PHILOSOPHICAL TRANSACTIONS.

I. *An Account of the* Sun's *Diſtance from the Earth, deduced from Mr.* Short's *Obſervations relating to the horizontal Parallax of the* Sun: *In a Letter from* Peter Daval, *Eſq; V. P. of R. S. to* James Barrow, *Eſq; V. P. of R. S.*

Read Jan. 13, 1763.

ACCORDING to Mr. Short, the mean horizontal parallax of the Sun is 8″, 65.

Now this parallax is the angle, which the ſemidiameter of the earth ſubtends, being ſeen from the Sun.

Therefore as 8″, 65, is to 360° (the whole periphery of a circle) ſo is the ſemidiameter of the earth to the periphery of the orbit of the earth round the Sun.

Sun. But 8″, 65, is very nearly $\frac{1}{149826}$th part of 360°, as may be eaſily proved by diviſion.

According to the lateſt obſervations, the mean ſemidiameter of the earth is 3958 Engliſh miles, which being multiplied by 149,826 produces 593,011,308 miles for the circumference of the orbit of the earth.

The diſtance of the earth from the Sun is the ſemidiameter of this orbit: and the periphery of the circle is to it's ſemidiameter very nearly as 6,283,185 to one.

Therefore if we divide 593,011,308 by 6,283,185 the quotient, which is very nearly 94,380,685, will give the mean diſtance of the earth from the Sun in Engliſh miles.

N. B. As the orbit of the earth is an ellipſis, not a circle, the diſtance of the earth from the Sun will be greater in it's aphelion, and leſs in it's perihelion, than here aſſigned.

Dear Sir,

I have from Mr. Short's obſervations deduced, as above, the mean diſtance of the Sun from the earth, and am pretty ſure I have made no material miſtake.

I am

Your's entirely,

Dec. 18, 1762.

Peter Daval.

II. *Ob-*