



Astronomical Sport With Bigger and Better Telescopes

No asteroid discoveries (see “What CAN You See With a Telescope?”) were reported between 1807 and 1845, but not because there was a lack of searchers. Groups of amateur and professional astronomers designed special sky-mapping projects to search for them. But it was Karl Hencke, a postmaster and amateur astronomer in Driesen, Prussia, who provided the “breakthrough.”

A New Era in Asteroid Discovery

Hencke started searching in 1830, using a small telescope mounted through the roof of his house. He spent fifteen years, alone and without financial support, plotting star locations and looking for a moving point of light that might be an asteroid. On December 8, 1845, he was looking for Vesta and accidentally discovered Astraea. This was nearly 39 years after the discovery of Vesta (see “Astronomical Serendipity”). The King of Prussia rewarded Hencke with an annual pension of 1,200 marks. He continued to search and, on July 1, 1847, he found another asteroid. He gave Carl Friedrich Gauss (see “The Lost is Found”) the last of the first generation of asteroid researchers, the honor of naming this sixth asteroid.

Hencke’s discoveries triggered a new age of “astronomical sport.” Fifteen asteroids were found by the end of 1851. In the last half of the 19th century, new asteroid discoveries were made every year and most astronomers found more than one asteroid during their lifetimes. A couple of notable astronomers, Hermann Golschmidt and C.H.F. Peters, were fortunate enough to make **two discoveries on a single night!**

As asteroid discoveries flourished, this new wave in astronomy attracted growing attention. In 1868, when James Watson discovered the 100th asteroid, the French Academy of Sciences engraved the faces of Theodore Robert Luther, J. R. Hind, and Hermann Goldschmidt, the three most successful asteroid-hunters at that time, on a commemorative medallion marking the event.

New Discoveries Call For New Systems

The first asteroids discovered were considered to be “minor planets.” An 1857 reference book refers to seventeen planets in the solar system, eight of which were major planets from Mercury to Neptune and the other nine were asteroids. For this reason, newly discovered asteroids were given both a name and a symbol, as was done for the major planets. For example, the symbol for Hebe was a cup.

By 1851, the Royal Astronomical Society decided that asteroids were being discovered at such a rapid rate that a different system was needed to categorize or name asteroids. In 1852, when de Gasparis discovered the twentieth asteroid, Benjamin Valz gave it a name and a number designating its rank among asteroid discoveries, 20 Massalia.

Sometimes asteroids were discovered and not seen again. So, starting in 1892, new asteroids were listed by the year



<http://www.detroitobservatory.umich.edu/Telescopes.html>

and a capital letter indicating the order in which the asteroid's orbit was calculated and registered within that

specific year. For example, the first two asteroids discovered in 1892 were labeled 1892A and 1892B. However, there weren't enough letters in the alphabet for all the asteroids discovered in 1893, so 1893Z was followed by 1893AA. A number of variations of these methods were tried, including designations that included year plus a Greek letter in 1914. In 1925, a simple chronological numbering system was established.

Old Methods Meet New Technology

The table below, which accounts for about half of the discoveries during the second phase of asteroid research, contains some interesting highlights and information regarding these observations. All these 19th-century astronomers used the visual method, which entailed hours of observation at the telescope looking for moving points of light. They persevered even in the extreme cold of winter, using this classic and well-tried method.

| Year | Asteroid | Discoverer | Location | Telescope Size/Model | Interesting facts about the asteroid or its discoverer |
|-------------------------|---------------------|--------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7/1/1845 12/8/1845 | 5 Astraea 6 Hebe | Karl Hencke Postmaster and amateur astronomer | Driesen, Prussia | Small but actual size not known | Telescope mounted through the roof of his house Gave Carl Friedrich Gauss (see " The Lost is Found ") the honor of naming the sixth asteroid. |
| 8/13/1847 10/18/1847 | 7 Iris 8 Flora | J. R. Hind, professional astronomer | London, England | Probably the 7- inch diameter telescope he is known to have used in 1852 | By 1854, Hind had discovered eight more asteroids. He worked at G. Bishop's private observatory "South Villa" at Regents Park. |
| 4/25/1848 | 9 Metis | Andrew Graham, professional astronomer | Markree Castle, Ireland | 4-inch Comet Seeker made by Ertel of Munich | The Markree Castle Observatory was owned by Edward Jonathan Cooper, who was too busy to observe on the night that Graham discovered Metis, the only asteroid found from an Irish observatory. |
| 4/12/1849 | 10 Hygiea | A. de Gasparis | Naples, Italy | May have used a German farmer's | Hygiea is the fourth largest asteroid after Ceres (see " It Was a |

| Year | Asteroid | Discoverer | Location | Telescope Size/Model | Interesting facts about the asteroid or its discoverer |
|-----------------------|---------------------------------------|---------------------------------------------------------------------|--------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | homemade telescope | <p>Dark and Starry Night”), Pallas, and Vesta (see “Astronomical Serendipity”).</p> <p>Even though Hygiea is larger than the “Principal Four,” its albedo (see “What Can You See With a Telescope?”) is only 0.07.</p> <p>De Gasparis discovered a total of seven asteroids.</p> |
| 4/17/1852 | 17 Thetis | Theodor Robert Luther, professional astronomer | Municipal Observatory, Düsseldorf, Germany | | <p>Luther was one of the few astronomers who devoted himself almost exclusively to searching for new asteroids.</p> <p>He found his 24th asteroid by February 20, 1890.</p> |
| 9/17/1857 | 48 Doris 49 Pales | Hermann Goldschmidt painter and amateur astronomer | Paris, France | 2-inch telescope | <p>Working in his living room above the Café Procope in Paris, he was the first astronomer to discover two asteroids on the same night.</p> <p>By May 5, 1861, he had identified 14 new asteroids.</p> |
| 5/29/1861 6/3/1875 | 72 Peronia 144 Vibia 145 Adeona | Christian Heinrich Friedrich Peters, professional Danish astronomer | Hamilton College, Clinton, New York | 13.5-inch telescope | <p>Peters’ first discovery was made six weeks after the start of the Civil War.</p> <p>He was the second astronomer to find two asteroids in a single night.</p> |

| Year | Asteroid | Discoverer | Location | Telescope Size/Model | Interesting facts about the asteroid or its discoverer |
|----------------------------|----------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | | In two decades of searching, he found a total of 48 asteroids. |
| 7/11/1868 10/10/1874 | 100 Hekate 139 Juewa | James Watson, American professional astronomer | University of Michigan Detroit Observatory, Ann Arbor, Michigan | A 6-inch Pistor & Martins telescope from Berlin and a Henry Fitz 12 5/8-inch refracting made in New York, NY * | Watson found the 100 th asteroid in 1868, one of six that he discovered that year. In 1874, while in Peking, he made the first asteroid discovery from China. Watson made a total of 22 asteroid discoveries. |
| 3/18/1874 3/27/1922 | 136 Austria to 975 Perseverantia | Johann Palisa | 1874 Director of the Pola Marine Observatory 1881 Vienna Observatory | 6.3-inch refractor 26.75-inch refractor | Between 1874 and 1923, Palisa discovered a total of 122 asteroids—28 of them at the Pola Marine Observatory, and the rest at the Vienna Observatory. |

C.H.F. Peters' death in 1890 marked the beginning of the end of the second phase of asteroid discoveries. By 1891, more than 300 visual asteroid discoveries were made by telescope. In that same year, Max Wolf discovered his first asteroid using new technology --a photographic plate-- (see "Silver to the Rescue") and a revolutionary third phase of asteroid research began.

Additional Resources

Web Sites

<http://cfa-www.harvard.edu/iau/info/OldDesDoc.html>

Presents asteroid **nomenclature** history and information about the various ways of naming asteroids.

<http://cfa-www.harvard.edu/iau/lists/MPDiscsAlpha.html>

A more complete list of asteroid discoveries presented alphabetically according to the discoverers' names.

<http://cfa-www.harvard.edu/iau/lists/NumberedMPs00001.html>

Provides a more complete listing of 5000 asteroid discoveries, presented in order of discovery.

<http://www.detroitobservatory.umich.edu/Telescopes.html>

Features photos of telescopes installed in the University of Michigan Detroit Observatory on the dates shown, some of which may have been used by Watson.

Print Resources

Learner, R. (1981). *Astronomy through the telescope*. Van Nostrand Reinhold.

McSween, H.Y. (1999). *Meteorites and their parent planets*. Cambridge; New York: Cambridge University Press.

Peebles, C. (2000). *Asteroids: A history*. Washington, DC: Smithsonian Institution Press.

Roth, G. D., (1962). *The system of minor planets*. Princeton, NJ: Company Inc.