

sional planes being taken as unity, the conductivity parallel with these planes was found in a variety of magnesian schist to be 4.028. In certain slates and schistose rocks from central France, the ratio varied from 1 : 2.56 to 1 : 3.952. Hence in such fissile rocks as slate and mica-schist, heat may travel four times more easily along the planes of cleavage or foliation than across them.⁴⁵

In reasoning upon the discrepancies in the rate of increase of subterranean temperatures, we must also bear in mind that convection by percolating streams of water must materially affect the transference of heat from below.⁴⁶ Certain kinds of rock are more liable than others to be charged with water, and, in almost every boring or shaft, one or more horizons of such water-bearing rocks are met with. The effect of interstitial water is to diminish thermal resistance. Dry red brick has its resistance lowered from 680 to 405 by being thoroughly soaked in water, its conductivity being thus increased 68 per cent. A piece of sandstone has its conductivity heightened to the extent of 8 per cent by being wetted.⁴⁷

Mallet contended that the variations in the amount of increase in subterranean temperature are too great to permit us to believe them to be due merely to differences in the transmission of the general internal heat, and that they point to local accessions of heat arising from transformation of the mechanical work of compression, which is due

⁴⁵ Report of Committee on Thermal Conductivities of Rocks, Brit. Assoc. Rep. 1875, p. 61. Jannettaz, Bull. Soc. Géol. France (April-June, 1874), ii. p. 264. This observer has carried out a series of detailed researches on the propagation of heat through rocks which will be found in Bull. Soc. Géol. France, tomes i.-ix. (3d series).

⁴⁶ In the great bore of Sperenberg (4172 feet, entirely in rock-salt, except the first 283 feet) there is evidence that the water near the top is warmed $4\frac{1}{2}^{\circ}$ Fahr. by convection. Brit. Assoc. 1882, p. 78.

⁴⁷ Herschel and Lebour, Brit. Assoc. Rep. 1875, p. 58.