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Dr. LEE, President, in the Chair.

Lieut. Allen Young, R.N., Riversdale, Twickenham,
was balloted for and duly elected a Fellow of the Society.

A Last Letter from Capt. W. S. Jacob.

(Communicated by Prof. C. Piazzi Smyth).

“Having enjoyed the privilege,” writes Prof. Smyth, “of receiving frequent letters from my estimable friend, Captain W. S. Jacob, during the whole of his previous career in India as an official astronomer, I hailed with exceeding delight, during last September, the arrival of a first letter, written on his once again returning to the land of his adoption and youth; now as a private astronomer, but with judgment matured, intellect strengthened, his own settled problems to work out, and a far more powerful astronomical instrument than he had ever had an opportunity of observing with before.

“But that first letter was destined also to be his last, for within a week of closing it, he was no more of *this* world. He had served the government previously, but too faithfully, first in a military capacity, and afterwards in the Madras Observatory; and had, as the result has proved, too nearly consumed for them his physical vital energies, while his mind was still active and dominant as ever.

“Capt. Jacob’s letters, and his manner too, were never of a demonstrative character; but there was always a quiet worth about them, a calmness of view, sobriety of description, and easy introduction of numerical data, which rendered them of remarkable interest, and occasionally of extreme importance with reference to many scientific questions. These characteristics are all so well marked in his last letter, that I have thought for that reason, as well as because it is the last letter of a good and learned man, that the members of the Royal Astronomical Society might be interested in seeing it, recording it, and judging for themselves. It runs thus,—

“*Ship Herefordshire, 25th July, 1862.*

“My dear Smyth,

“As we approach Bombay I begin a letter to have it ready to despatch on arrival, as I may not have time to write much then. We have had a tolerably pleasant voyage on the whole, the ship being well found and commanded, the party of passengers not too large so as to incommode each other, and all having pulled pretty well together, so that there have been no quarrels, though a long sea-voyage seldom passes without them. Our freedom from them I attribute, in part, to the absence of *cards*, which often prove a fertile source of dispute.

“I have been able to do but little in the way of work on the voyage; much less than I expected; there were perpetual interruptions, and though we have met with little or no very severe weather, there has been plenty of it sufficiently rough to prevent our settling to any quiet occupation, and especially the use of the microscope, with which I had hoped to do some thing. But in this I have quite failed. In the few attempts I have made, I did not succeed in finding any organism in the water at all. How to account for this is a puzzle to me; but I have also remarked that there has been throughout the voyage far less phosphorescence at night, than I remember on any former occasion; on many nights none whatever.

“On the other leaf are a few memorandums which may interest you; you can make any use of them you please. The S.E. Trade has been irregular and squally on both sides of Africa: on *this* side it has occasionally blown for some hours from E.N.E., or thereabouts. So there have been anomalies in the atmosphere as well as the ocean.

“*August 7th.* The same remarks will apply to the end of our voyage; when this was commenced we were expecting to reach Bombay in about a week, the passage from the Line being generally pretty rapid at this season, but instead of finding the S.W. monsoon at or near the Line, we met with light baffling winds from S., W., and even N.W., as far at lat. 10° N. For the last three days we have had the monsoon wind, but very little S. of W. We hope to anchor this after-

noon. All well, and in pretty good spirits, though we have been suffering latterly from heat more than I should have expected, the highest temperature having been 85° , but the light winds made it more oppressive. With our kind remembrances to ———,

“ ‘Believe me,

“ ‘Yours very truly,

“ ‘W. S. Jacob.’

“ 11th August. Anchored on the 7th, at 2^h P.M. Leaving for Poona to-morrow morning. All well!

“ *Zodiacal Light.*

May 17th, at 8^h P.M., in lat. $21^{\circ} 1' N.$ and long. $23^{\circ} 20' W.$

Zod. light very bright, extending nearly to *Præsepe*.

(∴ apex in R.A. $8^{\text{h}} 31^{\text{m}}$ and Decl. $+ 20^{\circ} 30'$
(and Sun in R.A. $3^{\text{h}} 37^{\text{m}}$ and Decl. $+ 19^{\circ} 25'$)

May 26th, at 7^h 30^m P.M., in lat. $4^{\circ} 45' N.$ and long. $21^{\circ} 20' W.$

Zod. light reaches nearly to *Leonis*.

(∴ apex in R.A. $9^{\text{h}} 35^{\text{m}}$ and Decl. $+ 24^{\circ} 30'$
(and Sun in R.A. $4^{\text{h}} 13^{\text{m}}$ and Decl. $+ 21^{\circ} 12'$)

June 11th, 16^h 0^m, in lat. $14^{\circ} 44' S.$ and long. $32^{\circ} 15' W.$

Zod. light extends nearly to *Mars*.

(∴ apex in R.A. $23^{\text{h}} 13^{\text{m}}$ and Decl. $- 8^{\circ} 5'$
(and Sun in R.A. $5^{\text{h}} 21^{\text{m}}$ and Decl. $+ 23^{\circ} 9'$)

June 16th, 7^h 0^m, in lat. $26^{\circ} 30' S.$ and long. $34^{\circ} 0' W.$

Zod. light extends to a little beyond *Regulus*; axis points nearly to *α Virginis*.

(∴ apex in R.A. $10^{\text{h}} 5^{\text{m}}$ and Decl. $+ 12^{\circ} 30'$
(and Sun in R.A. $5^{\text{h}} 39^{\text{m}}$ and Decl. $+ 23^{\circ} 22'$)

June 21st, 7^h 0^m, in lat. $31^{\circ} 53' S.$ and long. $24^{\circ} 55' W.$

Zod. light reaches nearly to *Saturn*, a little S.W.

(∴ apex in R.A. $11^{\text{h}} 16^{\text{m}}$ and Decl. $+ 7^{\circ} 0'$
(and Sun in R.A. $6^{\text{h}} 0^{\text{m}}$ and Decl. $+ 23^{\circ} 27'$)

A Last Letter from Capt. W. S. Jacob.

July 16th, 6^h 40^m, in lat. 29° 52' S. and long. 55° 19' E.

Zod. light seen along with twilight. At 7^h 0^m the vertex extends to half way between γ and α *Virginis*. The light is much paler than the brighter portion of the Milky Way.

$$\left(\begin{array}{l} \therefore \text{apex in R.A. } 12^{\text{h}} 57^{\text{m}} \text{ and Decl. } - 5^{\circ} 34' \\ \text{and Sun in R.A. } 7^{\text{h}} 43^{\text{m}} \text{ and Decl. } + 21^{\circ} 20' \end{array} \right)$$

July 17th, 7^h 0^m, in lat. 28° 11' S. and long. 57° 40' E.

Sky hazy; the Zod. light is ill defined, but seems to reach a point about $\frac{1}{3}$ of the way from *Spica* towards δ *Virginis*.

$$\left(\begin{array}{l} \therefore \text{apex in R.A. } 13^{\text{h}} 5^{\text{m}} \text{ and Decl. } - 7^{\circ} 15' \\ \text{and Sun in R.A. } 7^{\text{h}} 47^{\text{m}} \text{ and Decl. } + 21^{\circ} 10' \end{array} \right)$$

July 22d, 7^h 30^m, in lat. 16° 2' S. and long. 62° 23' E.

Sky hazy; Zod. light very indistinct, extremity somewhere about *Spica*.

$$\left(\begin{array}{l} \therefore \text{apex in R.A. } 13^{\text{h}} 18^{\text{m}} \text{ and Decl. } - 10^{\circ} 26' \\ \text{and Sun in R.A. } 8^{\text{h}} 7^{\text{m}} \text{ and Decl. } + 20^{\circ} 15' \end{array} \right)$$

July 30th, 16^h 40^m, in lat. 5° 5' S. and long. 63° 20' E.

Zod. light bright; extremity nearly two degrees north of α *Tauri*, noted while *Venus* was behind a thick cloud.

$$\left(\begin{array}{l} \therefore \text{apex in R.A. } 4^{\text{h}} 28^{\text{m}} \text{ and Decl. } + 18^{\circ} 15' \\ \text{and Sun in R.A. } 8^{\text{h}} 39^{\text{m}} \text{ and Decl. } + 18^{\circ} 30' \end{array} \right)$$

“ Other Phenomena. ”

“ May 21. In lat. 12° 20' N., long. 25° 0' W., η *Argus* is almost lost in the nebula—quite so to the naked eye. In binocular, it looks a little brighter than ϵ *Crucis*, but far below δ .

“ June 11. Lunar eclipse: when totally immersed, the Moon was of a dull copper colour, with a silvery edge at the part last immersed.

“ July 16. In lat. 29° 45' S., and long. 55° 25' E., a large meteor seen at 7^h 50^m, about twice as bright as *Venus*, passing obliquely downwards to the left, a little below *Corona Borealis*. It disappeared and reappeared several times behind small clouds.

“ July 17. η *Argus* is now scarcely so bright as ϵ *Crucis*.

“ July 29. Many small meteors at about 15^h, most of them directed towards a point between *Polaris* and *Capella*, rather

nearer *Polaris*! One, brighter, crosses *Cygnus* from *Cassiopeia*.

“ July 30. Many small meteors in various directions between 8^h and 9^h, and again about 16^h 30^m.”

Thus closes Capt. W. S. Jacob's last letter to me; wherein, the meteor of July 16th, with its notes of proof of a minimum distance; and the Zodiacal Light of July 30th, with its example of profiting by an accident, to eliminate a dangerous interference with the sort of observation he was engaged on, illustrate most truly the able observer and intelligent mind. I would also, and more particularly, beg to call attention to the extremely anomalous condition which the writer describes, as prevailing both in the sea and atmosphere; the latter evidenced in the perversion of both trade-winds and monsoons: the whole forming a most independent testimony to Sir John Herschel's opinion recently expressed, in the *Memoirs of the Manchester Philosophical Society*; to the effect, that the climate of the whole Earth has been experiencing, for the last two and three years, a remarkable disturbance from a cosmical cause, which he places in the Sun, and traces, first in its direct action on the Southern hemisphere, and then indirect action on the Northern.

In the section of the Zodiacal Light I have added to each observation, in parentheses, a note of the concluded Right Ascension and Declination of the apex of the light, as well as of the Sun, at the time, to facilitate deductions; and amongst the additional phenomena, have only to allude to the striking terms in which my deceased friend describes the decadence of *Argus*. When I left the Southern hemisphere, in 1845, this star was brighter than any in the Northern hemisphere, and was the third brightest in the Southern, being transcended only by *Sirius* and *Canopus*, if, indeed, the latter was superior. It was then, without doubt, brighter than when Sir John Herschel left the Cape in 1838; but it had increased so much during his stay, that that great astronomer remarked, in a conversation there can now be hardly any blame in reporting, “that he was glad he had mapped down the nebula around *Argus* during the earlier part of his visit, for that now (in 1837) the star was so bright as to have nearly extinguished the nebula,” or words to that general effect. In the year 1862, however, behold Capt. Jacob beginning to describe *Argus* as, in its turn, “almost lost in the nebula”—a remarkable inversion of the former particulars.