APOLLO 16 AND 17 LUNAR ORBITAL PHOTOGRAPHY, Farouk El-Baz, National Air and Space Museum, Smithsonian Institution, Washington, D. C. 20560.

With the Apollo 17 orbital photography at hand, 17% of the lunar surface has been covered by vertical mapping camera photographs at 25m resolution, and by rectifiable panoramic camera photographs at 2m resolution. Additional ground has also been covered by the less well-controlled and lower resolution oblique mapping camera photography and the special purpose Hasselblad photography using color and very-high-speed, black-and-white film. Available products of these photographic systems allow thorough analyses of lunar surface features for geomorphological studies as well as correlations with other remotely-sensed data.

A case is made that Apollo 16 photography of the crater King and its environs will allow a better understanding of lunar cratering processes and the horizontal transport of material at or very near the surface. Dune-shaped accumulations abound on the outer rim of King. Many display features that are indicative of ejecta acceleration downslope and deceleration up slope as it moved away from the crater.

Craters made by SIV-B and LM ascent stage impacts on the lunar surface were first recognized in the Apollo 16 photography by E. Whitaker. The Apollo 14 SIV-B made a 40m diameter crater with a somewhat asymmetrical, but distinctly dark, ejecta blanket. Rays are mostly dark, with a few light ones, and extend up to 5km from the impact site. The darkening is probably due to the fact that the velocity of impact is low enough to overturn the subsurface material without severe shock and fracturing. Other possible causes for the darkening are also explored.

Apollo 17 brought back new evidence of the complexity of mare basin filling. Numerous lava flow fronts are shown in photographs of western Mare Serenitatis and southern Mare Imbrium. The overlapping scarps indicate that mare basin filling was a process that took place during a long period of time, allowing each flow to cool and assume a shape prior to emplacement of another. A variety of constructional forms in southwestern Mare Imbrium suggests a variety of compositions in the later stages of mare basin filling.

On the lunar farside, basalt-like fill is limited to a few large basins and craters over 100km in diameter. The craters are Imbrian to Eratosthenian in age. As depicted in Apollo 17 photography, there are also several "turtle back craters." These are shallow depressions with somewhat dark fill that displays concentric (with a few radial), cracks. Several examples are given of this type of probable manifestation of volcanism in the farside highlands.

A case is presented of detailed correlation between general

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geologic units classified on the basis of photogeologic mapping and results of geochemical remote sensing. Units in the photogeologic map by Wilhelms and El-Baz (in preparation) of the eastern limb region of the Moon correlate with variations depicted by x-ray and gamma ray spectrometry as well as laser altimetry. The correlation is very successful and encourages further attempts to extrapolate ground-truth data to larger segments of the Moon.