

## ISAAC WARD AND S ANDROMEDAE

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This year we celebrate the 100th anniversary of the discovery of the first supernova, that of August 1885 near the nucleus of the Andromeda galaxy. In this centenary year it is surely worthy of note that, although others saw the new star within days of its appearance, the honour of being the first must fall to a Belfast amateur astronomer, Isaac Ward.

### 1. *A renowned amateur astronomer*

Ward has already been the subject of a note in an earlier issue of this Journal (McElderry 1954). He was born in Belfast on 13th September, 1834, and lived at 22 Camden Street, University Road, Belfast. He died on 11th October, 1916, and was laid to rest two days later at Drumbeg.

Following his death, an appreciation under the title "Isaac W. Ward A Versatile Genius" was published in the Belfast Public Art Gallery Quarterly Notes, from which the accompanying photographs are reproduced. The author of that appreciation wrote: "Fate had bestowed upon Mr. Ward many unique gifts. He was a world-famed astronomer, noted also for his literary and artistic tendencies, while he had a detailed and far-reaching memory of old Belfast. Yet with all the good gifts the kind fairies had bestowed upon him at his birth, the uninvited evil fairy who came along afterwards could do nothing worse than give to him the fatal gift of modesty. Why need we wonder that Belfast had little idea of the true greatness of the kindly, elderly gentleman when he himself had no suspicion of his own rank as a genius. His brain was one that registers mathematical accuracy without effort: the keen vision, the cast-iron memory were all attributes of the highest, and had ambition ever lured him away from his beloved Belfast, greater aims and scope of work might have placed him in the ranks of the foremost scientific men of the day. Would we now have the wealth that Shakespeare left us if he had been able to dwell contentedly at Stratford-on-Avon all his days?"

Ward came from a noted Belfast family whose original farmland was located on the site of what is now the Malone Golf Links and his father had been an agent for the old Coach Office. In a letter, a cousin of his from Dublin wrote: "What he did not know about the history and development of the linen trade and manufacture in the North of Ireland was not worth knowing, and the same remark applies to all historical matters connected with Belfast, including his great knowledge of the beginning and development of the city's banking business".

Under the pen-name of "Belfastiensis" he contributed to the Belfast newspapers on a variety of subjects and sometimes under the signature of "Linea" he



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contributed articles and letters to the “English Mechanic and World of Science” on matters astronomical.

Isaac Ward was no mean astronomer. R. A. Proctor spoke of him as a man “of the keenest vision” while the Rev. T. W. Webb, author of “Celestial Objects for Common Telescopes”, gave many references to his marvellous vision in that he was able to observe satellites and double stars with a smaller aperture than any other astronomer. Webb quoted Ward no less than 43 times in his book, twice on satellites of Saturn, once each on satellites of Uranus and Neptune and 39 times on double stars. Throughout his astronomical career he used a 4.3-inch Wray refractor. He was also a member of the Ulster Astronomical Society which flourished from 1890-94 but apparently he did not hold office. A list of his principal contributions is appended below. His observations of the satellites of Uranus and Neptune were given the seal of approval of no less a person than S. W. Burnham.

## 2. *The new star in M31*

Notwithstanding his many astronomical researches, it was his discovery of the first supernova which, in retrospect, is his principal claim to fame. Of course, at that time, 1885, the concept of supernovae was not known nor was the extra-galactic nature of the nebulae.

It transpires that Ward was observing M31 on 19th August of that year when he noticed a star which he estimated to be of magnitude 7 near the nucleus. It was observed the following evening by E. Hartwig and estimated to be of the sixth magnitude. The next sighting appears to have been in Budapest by Baroness de Podmaniczky on 22nd August on the occasion of a star party which was attended by Dr. de Kovesligethy. They were using a 3.5-inch telescope. The Baroness and her



ISAAC WARD AND HIS TELESCOPE

1874.



party, however, did not appreciate the stellar nature of what they observed. As there was a full moon that evening they thought that its glow had washed out the nebulosity surrounding the nucleus of M31, leaving only the nucleus itself to be stellar in appearance (Chambers 1898). Similarly, a pre-discovery observation on 17th August by Gully of Rouen was ascribed to a defect in a new telescope (Burnham 1978).

According to Chambers the new star rose to maximum on approximately 31st August and by the end of September had declined to magnitude 10, although Burnham states that S. Gaposchkin made an analysis of the observations at Harvard and found that maximum probably occurred on 17th August at about magnitude 5.4. Trouvelot suggested the star was in the Milky Way as a number of stars were observed to be scattered all over the Andromeda "nebula" and he thought they were too well-defined to be either immersed in the nebula or behind it. Chambers himself observed the star on 3rd September with a 6-inch refractor and also thought it had nothing to do with M31.

According to R. Burnham the light of the star decreased for five months and faded from sight in February 1886. It was last seen by A. Hall with the Washington 26-inch refractor on 1st February, 1886, as a 16th magnitude object, and by the Rev. T. E. Espin with difficulty on 6th March of the same year with a power of X1000 on a 17¼-inch reflector (Webb 1962 edition).

### 3. *Not a nova, but a supernova*

After G. W. Ritchey's discovery of faint novae in M31 in 1917 it became obvious that the nova of 1885 was different. The amplitude of normal galactic novae rarely exceed 13 magnitudes. S Andromedae, as it was designated, had peaked in brightness at around 6th magnitude and therefore should have been visible at around magnitude 19, but photographs down to magnitude 23 failed to show it. Its absolute magnitude at maximum must therefore have been -16 or -17.

The observation of this and subsequent novae in other galaxies indicated the existence of "island universes" which led to the famous Shapley-Curtis debate. Subsequently it was recognized that the Andromeda and other "nebulae" were galaxies beyond and independent of the Milky Way which itself was simply one among many. The nature of the novae visible at such large distances indicated that they were of a different class and so it was that S Andromedae was later recognized as the first supernova observed in the course of eruption.

Isaac Ward's professional successors are still debating the nature of supernovae and in modern times discoveries of exotic new objects are made with large telescopes in conjunction with highly specialized equipment. It is surely fitting, therefore, that this year in particular we should remember the unassuming, retiring amateur and his remarkable discovery with a small telescope.

### *Acknowledgement*

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*Selection of Letters on Astronomical Themes*

Reference to Isaac Ward's Observation	...	E.M.	21/ 4/1876
Small Telescopes on Saturn and Other Objects	...	E.M.	19/12/1879
"Celestial Objects"—Comes to Vega—Comes to Polaris—Comites to Epsilon Lyrae* and other Test Objects	...	E.M.	10/ 9/1880
Encke's Comet—Great Comet, 1882	...	E.M.	23/ 2/1883
Alpha Sagittae—Sunspots—Aurora— The Late Mr. Birmingham	...	E.M.	19/ 9/1884
The Rev. Prebendary Webb—Sunspots	...	E.M.	19/ 6/1885
The Andromeda Nebula	...	E.M.	2/10/1885
Messier 31 and Nova 1885 Andromedae	...	E.M.	16/10/1885
The Variable Red Star V Cygni	...	E.M.	6/11/1885
Fabry and Barnard Comets	...	E.M.	5/ 3/1886
The Red Variable V Cygni—31 Messier Andromedae [sic]	...	E.M.	5/11/1886
The Variable Star V Cygni	...	E.M.	10/12/1886
Range of Barometer	...	E.M.	31/12/1886
The Trapezium of Orion	...	E.M.	4/ 5/1888
Venus	...	E.M.	17/ 5/1889
The Transit of Mercury	...	N.W.	6/11/1907
Halley's Comet and Other Remarkable Comets	...	N.W.	9/10/1908
Prof. S. W. Burnham and His Life-Work	...	E.M.	10/ 7/1914
The Group Epsilon Lyrae	...	E.M.	21/ 8/1914

E.M. = "English Mechanic and World of Science".

N.W. = "Northern Whig".

\* Comes is from the Latin for companion; its plural is comites. These words were used frequently during last century.

*References*

- Burnham, R. *Burnham's Celestial Handbook*, 1978 Edition, Vol. 1, p. 143.  
 Chambers, G. F. *The Story of the Stars*, 1898, p. 94.  
 McElderry, J. H. "Historical Notes on Irish Astronomy: Glimpses of Popular Astronomy in  
 Belfast", 1954, *Irish Astron. J.*, 3, 74.  
 Webb, Rev. T. W. *Celestial Objects for Common Telescopes*, 1962 Edition, Vol. 2, p. 22.

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