THE COMETS OF FEBRUARY, 1880, AND JANUARY, 1887.

By A. B. Biggs.

Notwithstanding the apparent contradiction, the circumstance which rendered the late Comet especially disappointing and tantalising to observers, as well as detracting from the general interest which is usually taken in these casual visitors, may be considered, from one point of view, as investing it with peculiar interest. I refer to its *headless* character. In this respect it is, so far as I am aware, almost, if not quite unique. I can account for only two others that can at all compare with it, namely, Tuttle's Comet of 1790, and that which bothered us so in 1880. Tuttle's Comet, however, which is described as "a confused nebulosity, without indications of a nucleus," was presumably of moderate dimensions, whose position was measurable; whilst that of 1880 furnished some questionable indications of a head from which approximate positions were obtained, although, so far as I am aware, nothing certain in this respect was obtained by any one.

Our last visitor appears to have completely baffled everyone in the search for any point of condensation. I can only describe it as a *mere wisp*. Many hours were spent by myself in sweeping about in the direction of the streak with the $8\frac{1}{2}$in. reflector.

The comparison between our late visitor and that of 1880 is rendered still more interesting by other points of resemblance. The accompanying rough chart, constructed from my own notes of both Comets will, I think, indicate these points with sufficient clearness. In this chart the positions of both Comets and their apparent lengths are laid down as accurately as could be ascertained by reference to known stars. Instrumental measures of such ghost-like objects were, speaking generally, useless or impossible, except as regards the last position of that of 1880, when the object had diminished to a mere telescope speck, its then position being read off from the circles of the equatorial.

The several positions as laid down in the chart would appear almost to indicate the progress of the *same Comet* from day to day. It is important to observe that the positions correspond as to *time of year*, consequently the projection of the orbits upon the back-ground of the sky would not be materially

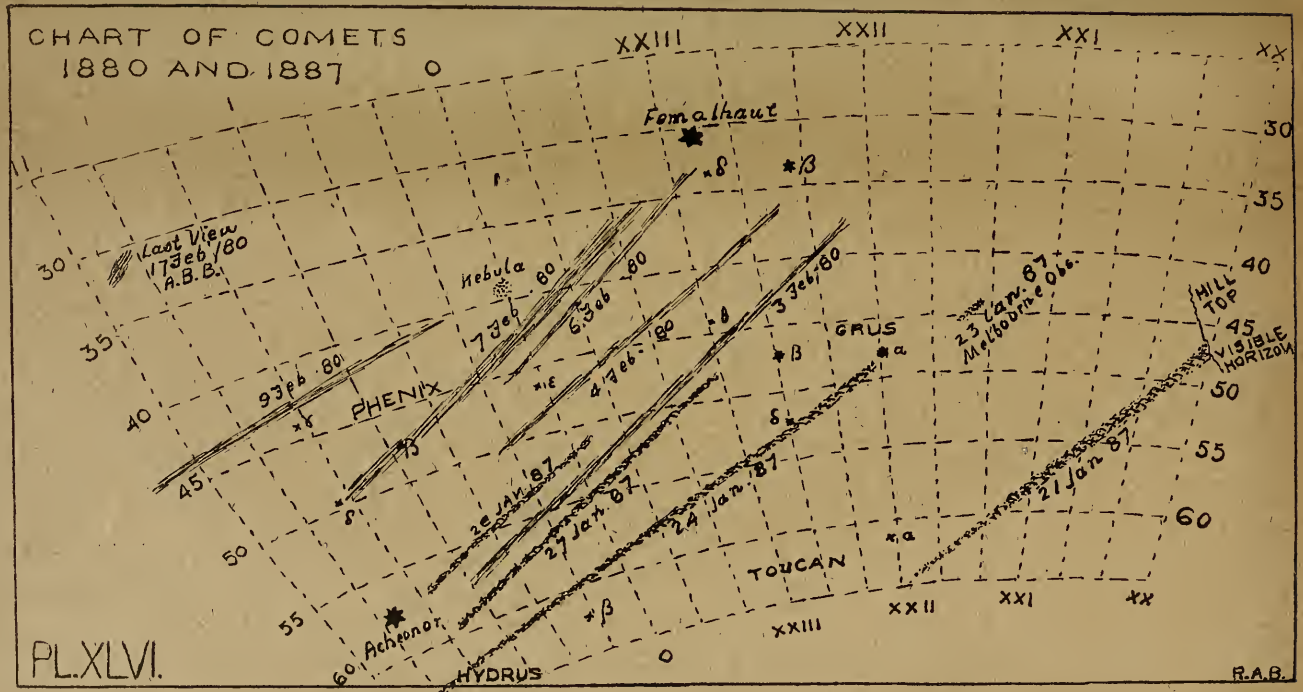
CHART OF COMETS
1880 AND 1887
XXIII
XXII
XXI
XX
Fomalhaut
Last View
17 Feb 80
A.B.B.
Nebula
7 Feb 80
6 Feb 80
3 Feb 80
9 Feb 80
4 Feb 80
PHENIX
GRUS
23 Jan 87
Melbourne Obs.
HILL TOP
VISIBLE HORIZON
26 JAN 87
27 Jan 87
24 Jan 87
21 Jan 87
TOUCAN
Achernar
HYDRUS
PL.XLVI.
R.A.B.

affected by the position of the earth in its orbit or the direction of the earth's motion; that is, the orbits of both Comets are practically from about the *same view-point.* A rough heliocentric projection of the paths of each of these Comets, which I have attempted from the very indefinite data which alone we possess, appears to me to indicate orbits very closely approximate.

We have here, then, two cometary apparitions strongly resembling each other in their peculiar *headless character*—in general appearance—length of tail, and in their apparent paths. So far as all this goes there would appear to be strong indications of identity.

The *headless character* of these Comets involves, I think, some interesting questions. The *nucleus* of a Comet, and it alone as pertaining to the Comet, obeys the laws of gravitation and projectile velocity. The *tail* holds no allegiance to such laws, it is governed only by the head, as being an appendage to it, swinging itself round on the outside of the curve as the Comet pursues its path round the sun. But, what governs the motion of a *tail without a head?* If these Comets were really headless (of which invisibility must of course not be taken as absolute proof) I cannot conceive of their pursuing any rational path in space. Their apparent *orbital motion* would indicate that they must be *ponderable* matter, which the tail of a Comet pretty certainly is not.

I cannot help thinking that, under the conditions, it is not an unreasonable supposition with regard to both of these bodies, that they might be the main body of a stream of meteoric matter whose orbit intersects the ecliptu, not very far from the position of the earth at the time of appearance (January and February), such stream being rendered visible by its compactness, illuminated by sunlight, and by its nearness to the earth at the time of passing. In this case, however, the "wisp" should coincide with the actual orbit of the stream. The great inclination of the former from the ecliptic, (not far from a right angle) can only be reconciled with that of the orbit by supposing the body to have been at the time not far from the earth, that is, much nearer to the earth than to the sun. This I think was the case, judging from the very meagre data available. Such a supposition however implies an orbit differing considerably from that of the Great Comet of 1882-3, with which the orbit of that of 1880 was supposed to correspond.