

## The Great Comet of 1882

Like the shepherds of yore, the early pioneer had time to know and appreciate the wonders of the heavens. To him they had a practical value, for by the stars at night he often found his way across the trackless prairies, and by the sun he told the hours of the day. The traditional lore concerning the "signs of the zodiac" was once common knowledge, and it was regarded as a mark of erudition to be able to govern household affairs, from planting to butchering, by the "phases of the moon". Whether the motive was religious inspiration, belief in the soothsayings of astrologers, or devotion to the science of astronomy, people stood in wonderment as they beheld the glories of the midnight sky.

Of the many awe-inspiring spectacles in the heavens, none was more likely to arouse sinister forebodings among people than the appearance of a comet. The strange psychological behavior and anxiety created by the occurrence of such a phenomenon, especially among the more ignorant classes, has been noted throughout all ages. It is often more inexplicable than the mystery of the comet itself.



Almost every year witnesses the coming of one or more of the minor comets, whose appearance is usually so ordinary that few persons except astronomers are sufficiently impressed to give them a second look. This is not true, however, on those rarer occasions, perhaps only a few times in a century, when comets of such great magnitude appear in the sky that they are immediately recognized by every one as objects of extraordinary interest.

An awakening of interest in astronomy occurred during the nineteenth century in Iowa as elsewhere. The subject was included in the curricula of the numerous academies, seminaries, and colleges of the State. Moreover, the unprecedented number of major astronomical events aroused much popular curiosity. For the people of Iowa the pageant began with the Great Comet of 1843, which was followed closely by the Marion Meteorite Fall of 1847, the notable Donati's Comet of 1858, the Leonid Shower of 1867, the Total Eclipse of the Sun of 1869, the brilliant Amana Meteorite Shower of 1875, and the extraordinary Estherville Meteorite Shower of 1879. From this list of celestial activities it would seem that Iowa was well situated for astronomical observations.

When the "Great Comet of 1882" appeared, the people of Iowa were well prepared to contemplate it with an attitude of scholarly sophistication.



While some superstition was probably evidenced by a few religious fanatics and uninformed persons, most people understood, appreciated, and enjoyed the grand spectacle.

Comets have been called the rovers of the solar system. The number is undetermined, probably running well into the thousands. Of uncertain origin, they travel through space in elongated orbits, approaching the sun at intervals of many years. It is thought that some comets have parabolical orbits, in which case they visit the sun but once and then only by accident. After circling the solar center, they pass on out into the vast reaches of outer space, never to return.

Comets can be readily distinguished from other astronomical objects by their characteristic long, tail-like appendage. This tail is called the coma, or hair, from which designation comets derived their name. It is composed chiefly of atomic gaseous matter, so rare that it actually rides at incredible speed on the light waves proceeding outward from the sun. When entering the solar system and approaching the sun, the comet's luminous tail trails along behind, as all good tails are supposed to behave. Then, as the comet swings around the sun and begins its outward journey, the tail reverses its position and precedes the head of the comet out into space. It is as though the celestial



stranger rushes into the solar system and, recognizing its mistake, bows adieu and politely backs out again.

The Great Comet of 1882 became visible to the naked eye on September 3rd in New Zealand, only two weeks before reaching its perihelion (nearest approach to the sun) on September 17th. It was observed in the northern hemisphere somewhat later. On September 28th the *Oskaloosa Herald* announced that the "new comet which has suddenly sprung into the eastern sky, travels at the rate of 370 miles per second. It is a stranger and is rapidly getting into the atmosphere and influence of the sun, and mayhaps give it a whack. It can be seen early in the morning, about four o'clock, but soon will be visible all day."

As a matter of fact, at that time it was already receding or passing out of the sun's influence. W. L. Elkin at the Cape of Good Hope watched it approach perihelion "like a dazzling white bird with outspread wings" and apparently disappear into the sun. It actually passed between the earth and the sun, yet no trace of it could be seen on the solar disc. Afterward, it was observed on the opposite side of the sun, clearly visible by daylight early in the morning, "brandishing a portentous, swordshaped tail, which, if it had been in the evening sky, would have excited the wonder of hun-



dreds of millions, but situated where it was, comparatively few saw it." The editor of the Des Moines *Iowa State Register* complained that this 1882 comet was "not compatible with that spirit in society which causes gate hinges to wear away prematurely", for it was not visible in the moonlight. Nevertheless, many persons got up at daybreak to see the brilliant spectacle.

"Don't fail to see it!" admonished the editor of the Vinton *Eagle* on October 10th. "If you can't get up early enough in the morning, stay up all night, and watch for its appearance. But you will not need to watch very carefully, for it is the most brilliant object in the heavens, from about 4:30 to 5:30 in the morning, at which time it is near the horizon, a little south of east. The nucleus is very bright and the tail is simply a magnificent train of light, almost white in the center, shading off to paleness toward the edges and the end. The tail is about 20 degrees in length, as seen by the naked eye, and spreads out like a fan. It is very near the sun but has passed its nearest point and is now traveling from it at a rate of 2,000,000 miles a day. Yesterday morning was the first time there has been a good opportunity to see the celestial visitor, on account of fogs and clouds. The sky was very clear and bright yesterday morning, and it could be dimly seen as late as six o'clock."



On the previous day the editor of the *Oskaloosa Herald* had joined "the early rising brigade" and was "blessed with a magnificent view of the comet". It appeared to him "like some great electric light, with a tail attached covering some twelve to sixteen degrees of an arc. It is beautiful beyond description, and eclipses all other comets that have ever been exhibited in this section. In size it is about two hundred miles wide and sixteen thousand miles long, and astronomers tell us that this particular comet has a through ticket to fall into the sun in the summer of 1883, when some sort of trouble may be expected".

The editor, however, was not alarmed at this erroneous prediction. "Persons with a good glass," he declared, "claim to have read, in letters of burnished gold a foot long — extended antique — 'Take the Oskaloosa Herald,' and 'Vote the Straight Ticket.' Carrying such an announcement as that it is plain to tell all the authorities on that comet are sound Republicans, and therefore not bound for the grand jump into the internal affairs of the sun. It will continue steadily on its way, ornamenting the heavens, and doing its appointed duty."

According to scientific observers the Great Comet of 1882 went through the corona of the sun where the temperature was estimated to be 3000°.



When first seen the nucleus was circular but in passing so close to the sun it broke into several parts and appeared as a "luminous streak some 50,000 miles in extent, upon which there were six or eight star-like knots of condensation". This "string of pearls" continued "to lengthen as long as the comet was visible, until at last the length exceeded 100,000 miles." By calculating the orbits of four separate nuclei, a mathematician predicted that one would return in 664 years (2546 A. D.), another in 769 years (2651), the third in 875 years (2757), and the last in 959 years (2841), instead of appearing in one great body as in 1882.

The editor of the *Washington Democrat*, who was not at all scientific, saw the comet on October 20th, and apparently noticed the division of the nucleus. "It looked to us", he wrote, "like a great burning light about the size of a bushel basket dancing around in all directions with several long tails about sixty feet long, which flapped back and forth like the streamers on a liberty pole, and there were millions and millions of stars or meteors shooting in all directions". Editor George G. Rodman may have exercised vivid imagination in his description, but there can be no doubt that he was greatly impressed by what he saw.

Not all the Iowa observations were of such a frivolous or facetious nature. Professor Nathan



R. Leonard at the State University made excellent notes considering the limitations of his equipment. "During these nights of the comet's glory", reported the *Iowa City Republican* on October 19th, "the University Observatory has been the centre of attraction, and Prof. Leonard has been unceasing in his attentions to the beautiful stranger. On such occasions our regrets are peculiarly intense when we think of our telescope, good as it is for all ordinary purposes, yet too small for the more notable purposes of discovery."

"The antics of the comet are exciting the astronomers", announced the *Oskaloosa Herald* on October 19th. At the end of September "a separation was seen of the nucleus. On October 2nd, the parts had nearly closed up. On October 5th, there was a second separation. Again the parts closed together partially. On the 8th a pear-shaped nucleus was seen, and on the 9th a separation. These separations, occurring at periods of four days, bear out the theory that the fragments revolve around a common center of gravity. It is still on exhibition in the early morning, and it pays to look out and see it."

Two days later the *Iowa City Republican* declared that the "present comet in the Eastern sky, which can be distinctly seen by everyone at early morning, is certainly the most remarkable of all the



modern comets. Prof. Lewis Swift, director of the Warner Observatory, Rochester, N. Y., states that the comet grazed the sun so closely as to cause great disturbance, so much so that it divided into no less than eight separate parts, all of which can be distinctly seen with a good telescope. There is only one other instance on record where a comet has divided, that one being Biela's comet of 1846, which separated into two parts."

The Des Moines *Iowa State Register* printed an unusually complete series of articles, commenting upon almost every phase of the comet's career. On October 12th a Scotch scientist was quoted as believing that the comet would return in 1883 and fall into the sun with disastrous results. A Harvard professor, however, thought this was unlikely, and thus fears were allayed. The paper proclaimed on October 14th that the "comet now in the constellation Hydra is proving to be one of the most magnificent apparitions that have so far appeared in the present century." It seemed much larger and more beautiful than the comet of 1843. To a lady it appeared like a fan, and to a hen-pecked husband like a "broom handle, with a grid-iron on the end of it."

On October 17th the *Iowa State Register* printed a poem by A. R. Fulton, former immigration commissioner for Iowa.



TO OUR CELESTIAL VISITANT

Mysterious wanderer of the sky,  
In heaven's bright caravan,  
In thy celestial journey, why  
Seek'st thou the abode of man?

From what far realm dost thou hail,  
With thy mission here to men,  
Of unknown wonders that prevail  
Far beyond our mortal ken?

From far-off regions infinite,  
Where suns of other systems shine,  
Dost thou before our vision flit  
To impart some truth divine?

Art thou some reckless planet, hurled  
From thine ancient orb for crime,  
Doomed to wander — an Ishmael world —  
Down the endless years of time?

Need mankind regard thee with awe,  
As the herald of some curse!  
Mov'st thou not by some fixed law  
Through the boundless universe?

Flashing through the realms of space,  
What other beings gaze on thee,  
And in thy wondrous grandeur trace  
The matchless hand of Deity?



Whence thou comest, or wither bound —  
What thy mission — good or ill —  
All — all, are mysteries profound,  
Unrevealed by human will.

Soon thou'lt pass from mortal eye,  
On thy journey mid the spheres,  
And light perchance again our sky  
When have sped a thousand years.

Like the famous eclipse of 1869, the Great Comet of 1882 attracted the attention of scientists all over the world. There was considerable debate as to its true identity. Some at first thought it was closely related to the comets of 1843 and 1880, but not identical. Spectroscopic analysis indicated that it contained hydrogen, sodium, carbon, and possibly iron. Like its great predecessor of 1843, it was remarkable for having been visible in broad daylight. That it left an indelible impression upon the consciousness and memories of all who witnessed it cannot be denied.

BEN HUR WILSON