is manifested during the twenty-five days immediately pre-
ceding and succeeding the comet's perihelion passage. The
value of the constant is therefore somewhat different, because
in the neighborhood of the sun the highly attenuated but
still gravitating strata of the resisting fluid are denser. Ol-
bers maintained* that this fluid could not be at rest, but
must rotate directly round the sun, and therefore the resist-
ance offered to retrograde comets, like Halley's, must differ
wholly from that opposed to those comets having a direct
course, like Encke's. The perturbations of comets having
long periods of revolution, and the difference of their magni-
tudes and sizes, complicate the results, and render it diffi-
cult to determine what is ascribable to individual forces.

The gaseous matter constituting the belt of the zodiacal
light may, as Sir John Herschel† expresses it, be merely the
denser portion of this comet-resisting medium. Although it
may be shown that all nebulæ are crowded stellar masses,
indistinctly visible, it is certain that innumerable comets fill
the regions of space with matter through the evaporation of
their tails, some of which have a length of 56,000,000 of
miles. Arago has ingeniously shown, on optical grounds,‡
that the variable stars which always exhibit white light
without any change of color in their periodical phases, might
afford a means of determining the superior limit of the dens-
ity to be assumed for cosmical ether, if we suppose it to be
equal to gaseous terrestrial fluids in its power of refraction.

The question of the existence of an ethereal fluid filling
the regions of space is closely connected with one warmly
agitated by Wollaston,§ in reference to the definite limit of
the atmosphere—a limit which must necessarily exist at the
elevation where the specific elasticity of the air is equipoised
by the force of gravity. Faraday's ingenious experiments on

* Olbers, in Schum., *Astr. Nachr.*, No. 268, s. 58.
† *Outlines of Astronomy,* § 556, 597.
‡ "*En assimilant la matière très rare qui remplit les espaces célestes
quant à ses propriétés réfringentes aux gas terrestres, la densité de cette
matière ne saurait dépasser une certaine limite dont les observations des
étoiles changeantes, p. e. celles d'Algol ou de β de Persée, peuvent assigner
la valeur.*"—Arago, in the *Annuaire pour* 1842, p. 336–345. "On com
paring the extremely rare matter occupying the regions of space with
terrestrial gases, in respect to its refractive properties, we shall find that
the density of this matter can not exceed a definite limit, whose value
may be obtained from observations of variable stars, as, for instance,
Algol or β Persei."
§ See Wollaston, *Philos. Transact.* for 1822, p. 89; Sir John Herschel,
op. cit., § 34, 36.