

4230, which agrees as well as can be expected with Professors Liveing and Dewar's measure 4220.

In their paper "On the Spectra of the Compounds of Carbon" (Proc. Roy. Soc. vol. xxx. p. 494), Professors Liveing and Dewar show that these two groups indicate the presence of cyanogen, and are not to be seen in the absence of nitrogen. If this be the case, the photograph gives undoubted evidence of the presence of nitrogen in the comet, in addition to the carbon and hydrogen shown to be there by the bright groups in the visible part of the spectrum. On this hypothesis we must further suppose a high temperature in the comet unless the cyanogen is present ready formed.

I should state that Mr. Lockyer regards the two groups in the photograph, and the groups in the visible spectrum, to be due to the vapour of carbon at different heat-levels (Proc. Roy. Soc. vol. xxx. p. 461).

It is of importance to mention the strong intensity in the photograph of the lines 3883 and 3870, as compared with the continuous spectrum, and the faint bright group beginning at 4230. At this part of the spectrum, therefore, the light emitted by the cometary matter exceeded by many times the reflected solar light. I reserve for the present the theoretical suggestions which arise from the new information which the photographs have given us.

1881 July 9.

W. HUGGINS.

CORRESPONDENCE.

*To the Editor of 'The Observatory.'
The Grave of Flamsteed.*

SIR,—

Believing that any circumstances, however trivial, relating to the personal history of the Rev. John Flamsteed will be received with interest, I have thought that the readers of the 'Observatory,' and astronomers generally, will be glad to be informed of a few facts lately come into my possession, which clear up a doubtful point regarding the resting-place of the remains of the first Astronomer Royal. These facts have been gleaned principally from the registered copy of the will of Mrs. Margaret Flamsteed, his widow, now preserved in the Principal Registry of the Court of Probate, Somerset House.

Flamsteed died at the Royal Observatory on 1719, December 31; and in the parish register of Burstow, in Surrey, the record of his burial is entered thus:—"1719-20. Jan: ye 12th. The Rev^d Mr. John Flamsteed, Rector of this Parish." Up to the present time there appears to have been some uncertainty as to the locality of his grave, whether it was in the chancel or the churchyard. There was no known documentary evidence one way or the other; but it has always been supposed to be in the chancel; and a *tradition*, brought down probably from rector to rector, has assigned a

place for it there next to that of Flamsteed's predecessor, Dr. Cooke.

Mr. J. Carpenter, in his interesting account of Flamsteed, published in the 'Gentleman's Magazine,' February-April 1866, commenting on the paucity of information we possess, remarks:—"And what of Flamsteed? Where is his resting-place and his monument? Must we say that the former is scarcely known, and that nothing in the shape of the latter exists? Such is the fact. It is curious that his biographers make scarce any mention of the deposit of his mortal remains. Thinking it most probable that they were interred in the churchyard of the parish of his ministry, we lately visited Burstow, with the hope of finding some tombstone or monument to his memory. We found none. The present rector kindly informed us that there is an entry in the parish register to the effect that John Flamsteed was buried on Jan. 12, 1720, and that a tradition exists that he was laid beside Dr. Cooke (possibly his father-in-law)*, but that no monument or tablet has ever existed; not even is his name inscribed upon the stone that covers his bones."

To this interesting statement of Mr. Carpenter, I may add that Mr. Lynn has more recently visited Burstow church, and was informed by the present rector, the Rev. T. B. Sikes, that all that is known of Flamsteed's grave in the parish is, that it is believed that he was interred by the side of his relative, Dr. Cooke, but that there is no memorial of him further than the brief record of his burial inserted in the parish register.

The following extract from Mrs. Flamsteed's will, dated Dec. 3, 1728, clearly shows that the Burstow tradition is founded on fact, and that the remains of the astronomer do really lie in the chancel and not in the churchyard. "Item. I doe hereby order and direct that I be buryed in the same Grave in which Mr. John Flamsteed is buryed in the Chancell of Burstow Church, in the County of Surry, and I doe further order and direct that I shall be inclosed in a Leaden Coffin for which and another Coffin to inclose the former I assigne ten pounds. I further order and direct that my Executor (if it please God I doe not live to doe it myself) doe cause to be placed in the aforesaid Chancell of Burstow in Surry, a Marble Stone or Monument with an inscription in Latin, in memory of the late Reverend Mr. John Flamsteed, and I allow twenty five pounds for the Expence of it. I would have my own Interrment mentioned in that Inscription." (*Registered Copy*, 189 *Auber*.)

Here we have not only positive evidence of the interment of Flamsteed in the chancel of Burstow church, but we are also informed that decided testamentary instructions were given by his widow

* Margaret Cooke, who became the wife of Flamsteed, was the daughter of Ralph Cooke, son of the above Dr. Cooke. In her will Mrs. Flamsteed bequeaths a portrait "of my Grandfather Cooke, formerly rector of Burstow," &c., to the Rector of Maresfield.

that a suitable memorial with an inscription should be erected over his remains. Why the executor, Mr. John Hodgson, failed to carry out the expressed wishes of Mrs. Flamsteed must be left as a matter of conjecture. Ample funds were left by the testatrix, as we may gather from the numerous legacies bequeathed, some of which were of considerable amount. A legacy of twenty-five pounds, for the purchase annually of two gowns and petticoats for two poor women of the parish of Burstow, was duly paid to the rector, as is recorded on a tablet in the church. It is clear that the monument was never erected, as it would be extremely improbable that one of the nature of that described in the will would have totally disappeared from the chancel, while that of Dr. Cooke, of older date, is still in good preservation. We can come to no other conclusion than that the executor, who was the residuary legatee, either wilfully or carelessly neglected his duty. Probably the erection of the monument was deferred from year to year till the subject was forgotten altogether. That the executor was dilatory in carrying out the terms of the will, in which there were no deferred trusts affecting the executor, may be assumed from the following entry, dated 23 Dec. 1751, on the margin of the registered copy of the will, more than twenty-one years after the death of Mrs. Flamsteed:—"Administration with will annexed of the goods, chattels, and credits of Margaret Flamsteed, late of East Greenwich, co. Kent, widow, deceased, left unadministered by John Hodgson, the sole executor and residuary legatee, granted to John Tew, the sole executor and residuary legatee named in the will of the said John Hodgson, deceased."

The following extract from the will of Mrs. Flamsteed may also interest some of your readers:—"Item. I give to the University of Oxford to be hung in the Gallery where the Pictures of the Founders of Colleges and other eminent persons hang, a Picture, a three quarters length, of the late Reverend Mr. Flamsteed, with the frame drawn by Mr. Gibson in the year 1712, which date it has upon it. I give also an Originall Picture of Tycho Brahe, a three quarters length, to be placed in the aforesaid Gallery in Oxford. Item. I give to the Royall Society in Crane Court, Fleet Street, London, an Original Picture of the late Mr. John Flamsteed, an half length, drawn by Mr. Murry, and also give a Picture of Tycho Brahe*, a three quarters length, with each of their respective frames, to be placed where the Pictures of Mr. Boyle and other persons of that learned Society are fixed."

Mrs. Flamsteed continued to reside in Greenwich till her death on July 29, 1730. Her will was proved on the following day. In the Greenwich Parish Registry of Burials, the following concise entry is made:—"1730, Aug. 7. Mrs. Flamstead—carried out." From this entry we may conclude that her remains were removed

* In the list of Portraits in the possession of the Royal Society given on pp. 579-580 of Weld's 'History of the Royal Society,' there are two of Flamsteed, but none of Tycho Brahe.

on that day from her residence in Greenwich to Burstow, where, on August 17, she was interred in the grave of her husband in the chancel of the church. The following record exists in the parish register:—"1730, Aug. 17. Margarett ye wife of ye Rev^d Mr. Flamsted."

For the copy of the will of Mrs. Flamsted, I am greatly indebted to a friend who undertook to search through the calendars at the Principal Registry for wills relating to the Flamsted family. He was fortunate in discovering not only the will of Mrs. Flamsted, which contains so many interesting particulars, but also that of Flamsted and of various members of his family. He also came across the will of Dr. Halley, which is a short one, and purely of a private character. Copies of the wills of the two Astronomers Royal have been deposited by Sir George Airy, for reference, among the archives relating to the ancient history of the Royal Observatory.

I am, Sir, yours faithfully,

E. DUNKIN.

Kidbrooke, Blackheath,
1881 June 27.

Meteorological Conditions for Eclipse Observers.

SIR,—

Mr. Todd ends his remarks on the utility of telegraphic messages during total eclipses with the phenomenon of 1889. If we look ahead a little, there is one eclipse in this century to which the method will be singularly applicable, that of May 28, 1900, which is total both in America and Europe. During the earlier hours of the total phase there may be a perfect chain of observing stations across the southern districts of the states of Louisiana, Alabama, Georgia, and South Carolina. After traversing the Atlantic the shadow reaches European land a little south of Oporto, the interval and opportunities being pretty nearly all that could be desired for telegraphing any noteworthy feature. In case of clouds at Oporto, other observers will doubtless be stationed in the south-east of Spain, in the neighbourhood of Alicante. The short duration of totality, little more than one minute, is somewhat compensated for by the suitability of the eclipse for applying the telegraphic method. In the case of the next remarkable eclipse five years afterwards, although the duration is much longer, yet the shadow passes over sea instead of land before touching the shores of the Bay of Biscay.

As to the available situation for the eclipse of 1886, mentioned as occurring in the time of the "storm season in the West Indies," I may mention that some meteorological observations taken on the east side of Grenada in August 1873 show the sky nineteen days cloudy and twelve clear about an hour after sunrise; consequently the chances are not much better than would be the case in Great Britain.

As to the next really available eclipse, that of August 19, 1887, the following are observations of amount and form of cloud taken