inſtrument will be but ſmall, the object dark and confuſed, and alſo difficult to be found. Nor do I ſee, why the reflexion is more upon the ſame *axis*, and ſo more natural in one caſe than in the other: ſince the *axis* it ſelf is reflected towards the Eye by the Oval plain; and the Eye may be defended from external light as well at the ſide, as at the bottome of the Tube.

You ſee therefore, that the advantages of this deſign are none, but the diſadvantages ſo great and unavoidable, that I fear it will never be put in practiſe with good effect. And when I conſider, that by reaſon of its reſemblance with other Teleſcopes it is ſomething more obvious than the other conſtruction; I am apt to believe, that thoſe, who have attempted any thing in Catoptricks, have ever tryed it in the firſt place, and that their bad ſucceſs in that attempt hath been the cauſe, why nothing hath been done in reflexions. For, Mr. *Gregory*, ſpeaking of theſe inſtruments in the aforeſaid book pag 95, ſayeth; *De mechanica horum ſpeculorum & lentium, ab aliis fruſtrà tentatâ, ego in mechanicis minus verſatus nihil dico.* So that there have been tryals made of theſe Teleſcopes, but yet in vain. And I am informed, that about 7 or 8 years ſince, Mr. *Gregory* himſelf, at *London*, cauſed one of ſix foot to be made by Mr. *Reive*, which I take to have been according to the aforeſaid deſign deſcribed in his book; becauſe, though made by a skilful Artiſt, yet it was without ſucceſs.

I could wiſh therefore, Mr. *Caſſegrain* had tryed his deſign before he divulged it: But if, for further ſatisfaction, he pleaſe hereafter to try it, I believe the ſucceſs will inform him, that ſuch projects are of little moment till they be put in practiſe.

*Some Experiments propos'd in relation to Mr.* Newtons *Theory of light, printed in* Numb. 80; *together with the Obſervations made thereupon by the Author of that Theory; communicated in a Letter of his from* Cambridge, *April* 13. 1672.

I. TO contract the beams of the Sun without the hole of the window, and to place the priſm between the focus of the *Lens* and the hole, ſpoken of in M. *Newtons* theory of light,

II. To

II. To cover over both Ends of the Priſm with paper at ſeveral diſtances from the middle; or with moveable rings, to ſee, how that will vary or divide the length of the figure, inſiſted upon in the ſaid Theory.

III. To move the Priſm ſo, as the End may turn about the middle being ſteady.

IV. To move the priſm by ſhoving it, till firſt the one ſide, than the midle, than the other ſide paſs over the hole, obſerving the ſame Parallelism.

*The Obſervations, made upon theſe propoſals.*

I Suppoſe the deſign of the Propoſer of theſe Experiments is, to have their events expreſſed, with ſuch obſervations as may occur concerning them. 1. Touching the *firſt*, I have obſerv'd, that the Solar image falling on a paper placed at the *focus* of the *Lens*, was by the interpoſed Priſm drawn out in length proportional to the Priſms reflexion or diſtance from that *focus*. And the chief obſervable here, which I remember, was, that the Streight edges of the oblong image were diſtincter than they would have been without the *Lens*.

Conſidering that the rays coming from the Planet *Venus* are much leſs inclined one to another, than thoſe, which come from the oppoſite parts of the Suns diſque; I once tryed an experiment or two with *her* light. And to make it ſufficiently ſtrong, I found it neceſſary to collect it firſt by a broad *lens*, and then interpoſing a Priſm between the *lens* and its *focus* at ſuch diſtance, that all the light might paſs through the Priſm; I found the *focus*, which before appeared like a lucid point, to be drawn out into a long ſplendid line by the Priſms reflexion.

I have ſometimes deſigned to try, how a fixt Star, ſeen through a long Teleſcope, would appear by interpoſing a Priſm between the Teleſcope and my eye. But by the appearance of *Venus*, viewed with my naked eye through a Priſm, I preſage the event.

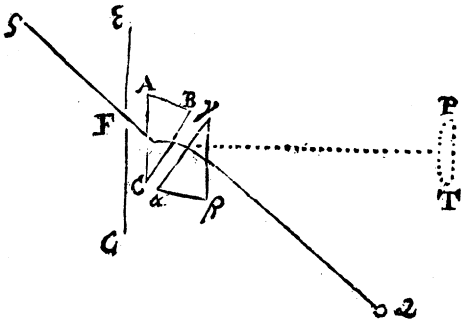
2. Concerning the *ſecond* experiment, I have occaſionally obſerved, that by covering both ends of the Priſm with Paper at ſeveral diſtances from the midle, the breadth of the Solar image will be increaſed or diminiſhed as much, as is the aperture

ture of the Prism without any variation of the length: Or, if the aperture be augmented on all sides, the image on all sides will be so much and no more augmented.

3. Of the *third* experiment I have occasion to speak in my answer to another person; where you'l find the effects of two Prisms in all cross positions of one to another described. But if one Prism alone be turned about, the coloured image will only be translated from place to place, describing a circle or some other Conick Section on the wall, on which it is projected, without suffering any alteration in its shape, unless such as may arise from the obliquity of the wall or casual change of the Prisms obliquity to the Suns rays.

4. The effect of the *fourth* experiment I have already insinuated telling you (in pag. 3076 of the *Transactions*) that Light, passing through parts of the Prism of divers thicknesses, did still exhibit the same Phænomena.

*Note*, that the long *axes* of the two Prisms in the experiment described in the said pag. 3076 of the *Transactions*, were parallel one to another. And for the rest of their position, you will best apprehend it by this Scheme; where let EG design the window; F the hole in it, through which the light arrives at the Prisms; ABC the *first* Prism, which refracts the light towards PT, painting there the colour in an oblong form; and $\alpha C \gamma$ the *second* Prism, which refracts back again the rays to Q, where the long image PT is contracted into a round one.




The plane $\alpha\gamma$ to BC, and $\beta\gamma$ to AC, I suppose parallel, that the rays may be equally refracted contrary ways in both Prisms. And the Prisms must be placed very near to one another; For if

if their diſtance be ſo great, that colours begin to appear in the light before its incidence on the ſecond Priſm, thoſe colours will not be deſtroyed by the contrary refractions of that Priſm.

Theſe things being obſerved, the round image Q will appear of the ſame bigneſs, which it doth when both the Priſms are taken away, that the light may paſs directly towards Q from the hole without any refraction at all. And its diameter will equal the breadth of the long image PT, if thoſe images be equally diſtant from the Priſms.

If an accurate conſideration of theſe refractions be deſigned, it is convenient, that a *Lens* be placed in the hole F, or immediately after the Priſms, ſo that its *focus* be at the image Q or PT. For, thereby the Perimeter of the image Q and the ſtraight ſides of the image PT will become much better defined than otherwiſe.

*An Account of a Stone cut out from under the tongue of a Man; lately ſent in a Letter of* Mr. Liſters *to his Grace the* Lord Arch-Biſhop *of* York.

May it pleaſe your Grace,

IN obedience to your Grace's Commands, I have penned the Circumſtances of a not common Medical obſervation, viz. the Exciſion of *a ſtone* from under the tongue. And I here with preſent your Grace alſo with the ſtone its ſelf, as I had it from the perſon it was taken.*

* *This Stone is now in the cuſtody of the* R. Society, *to whom it was preſented afterwards.*

As to the occaſion and time of its birth, he tels me, (My Lord, you may be pleas'd to give firm Credit to every particular, that he hath anſwered me at your Grace's inſtance) it was from a winter Sea-voyage, which laſted much longer than he expected, and wherein he ſuffered an exceeding cold; and that, not long after his landing, he found a certain *Nodus* or hard lump in the very place whence this ſtone was cut. There was about 8 years betwixt its breading and being taken away.

As to its growth, and the inconveniences thence enſuing; he further ſaith, that upon all freſh-cold-taking, he ſuffered much pain in that part eſpecially; and yet, that cold once being over, that part was no more painful than the reſt of his mouth. He adds, that towards the *7th* and *8th* year it did often cauſe ſud-

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