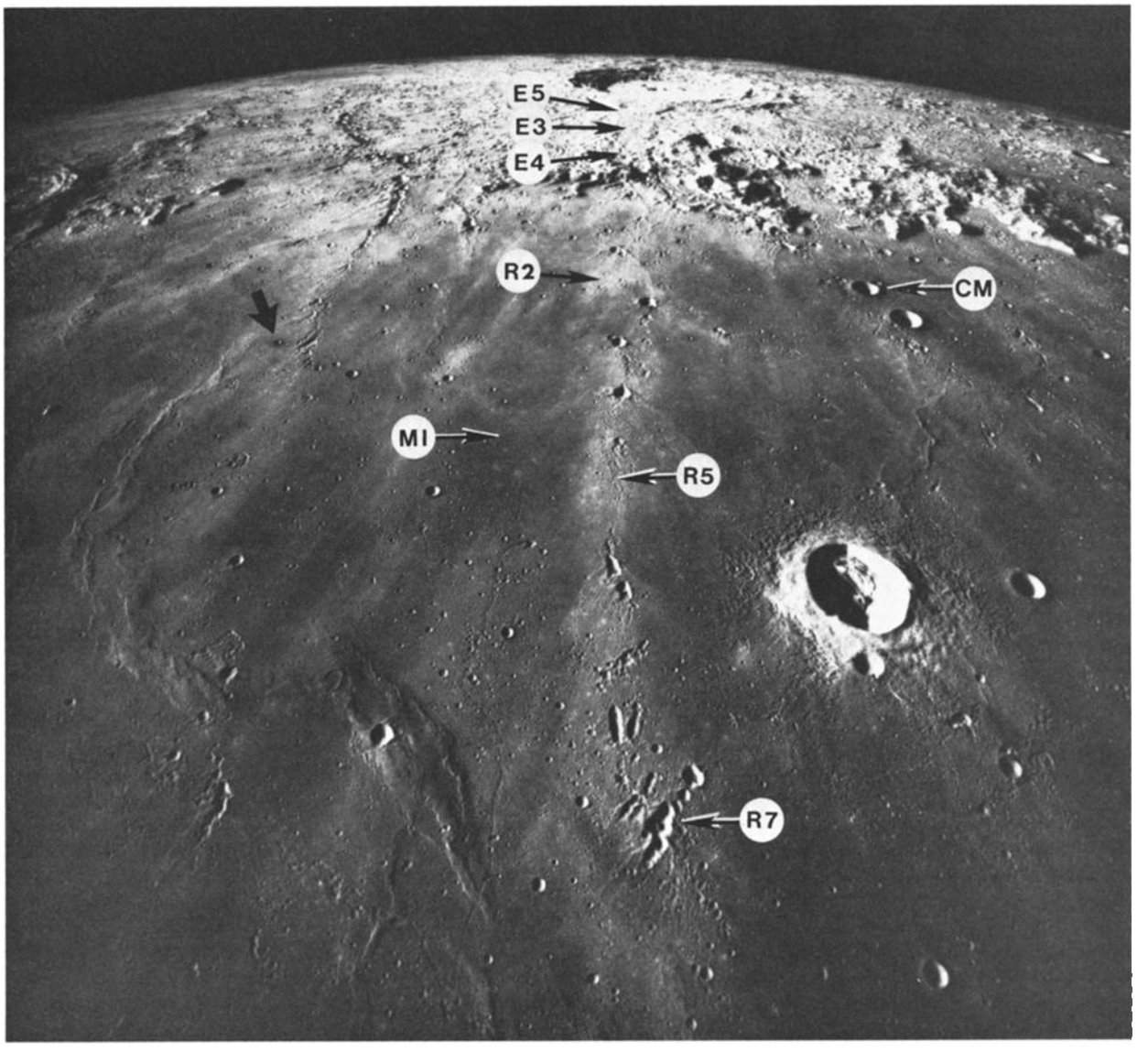

Fig. 5. Oblique Apollo 17 photograph taken approximately 300 km north of the crater Copernicus, looking south along the main ray system investigated here. Copernicus is the large crater on the horizon, while the specific areas studied in detail are indicated with labeled arrows. The large impact crater in the bottom righthand corner of this view is the 20-km-diameter crater Pytheas. Apollo frame number AS17 2442.

phology and secondary crater characteristics. Finally, data for 3.8-cm radar backscatter properties (Figure 6) were examined for each area in relation to its surroundings. As a result of the radar data acquisition techniques [*Zisk et al.*, 1974], many areas in Mare Imbrium occurred in more than one independent radar data set, increasing the reliability of the interpretations. Some of the key properties of these small areas are summarized in Tables 1 and 2. The spectral and physical properties are considered in detail below on an area by area basis.

Measured Properties of Ray Areas

Mare 1 (M1). This area was chosen because it appears from albedo and radar backscatter data to be relatively free of ray material and should thus be representative of the local mature mare substrate. The area is just to the east of the main ray system, discussed below, although high-albedo material also lies 8 km to the north. There are no secondary craters within the spot; the closest such crater larger than 1 km diameter is ~20 km to the west or ~50 km to the south, so that it is unlikely that tertiary ejecta covers this area. The radar backscatter for this general area is moderately low, typical for the surrounding apparently undisturbed mare, although this backscatter is not as low as that from an apparent ring of material around Pytheas, the 30-km crater located 100 km to the west. The spectral reflectance characteristics for M1 are comparable to other low-titanium basalt soils [*Pieters et al.*, 1980]. It exhibits a steeper continuum slope than most highland soils (including those Copernicus soils presented in Figure 3). The pyroxene band strengths are stronger than for highland soils and centered at longer wavelengths. The band center near 1.0 μm for M1 is due to Fe- and Ca-rich clinopyroxenes [*Adams*, 1974], the major mafic mineral in this basalt.

Mare Crater (CM). This area is centered on the post-Copernicus primary impact crater Draper C (U. S. Geological Survey Map I-462), which has a subdued ejecta blanket pre-