= Great Comet of 1882 =

The Great Comet of 1882 formally designated C / 1882 R1 , 1882 II , and 1882b , was a comet which became very bright in September 1882 . It was a member of the Kreutz Sungrazers , a family of comets which pass within 1 R ? of the Sun 's photosphere at perihelion . The comet was bright enough to be visible next to the Sun in the daytime sky at its perihelion .

= = Discovery = =

The comet appeared suddenly in the morning skies of September 1882 . As it was already visible to the naked eye , it was discovered independently by many people . Reports suggest that it was first seen as early as 1 September 1882 , from the Cape of Good Hope as well as the Gulf of Guinea , and over the next few days many observers in the southern hemisphere reported the new comet .

The first astronomer to record observations of the comet was W. H. Finlay , the Chief Assistant at the Royal Observatory in Cape Town , South Africa . Finlay 's observation on 7 September at 16h GMT was also an independent discovery , and he reported that the comet had an apparent magnitude of about 3 , and a tail about a degree in length .

The comet brightened rapidly , and within days had become an exceptionally bright object . Her Majesty 's Astronomer at the Cape , David Gill , reported watching the comet rise a few minutes before the Sun on 18 September , and described it as " The nucleus was then undoubtedly single , and certainly rather under than over 4 ? in diameter ; in fact , as I have described it , it resembled very much a star of the 1st magnitude seen by daylight . " .

= = Perihelion = =

The comet was rapidly approaching perihelion when it was discovered . At perihelion , the comet is estimated to have been only 300 @,@ 000 miles or 480 @,@ 000 kilometres (0 @.@ 0032 AU) from the Sun 's surface . Subsequent orbital studies have determined that it was a Sungrazing comet , one which passes extremely close to the surface of the Sun . For many hours on either side of its perihelion passage , the comet was easily visible in the daytime sky next to the Sun . It reached an estimated magnitude of ? 17 .

Shortly after perihelion was reached on 17 September , the comet transited the Sun . At the Cape , Finlay observed the comet with the aid of a neutral density filter right up until the moment of transit , when the Sun 's limb was " boiling all about it " . Finlay noted that the comet disappeared from view very suddenly , and no trace of it could be seen against the Sun 's surface .

= = Post @-@ perihelion evolution = =

After its perihelion passage , the comet moved into dark skies , and although it faded as it receded from the Sun it remained one of the most prominent objects in the sky . On 30 September , observers , including Finlay and E. E. Barnard , began to notice that the comet 's nucleus was elongated and broken into two pronounced bright balls of light , and by 17 October it was clear that it had broken into at least five fragments . Observers reported that the relative brightness of the fragments varied from day to day .

In mid @-@ October , the comet developed a notable antitail , pointing towards the Sun . Anti @-@ tails are a fairly common cometary phenomenon , and result from orbital geometry giving the appearance of a tail pointing towards the Sun although material can only be driven away from the Sun .

The nucleus reached its maximum apparent size in December 1882 . The comet faded gradually , but despite its fragmentation it remained visible to the naked eye until February 1883 . The last definite sighting of the comet was made by B. A. Gould at Córdoba on 1 June 1883 .

= = Orbital studies = =

Studies of the orbit of the comet showed that the Great Comet of 1882 was moving on an almost identical path to previous great comets seen in C / 1843 D1 and C / 1880 C1 . These comets had also suddenly appeared in the morning sky and had passed extremely close to the Sun at perihelion . One suggestion was that all three were in fact the same comet , with an orbital period that was being drastically shortened at each perihelion passage . However , studies showed this to be untenable , as the orbital period of this comet is 772 ± 3 years and the others are 600 ? 800 years .

Heinrich Kreutz studied the orbits of the three great comets , and developed the idea that the three comets were fragments of a much larger progenitor comet which had broken up at an earlier perihelion passage . The fragmentation of the Great Comet of 1882 itself demonstrated that this was plausible . It is now thought that the Great Comet of 1882 is a fragment of X / 1106 C1 , and that Comet du Toit (C / 1945 X1) and Comet Ikeya ? Seki (C / 1965 S1) are two of its sister fragments .

It is now well established that the comets C / 1843 D1 , C / 1880 C1 , C / 1882 R1 , C / 1887 B1 , C / 1963 R1 , C / 1965 S1 , and C / 1970 K1 are all members of a family known as the Kreutz Sungrazers , which are all descended from one comet . Current models do not support the frequent supposition in the prior literature that the famous comet of 372 BC is in fact the ultimate parent of the Sungrazers . The comet of 372 BC is often associated with Aristotle who , along with others from his time , described that comet in his writings . However , Aristotle was only twelve at the time of the comet 's appearance and the historian , Callisthenes of Olynthus , who also wrote about it was born ten years after its appearance . Consequently , their reports should not be taken as eye @-@ witness accounts . Further , there is no mention of the comet in Chinese literature of the time . Instead either the comet of February 423 or of February 467 with orbital periods of around 700 years is now considered the likely progenitor of the Sungrazers . The fragments of the Great Comet of 1882 will return in several hundred years ' time , spread out over perhaps two or three centuries .