Letter to Henry Oldenburg, 19 March 1671

Author: Isaac Newton
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<36r>
< insertion from the top of f 36r >

M^{r} Newtons Letter to M^{r} Oldenb.
containing some Advertisements about his
Reflecting Telescope.

< text from f 36r resumes >
< insertion from the top right of f 36r >

Read Mar: 21: 71

Enter'd LB. 5. 364.

< text from f 36r resumes >

Sir

In my last letter I gave you occasion to suspect that the instrument which I sent you is in some respect or other indisposed, or that the metalls are tarnished. And by your letter March 16 I am fully confirmed in that opinion. For whilest I had it, it represented the Moon in some parts of it as distinctly as other Telescopes usually doe which magnify as much as that. Yet I very well know that that instrument hath its imperfections both in the composition of the metall & in its being badly cast as you may perceive by a scabrous place neare the middle of the **{**metale**}** of on the polished side, & also in the figure of that metall neare 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 onely for its magnifying objects at small distances. But if for such distances suppose 500 foot it magnify at that rate, by the rules of opticks it must for the greatest distance imaginable magnify more then $37\frac{3}{4}$ to 1 which is so insensible a diminishing that it may be even then put as 38 to 1.

I told you that here is another instrument made like the former which doth very well. Yesterday I compared it with a six foot Telescope & found it not onely to magnify more but also more distinctly. And to day I found that I could reade in one of the Philosophicall Transactions placed in the sun's light at a hundred foot distance, & that at a hundred & twenty foot distance I could discern some of the words. When I made this tryall its aperture (defined next the eye) was equivalent to more then an inch and a third part of the object metall. This I thought good to inform you of because it may be of some use to those that shall endeavour any thing in reflexions. For hereby they will in some measure be enabled to judg of the goodness of their instruments**{.}** And for this end you may annex these observations made with this last instrument, to the description of it in the Transactions of this Month. But my answer to M^{r} Hooks observations will not be

ready for then, because I intend to annex to that answer some further explications of the Theory, which I shall not have leisure to do this week or fourtnight. Sir I am in hast

Your Faithfull servant.

I. Newton

March 19th. 1671.

<36v>

[Editorial Note 1]

These

For Henry Oldenburg Esq.
at his house neare the
middle of the old Pall-mail
in Westminster

London

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< insertion from lower down f 36v >

Received March. 20. 71.

Answered March. 23. comm. the
Comet and ✳ sub cap
Cygni from Hevel.

< text from higher up f 36v resumes >
< insertion from lower down f 36v >

i.e. if the **{**bent**}{**lens**}** axis were accounted streight,

< text from higher up f 36v resumes >

[Editorial Note 1] Envelope text written upside down on page