TITLE: The luminescent properties of Apollo 11 and 12 material.

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Abstract: Under 159 MeV proton bombardment both Apollo 11 and 12 lunar fines give whitish spectra of comparable brightness, the plagioclase fraction being responsible. An enhanced red response, seen at first in the Apollo 11 material, was found to be absent after several months' storage in dry air at 20°C. This red response was not present in Apollo 12 material which had been stored for several months. Perhaps as a consequence of this long storage the Apollo 12 core-tube samples gave only a very weak, blue natural thermoluminescence above 250°C. The induced thermoluminescence of 11 and 12 material is not too disimilar. The water-induced glow peaks near -90°C that occur in the Apollo 11 samples and are removed by heating above 100°C, are present also in the Apollo12 samples but are much more persistent. They were not removed even on holding the samples above 200°C for more than 30 minutes.