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*A Relation of the great Effects of a new sort of Burning Speculum lately made in Germany: taken from the Acta Eruditorum of the Month of January last: being a Letter from the Inventor to the Authors of that Journal.*

OF the concave burning *Speculum* which I lately caused to be made in *Lusace*, take this following Account.

The like thereof hath not yet been made, *that I know of*, for in Magnitude it exceeds even that great one which they shew as a Sight at *Paris*, and whole measure I took when I was there, by about three eights of a *Lipsick Ell*. The outer Circle of mine is near three such Ells in *Diameter*, and is made of a Copper Plate scarce twice so thick as the back of an ordinary Knife; and may therefore be easily removed from place to place, and ordered for use; whereas those which I have yet seen that are large, and capable of producing considerable effects, being Cast thick of a Mixt Mettal, are because of their bulk and weight, less Tractable. The workmanship of this *Speculum*, which in one of the other sort, of this Magnitude, would be an immense Labour, may by the contrivances I have invented, be easily and in little time performed by one Man.

The Polish thereof is very good, and represents by distinct reflections all those appearances which arise from the concave Figure thereof; representing a Dwarf like a Gyant, or the Head or other part of a prodigious Magnitude. The Eye being placed nearer the *Speculum* than is the *Focus* thereof, all objects are seen within it, in an erect Posture, and

and as at a great distance; but the Eye being farther off than the *Focus*, all things appear inverted and without the *Speculum*: And because the *Focus* is two Ells off, it is pleasant to see Objects distinctly as it were hanging in the Air; and if a Sword be drawn against the *Speculum*, a Spectator not used to such Optical Delusions, would be apt to be Frighted, Imagining a Pass to be made at his Face.

The Force of this *Speculum* in Burning is such, that even *Chymists*, who best know the power of Fire, will hardly credit it, unless they see it with their own Eyes. For (1) a piece of Wood put into the *Focus* Flames in a Moment, so as a fresh Wind can hardly put it out. (2) Water applyed in an earthen Vessel presently Boyles, so as to Boile an Egg, and the Vessel being held there some time, the Water evaporates all away. (3) A piece of Tinn or Lead three Inches thick, as soon as it is put into the *Focus*, melts away in drops, and held there a little time is in a perfect *Fluor*, so as in two or three Minutes to be quite pierced through. (4) A plate of Iron or Steel placed in the *Focus* immediately is seen to be red hot on the backside; and soon after a hole is Burnt through; I have made three such holes in a plate, in six Minutes time. (5) Copper, Silver and the like applyed to the *Focus* melt, which I have tryed with several sorts of Coin; among the rest with a *Rix Dollar*, and the same happen'd to it as to the aforefaid Iron Plate in 5 or 6 Minutes. (6) Things not apt to melt as Stones, Brick and the like, soon become red hot like Iron. (7) Slate at first is red hot, but in a few Minutes turns into a fine sort of black Glafs, of which if any part be taken in the Tongs and drawn out, it runs into Glafs threads. (8) Tiles which had suffered the most intense Heat of Fire, in a little time melt down into a yellow Glafs, as do. (9) Pot-threads, not only well burnt at first, but much used in the Fire, into a blackish-yellow Glafs. (10) Pumice-Stone said to be that of burning Mountains, in this Solar Fire, melts into

into a white transparent Glass. (11) A piece of a very strong Crucible put in the *Focus*, in 8 Minutes was melted into a Glass. (12) I have likewise seen Bones turned into a kind of Opaque Glass, and a clod of Earth into a yellow or greenish Glass.

It is to be noted that I made these Experiments in the latter end of *August* and *September*, when the Sun has not the same Force as when he is about the Summer Solstice; at which time I promise my self yet more wonderful effects; tho' from hence it is evident, that there is no other Fire in Nature of the like Force and Efficacy.

I might add several other things well worth Notice, but shall only give you this one. I tryed what effect the Beams of the full Moon, concentred with this *Speculum*, would have, at the time when she was at her greatest Altitude; but there was not found any degree of Heat, tho' the Light was not a little encreased.

This passage of the *Lipsick* Journal was produced at one of the meetings of the Royal Society by Mr. *Hook*, as seconding a proposal he had some Years since made to them concerning the same thing. He supposed that if such a *Speculum* were made of many Foot diameter, its effects must needs be prodigious; and might be of great use in perfecting the Art of Pastes or Factitious Jewells, which require the most intense degree of Heat, to bring them to an exact mixture. He conceives such an one might be made very large for a small Price, being hammered out of a Copper Plate, and tinned over with a mixture of Tin, Lead and Tin-glass, which is found to bear a very good Polish.

## L O N D O N

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