

Sir H. Englefield, that there exist in a solar beam both rays of heat which are not luminous, and rays of light which have no heating power.

(350.) The heat, radiated by terrestrial fires, and by bodies *obscurely* hot, by whatever means they have acquired their heat (even by exposure to the sun's rays), differs very materially from solar heat in their power of penetrating transparent substances. This singular and important difference was first noticed by Mariotte, and afterwards made the subject of many curious and interesting experiments by Scheele, who found that terrestrial heat, or that radiated from fires or heated bodies, is intercepted and detained by glass or other transparent bodies, while solar heat is not; and that, being so detained, it heats them: which the latter, as it passes freely through them, is incapable of doing. The more recent researches of Delaroché, however, have shown that this detention is complete only when the temperature of the source of heat is low; but that, as that temperature is higher, a portion of the heat radiated acquires a power of penetrating glass; and that the quantity which does so bears continually a larger and larger proportion to the whole, as the heat of the radiant body is more intense. This discovery is very important, as it establishes a community of nature between solar and terrestrial heat; while at the same time it leads us to regard the actual temperature of the sun as far exceeding that of any earthly flame.

(351.) A variety of theories have been framed to account for these curious phenomena: but the subject stands rather in need of further elucidation from experiment, and is one which merits, and will probably amply repay, the labors of those who may hereafter devote their attention to it. The theory of the radiation of heat, in general, which seems to agree best with the known phenomena, is that of M. Prevost, who considers all bodies as constantly radiating out heat in all directions, and receiving it by a similar means of communication from others, and thus tending, in any space filled, wholly