

or in part, with bodies at various temperatures, to establish an equilibrium or equality of heat in all parts. The application of this idea to the explanation of the phenomenon of dew we have already seen (see 167.). The laws of such radiation, under various circumstances, have been lately investigated in a beautiful series of experiments on the cooling of bodies by their own radiation in vacuo, by Messrs. Dulong and Petit, which offer some of the best examples in science of the inductive investigation of quantitative laws.

(352.) The communication of heat between bodies in contact, or between the different parts of the same body, is performed by a process called conduction. It is, in fact, only a particular case of radiation, as has been explained above (217.); but a case *so* particular as to require a separate and independent investigation of its laws. The most important consideration introduced into the inquiry by this peculiarity is that of time. The communication of heat by conduction is performed, for the most part, with extreme slowness, while that performed by direct radiation is probably not less rapid than the propagation of light itself. The analysis of the delicate and difficult points which arise in the investigation of this subject in its reduction to direct geometrical treatment has been executed with admirable success by the late Baron Fourier, whose recent lamented death has deprived science of an ornament it could ill spare, thinned as its ranks have been within the last few years. This acute philosopher and profound mathematician has developed, in a series of elaborate memoirs presented to the French Institute, the laws of the communication of heat through the interior of solid masses, placed under the influence of any external heating and cooling causes, and has in particular applied his results to the conditions on which the maintenance of the actual observed temperature on the earth's surface depends; to the possible influence of a supposed central heat on our climates; and to the determination of the actual amount of the heat, derived to us from the sun, or at least that