any tiny dot that had changed position. This was a tedious task and demanded extreme concentration. Every half hour, Tombaugh would take a short break by walking away from the comparator. The stakes were too high to afford any lapse in concentration.

By January 1930, Tombaugh had spent thousands of hours on the blink comparator and had scanned the positions of 15 lakh stars. He had observed many dots that had moved, but at speeds that suggested they were too close to Earth to be Planet X. Finally, on February 18, 1930, Tombaugh noticed a tiny object that was in different positions in the plates taken on January 23 and January 29. The image was too sharp to be that of a comet. Its speed was too slow to be that of an asteroid or space debris, but suggested that it was far enough from Earth to be beyond Neptune.^{10,12} This was just as Lowell had predicted.

Announcing the discovery of Planet X

When Tombaugh reported this observation to Slipher, the entire team at the Lowell Observatory became



Fig. 2. Clyde Tombaugh with his homemade 9-inch telescope. He ground the mirrors for it himself. He also built his own mount with part of the crankshaft from his father's 1910 Buick (a car model) and discarded parts of a cream separator (used on his family's farm). This was the telescope that allowed him to observe markings on the surface of Jupiter and Mars.

Credits: Popular Science Monthly, Wikimedia Commons. URL: https://en.wikipedia.org/wiki/File:Clyde_W._Tombaugh.jpeg. License: CC-BY.

involved in checking if this object met Lowell's predictions for Planet X. Based on Lowell's calculations, the mass of this object would be seven times that of Earth and it would be at a mean distance of 43 astronomical units (AU) from the Sun. This is how Chapter 12 of the Grade VI textbook introduces this unit of distance: *"The distance of the Sun from the Earth is about 150 million km. A useful unit for expressing distances within the solar system*

*is 'astronomical unit' (au) which is approximately the distance between the Sun and the Earth"*¹ Tombaugh took more images of the same region of the sky with his 13-inch telescope and the 24-inch telescope that Lowell had used to observe Mars. Based on his observations, Tombaugh estimated the mass of this object to be roughly the same as that of Earth. Lampland tried to get a clearer image of the object by photographing it with the 42-inch

Box 4. Why did Tombaugh use long exposures?

Because he was taking photographs of the night sky. By choosing long exposures, Tombaugh was ensuring that the aperture of the camera remained open for as long as possible, letting in as much light as possible in an otherwise dim environment. This kind of exposure may also have been better suited to contrasting static objects with moving ones, although it may have caused moving objects to look blurred.

telescope that Lowell had used in the first phase of his search. But its images remained faint and did not have the disc-like appearance that other planets had.¹³ To determine its path around the Sun, Tombaugh and Lampland recorded its position every day till May 26. Since no one at the Lowell Observatory had any experience calculating planet orbitals, Slipher asked astronomers from other observatories for help in this task.⁵

Finally, on March 12, 1930, Slipher sent a telegram with details of this discovery to the Harvard College Observatory. Based on the evidence the team at the Lowell Observatory had so carefully collected, the discovery was announced on March 13. This would have been Lowell's 75th birthday. As news of this discovery spread, the Lowell Observatory received more than a thousand suggestions for names. The most popular choices were Minerva, Persephone, and Cronus.^{9, 10} The name 'Pluto' (the Roman God of the underworld) was suggested by a 11-year-old called Venetia Phair. Her grandfather, Falconer Madan, loved the name and shared it with the Lowell Observatory through an astronomer friend.¹⁴ When a vote was taken, this name received 150 nominations. The Lowell Observatory got this name approved by both the American Astronomical Society and the Royal Astronomical Society. By May 1, 1930, Planet X was officially known as Pluto.

Chapter 1 ('The Wonderful World of Science') of the Grade VI science textbook (NCERT, 2024-2025) invites students to see science as: "...a way of thinking, observing, and doing things to understand the world we live in and to uncover the secrets of the universe". The story of the discovery of Pluto offers a concrete example of this process. Discussions around this story can help teachers meet two of the nine curricular goals that the National Curriculum Framework for School Education (NCF-SE) 2023 recommends for the middle stage:

- 1) CG-6: "Explore the nature and processes of science through engaging with the evolution of scientific knowledge and conducting scientific inquiry". Specifically, it can help students develop the competency to: "Illustrate how scientific knowledge and ideas have changed over time (description of motion of objects and planets, number of planets) and identify the scientific values that are inherent and common across the evolution of scientific knowledge (scientific temper, science as a collective endeavour...)".
- 2) CG-9: "Develop awareness of the most current discoveries, ideas, and frontiers in all areas of scientific knowledge in order to appreciate that Science is ever evolving and that there are still many unanswered questions".

In addition to the aspects highlighted in these curricular goals, I would like to briefly touch upon two more:

- 3) Students often think of experiments as being the only or the most important approach that scientists use to investigate the natural world. Is this reinforced by the fact that many science textbooks focus on experiments? Or because many of us call all hands-on experiences in the classroom 'experiments' rather than 'activities'? The story of the discovery of Pluto may illustrate how experiments may not always be possible to do in fields like astronomy. It could also introduce students to the role that speculation, mathematical calculations, and careful observation play in developing scientific knowledge. **Prompt for students:** If your students show interest in this aspect of science, you could encourage them to think of and discuss examples where using an experiment to answer a question in science may be unnecessary, insufficient, or even unethical.
- 4) The story of the discovery of Pluto illustrates how our perception of the natural world is linked to and aided by the tools we use to explore it. We would know very little about Pluto (as well as Uranus and Neptune) without the powerful telescopes that are part of this story. It may also be important to point out to students that the efforts of many generations of people were involved in designing, building, and refining these tools. **Prompt for students:** If your students show interest in this aspect of science, you could:
 - a) Encourage them to think of and discuss an example of at least one tool that allows them to observe, measure, or analyse some phenomenon in their immediate world in more detail and with more accuracy. You could use some of these questions for the discussion: *What aspects of your world would be invisible, inaudible, or unclear to you if you did not have this tool? Are there things you could not have known for yourself without this tool?*
 - b) You could also download the **Planet Discovery Activity** on blink comparators designed by Dr Erica from Rosie Research: <https://bit.ly/3VJgm2S>. Invite your students to try it out. Page 4 of this activity displays images of the actual slides that Tombaugh compared to discover Pluto. If your students are unable to spot Pluto on these slides, show them what Tombaugh spotted by displaying this image on your mobile phone: <https://www.planetary.org/space-images/the-pluto-discovery-plates>. You could use this question for the discussion: *How important is it to have tools that make an investigation less time consuming? What kind of explorations would require such tools?*

The fact that Pluto is no longer considered a planet is linked to all these aspects of the nature of science. Because it is so far away from us (34 times the distance between us and the Sun), it is very difficult to observe. We have seen how Tombaugh and Lampland used a range of telescopes of increasing resolution to photograph it. But their images remained dim and unclear. As our tools to observe Pluto have become more refined, our knowledge of it has changed, and our definition of a planet has become clearer. For example, the first planet-like image of Pluto came in the 1990s, after the launch of the Hubble Space Telescope. The more astronomers observed this object, the smaller it appeared. By 2006, its mass was estimated as being 0.2% that of the Earth. These changes in our understanding have led to its reclassification as a dwarf planet. Returning to Chapter 1 of the Grade VI science textbook, this aspect of the story can be used as an example of how: "Science is like a giant and unending jigsaw puzzle...

Sometimes, we find that a piece of this puzzle has been put in the wrong place and needs to be moved. New discoveries often change our understanding of the world".

Prompt for students: If your students show interest in this aspect of science, you could encourage them to think of 1-2 statements about any aspects of their own world that are well-supported by evidence. These statements could be very simple in nature. For example, students could say that the bell for their lunch break always rings at 12 pm. Or that a certain kind of tree in their neighbourhood only starts flowering in a certain month of the year. Write these statements on the board. Ask them to share evidence to support these statements. You could then ask: *What if you found new evidence? For example, Buransh or Rhododendron, the state tree of Uttarakhand, is known to flower in March and April. But it was seen to bloom in January this year. How would you respond to new evidence of this kind? Would you dismiss it? Or would you be open to revising your earlier statement? What factors would help you choose your response?* Use this discussion to share how 'facts' in science are reliable, yet open to revision.



(a)

Another reason this story may be important to tell in the science classroom is to ask students two questions that they may not ask you themselves, but are likely to think about a lot. Especially when they need to finish a lot of homework, prepare for examinations, or struggle with understanding a particularly abstract or complex concept in their textbook. The two questions are: *Why does science matter? Why do we study it?* This is how Chapter 1 of the Grade VI science textbook responds to these questions: "As human beings, we have always been curious about our surroundings. We start exploring our surroundings and asking questions right from our childhood...science is all about joyful exploration. Enjoy your scientific journey, keep exploring and never stop wondering about the amazing mysteries of the universe and asking questions." But many students may struggle to find opportunities to connect this curiosity and sense of joy with what they see in their textbooks. Some of our ways of teaching science may also play a role in this disconnection. In contrast, stories of discovery, like that of Pluto, can offer students many opportunities to relate to science as an exciting and creative pursuit rather than as a dry and uninteresting subject. Here are some aspects of this story that hooked our interest:

- Neptune was discovered within a degree of the position Verrier had predicted for it. And Galle spotted it on the same night that he received Verrier's prediction! **Prompt for students:** If your students show interest in this aspect of the story, invite them to imagine what influence the speed of this discovery may have had on Lowell's resolve to search for Planet X. Remind them that Lowell started his search for Pluto in 1906 and continued to search for it till his death ten years later. He used an approach that combined mathematical calculations (like Verrier) with observations of the night sky (like Galle). Yet, Lowell found no evidence for Pluto in his lifetime. You could use some of these questions for a discussion: *What does this tell us about the process of seeking answers*

for questions in science? What do you think may have helped Galle and Verrier? Was the search for Pluto harder to start with?

- To refine his search for Planet X, Lowell needed the answer to two questions: Where in the night sky would he be most likely to find such an object? And how big an object should he be looking for in photographs of the night sky? Making these predictions required some very complex mathematical calculations. Astronomers today could use some very advanced computers to do this. But this was at a time when even calculators (like the arithmometer) were only able to handle much simpler calculations. So, Lowell hired a team of 'human' computers! These were people who made complex, long, and often tedious calculations by hand. These calculations were particularly important in astronomy and navigation. About 50% of human computers were women. Many men saw this as a dull unglamorous job. It required long hours of precise work that was rarely acknowledged. Many astronomers could pay women computers half of what they paid the men. Lowell's team of human computers was headed by Elizabeth Langdon Williams. She was among the earliest women to graduate (with a degree in physics) from the Massachusetts Institute of Technology (MIT), US. Both Lowell and Tombaugh used Williams' calculations in their search for Pluto. **Prompt for students:** If your students show interest in this aspect, you could ask them to search for more details about Williams. Or to come up with a list of other such women whose calculations contributed to important discoveries in science. Depending on their interest and the resources available to you, this could become a year-long project. It may be helpful to keep in mind that there are very few records of the contributions women made to science during this period. Searching for material and even the names of scientists who were women may be particularly difficult. If neither of these ideas are possible to explore in your context, you could use some of these questions for a class discussion: *How was Williams' contribution to the discovery of Pluto different from Verrier's contribution to the discovery of Neptune? Why do you think Williams' role in this story is rarely spoken about? Do you think the girls in your class have a better chance (than Williams) of becoming and being known as scientists?* Even as science teachers, this may be the first time some of us may be participating in or facilitating such a discussion. You may find the freely available recording of an i wonder...webinar (Feb 2024) titled 'Dorothy Andersen: An Unsung Hero' (<https://www.youtube.com/watch?v=GkKhdz8Wbe8>) helpful in preparing for your role in the discussion.
- Lowell used his personal wealth to build the Lowell Observatory (it was one of a kind at the time) and willed most of his estate to it! We can guess how important this aspect is from the fact that the search for Pluto was put on hold for a 11-year period when the observatory did not have access to Lowell's wealth. **Prompt for students:** If your students show interest in this aspect, you could ask them how this may be related to the nature of Lowell's search. You could use some of these questions for a discussion: *Can you think of some things an astronomer would need to answer such a question? Do all questions in science need this kind of financial support? Can you think of 1-2 questions that can be explored with simple, inexpensive, and easily available materials?* You could also connect it to the next aspect included in this list!
- Tombaugh was so determined to observe markings on the surface of Jupiter that he built his own telescopes from scratch. He ground his own mirrors and lenses for it. And used discarded automobile parts and farm equipment to build its mount. He had no formal training in any of this! **Prompt for students:** If your students have had the opportunity to 'make' a scientific model or instrument themselves, you could invite them to share their experience. Here are some questions you could use for this discussion: *What did you make? What kind of help did you need from your classmates and/or teacher? What did*



you use this instrument for? What did you learn from this experience? Did you enjoy it? To offer students more of these opportunities, you could refer to the articles titled:

- 'The Pedagogy of Making: Pinhole Camera' in this issue of *i wonder...* (Dec 2023–Dec 2024). In this article, Shiv Pandey (a teacher) shares his experience of inviting students to construct their own pinhole cameras.
 - 'Doing Science without Labs' in this issue of *i wonder...* (Dec 2023–Dec 2024). In this article, Satish Bhaskar (a teacher educator) shares his observations of how offering a space for 'jugaad from junk' can encourage students to experiment with constructing new things using discarded objects.
 - 'Daytime Astronomy with Self-constructed Equipment' in the previous issue of *i wonder...* (Jun 2023). In this article, Prajval Shastri (an astronomer) shares how students can construct their own magic mirrors and mounted solar ball projectors to observe celestial objects in the daytime sky.
- Dr Slipher saw some of Tombaugh's drawings of Jupiter and offered him a chance to work as an astronomer at the Lowell Observatory. Tombaugh had completed only a high school degree at the time! **Prompt for students:** If your students show interest in this aspect, encourage them to record their observations of any object or feature in their immediate world by drawing it. Invite them to choose a subject that is related to something they are studying in science. You could use this question as a prompt: *What about this object or feature would be interesting to discuss in the science class?* Display their drawings in the class. Give each drawing a number. Allow your students enough time to view this display. Ask them to guess what object or feature is captured in each drawing. Then invite each student to present the subject of their drawing to the class. At the end of each sharing, ask how many students had guessed the subject of the drawing correctly. You could use some these questions for a discussion: *What would you need to see in a drawing to make a more accurate guess about its subject? Did any of the drawings help you see something that you had not noticed before? How easy or difficult did you find it to record your observations as drawings? Did it have any effect on what you observed or the way you observed it? How important do you think drawings are in science? What scientist-like skills could Dr Slipher have seen in Tombaugh's drawings?*
 - Tombaugh first observed Pluto in February, 1930. This was the evidence that the Lowell Observatory had been seeking for about 24 years. The most immediate effect it had was that the entire staff at the observatory became involved in verifying this observation. They announced this discovery only about a month later! **Prompt for students:** If your students show interest in this aspect, ask them to imagine: *If you were in Tombaugh's shoes or on that team, what would that month have seemed like? Why was it so important to verify this observation? What do you think this process of verification involved? What if the team at the Lowell Observatory had reported this observation as soon as Tombaugh made it and it turned out to be wrong? We have seen that science is open to revision. How is this different from the kind of revision we spoke about?*

We wrote this story specifically for school teachers preparing to introduce their students to the solar system. While Pluto was seen as a planet for only 76 years, it has made a mark on many of us. It is likely that your students will question how matter-of-factly their textbook addresses this 'demotion.' We hope our telling of this story allows you to answer their questions without taking away from the wonder that this example of science as a human endeavour can inspire. We also invite you to choose parts of this story and ways of retelling it that you think will be most engaging to your students.

Curious about the images in this Guide? Here are some details:

Figure (a): Lowell using the 24-inch telescope at Lowell Observatory to observe the sky. Later, Tombaugh used this telescope to photograph Pluto. Both would likely sit in this position for hours. Credits: Lowell Observatory, Wikimedia Commons. URL: https://en.wikipedia.org/wiki/File:Percival_Lowell_observing_Venus_from_the_Lowell_Observatory_in_1914.jpg. License: Public Domain.

Figure (b): Perhaps the only photograph we have of Elizabeth Langdon Williams. What about the other women on her team? Who were they? Credits: Lowell Observatory, Wikimedia Commons. URL: https://commons.wikimedia.org/wiki/File:Elizabeth_Langdon_Williams.jpg. License: Public Domain.

Key takeaways



- The presence of a ninth planet in the solar system was proposed when observations of Neptune could not explain differences between the predicted and observed orbitals of Uranus.
- The astronomer Percival Lowell started the search for this planet, which he called Planet X, in 1906 at the Lowell Observatory, Arizona, USA. Between 1906 and 1916, Lowell and his team developed a combined mathematical and observational approach to search for this planet in the night sky. They also refined the tools (telescopes and blink comparator) they used for this search.
- In 1929, Vesto Slipher from the Lowell Observatory resumed the search for this planet and assigned this task to Clyde Tombaugh, a gifted telescope builder and an amateur astronomer. In February 1930, using Lowell's methods and his tools, Tombaugh discovered an object that was planet-like in its movement and far enough from Earth to be beyond Neptune.
- In March 1930, the discovery of this planet was announced. The name 'Pluto' was suggested by a eleven-year-old called Venetia Phair.

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Notes:

1. Credits for the image used in the background of the article title: Pluto, NASA, Wikimedia Commons. URL: https://en.wikipedia.org/wiki/File:Pluto-01_Stern_03_Pluto_Color_TXT.jpg. License: CC-BY.
2. This article has one detachable classroom resource: **Teacher's Guide: Pluto in the Classroom.**

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