An Extract of a Letter, received very lately, (March 19th) from the Inventor of this new Telescope, from Cambridge

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To all which I cannot but subjoyn an Extract of a Letter, received very lately, (March 19th) from the* Inventor *of this new Telescope, from* Cambridge, *viz.

IN my last Letter I gave you occasion to suspect, that the Instrument which I sent you, is in some repect or other indisposed, or that the metals are tarnished. And by your Letter of *March* 16. I am fully confimed in that opinion. For, whilest I had it, it represented the Moon in some parts of it as distinctly, as other Telescopes usually do which magnifie as much as that. Yet I very well know, that the Instrument hath its imperfections both in the composition of the metall, and in its being badly cast, as you may perceive by a scabrous place near the middle of the metall of it on the polished side, and also in the figure of that metall near that scabrous place. And in all those respects that instrument is capable of further improvement.

You seem to intimate, that the proportion of 38 to 1 holds only for its magnifying Objects at small distances. But if for such distances, suppose 500 feet, it magnifie at that rate, by the rules of Opticks it must for the greatest distance imaginable magnifie more than $37\frac{3}{4}$ to 1; which is so considerable a diminishing, that it may be even then as 38 to 1.

Here is made another Instrument like the former, which does very well. Yesterday I compared it with a six foot Telescope, and found it not only to magnifie more, but also more distinctly. And to day I found, that I could read in one of the *Philosophical Transactions*, placed in the Sun's <4010> light, at an hundred foot distance, and that at an hundred and twenty foot distance I could discern some of the words. When I made this tryal, its Aperture (defined next the Eye) was equivalent to more than an inch and a third part of the Object-metall. This may be of some use to those that shall endeavour any thing in *Reflexions*; for hereby they will in some measure be enabled to judge of the goodness of their Instruments, &c.

N. B. The Reader may expect in the *next Month* another Letter, which came somewhat too late to be here inserted; containing a *Table*, calculated by the same Mr. *Newton*, about the several *Apertures* and *Charges* answering the several *Lengths* of these Telescopes.