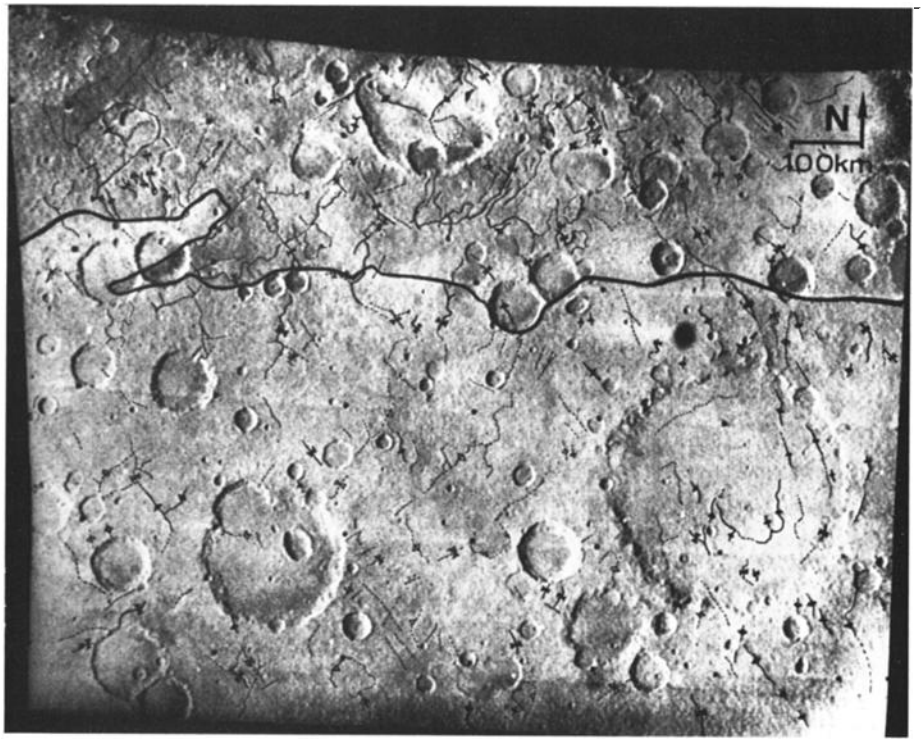

Fig. 10. Lineations mapped on rectified frame 6N21. The approximate boundary between the lower albedo region, Meridiani Sinus (above), and the higher albedo region, Deucalionis Regio (below), is accompanied by numerous rillelike lineations. The albedo contrast between these regions is not obvious owing to the enhancement of small-scale contrast differences (maximum discriminability photographs). Symbols used are those in Figure 1.

may reflect dilution of the $w1$ lineations by imaging artifacts. Published Mariner 9 imagery [*Sagan et al.*, 1972], however, shows dark and light lineations that are wind produced. Thus some of the large peaks in the rose diagram of $w1$ lineations may reflect meteorologically controlled trends that will be distinct from $w3$-$w2$ lineations, which are identified as topographic forms. Preliminary examination of Mariner 9 images of this region confirms such a possibility and underscores the importance of classifying lineations prior to their interpretation.

As *Binder and McCarthy* [1972] point out, surface trends commonly correspond to ejecta and structural features associated with huge basins. The region surrounding Hellas displays both concentric and radial trends, but the latter system is revealed only in the less significant class of lineations. The dominance of the concentric system of lineations is similar to old lunar basins, such as Humorum and Nectaris, where the concentric structural weaknesses persist or are rejuvenated, whereas radial ejecta patterns are destroyed with age. If such basins are not included in the photographic coverage, it is difficult, if not impossible, to separate these associated trends from regional or global structural trends. This problem is particularly severe for imaging flyby missions such as the Mariner 1969 and future space probes.

CONCLUSIONS

Mariner 6 and 7 imagery provided an intriguing glimpse into the structural complexity of the Martian crust that now has been confirmed by the highly successful Mariner 9 orbiter. Experience with images from precursory probes indicates that caution must be used in mapping lineations. Cross correlations of lineations from separate frames having different orientations provide an index for the possible dilution of structural detail by imaging noise