



Fig. 2d. The ejecta facies of old craters (Class 4) are barely detectable but the butterfly-wing pattern remains identifiable. Viking Frame 864A41.

without ejecta facies but with the saddle-shaped rim, elongate plan, and typically the median floor ridge were placed into Class 5 (Figure 2e). Such craters represent some of the oldest preserved impacts.

The five relative age classes were subsequently reduced to three classes in order to increase the statistical significance, to avoid misclassifications resulting from regionally different gra-

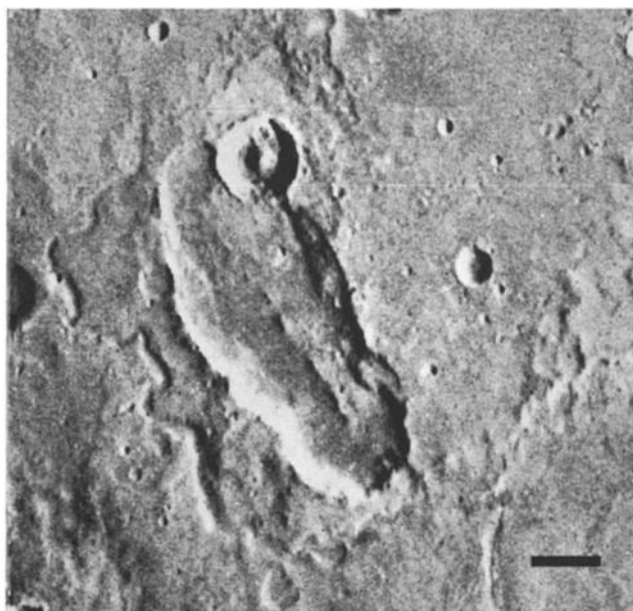


Fig. 2e. The oldest grazing impacts (Class 5) have lost their ejecta facies but other criteria permit identification. Viking Frame 829A33. In all examples, north is up and the bar scale indicates 10 km.

dational processes (wind erosion, blanketing, etc.), and to correct for the more rapid erasure of detail around smaller craters. Specifically, Classes 1 and 2 were combined. Classes 4 and 5 were combined but were limited to craters larger than 20 km. Craters smaller than 20 km from these classes were placed in Class 3. Appendix A provides a list of the craters used in this study, including their sizes, locations, Viking frames, and age classifications.

DISTRIBUTION AND ORIENTATION OF MARS GRAZERS

A total of 176 classifiable craters produced by grazing impacts were identified. Figure 3 shows histograms of sizes for the grouped relative age classes and reveals, as might be expected, that the largest examples occur in the oldest age class. In this figure, craters smaller than 20 km in the oldest age class have not been combined with age Class 3 in order to show the actual distribution of sizes. The largest example (average of two axes) in each class increases from about 25 km (combined Class 1 and 2) to 40 km (Class 3) to 95 km (combined Class 4 and 5), a trend reflected in the mean diameters from about 10 km to 11 km to 36 km, respectively.

The degree of elongation of Mars grazers appears to increase with increasing relative crater age class (Figure 4). This trend is most pronounced for the oldest examples. There may be

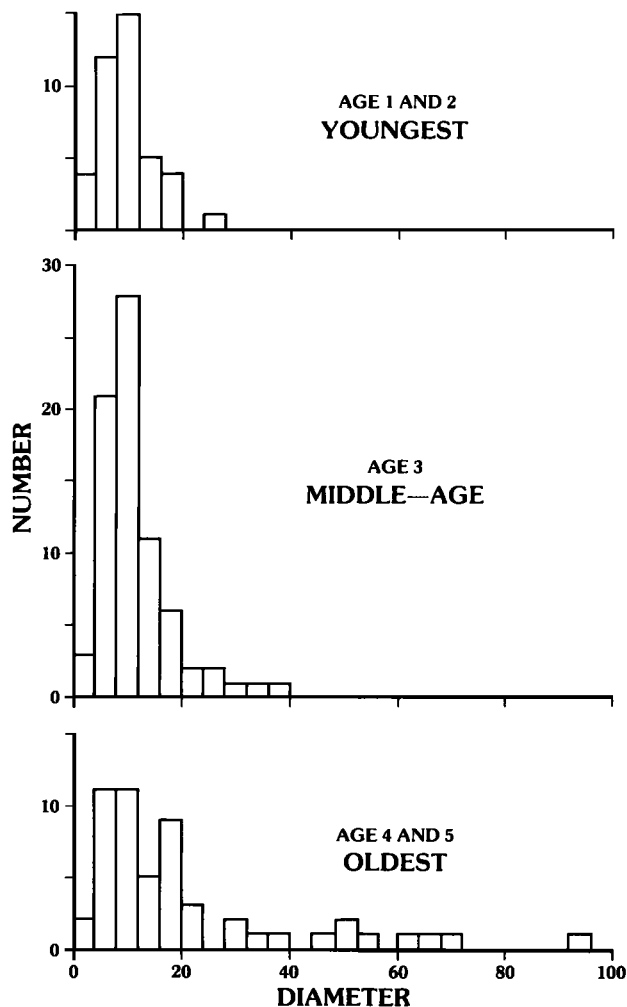


Fig. 3. Histogram of mean crater diameters for different relative age classes in 4 km bins.