other impulse conveyed along a steel bar, is about sixteen times greater than in air. Now, suppose the sun and the earth connected by a steel bar. A blow struck at one end of the bar, or a pull applied to it, would not be delivered—would not begin to be felt—at the sun till after a lapse of 313 days. Even light, the speed of which is such that it would travel round the globe in less time than any bird takes to make a single stroke of his wing, requires seven minutes and a half to reach us from the sun.

(12.) The illustration of the distance of the sun which I have just mentioned, by supposing it connected with the earth by a steel bar, will serve to give us some notion of the wonderful connexion which that mystery of mysteries, gravitation, establishes between them. The sun *draws* or pulls the earth towards it. We know of no material way of communicating a pull to a distant object more immediate, more intimate, than grappling it with bonds of steel; and how such a bond would suffice we have just seen. But the *pull* on the earth which the sun makes is instantaneous, or at all events incomparably more rapid in its transmission across the interval than any solid connexion would produce, and even demonstrably far more rapid than the propagation of light itself.*

(13.) Let me now try to convey some sort of palpable notion of the *size* of the sun itself. On a circle six feet in diameter, representing a section of it through the centre, a similar section of the earth would be about

* See note at the end of this lecture.