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JOHN WARREN'S UNPUBLISHED OBSERVATIONS OF THE GREAT COMET OF 1811 FROM INDIA

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Abstract: Captain John Warren was the Acting Astronomer of Madras Observatory during the years 1805–1811 when the Astronomer John Goldingham went to England on leave. At Madras, Warren observed the Great Comet of 1807 (C/1807 R1), computed its orbit, and prepared a manuscript that he sent to the Royal Astronomical Society in London (which they chose not to publish). Subsequently, Warren observed the Great Comet of 1811 (C/1811 F1), and recorded his observations in the Madras MS Records for 1812 (which are now housed in the Archives of the Indian Institute of Astrophysics). Outside Europe, Warren's Head Assistant Sanevasa Chairy was the first to independently notice the Great Comet-to-be, after rightfully sensing that the faint nebulosity near a star in Monoceros was a comet. Prompted, perhaps, by the fate of his 1807 paper, Warren chose not to write a paper about Madras Observatory observations of the 1811 comet, which I now discuss in this paper.

Keywords: The Great Comets of 1807 and 1811; Madras Observatory; John Warren; Royal Astronomical Society

1 INTRODUCTION

Captain John Warren (1769–1830; Figure 1) was Acting Astronomer of the Madras Observatory (Figure 2) during the years 1805–1811 when the Astronomer John Goldingham went to England on leave. In the course of his tenure, two Great Comets appeared in the sky, in the years 1807 and 1811 respectively. These comets are noted in history for creating sensation among astronomers, and even generated concern among the general public, leaving an indelible imprint on their minds (e.g. see Figure 3). Warren observed both comets and briefly recorded his observations in the Madras MS Records (1812).

Observations by astronomers in Europe and the U.S. are well documented but those by Warren remain unpublished. He recorded his observations of the 1807 comet in the form of a research paper (Warren, 1808) and sent this to England in 1809 (Ananthasubramaniam, 1991). This manuscript is now in the Archives of the Royal Astronomical Society (RAS MSS Madras 6) and through the courtesy the Royal Astronomical Society it has finally been published (see Warren 2019) and commented upon (see Kapoor 2019).

Warren's observations of the Great Comet of 1811 were briefly recorded in the Madras MS Records (1812), but they also were not published at the time. These are the subject of this present short paper.

A brief account of the early days of Madras Observatory and the equipment there has been given in Kapoor (2019), since Warren (1808) had regretted in his paper "… having no instrument at the observatory of sufficient powers of observation of this nature." For details of Madras Observatory see Kochhar (1985a; 1985b), while Kochhar and Orchiston (2017) provide an overview of nineteenth century astronomy in India.

Figure 1: John Warren (courtesy: Indian Institute of Astrophysics Archives).

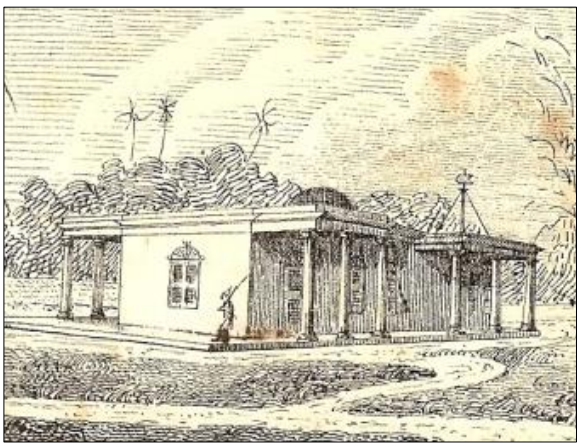

Figure 2: Madras Observatory at Numgambakkam (adapted from Taylor, 1838: cover image).

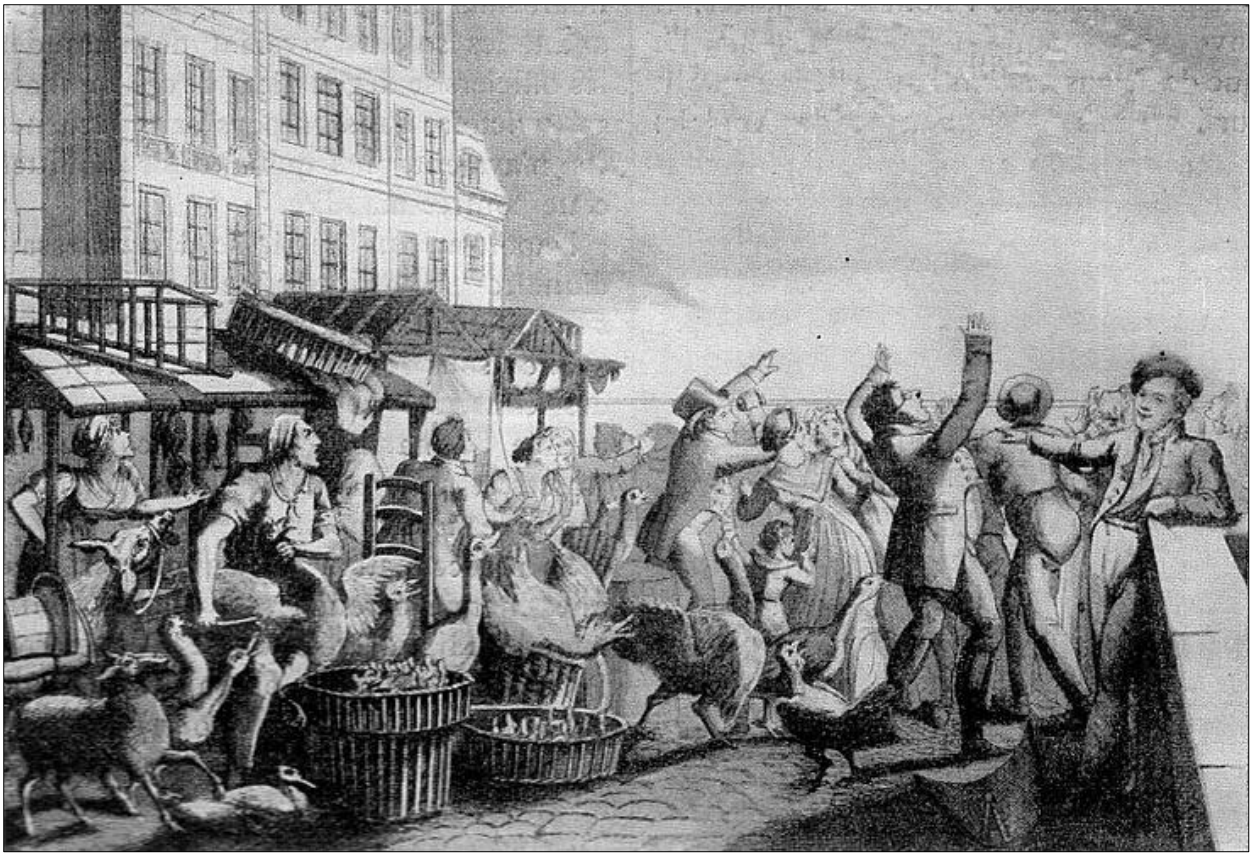

Figure 3: A charming French engraving showing public reaction to the appearance of the Great Comet of 1811 (https://fr.wikipedia.org/wiki/Fichier:Com%C3%A8te_1811.jpg).

2 THE GREAT COMET OF 1811

The Great Daylight Comet of 1811 (C/1811 F1) has an interesting history for it led to the Vintage Comet Wine of 1811. The brief entry on 'Comet wine' in Brewer's (1894) *Dictionary of Phrase and Fable* is worth reading. Comet Wine was a term of praise that was especially coined for a wine of superior quality. It came from grapes harvested in comet years that were considered to have better flavour than grapes grown in other years, for one believed that either the weather was warmer and that gave them a better quality or it was a positive chemical influence of the comet itself. This notion therefore made wines produced in the years 1811, 1826, 1839, 1845, 1852, 1858, 1861 etc. special. The finest vintage of the nineteenth century, however, belonged to the year 1811 when the harvest time September-October coincided with the presence in the sky of a Great Comet. The charm of the comet wine even led to the 1992 movie "Year of the Comet".

The Great Comet of 1811 was discovered at Viviers on the evening of 25 March by the French amateur astronomer Honoré Flaugergues (1755–1835; Lynn, 1905) in Argo Navis, the Ship of the Argonauts—a large constellation that in 1752 had been split by the French astronomer Nicolas Louis de Lacaille into Carina, Puppis and Vela. The comet was low in the south but was moving northwards and brightening. From its position given by Flaugergues for the next night the comet was located in Puppis. It was independently discovered by J.L. Pons on 11 April (Vsekhsvyatskii, 1964). The comet was visible to the naked eye for a record 260 days, a record shattered only by the comet Hale-Bopp in 1996–1997. Its tail extended to 70° in the month of December. It passed its perihelion on 12 September, was closest to the Earth on 16 October (at 1.2213 AU), and was last observed on 17 August 1812 (Kronk, 2003).

The comet left a great impression on persons of fine arts (e.g. see Figure 4), having been visible to the naked eye right from middle of April 1811 through to the first week of January 1812. It figured in the drawings of John Linnell (1792–1882), the great English naturalist, and *The Ghost of a Flea*, a miniature ca. 1819–1820 by William Blake (1757–1827) who had witnessed the comet (Olson, 1985). Blake illustrated several of his works with highly imaginative images of comets and meteors. A fiery comet also figured in Leo Tolstoy's (1828–1910) *War and Peace* (VIII, Chapter 22), but if the inspiration came from the comet of 1811, the wrong year was selected. Nevertheless, the ascription continued as recently as in 2016 when David Malloy's 2012 musical *Natasha*, *Pierre and the Great Comet of 1812*, inspired by a 70-page slice

Figure 4: A German depiction of the Great Comet of 1811 (https://fr.wikipedia.org/wiki/C/1811_F1#/media/File:Komet_von_1811.jpg).

from the great classic, premiered on Broadway in November 2016. There *was* a comet discovered by J.L. Pons on 21 July 1812 but it was too insignificant to cause such sensation and merit a place in works of art. Napoléon Bonaparte (1769–1821) was superstitious about the Great Comet of 1811 and adopted it as his guide-star and controller of his destiny. Some time earlier Charles Messier (1730–1817) had stated in his Memoirs of 1808 (1769 *Grande Comète qui a Paru a la Naissance de Napoléon-le-Grand Découverte et Observée Pendant Quatre Mois par M Messier*) that the great comet of 1769 "… preceded the birth of Napoleon the Great by 7 days …" (Meyer, 2007: 4); Messier had discovered this comet on 8 August.

According to the Jet Propulsions Laboratory (2017), the orbital elements of the Great Comet of 1811 are:

q = 1.035412 AU
i = 106º.9342
e = 0.995125
ω = 65°.4097
Ω (2000.0) = 143°.04977
Perihelion on 12.7562 September

3 JOHN WARREN'S ACCOUNT OF THE COMET

The Madras M.S. Records (1794–1812) of the Madras Observatory are hand-written records of the activity at the Observatory. Therein is a letter dated 27 April 1811 written by John Warren to the Acting Surveyor General informing him of the sighting of 'a nebulosity' on the evening of the 25 April. With the passage of time this would turn out to be the Great Comet of 1811.

The letter, in Warren's own handwriting, is reproduced below in full.

> To the Acting Surveyor General
>
> Sir
>
> I have the honor to inform you that on the evening of 25th Inst. the native head assistant at the Observatory reported to me that he had seen a faint luminous appearance near some unformed stars adjoining to the Constellation of Monocerous which he suspected might be a Comet. On the 26th in the evening I observed the same Phenomenon whose appearance was somewhat brighter than the Nebula in Andromeda close to a telescopic star in the lower part of Monocerous but observing no nucleus it was visible to the naked eye and something like a Train was discernible in a direction from the Sun. Its distance (taken with a sextant) was 18:20 (from Procyon) and from Sirius – 17:29.
>
> On the 27th about the same hour in the evening I observed again the same appearance, which had visibly altered its position, being then 1° from the telescopic star before mentioned, its brightness did not seem to have increased which I ascribe to the light of the Moon having become greater. On taking its distance from the same stars as before I found it from Procyon 17°:41′ E and from Sirius 17°:41′s which indicates a motion towards the sun of about 1° in 24 hours. The Train was discernible as before but a little fainter on account of the moonlight. No nucleus was yet formed, and untill that occurs no very accurate observation can be taken.
>
> I have now but little doubt of the appearance being a Comet. a few days more observations however will be necessary to make it quite certain.
>
> I have the honor to be Sir
> Your most obet. Sert
> M.C.Obsery.
>
> [Signed] J Warren
> 27th of April
> Actg astr

Note 'honour' and 'Monoceros', as spelt. To whom did the letter refer as the Acting Surveyor General? According to Phillimore (1950: 299) it would have been William Morison (1781–1851) who was Acting Surveyor General until end of March 1815, in place of the new appointee, Major Mackenzie, when the latter had to leave for Java in April 1811.

Notably, Warren's un-named Assistant was versant with the sky and celestial phenomena, and prescient enough to perceive of the observed nebulous form as a comet. We can only guess how the observers responded to the language barrier, but what the Assistant reported to his superior did earn him credit. Phillimore (1950: 196) mentions that there were two *Brahman* Assistants at the Observatory who had similar duties to perform, but one of them was more experienced and had an advantage in that he could speak and write English. The two Assistants would observe the transit of the Sun every noon, frequently occurring eclipses of the Jovian satellites and the transits of certain stars for the purpose of regulating the astronomical clock, etc.

In his paper on the comet of 1807, Warren (1808) mentioned his Bramin Assistant 'Senivassachari' who had observed the Great Comet of 1807 together with him. I believe he was still an Assistant in 1811 because in his report published in *Asiatic Researches* on determining the obliquity of the ecliptic in the months of December 1809 and June and December 1810 Warren (1818: 194) names his Brahmin Assistant as Sanevasa Chairy. Incidentally, he would appear to be the father of Chintamani Ragoonatha Charry

(b. 1828) who began working at Madras Observatory in 1840 and went on to create an international reputation as an astronomer (see Rao et al., 2009; Shylaja, 2012; Venkateswaan, 2018).

Based on a communication by Warren, a short note on the comet of 1811 appeared in *The Literary Panorama* also, followed by an Addendum (The Literary Panorama, 1812: 726–727). The note, titled *Detail of a Luminous Phenomenon Lately Discovered by Captain Warren, at Madras*, covers his observations over the period 25 April–16 May. The description of the observations up to 27 April largely matches that in his 'Letter' reproduced above, but also includes his observation of the 26th. The text below is reproduced in full because it is best said in Warren's own words.

> On the 25th of April last, at 8 P.M., a luminous appearance was noticed by him between the constellation of Canis Major, and Monoceros on the Eastern skirts of the Milky-way; which it was at first supposed to belong to. It was in brightness equal to the Nebula in Andromeda, but so undefined that it could not be observed with an instrument on that evening.
>
> On the 26th at 7h.30m. P.M. the same phenomenon was noticed somewhat North of East, of its former position. A faint luminous trace was discernible to the naked eye, and extended from it, in a direction opposite to the Sun. Its distances from Syrius, and Procyon were observed with a sextant as follows:-
> From Syrius 18d. 20m. E } 7h. 45m.
> From Procyon 17d. 10m. S }
> it then stood close East of a Telescope star being one of the unformed group below Monoceros.
>
> On the 27th its position with respect to the same stars was,
> From Syrius 17d. 37m. E } 7h. 50m.
> From Procyon 17d. 41m. S }
> having moved 1d. nearly towards the Sun. The body was less luminous, owing probably to the increased light of the Moon which had approached it. The train was still visible to the naked eye. It had moved through a whole diameter of the Telescope from the small star near to which it was seen on the previous day; and covered another Star of the 7th or 8th magnitude so that had it been thus placed on the 25th it would have been taken for the Nucleus of a Comet.
>
> On the 28th, the Moon shining bright, the luminous appearance was so faint that no accurate observation could be obtained. It had, however, left the small star which it covered on the preceding night, and had moved through another diameter of the Telescope towards the Sun. There was at 8 on that evening as little appearance of a Nucleus as before. On the 29th and 30th the weather being hazy and the Moon not far from the phenomenon, it could not be observed.
>
> Some more observations are required to ascertain whether this appearance be a Comet or not. Its geocentric motion towards the Sun and the faint haze which extended behind it in a contrary direction indicate it to be of that class, and if it be still discernible about the 15th of May, whatever doubt may be entertained respecting its nature will then be entirely removed. JOHN WARREN. H.C.'s Observatory, 1st of May, 1811."
>
> May 16 – The weather having cleared on the 8th of May, the Phenomenon observed by Capt. Warren at the Hon. Company's Observatory near the Constellation of Canis Major was again observed in the upper part of Monoceros in a direction somewhat east of north of its former position; exhibiting to the naked eye the usual appearance of a Comet with a distinct train, though no Nucleus was discernible with a telescope. It had moved since the 28th of April at the mean rate of 0:28½ per diem.
>
> The appearance of this Comet has hitherto been so undefined that it could not be observed with sufficient accuracy to obtain satisfactory results respecting its orbit. Several more observations will be requisite for computing its elements; which may be obtained hereafter, as it probably will be visible for some time longer. –Govt. Gazette.

4 ON THE OBSERVATIONS BY JOHN WARREN

According to Kronk (2003: 19) the comet was in Puppis when discovered on 25 March, in Monoceros on 28 April and in Canis Minor on 21 May, and so on. Warren took two accurate positions with the sextant during 25–30 April 1811—about one month after the discovery—and from these he deduced that the comet was moving towards the Sun at a rate of about 1° in 24 hours.

Unfortunately Warren's two positions of the comet cannot, by themselves, be used to determine the orbit. To deduce the six orbital elements, at least three separate sets of angular observations of right ascension (α) and declination (δ) are necessary. For the comet of 1807, Warren (1808; 2019) used a set of four consecutive observations and determined its orbit using spherical trigonometry and Kepler's laws. He did not consider perturbations from the major planets but the elements came close enough to those finally calculated by Bessel (1810). Earlier we noted:

> The first decade of the nineteenth century witnesssed the most crucial development in the art of orbit computation, spurred by the discovery of four minor planets between 1

Table 1: Location of the Comet

Date (1811)	Elongation of the Comet	
	From Sirius	From Procyon
26 April	17° 16′ (17° 29′)	17° 54′ (18° 20′)
27 April	17° 26′ (17° 41′)	17° 22′ (17° 41′)

> January 1801 and 29 March 1807 .... The whole exercise of orbit determination used to be arduous. One would divide the orbit into degrees, and for each degree the computations performed were daunting. Then in 1801 Carl Gauss (1777–1855) presented a simple and quicker method of computing an elliptical orbit by using observations derived from an arc in the sky (Gauss, 1809). This approach soon led to the recovery of a 'lost' Ceres. (Kapoor, 2019: 142).

In the present case, we can at least generate the comet's positions using Horizon software to see where it was located in the sky on the two dates of the observations. The timings 7h 45m and 7h 50m as given are local mean times since these are Madras Observatory times. For Greenwich Time we subtract 5h 21m from each, to allow for the longitude of Madras. With that, we have computed the respective elongations--see Table 1.

In this Table the values in brackets are those that Warren recorded in the Madras MS Records (and they differ slightly from those listed in *The Literary Panorama 1812*). Warren's measured elongations indicate that the comet made an approximate right-angled triangle with the two prominent reference stars on the two dates. These two stars made it easy for him to follow the movement of the comet in right ascension and declination. The elongation values in Table 1 compare well, and show that the comet moved north more than it moved east or west. As we know, sextant measurements are not considered very accurate, but because he was involved in the Trigonometrical Survey of India Warren was able to measure the comet's angular separations from the reference stars to the last minute of an arc, and record the time to the nearest minute. To gain a real feel for how the Madras astronomers would observe, one needs to go through Goldingham's (1809: 22: 153–156) account. It is an astronomer's manual in brief, but it shows how concerned the early observers were about the correct values for the longitude of Madras, the angular measurements, and the apparent and the mean time of the observations, etc.

For 26 April, the phrase that "… it then stood close East of a Telescope star being one of the unformed group below Monoceros …" leads us to the star 5 Puppis (apparent mag. $5.^{m}5$) as the probable candidate. A screen-grab from SKY-MAP.ORG of the region near 5 Pup (in the box) is reproduced in Figure 5 to recreate the situation. The star 5 Pup is located ~2°.5 south of α Monocerotis ($3.^{m}9$). The brightest star near the bottom of the photograph is Sirius and the bright star at top-left is Procyon; the Orion complex is to the right. As per Warren's description, the comet would have been near the left edge of the box, the computed elongation between the two that day being ~1°.5.

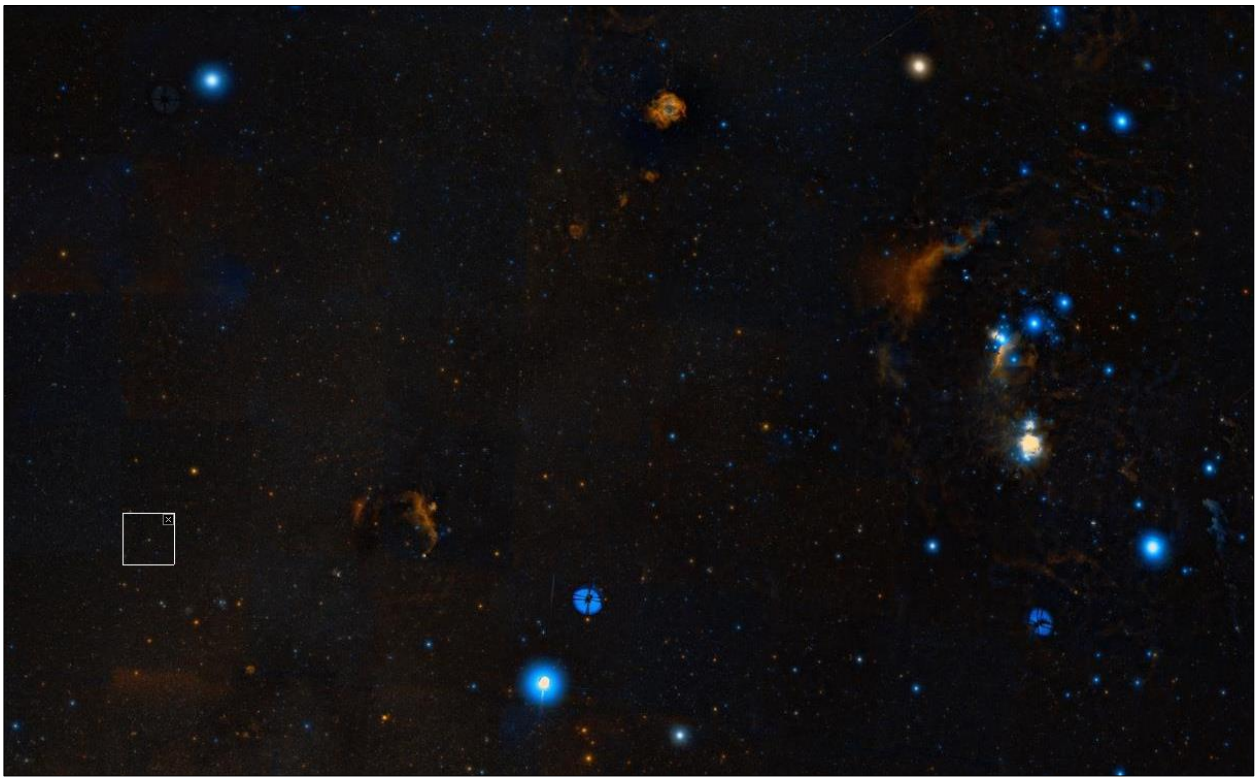

Figure 5: A screen-grab from SKY-MAP.ORG of the region near the star 5 Puppis (in the box). For details, see the text.

Ironically, Warren did not return to the comet, even when it later turned into a spectacular object months later, with a tail that extended 70° in December (Vsekhsvyatskii, 1964: 144). When it was discovered its apparent declination was about –30°, so it was easier to access from low latitudes. Meanwhile it was moving northwards mainly in declination, reaching –12° in late April when first spotted at Madras. In between, its heliocentric (r) and geocentric distances (Δ) changed a little, from 2.73 and 2.16 AU to 2.36 and 2.19 AU respectively. During this period there was a Full Moon on 8 April. J.L. Pons, who was not aware of Flaugergues' discovery, first saw the comet from Marseilles on 11 April, and Von Zach confirmed Flaugergues' discovery that same day (Kronk, 2003: 20). Later that year he summarized the observations of the comet made by several European observers between 11 April and 2 June (von Zach, 1811: 191; cf. Flaugergues and Burckhardt, 1811: 599 and Olbers, 1814: 242). The comet was in conjunction with the Sun in June, and Olbers (1814: 242) described its reappearance in the second half of August.

According to von Zach (1811), there were several early observers of the comet, and all were from Europe. Their names read like a 'Who's Who' of astronomy. Outside of Europe, Sanevasa Chairy (modern version: Srinivasa Chary) was the first to independently notice the comet, on 25 April 1811, having rightly sensed that the faint nebulosity near stars adjoining Monoceros was a comet. Previously, it was thought that the first observer of the comet outside of Europe was J.J. de Ferrer of Cuba, on 18 May 1811 (Lynn, 1898: 242).

5 CONCLUDING REMARKS

Warren did not compute the orbit of the Great Comet of 1811, but his observations of this comet and the Great Comet of 1807 qualify for inclusion in the suites of observations used in orbit determination incorporating the perturbation effect of the planets.

During the nineteenth century, professional astronomers were expected to do positional astronomy, not search for or follow new comets—an activity reserved mainly for amateurs. It is likely that this philosophy and the Royal Astronomical Society's decision not to publish his paper about the Great Comet of 1807 were the reasons why Warren chose to cease making any further observations of the 1811 comet or author a short paper based on the observations that he had made.

6 ACKNOWLEDGEMENTS

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7 REFERENCES

Ananthasubramaniam, C.K., 1991. The Madras Observatory, 1792–1931. *Journal of the Royal Astronomical Society of Canada*, 85, 97–106.

Bessel, F.W., 1810. *Untersuchungen über die scheinbare und wahre Bahn des im Jahre 1807 erschienenen grossen Cometen*. Königsberg.

Brewer, E.C., 1894. *Dictionary of Phrase and Fable*. Philadelphia, Henry Altemus Co. (online 1993 edition).

Flaugergues H., and Burckhardt, J.K., 1811. Auszug aus zwey Schreiben des Freyherrn von Ende, vormal, konigl. wurtemb. Staatsminister. Mannheim, am 11. May und 6. Jun., 1811. *Monatliche Correspondenz*, 23, 598–602.

Gauss, C.F., 1809. *Theory of the Motion of the Heavenly Bodies Moving about the Sun in Conic Sections*. New York Dover reprint (1963).

Goldingham, J., 1809. Eclipses of the satellites of Jupiter, observed by John Goldingham and under his Superintendence, at Madras, in the East Indies. *A Journal of Natural Philosophy, Chemistry, and the Arts*, 22, 153–156.

Gregory, O., 1802. *A Treatise on Astronomy* …, London, G. Kearsley.

Jet Propulsion Laboratory, 2017. *Small-Body Database Browser* (http://ssd.jpl.nasa.gov/sbdb.cgi).

Kapoor, R.C., 2019. On observations of the Great Comet of 1807 (C/1807 R1) from India. *Journal of Astronomical History and Heritage*, 22, 137–146.

Kochhar, R.K., 1985a. Madras Observatory: The beginning. *Bulletin Astronomical Society of India*, 13, 162–168.

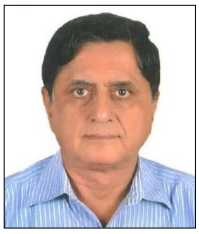
Kochhar, R.K., 1985b. Madras Observatory – buildings and instruments. *Bulletin of the Astronomical Society of India*, 13, 287–302.

Kochhar, R.K., and Orchiston, W., 2017. The development of modern astronomy and emergence of astrophysics in India. In Nakamura, T., and Orchiston, W. (eds.), *The Emergences of Astrophysics in Asia: Opening a New Window on the Universe.* Cham (Switzerland), Springer. Pp. 705–770.

Kronk, G.W., 2003. *Cometography*, *A Catalogue of Comets*. *Volume 2: 1800–1899*. Cambridge, Cambridge University Press.

Lynn, W.T., 1898. Ferrer's cometary observations at

Cuba. *Observatory*, 21, 242–243.
Lynn, W.T., 1905. Honoré Flaugergues. *Observatory*, 28, 391–392.
Madras MS Records, 1812. *Madras M.S. Records of the Madras Observatory January 1794–October 1812*. Indian Institute of Astrophysics Archives, Bengaluru.
Meyer, M., 2007. Charles Messier, Napoleon, and Comet C/1769 P1. *International Comet Quarterly*, January, 3–6.
Olson, R.J.M., 1985. *Fire and Ice: A History of Comets in Art*. New York, Walker & Co.
Phillimore, R.H., 1950. *Historical Records of the Survey of India*. *Volume II, 1800 to 1815*. Dehra Dun, The Survey of India.
Rao, N.K., Vagiswari, A., Thakur, P., and Birdie, C., 2009. C. Ragoonatha Charry and variable star astronomy. *Journal of Astronomical History and Heritage*, 12, 201–201.
Shylaja, B.S., 2012. *Chintamani Ragoonathachari and Contemporary Indian Astronomy*. Bangalore, Navakaranataka Publishers.
The Literary Panorama, 1812. Detail of a luminous Phenomenon lately discovered by Captain Warren at Madras. *The Literary Panorama, and National Register: A Review of Books, Register of Events, Magazine of Varieties: Comprising Interesting Intelligence From the Various Districts of the United Kingdom; the British Connexions in America, Africa, the East Indies, the West Indies, Western Asia &c. and From All Parts of the World. Volume XI*. Lon-don, Cox and Baylis.
Venkateswaran, T.V., 2018. Ragoonatha Charry and his 'scientific pañcāṅga. In Orchiston, W., Sule, A., and Vahia, M. (eds.). *Growth and Development of Astronomy and Astrophysics in India and the Asia-Pacific Region. Proceedings of the 9th International Conference on Oriental Astronomy*. Mumbai, Tata Institute of Fundamental Research and the Hindustan Book Agency. Pp. 147–167.
Von Zach, F.X., 1811. Sammlung … *Monatliche Correspondenz*, 24, 191.
Vsekhsvyatskii, S.K., 1964. *Physical Characteristics of Comets*. Jerusalem, Israel Program for Scientific Translations.
Warren, J., 1818. An account of observations taken at the Observatory, near Fort St. George, in the East Indies, for determining the obliquity of the ecliptic, in the months of December 1809, June and December 1810. *Asiatic Researches; or, Transactions of the Society, Instituted in Bengal,* 191–199.
Warren, J., 2019. An account of the comet, which appeared in the months of September, October and November 1807. *Journal of Astronomical History and Heritage*, 22, 132–136.



Professor Ramesh Kapoor began his career in 1971 at the Uttar Pradesh State Observatory (now the Aryabhatta Research Institute of Observational Sciences, ARIES) at Naini Tal, India, in observational astronomy where his main interest was flare stars. From March 1974 until September 2010, he was with the Indian Institute of Astrophysics (IIA) in Bengaluru, where he worked on various topics in relativistic astrophysics centred round the observational aspects of black holes, white holes, quasars and pulsars, etc. He has participated as an observer and as an organizer in a few solar eclipse expeditions mounted by the IIA. Ramesh has published in international journals and presented papers at national and international conferences. His current research interest is history of astronomy, particularly comet sightings and observations from the Indian region. In addition, he has been active in popularizing astronomy, and he also has published on Indian systems of medicine. Ramesh is a member of the International Astronomical Union and a Life Member of the Astronomical Society of India.