

His *Theory of Apertures*, though he seems to think it very authentick, yet to me it seems not so clear. For, the same Glasse will endure greater or lesser *Apertures*, according to the lesser or greater Light of the *Object*: If it be for the looking on the *Sun* or *Venus*, or for seeing the *Diameters* of the *Fix'd Stars*, then smaller *Apertures* do better; if for the *Moon* in the *daylight*, or on *Saturn*, or *Jupiter*, or *Mars*, then the largest. Thus I have often made use of a 12 foot-Glasse to look on *Saturn* with an *Aperture* of almost 3 inches, and with a single Eye-glasse of 2 inches *double convex*: but, when with the same Glasse I looked on the *Sun* or *Venus*, I used both a smaller *Aperture*, and shallower *Charge*. And though M. *Auzout* seems to find fault with the *English* Glasse of 36 foot, that had an *Aperture* of but $2\frac{1}{2}$ inches *French*, as also, with a 60 foot *Tube*, used but with an *Aperture* of 3 inches yet I do not find, that he hath seen Glasses of that length, that would bear greater *Apertures*, and 'tis not impossible, but his *Theory of Apertures* may fail in longer Glasses.

Of a means to illuminate an Object in what proportion one pleaseth; and of the Distances requisite to burn Bodies by the Sun.

One of the means used by M. *Auzout* to enlighten an *Object*, in what proportion one pleaseth, is by some great *Object-Glasse*, by him called a *Planetary* one, because that by it he shews the difference of Light, which all the *Planets* receive from the *Sun*, by making use of several *Apertures*, proportionate to their distance from the *Sun*, provided that for every 9 foot draught, or thereabout, one inch of *Aperture* be given for the *Earth*. Doing this, one sees (*saieth he*) that the Light which *Mercury* receives, is far enough from being able to burn Bodies, and yet that the same Light is great enough in *Saturn* to see clear there, seeing that (to him) it appears greater in *Saturn*, than it doth upon our *Earth*, when it is overcast with Clouds: Which (he adds) would scarce be believed, if by means of this Glasse it did not sensibly appear so: Whereof he promises to discourse more fully in his

Treatise of the usefulness of great Optick-Glasses, where he also intends to deliver several Experiments, by him made, 1. Touching the quantity of Light, which a Body, that is 10. 15 and 20 times, &c. remoter than *Saturn*, would yet receive from the *Sun*. 2. Touching the quantity of Light, by which the *Earth* is illuminated even in the *Eclipses* of the *Sun*, in proportion of their bigness. 3. Touching the quantity of Light, which is necessary to burn Bodies: he having found, that not abating the Light, which is reflected by the Surfaces of the Glafs (whereof he confesseth, he doth not yet exactly know the quantity) there wou'd be necessary about 50 times as much Light, as we have here, for the burning of *Black* Bodies; and near 9 times more for the burning of *White* Bodies, than for the burning of *Black* ones: and so observing the immediate proportions between these two, for burning Bodies of *other* Colors. Whence (he tells us) he hath drawn some consequences, touching the distance, at which we may hope, to burn Bodies here, by the means of *great Glasses* and *great Looking-glasses*. So that (*saith he*) we must yet be seven times neerer the *Sun*, than we are, to be in danger of being burned by it. Where he mentions, that having given *Instructions* to certain persons, gon to travel in *Hot Countries*, he hath among other particulars recommended to them, to try by means of *great Burning-glasses*, with how much less *Aperture* they will burn *there*, than *here*, to know from thence, whether there be more Light *there* than *here*; and how much; since this perhaps may be the only means of trying it, supposing, the same matters be used: although the difference of the Air already heated both in *hot Countries*, and in the *Planets*, that are neerer than we may alter, if not the quantity of Light, at least that of the Heat found there.

A further Account, touching Signor Campani's Book and Performances about Optick-glasses.

In the above-mentioned *French Tract*. there is also contained *M. Auzout's* Opinion of what he had found New in the *Treatise* of Signor *Campani*, which was spoken of in the first *Papers* of these *Transactions*, concerning both the Effect of the *Telescopes*, contrived after a peculiar way by the laid *Campam* at *Rome*, and his