it; whence, if it is formed of ice, it becomes liquid; but if this plate of ice is exposed to the rays of a torch it allows a sensible amount of heat to pass through with the light.

36. We have taken as the measure of the external conducibility of a solid body a coefficient h, which denotes the quantity of heat which would pass, in a definite time (a minute), from the surface of this body, into atmospheric air, supposing that the surface had a definite extent (a square metre), that the constant temperature of the body was 1, and that of the air 0, and that the heated surface was exposed to a current of air of a given invariable velocity. This value of h is determined by observation. The quantity of heat expressed by the coefficient is composed of two distinct parts which cannot be measured except by very exact experiments. One is the heat communicated by way of contact to the surrounding air: the other, much less than the first, is the radiant heat emitted. We must assume, in our first investigations, that the quantity of heat lost does not change when the temperatures of the body and of the medium are augmented by the same sufficiently small quantity.

37. Solid substances differ again, as we have already remarked, by their property of being more or less permeable to heat; this quality is their conducibility proper: we shall give its definition and exact measure, after having treated of the uniform and linear propagation of heat. Liquid substances possess also the property of transmitting heat from molecule to molecule, and the numerical value of their conducibility varies according to the nature of the substances: but this effect is observed with difficulty in liquids, since their molecules change places on change of temperature. The propagation of heat in them depends chiefly on this continual displacement, in all cases where the lower parts of the mass are most exposed to the action of the source of heat. If, on the contrary, the source of heat be applied to that part of the mass which is highest, as was the case in several of our experiments, the transfer of heat, which is very slow, does not produce any displacement, at least when the increase of temperature does not diminish the volume, as is indeed noticed in singular cases bordering on changes of state.