http://www.geology.19thcenturyscience.org/books/1858-Whewell-HistSci/README.htm

Newton's law will materially affect the mathematical calculations on the subject, which were made to depend on that law both by Fourier, Laplace, and Poisson. Probably, however, the general features of the results will be the same as on the old supposition. M. Libri, an Italian mathematician, has undertaken one of the problems of this kind, that of the armil, with Dulong and Petit's law for his basis, in a Memoir read to the Institute of France in 1825, and since published at Florence.[21]

Sect. 6.— Other Laws of Phenomena with respect to Radiation.

The laws of radiation as depending upon the surface of radiating bodies, and as affecting screens of various kinds interposed between the hot body and the thermometer, were examined by several inquirers. I shall not attempt to give an account of the latter course of research, and of the different laws which luminous and non-luminous heat have been found to follow in reference to bodies, whether transparent or opaque, which intercept them. But there are two or three laws of the phenomena, depending upon the effects of the surfaces of bodies, which are important.

1. In the first place, the powers of bodies to *emit* and to *absorb* heat, as far as depends upon their surface, appear to be in the same proportion. If we blacken the surface of a canister of hot water, it radiates heat more copiously; and in the same measure, it is more readily heated by radiation.

2. In the next place, as the radiative power increases, the power of reflection diminishes, and the contrary. A bright metal vessel reflects much heat; on this very account it does not emit much; and hence a hot fluid which such a vessel contains, remains hot longer than it does in an unpolished case.

3. The heat is emitted from every point of the surface of a hot body in all directions; but by no means in all directions with equal intensity. The intensity of the heating ray is as the sine of the angle which it makes with the surface.

The last law is entirely, the two former in a great measure, due to the researches of Leslie, whose *Experimental Inquiry into the Nature and Propagation of Heat*, published in 1804, contains a great number of curious and striking results and speculations. The laws now just

[21] *Mém. de Math. et de Phys.* 1829.