

Although comets have a smaller mass than any other cosmical bodies—being, according to our present knowledge, probably not equal to $\frac{1}{5000}$ th part of the Earth's mass—yet they occupy the largest space, as their tails in several instances extend over many millions of miles. The cone of luminous vapor which radiates from them has been found, in some cases (as in 1680 and 1811), to equal the length of the Earth's distance from the Sun, forming a line that intersects both the orbits of Venus and Mercury. It is even probable that the vapor of the tails of comets mingled with our atmosphere in the years 1819 and 1823.

Comets exhibit such diversities of form, which appear rather to appertain to the individual than the class, that a description of one of these "wandering light-clouds," as they were already called by Xenophanes and Theon of Alexandria, cotemporaries of Pappus, can only be applied with caution to another. The faintest telescopic comets are generally devoid of visible tails, and resemble Herschel's nebulous stars. They appear like circular nebulæ of faintly-glimmering vapor, with the light concentrated toward the middle. This is the most simple type; but it can not, however, be regarded as rudimentary, since it might equally be the type of an older cosmical body, exhausted by exhalation. In the larger comets we may distinguish both the so-called "head" or "nucleus," and the single or multiple tail, which is characteristically denominated by the Chinese astronomers "the brush" (*sui*). The nucleus generally presents no definite outline, although, in a few rare cases, it appears like a star of the first or second magnitude, and has even been seen in bright sunshine;* as,

ing twenty-four hours within a distance of 2,000,000 miles from the Earth) terrified Louis I. of France to that degree that he busied himself in building churches and founding monastic establishments, in the hope of appeasing the evils threatened by its appearance, the Chinese astronomers made observations on the path of this cosmical body, whose tail extended over a space of 60° , appearing sometimes single and sometimes multiple. The first comet that has been calculated solely from European observations was that of 1456, known as Halley's comet, from the belief long, but erroneously, entertained that the period when it was first observed by that astronomer was its first and only well-attested appearance. See Arago, in the *Annuaire*, 1836, p. 204, and Laugier, *Comptes Rendus des Séances de l'Acad.*, 1843, t. xvi., 1006.

* Arago, *Annuaire*, 1832, p. 209, 211. The phenomenon of the tail of a comet being visible in bright sunshine, which is recorded of the comet of 1402, occurred again in the case of the large comet of 1843, whose nucleus and tail were seen in North America on the 28th of February (according to the testimony of J. G. Clarke, of Portland, state of