This paper describes the continuation of observations of the interaction of far infrared electromagnetic radiation with lunar samples.

In the case of the fines an observed increase of mass electromagnetic attenuation coefficient with density indicates that part of the attenuation results from scattering: at 338 μm the pure absorption and scattering coefficients are equal at a porosity of \( \frac{\rho_0 - \rho}{\rho_0} = 0.7 \). Within the wavelength range 300 - 3000 μm the scattering coefficient decreases with increasing wavelength although the ratio of the scattering to pure absorption terms becomes greater as the wavelength is increased. Within the same wavelength range the attenuation coefficient shows a marked temperature dependence; the relevance of this effect to absorption mechanisms centred in the infrared is discussed. Previous attenuation measurements in the range 1000 - 3000 μm have been confirmed using a new filter spectroscopic technique.
The results are discussed in connection with measurements of the thermal conductivity of lunar fines and direct thermal measurements on the lunar surface. It is concluded that there is a relatively sharp variation of conductivity with depth in the upper layers of the lunar regolith.