

LETTERS TO THE EDITOR.

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The Tail of Halley's Comet on May 18-19.

PERHAPS the following observations I made of Halley's comet on the night of May 18, when it crossed the sun's disc, may be of interest as a record.

On that evening I crossed by steamer from Palermo to Naples, as I wished to have a clear horizon all round to see what would happen. The vessel leaves Palermo at 7 p.m. and arrives at Naples at 7 the following morning, and it seemed the best place for a view.

I may say that I had been watching the comet every night from May 7, and was quite familiar with its appearance. I say this because it was quite different from that of any other comet I can remember. The first time I saw the tail was when I came on deck on May 7 about 4 a.m.; the nucleus was not visible, but right across the sky was a long white streak just like a cloud, quite as opaque as a cloud, and I could not believe it was the tail of the comet at all; but on coming on deck the next morning at 2.15 I saw the same white streak, but this time with the nucleus, also of a very white colour.

I had no instrument with me to measure the length of the tail, but I got the quartermaster to lay it off on the ship's compass; he put it down on paper; it was E. $\frac{1}{2}$ N., and the end of the tail was E. by S. $\frac{1}{2}$ S., which is about $22\frac{1}{2}^\circ$ horizontal measurement; the real length of the tail itself I could only estimate as "about half-way across the sky."

On the night of May 18, as soon as it got sufficiently dark, the tail was plainly visible; there was a ten-days' old moon which rather interfered with the view, but about 2 a.m. it had got sufficiently low and behind a thin but convenient bank of cloud, so that it did no further harm to my observation. Of course there was no nucleus to be seen; that was down below with the sun, but the tail was quite different in character from that which I had seen on the previous nights. It was not a long streak of white, but a confused mass of pinkish light extending along the horizon for 40° or 50° , and then stretching right across the sky, coming gradually to a point at the wide naked-eye double star (α and β Capricorni) below Altair, in line with the three stars. The tail narrowed in on its course upwards, and passed just below the Great Square of Pegasus, γ Pegasi being well in the tail, but α Pegasi was clear of it.

I continued watching the tail for shooting stars in its neighbourhood, but I only saw three or four; there was nothing particular about them, except that they seemed to start from the edge of the tail, which was well defined, and only travelled 4° or 5° from it.

But there still remains a curious sight to describe which I saw on the other side of the ship.

About 2.15 a.m. I went aft to get the time from the chart-room clock, and, happening to look over the port side of the ship to the west, I saw a pillar of light on the opposite side of the earth to that from which the comet's tail came up; it was about 45° (roughly) high and 50° or 60° broad at the horizon; it was straight up and down, and was much brighter in the middle than at the sides, and the bright part seemed like a pillar of light, but the lighter and more transparent sides came up and formed a large cone. The setting moon was a good deal to the right of the cone, and was somewhat clouded out, and had no connection with it. At the time I took the cone to be the Gegenshein, and did not pay much more attention to it, beyond looking now and then to see that it was still there.

Both the cone and the tail were visible from 2.15 to 3.5 a.m. It is quite possible that at this time the earth may have been passing through some of the tail, and had divided it in two.

I was up at Monte Casino the next night; unfortunately a fog came down on the mountain, but I heard that at the observatory they had seen an arch of light over the

part of the horizon from which the tail came. I did not see this; but I was at sea-level, and the observatory is up some 1500 feet.

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20 Hyde Park Place, London, W., June 17.

AN observing party was organised at this college for the purpose of taking note of any physical disturbances which might occur during the passage of the earth through the comet's tail, particulars of which will be published later. Our object in now writing is to put on record a remarkable appearance which presented itself at about 3.30 on the morning of May 19.

The comet has been visible here to the unaided eye since April 12, and up to the morning of May 18 the tail presented what may be termed a normal appearance, *i.e.* smaller at the nucleus than at the extremity, but on the morning of May 19 the character had altogether changed. At about 3.30 a luminous patch was seen at an altitude of about 20° from the horizon, and in the place where the tail formerly appeared. There were some clouds near the horizon, and as these cleared away the whole of the tail became visible, extending at 4.30 right up to the zenith, and there being lost in the Milky Way.

When there were no clouds the sky was remarkably clear, the Milky Way shining most brilliantly. The light from the tail of the comet was polarised, but not so distinctly as was the case with the normal tail on previous mornings. The tail persisted until daylight. It, to some extent as regards shape, simulated the Zodiacal Light, but at the same time was essentially different, and did not appear in the usual situation of the light, as it was many degrees to the north of the sun. It was much longer, narrower at the base, and ten times brighter. There is no question but that it was the comet's tail.

At 4.30 the upper half of the tail was quite free from cloud, and the gradual narrowing towards the upper end was most marked. It seemed from the curvature of the edges that a portion was missing from the under side of the tail. The conviction was borne in upon us that we saw a portion of the tail blotted out or cut off in some way, and this was certainly not done by cloud. Was it done by the earth's atmosphere? The following morning was cloudy, and nothing was seen at 3.30, but the comet appeared in the western sky at 5.40 in the evening.

Observations were not taken on succeeding mornings, which perhaps was a mistake, as something may have been left behind after contact with the earth, if contact really happened.

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The Colour of Pure Water.

HAVING noticed the colour of the sky, of air, and of water under different conditions, I was reminded on reading the report of Lord Rayleigh's lecture (NATURE, March 10) of a few notes I had made from time to time, and now think they may prove of interest.

First, optically pure water cannot be obtained by distillation. Prof. Tyndall asked me to prepare some pure water for him, which I attempted, first by distillation with acid permanganate, and then re-distilling this from a copper vessel and collecting the liquid in a bottle placed in a large bell-jar of hydrogen, a gas which is known to provide an optically pure atmosphere. The resulting water was not optically pure. Pure water was prepared by Tyndall by melting clear block-ice in a vacuum. Its colour was blue when seen through a tube 3 feet long.

The colour of a hard water which has been softened by Clark's process may be seen at the Colne Valley water-works, visible from the train on the up line just south of Watford Station, and at Joynson's paper works at St. Mary Cray, in Kent. When the members of the Society of Chemical Industry visited these works some years ago, they were much struck by the very beautiful blue of the water. It was even suggested that it had been purposely coloured with a very pure blue dye. Water of similar purity, containing very little mineral matter, being remarkable for its softness, comes from the Greensand below the London Clay. Such blue water I have noticed