An Account

Of the Invention of Grinding Optick and Burning-Glasses, of a Figure not-Spherical, produced before the Royal Society.

The ingenious and industrious Francis Smethwick Esquire, Fellow of the Royal Society, having for divers years painfully search’d after the way of grinding Glasses not-Spherical, affirms, that at length he hath now found it, for the proof of which, he lately (viz. February 27. 1668.) produced before the said Society certain Specimens of that Invention, which were a Telescope, a Reading and two Burning-Glasses.

The Telescope was about four foot long, furnish’d with four Glasses, whereof the three Ocular ones, Plano-convex, were of this newly-invented not-Spherical Figure, and the fourth a Spherical Object-glass. This being compared with a common, yet very good Telescope, longer than it by about four inches, and turned to several Objects, was found by those of the said Society that look’d through them both, to exceed the other in goodness, by taking in a greater Angle, and representing the Objects more exactly in their respective proportions, and enduring a greater Aperture, free from Colours.

The Reading Glasses of the same Figure being compared with a common Spherical-Glass, did far excell it, by magnifying the Letters, to which it was applied, up to the very edges, and by shewing them distinctly from one brim through the Center to the other, which the Spherical Glass came far short of. And this effect the new-figur’d Glasses perform’d only on one of its sides, and not on the other, as being of a different figure from Spherical-Glasses, which perform their effect near equally on both sides.

Lastly, The two Burning-Concaves of this new-invented figures were, the one of six inches Diameter, its focus three inches distant from the Center thereof; the other of the same Diameter, but less concave, and its focus 10 inches distant. These, when approach’d to a large Candle lighted, did somewhat warm the faces of those, that were 4 or 5 foot distant at least, and when

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held to the fire, burned Gloves and Garments at the distance of about three foot from the Fire.

Which were the particulars, the R. Society observed in these Glasses, and gave order to be Registered in their Books; encouraging the Inventor to proceed in this Work with all possible care and diligence, for enabling himself to instruct others in the way of Grinding these Glasses with facility.

The Inventor having declared his resolution to do so, added these Particulars. First, That the Lord Bishop of Salisbury, Seth Ward (who was then absent from the Meeting of the Society) had been by, when the deeper of his two Concaves turned a piece of Wood into flame in the space of ten seconds of time, and the shallower, in five seconds at most, in the season of Autumn, about 9 of the Clock in the Morning, the Weather gloomy*. Secondly, That the deeper Concave, when held to a lucid Body, would cast a Light strong enough to read by at a considerable distance. Thirdly, That exposing the same to a Northern Window, on which the Sun shined not at all, or very little, he had perceived, that it would warm ones hand sensibly, by collecting the warm’d Air in the day-time, which it would not do after Sun-set.

An Account

Of some Observations made by Mr. Samuel Colepresse at and nigh Plimouth, &c. 1667. by way of Answer to some of the Queries concerning Tides, propos’d Numb. 17. and 18.

1. Our Diurnal Tides, from about the latter end of March till the latter end of September, are about a foot higher (perpendicular, which is always to be understood) in the Evening than in the Morning, that is, in every Tide that happens after 12 in the day before 12 at night.

2. On the contrary, the Morning Tides from Michaelmas till our Lady-day in March again, are constantly higher by about a foot than those that happen in the Evening. And this proportion holds in both, after the gradual increase of the Tides rising