

## KM1746-1

<b>Date:</b>	1746 February 2	<b>Brightness:</b>	2
<b>Discoverer(s):</b>	E. C. Kindermann	<b>Type:</b>	Visual
<b>Location:</b>	Dresden, Germany	<b>Nobs:</b>	8

The reality of this comet has been debated over the years, which is quite astonishing since the first report describing it reads like an astrological pamphlet. With good reason, this object has been left out of all modern catalogues.

E. C. Kindermann was astronomer and mathematician at the Saxon court in Dresden. He had no formal education from a university and was basically self taught. In 1739, he published an astronomical textbook that had a title claiming that all celestial bodies would end up as comets. This title was changed in a later edition [72]. In 1744, he wrote the first science-fiction novel in German language, which described a trip to the first moon of Mars [73].

Kindermann published a pamphlet in 1746, which contained observations of a comet that he claimed to have predicted in earlier publications [74]. Reading further, the astonished reader finds that this comet is said to be the same that appeared in 1682, later known as 1P/Halley, and he even named it “Heter.”

The reason I called it Heter is that it appeared from the Herculan spheres and I could have called him Hercules as well...

Kindermann then goes on to say that it was first seen at 1:00 a.m. on February 2, close to the head of Medusa. Among the classical astronomical figures depicted in the sky, the head of Medusa is being held by the hand of Perseus. This would be close to Beta Persei, also known as Algol. Put into modern terms the position would be something like,

1746 (UT)	$\alpha$ (apparent)	$\delta$
Feb. 02.0035	02 <sup>h</sup> 50 <sup>m</sup>	+40° 00'

For Dresden, this would place the object at a height of about 22° in a northwestern direction.

Kindermann goes on to say that the comet moved northward through Perseus, across the right leg and the breast of Camelopardalis, and through the tail of Draco. There is no indication whether this all happened on February 2 or over several nights. He then said he next saw the comet on February 20, around 10:00 p.m., rising in the right leg of Pegasus. Unfortunately, there is uncertainty as to where the “right leg” is located, as classical depictions of Pegasus as a constellation can differ [75]. Despite this uncertainty, this location contradicts his statement that it rose at 10:00 p.m., as this area set around 9:30 p.m. The text continues to be confusing:

Its course is very fast, with the apparent arc being 120 degrees, which he passes within 5 1/4 hour: It moves against the rules of motion, which means that his movement force exceeds the one that is put against him.

Kindermann continues to say that it looked like a star of second magnitude, but the tail was only visible with the help of a telescope. He closes the pamphlet by predicting further comets for the coming years, which are returns of earlier ones, e.g. the Great Comet of 1744 (C/1743 X1), which he said would return in 1757 [76].

The Dutch astronomer N. Struyck noted that the comet was discussed in Kindermann's booklet "in an unusual way," and wrote to him for more details, presumably in 1748. Kindermann responded, noting that the comet was also seen by three other people. He also said he saw the comet in Lyra on February 21, in the head of Hercules on February 22, in the thigh of Hercules on February 23, in a small arm of Serpens on February 24, and noted that it crossed the ecliptic at longitude  $220^\circ$  on February 26. Kindermann said the comet disappeared between Virgo and Libra on February 27. Struyck added that this was all the information he received and suspected that the object of February 2 was not a comet but a different object.

The comet has been considered doubtful ever since. In 1784, A. G. Pingré expressed some doubt about this comet, based on its apparent rate of motion [77]. In 1846, J. R. Hind estimated rough positions from the available descriptions and computed an uncertain parabolic orbit. He said this orbit satisfied the general path of the comet and bore some resemblance to the orbit of the comet of 1231, but added that the "path assigned by this observer [Kindermann] is by no means regular [and] probably there are errors of dates" [78]. Hind's orbit is as follows:

T (UT)	$\omega$	$\Omega$ (2000.0)	$i$	$q$	$e$
1746 Feb. 15.5	$165^\circ$	$339^\circ$	$6^\circ$	0.95	1.0

During 1896, J. Holetschek published an analysis of the brightness and tails of all comets seen prior to 1760 [79]. He began his discussion about Kindermann's object by saying that he preferred to leave it out, but decided not to do so since Hind had presented an orbit. Interestingly, after beginning his analysis, Holetschek noticed that Hind's orbit showed the comet "would have passed from the Triangle through Aries to the Whale, thus through an area which is neither mentioned in [Kindermann's or Struyck's] report, and that therefore the orbit of Hind must be afflicted with an essential error." He said a perihelion date near the beginning of February would allow the orbit to more closely represent the locations given by Struyck. Holetschek mentioned that he contacted Hind, but Hind said the calculations had been lost. However, Hind added that he remembered, when asking German astronomers about Kindermann's observations, he mostly received head-shaking disapproval [80].

Holetschek covered Kindermann's observations and pointed out contradictions, especially between the observation of February 2 and all others from February 20 onward. He then presented an orbit that omitted the February 2 and final observations, but still only crudely represented the other observations, but with large residuals. It is as follows:

<u>T (UT)</u>	<u><math>\omega</math></u>	<u><math>\Omega</math> (2000)</u>	<u>i</u>	<u>q</u>	<u>e</u>
1746 Jan. 30.301	136.98°	343.65°	9.88°	0.871	1.0

This orbit revealed the comet should have been about 50° from Kindermann's indicated location on February 2. Holetschek concluded that the February 2 observation must have been something else, maybe a meteor, and agreed with Hind concerning the contradictions in the given positions and observation times.

Holetschek finally took a look at Kindermann's earlier publications and found that his 1744 astronomy textbook predicted the appearance of a comet named "Heter" in 1746, so that his comet was apparently supposed to be a fulfillment of his own prediction. In 1897, Holetschek commented,

... based on the study of the literary products of Kindermann this comet does not seem to be real and it does not deserve to be added in a catalogue of comets as well as the orbit by Hind. [81]