

*On the Illumination of Light-houses.* By Lieut. Thomas Drummond, of the Royal Engineers. Communicated by Lieut.-Colonel Colby, of the Royal Engineers, F.R.S. Read June 17, 1830. [*Phil. Trans.* 1830, p. 383.]

The author, after briefly describing the different methods at present employed for illuminating light-houses, proceeds to detail what he considers an improvement upon those now in use. This consists in substituting for the Argand burner a small ball of lime, ignited by the combustion of oxygen and hydrogen.

From this small ball, only three eighths of an inch in diameter, so brilliant a light is emitted, that it equals in quantity about 13 Argand lamps, or 120 wax candles; while in intensity, or intrinsic brightness, it cannot be less than 260 times that of an Argand lamp. These remarkable results are deduced from a series of experiments made lately at the Trinity House; and having been repeated with every precaution, and by different individuals, there seems no reason to doubt their accuracy.

In the best of our revolving lights, such as that of Beachy Head, there are no less than 30 reflectors, 10 on each side. If, then, a single reflector, illuminated by a lime ball, be substituted for each of these 10, the effect of the three would be 26 times greater than that of the 30. On account of the smaller divergence of the former, it would be necessary to double their number, placing them in a hexagon instead of a triangle; in this case, the expense is estimated at nearly the same. This method was tried lately at Purfleet, in a temporary light-house, erected for the purpose of experiments by the Corporation of the Trinity House; and its superiority over all the other lights with which it was contrasted, was fully ascertained and acknowledged.

On the evening of the 25th of May, when there was no moonlight, and the night dark, with occasional showers, the appearance of the light, viewed from Blackwall, a distance of ten miles, was described as being very splendid. Distinct shadows were discernible, even on a dark brick wall, though no trace of such shadows could be perceived when the other lights, consisting of 7 reflectors, with Argand lamps and the French lens, were directed on the same spot.

Another striking and beautiful effect, peculiar to this light, was discernible when the reflector was turned, so as to be itself invisible to the spectator. A long stream of rays was seen issuing from the spot where the light was known to be placed, and illuminating the horizon to a great distance. As the reflector revolved, this immense luminous cone swept the horizon, and indicated the approach of the light long before it could itself be seen from the position of the reflector. These singular effects must not, however, be understood as constant accompaniments of this light; for on a moonlight night, or when the weather is very hazy, they cease to appear.