

the Leaves being formed out of the substance of the Root, as a Chick out of the *Albumen*; in the mean while the whole decreasing in weight, as in the aforesaid *Aloe*; as 'tis manifest by many Experiments made by me.

An Extract
Of a Letter, written by Mr. Richard Towneley to Dr. Croon, touching the Invention of Dividing a Foot into many thousand parts, for Mathematical purposes.

Finding in one * of the last *Philosophical Transactions*, how much M. *Auzout* esteems his Invention of dividing a Foot into near 30000 parts, and taking thereby Angles to a very great exactness; I am told, I shall be look't upon as a great Wronger of our Nation, should I not let the World know, that I have, out of some scatter'd Papers and Letters; that formerly came to my hands of a Gentleman of these Parts, one Mr. *Gascoigne*, found out, That before our late Civil Wars, he had not only devised an Instrument of as great a power, as M. *Auzout's*, but had also for some Years made use of it, not only for taking the Diameters of the Planets, and Distances upon Land; but had farther endeavour'd, out of its preciseness, to gather many Certainties in the Heavens; amongst which, I shall only mention one, *viz.* The finding the *Moons Distance*, from two Observations, of her *Horizontal* and *Meridional Diameters*: Which I the rather mention, because the *French Astronomer* esteems himself the first that took any such Notice, as thereby to settle the *Moons Parallax*. For, our Countrey-man fully consider'd it before, and imparted it to an Acquaintance of his, who thereupon propos'd to him the Difficulties that would arise in the Calculation; with considerations upon the strange Niceties, necessary to give him a certainty of what he desired. The very Instrument he first made I have now by me, and two others more perfected by him; which doubtless he would have infinitely mended, had he not been slain unfortunately in His late Majesties Service. He had a *Treatise*

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* Vid. Numb. 21. P. 373.

rife of Opticks ready for the *Press*; but though I have used my utmost endeavour to retrieve it, yet I have in that point been totally unsuccessful: But some loose Papers and Letters I have, particularly about this Instrument for taking of Angles, which was far from perfect. Nevertheless, I find it so much to exceed all others, that I have used my Endeavors to make it exact, and easily tractable; which above a Year since I effected to my own desire, by the help of an Ingenious and Exact Watchmaker in these Parts: Since which time, I have not altogether neglected it, but employed it particularly in taking the *Distances* (as occasion served) of the *Circum-jovialists*, towards a perfect settling their Motion. I shall only say of it, That it is small, not exceeding in weight, nor much in bigness, an ordinary Pocket-Watch, exactly marking above 40000 Divisions in a *Foot*, by the help of two *Indexes*; the one shewing hundreds of Divisions, the other, Divisions of the hundred; every last Division, in my small one, containing $\frac{1}{10}$ of an Inch; and that so precisely, that, as I use it, there goes above $2\frac{1}{2}$ Divisions to a *Second*. Yet I have taken *Land-Angles* several times to one Division, though (for the Reason mention'd by M. *Auzont*) it be very hard to come to that Exactness in the Heavens, *Viz.* The swift motion of the *Planets*. Yet, to remedy that Fault, I have devised a *Rest*, in which I find no small advantage, and not a little pleasing those persons who have seen it, being so easie to be made, and by the Observer manag'd without the help of another: Which second Convenience, my yet nameless Instrument hath in great perfection; and is, by reason of its smallness and shape, easily applicable to any Telescope. Sir, If you think this Invention, thus imp ov'd, worthy to be taken notice of by the Curious, you may * command a more perfect Description of it, or any of the Observations, either M. *Gascoigne*, or my self have made with it.

* Care is taken, to get both this Description, and the Observations, from M. *Townly*.