

of the sun's surface is equal to that which would be produced by burning on that square yard six tons of coal per hour, and keeping up constantly to that rate of consumption—which, if used to the greatest advantage, would keep a 63,000 horse steam-engine at work.—And this, mind, on each individual square yard of that enormous surface which is 12,000 times that of the whole surface of the earth!

(26.) Let me say something now of the *light* of the sun. The means we have of measuring the intensity of light are not nearly so exact as in the case of heat—but this at least we know—that the most intense lights we can produce artificially, are as nothing compared *surface for surface* with the sun.—The most brilliant and beautiful light which can be artificially produced is that of a ball of quicklime kept violently hot by a flame of mixed ignited oxygen and hydrogen gases playing on its surface. Such a ball, if brought near enough to appear of the same size as the sun does, can no more be looked at without hurt than the sun—but if it be held between the eye and the sun, and *both* so enfeebled by a dark glass as to allow of their being looked at together—it appears as a black spot on the sun or as the black outline of the moon in an eclipse, seen thrown upon it. It has been ascertained by experiments which I cannot now describe, that the brightness, the intrinsic splendour, of the surface of such a lime-ball is only one 146th part of that of the sun's surface. That is to say, that the sun gives out as much light as 146 balls of quicklime *each the size of the sun*, and each heated *over all its surface* in the way I have de-