

Comet a 1915, Mellish. (See Plate.)

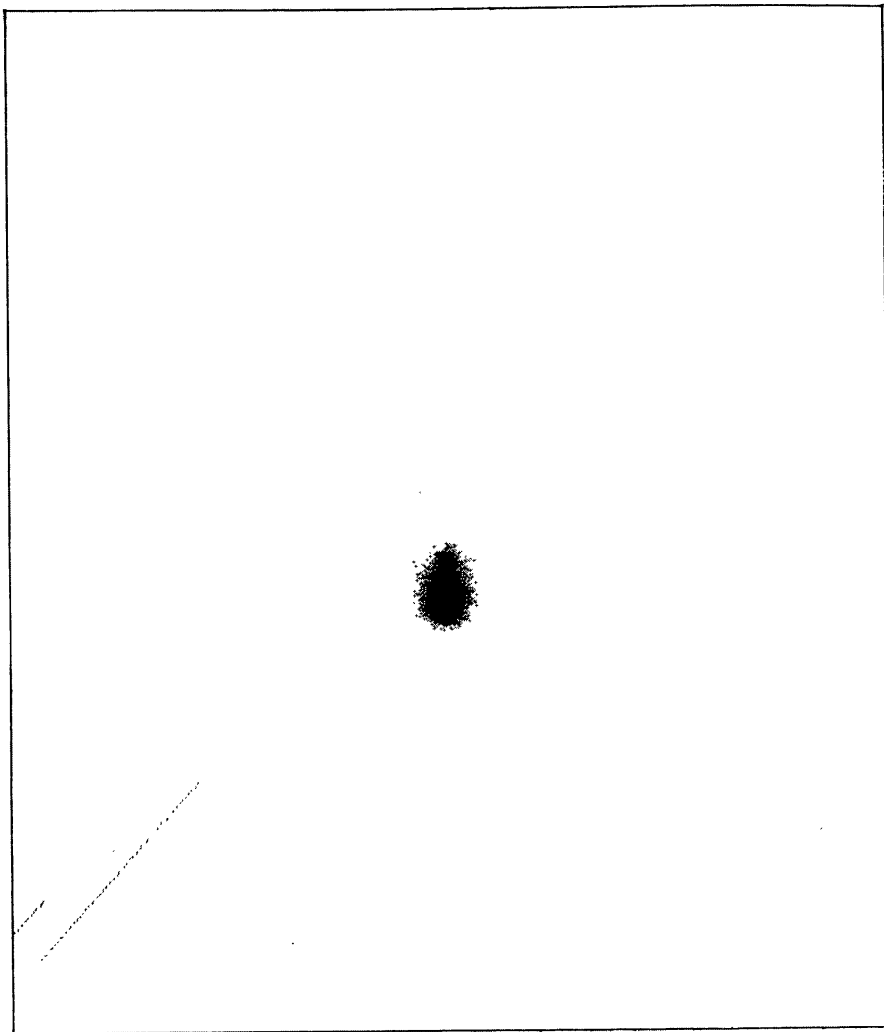
ALTHOUGH, since its discovery, this comet has been under continual observation visually, yet but few photographs of it would appear to have been obtained. The announcement made by Prof. Barnard that he had observed two supplementary nuclei, or detached condensations, was followed by other observations of the same phenomena. Prof. Lowell observed four detached nuclei on May 24, which were receding from the head at a rate of 4" a day. With the permission of the Astronomer Royal, we are able to reproduce a photograph, showing the detached portions, which he has received from Prof. Cooke, Director of Sydney Observatory. The four detached nuclei are well shown on plates taken with the astrographic telescope on June 5, 6, and 8, whilst plates taken with the same telescope on June 20 and 23 show a single condensation about 2' from the nucleus of the comet. A number of photographs were also obtained with a portrait-lens of 30 inches focal length with exposures up to 6½ hours.

Although the photographs do not exhibit any striking change of appearance, such as was seen in the case of Morehouse's comet, yet there are indications of somewhat similar alterations in the appearance of the head of the comet. Thus on June 6 the *coma* is brighter and larger, and envelopes the four detached nuclei. The tail is only faintly shown, and exhibits no marked feature. On June 8, however, a distinct change has occurred. The *coma* is now much brighter on the side "towards Sun," some envelopes are shown, and there is a well-defined straight ray extending half a degree from the nucleus. Some small changes in the appearance of the tail are shown on the plates taken with the portrait-lens.

The four detached nuclei, or condensations, are in pairs, and appear to vary in brightness from day to day. Calling them I., II., III., and IV. in the order of increasing distance from the head of the comet, numbers I. and III. are of about equal brightness on June 5 and 8, and are about one-half as bright as numbers II. and IV., which are also of equal intensity. On June 6, however, number III. is distinctly brighter than any of the others. The following measures give the position-angle and distance of the detached nuclei on the dates named:—

	I.		II.		III.		IV.	
1915, June 5...	276 ⁰	71'8	271 ⁰	80'7	270 ⁰	113'3	269 ⁰	126'2
6...	267	73'3	266	84'9	263	121'1	263	135'4
8...			251	88'5	246	139'1	248	149'2

Owing to the difficulty in obtaining the true orientation of the plates, the above measures of angle are liable to error, but the distances given should be well determined.



Comet α 1915, Mellish.

Sydney Observatory Astrographic Telescope, 1915 June 5. Exposure 1^h 45^m.

The photographs taken on June 20 and 23 show little beyond the head of the comet with a detached condensation in the following position :—

	h	m	°	"
June 20	4	40	183	107.6
23	5	12	179	109.8

We are indebted to Prof. Cooke for some photographs of a remarkable occurrence. P. J. MELOTTE.

Sun-spots and Terrestrial Magnetism.

THE circumstances which unveiled to us the relationship between sun-spots and terrestrial magnetism are curious and interesting. Spots on the Sun had been seen for ages, but no attempt was made to deal with the subject in a scientific manner until Schwabe, in 1826, commenced regularly to observe sun-spots, counting and recording the number visible on each day. After some years—that is to say, in the latter part of the year 1840—observatories were established in various of our colonies, and also at Greenwich, for the purpose of making magnetic and meteorological observations, which were continued for six years, 1841–1846. Ultimately the observatory at Greenwich became permanent. The magnets showed, in general, only a small diurnal inequality, but on September 25, 1841, there occurred at Greenwich a considerable magnetic disturbance, an account of which was printed by the Astronomer Royal and extensively circulated. In the course of time it was found that there had also been a magnetic disturbance on the same day at the colonial observatories, that at Toronto appearing to have commenced nearly at the same absolute time as the disturbance at Greenwich—an important discovery. I well remember the circumstances, having then but recently begun my work at Greenwich Observatory.

Some years later, on the results of the observations at the colonial observatories becoming available, General Sabine, in a paper communicated to the Royal Society in the year 1852 “On Periodical Laws discoverable in the Mean Effects of the Larger Magnetic Disturbances,” found in successive years at the colonial observatories continuous increase in the frequency of magnetic disturbance, and discussed the question of cosmical or solar relation, remarking also that Schwabe’s independent observation of solar spots showed variations similar in character to the magnetic variations. Sabine was well aware that the suggested relationship with sun-spots, depending, as it did, upon observations for so few years, would require confirmation—remarking that, as the physical agency by which the phenomena are produced is in both cases unknown, our recourse can only be