

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 frustra 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. **T**O 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 middle, 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 preface 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 middle, the breadth of the Solar image will be increased or diminished as much , as is the aper-

ture

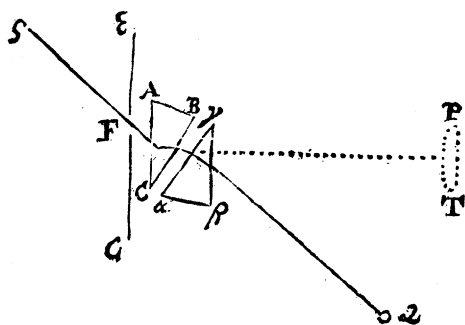
ture of the Prism without any variation of the length: Or, if the aperture be augmented on all sides, the image on all sides will be so much and no more augmented.

3. Of the *third* experiment I have occasion to speak in my answer to another person; where you'll 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 *acγ* the *second* Prism, which refracts back again the rays to Q, where the long image PT is contracted into a round one.



The plane *ay* to BC, and *βγ* 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 Archbishop 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 tells 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 breeding and being taken away.

As to its growth, and the inconveniences thence ensuing; he farther 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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