

should not appear in the like manner. But, I will determine nothing of any of these things. When I shall hereafter have made more frequent Observations of the Moon with my *great Telescopes*, in convenient time, I shall then perhaps learn more of it, than I know at present, at least it will excite the *Curious* to endeavor to make the like Observations; and it may be, others, that I have not thought of.

The Instance of the same Person to Mr. Hook, for communicating his Contrivance of making, with a Glass of a Sphere of 20 or 40 foot diameter, a Telescope drawing several hundred foot; and his offer of recompensing that Secret with another, teaching To measure with a Telescope the Distances of Objects upon the Earth.

In Numb. 4. Of these Papers, pag. 67. Mr. Hook had intimated, that he would shortly discover a way of his, with a *Plano-convex* Glasse of a Sphere of 20. or 40. feet Diameter, without *Veines*, and truly wrought of that Figure, to make a *Telescope*, that with a single *Eye-glass* should draw 300, 400, yea 1000 feet, without at all altering the *Convexity*: Monsieur *Auzout* returns this consideration, and offer upon it, which follows:

To perform (*saieth he*) with a *lesser Object-glass* the effect of a *great Telescope*, we must find out a way to make such an *Object-glass* to receive as many *Rayes* as one will, without their being sensibly distant from one another; to the end, that by applying to it a *stronger Eye-glass*, there may be still Beams enough to see the Object, and to obliterate the small specks and imperfections of the *Eye-glass*. And if Mr. *Hook* hath this Invention, I esteem it one of the greatest, that can be found in the matter of *Telescopes*: If he please to impart it to us, we shall be obliged to him; and
I wish,

I wish, I had a secret in *Opticks* to encourage him to that communication. If I did believe, that this would be esteemed one, To measure with a *great Telescope* the *distance of Objects* upon the *Earth*; which I have found long since, and proposed to some by way of *Paradox*; *Locorum distantias ex unica statione, absque ullo Instrumento Mathematico, metiri*; I doe here promise to discover it to him, with the necessary *Tables*, as soon as He shall have imparted his to me; which I will use, as he shall order me. For, although the *Practise* doe not altogether answer the *Theory* of my Invention, because that the length of the *Telescopes* admits of some *Latitude*; yet one comes near enough, and perhaps as *Just*, as by most of the *wayes*, ordinarily used with *Instruments*. That, which I am proposing, I doubt not but *M. Hooke* will soon understand, and see the determination of all *Cases* possible. I shall only say, that if we look upon the sole *Theory*, we may make use of an ordinary *Telescope*, whereof the *Eye-glass* is to be *Convexe*: for, by putting the *Glasses* at a little greater distance, than they are, proportionably to the distance for which it is to serve, and by adding to it a *new Eye-glass*, the *Object* will be seen distinct, though obscure; and if the *Eye-glass* be *Convexe*, the *Object* will appear erect. They may be done two manner of ways; either by leaving the *Telescope* in its ordinary situation, the *Object-glass* before the *Eye-glass*; or by inverting it, and putting *this* before *that*. But if any will make use of two *Object-glasses*, whereof the *Focus's* are known, the distance of them will be known. If it be supposed, that the *Focus* of the *first* be *B*. and that of the *second* *C*. and the distance given, $B + 2D$, and that *D minus C*. be equal to *F*; for, this distance will be equal to $B + C + F - r F^2 - C^2$. And if you have the *Foens* of the *first Object-glass*, equal to *B*, the distance, where you will put the *second Glass* equal to $B + G + D$. the *focus* of the 2d *Glasse* will be found equal to $\frac{CD}{CTD}$. And if you will that the *Object* shall be magnified as much with these two *Glasses*, as it would be with a single one, whereof the *Focus* should

should be of the distance given, having the *Focus* of the *Object-glass* given equal to B , and the distance given to $B \dagger D$; the distance between the first and the second *Glass* will be equal to $\frac{2B^2 + 2BD}{2B \dagger D}$, whence subducting B (the *Focus* of the *Object-glass* given) there remains $\frac{BD}{2B \dagger D}$; and if this sum be supposed equal to C , we shall easily know, by the precedent Rule, the *Focus* of the *second Glass*.

So far *M. Anzout*, who, I trust, will receive due satisfaction to his desire, as soon as the happy end of the present Contagion shall give a beginning and life again to the Studies and Actions of our retired *Philosophers*.

I shall onely here adde, That the Secret he mentions [Of measuring the distance of Places by a Telescope (fitted for that purpose) and from one station] is a thing already known (if I am not mis-informed) to some Members of our Society; who have been a good while since considering of it, and have contrived ways for the doing of it: Whether the same with those of *Mr. Anzout*, I know not. Nor have I (at the distance that I am now from them) opportunity of particular Information.

An Experiment of a way of preparing a Liquor, that shall sink into, and colour the whole Body of Marble, causing a Picture, drawn on a surface, to appear also in the inmost parts of the Stone.

This *Experiment*, having been hinted at in the next foregoing *Papers*, out of the *Mundus Subterraneus* of *Athanasius Kircher*, and several Curious Persons, who either have not the leisure to read Voluminous Authors, or are not readily skilled in that Learned Tongue wherein the said Book is written, being very desirous to have it transferred hither, it was thought fit to comply with their desire herein.

The Author therefore of the *Mundus*, &c, having seen
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