

to be the weight raised between the screws and mawls.

The distance between two contiguous threads of each screw was $1\frac{1}{3}$ inches; the length of the two opposite levers was 12 feet 8 inches, or 152 inches, and described a circumference of $477\frac{1}{2}$ inches: each screw was worked by 8 men: their force, reckoned at 30 lb. each, makes the power working on each screw equal to 240 lb.

Hence, from the known property, each screw could raise 65485 lb.

And the 18 screws raised 1178730 lb.

Then there remained 570802 lb. to be raised among about 126 mawls:

Which gives 4530 lb., or a little more than two tons, to be raised by each man with his mawl and wedges; which is considerably less than what I have seen raised by way of experiment.

XXXV. *Observations on an Evening, or rather Nocturnal, Solar Iris. By Mr. George Edwards, Librarian of the College of Physicians.*

To the Reverend Dr. Birch.

S I R,

Read June 16, 1757. **O**N Sunday evening the 5th of June 1757, being walking in the fields near Islington, about half a mile north of the upper reservoir or basin of the New River, I observed the sun

sun to sink beneath the visible horizon to the north-west, it being very clear in that quarter, except some thin clouds a little above the horizon, which were painted of fine red and golden colours, as is usual when the sun sets in a calm clear evening. But about 20 minutes after sun-set, as near as I could judge, it then being darkish, I was greatly surprised to see an Iris in the dusky air, at a height greater than is seen at any time in the rainbow. It was in the contrary quarter of the heavens to the setting sun, and fell on the smoke, mists, and evening vapours arising from the city of London and its neighbourhood. The arch seemed to be a full half circle, tho' its lower parts fell some degrees short of the horizon. It was very distinctly seen for about 15 minutes. Its colours the same as in the rainbow, but fainter. The lower ends of the bow arose gradually higher from the earth, as the sun declined beneath the horizon, until the whole arch disappeared. The center of the arch was above the horizon at its first appearance. What most perplexed me, was, to find the cause of this painted arch. I could not believe, that it proceeded from the sun-beams falling on rain; for there had been none that afternoon; nor was there any sort of signs of rain or rainy clouds to be seen; the wind being northerly, and the air cool, and somewhat hazy in the quarter where the bow appeared; which was not near so bright as the rainbow appears to be in the day-time; and I believe, that it would not have been visible at all in the presence of the sun. I imagine it was formed on the gross particles of the evening vapours; mixed with those of the smoke arising from the town;

town ; for had the sun-beams shot from beneath the horizon on falling rain at a considerable height above the earth, I believe the darkness would have rendered the appearance of such a bow far brighter than it appears to the sight in the presence of the sun : but this night or evening arch being reflected, as I suppose, from particles so minute as those of floating vapours, gave but little light and colour to the sight, and what would not have been visible, had the sun been above the horizon. For the same reason, the moon and stars are visible in the absence of the sun, and, on the contrary, are unseen when the sun is present : and if we light a candle, and set it in the sun-beams, the flame is lost to our sight, tho' the same candle will give us a considerable share of light in the night. As I have never before seen or heard of such an arch, I thought this account of it (imperfect as it is) might not be disagreeable to the Royal Society.

It could not be a lunar arch, the moon being then many degrees below the horizon, and the arch in a place, where it could not be affected by the moon's rays. The consciousness of my inability to give a proper account of such an uncommon appearance could not deter me from the attempt.

I think I have said all that is necessary on this subject ; yet am ready to answer any question for the farther illustrating of it. I am,

Reverend Sir,

Your most humble Servant,

College of Physicians, London,
June 6th, 1757.

Geo. Edwards.

XXXVI.