II. *Concerning the Distance of the fixed Stars.* *By the Honourable* Francis Roberts, *Esq*; *S.R.S.*

THE Ancient Astronomers, who had no other way of Computing the Distances of the Heavenly Bodies but by their Parallax to the Semidiameter of the Earth, and being never able to discover any in the fixt Stars, did from thence rightly enough infer, that their Distance was very great, and much exceeding that of the Planets, but could go no farther otherwise than by uncertain gues.

Since the *Pythagorean* System of the World has been revived by *Copernicus*, (and now by all Mathematicians accepted for the true one) there seemed ground to imagine that the Diameter of the Earth's Annual Course (which according to our best Astronomers is at least 40000 times bigger than the Semidiameter of the Earth) might give a sensible Parallax to the fixt Stars, though the other could not, and thereby determine their Distance more precisely.

But though we have a Foundation to build on so vastly exceeding that of the Ancients, there are some Considerations may make us suspect that even this is not large enough for our purpose.

Monsieur *Hugens* (who is very exact in his Astronomical Observations) tells us, he could never discover any visible Magnitude in the fixt Stars, though he used Glasses which Magnifie the apparent Diameter above 100 times.

Now, since in all likelihood the fixt Stars are Suns, (perhaps of a different Magnitude) we may as a reasonable *Medium* presume they are generally about the bigness of our Sun.

Let

Let us then (for Example) ſuppoſe the *Dog-Star* to be ſo. The Diſtance from us to the Sun being about 100 times the Sun's Diameter (as is demonſtrable from the Sun's Diameter being 32 Minutes) it is evident that the Angle under which the *Dog-Star* is ſeen in Mr. *Hugens*'s Teleſcope, muſt be near the ſame with the Angle of its Parallax to the Sun's Diſtance, or Semi-diameter of the Earth's Annual Courſe; ſo that the Parallax to the whole Diameter, can be but double ſuch a quantity, as even to Mr. *Hugens*'s nice Obſervation is altogether inſenſible.

The Diſtance therefore of the fixt Stars ſeems hardly within the reach of any of our Methods to determine; but from what has been laid down, we may draw ſome Concluſions that will much illuſtrate the Prodigious vaſtneſs of it.

1. That the Diameter of the Earth's Annual Orb (which contains at leaſt 160 Millions of Miles) is but as a Point in compariſon of it; at leaſt it muſt be above 6000 times the Diſtance of the Sun: For if a Star ſhould appear through the aforeſaid Teleſcope half a Minute broad (which is a pretty ſenſible Magnitude) the true apparent Diameter would not exceed 18 3d. Minutes, which is leſs than the 6000th. part of the apparent Diameter of the Sun, and conſequently the Sun's Diſtance not the 6000th. part of the Diſtance of the Star.

2. That could we advance towards the Stars 99 Parts of the whole Diſtance, and have only $\frac{1}{100}$ Part remaining, the Stars would appear little bigger to us than they do here: For they would ſhew no otherwiſe than they do through a Teleſcope, which Magnifies an Hundred fold.

3. That at leaſt Nine Parts in Ten, of the Space between us and the fixed Stars can receive no greater Light from the Sun, or any of the Stars, than what we have from the Stars in a clear Night.

4. That

4. That Light takes up more time in Travelling from the Stars to us, than we in making a *Weſt-India* Voyage (which is ordinarily performed in ſix Weeks.) That a Sound would not arrive to us from thence in 50000 Years, nor a Cannon-Bullet in a much longer time. This is eaſily computed, by allowing (according to Mr. *Newton*) Ten Minutes for the Journey of Light from the Sun hither, and that a Sound moves about 1300 Foot in a Second.

III. *An Account of a Stone of a Prodigious ſize extracted by Section out of a Woman's Bladder, now living, on the Eighth day of* November, 1693. *by Mr.* Baſil Wood, *Surgeon.*

THE Perſon who performed this, being prevailed upon by ſome Friends to give the Curious an Account of the extraordinary bigneſs and ſhape of this Stone, has communicated it to the Publiſher of theſe Tranſactions, in the following words.

This Stone was taken from Mrs. *Henchman*, a Widow Gentlewoman, of the Age of about One and Fifty Years, who Lodges in *Kings-Head-Court* in *Holborn*. Its ſhape is not very unlike to a ſort of Spring-Purſe (as they are called) which many People uſe; and its ſurface is indifferently ſmooth, excepting only that there are Four Protuberances, each of which is about the ſize of a Hazel-Nut; theſe ſeem to have been at firſt leſſer Stones, which falling into the Bladder after that the great Stone was almoſt grown to its full bigneſs there, were joyned to it, firſt by adheſion, and at laſt became all one Body with it. It is alſo very probable that