techniques, speckle and Michelson interferometry and lunar occultations have been or can be applied to asteroid diameter determinations. However, because these techniques are sensitive to the unknown limb darkening and albedo distribution of the asteroid, we doubt that they can achieve the accuracy possible with stellar occultations. Unfortunately, the stellar occultation method has not always reached its potential. Analyses of observations of occultations by 433 Eros (O'Leary *et al.*, 1976), 6 Hebe (Taylor and Dunham, 1978), and 532 Herculina (Bowell *et al.*, 1978) have all been limited by inadequate coverage of the occultation track and to some extent by almost total reliance on visual observations. Primarily because of accurate predictions, it was possible to avoid these problems for the occultation of SAO 85009 by Pallas. Accurate predictions and mobile telescopes are the key to further successful asteroid occultation studies. This research was supported by NASA Grants NGR-03-003-001 and NSG-2174.

8.16 Hektor: A Puzzling Asteroid. W.K. HARTMANN Planetary Science Institute, Tucson; D.P. CRUIKSHANK, University of Hawaii, Honolulu - Our observations in February 1977 measured a low albedo (p_V = 0.022 ± .003) for a pole-on view of a side of Hektor whose albedo had not been measured earlier. The observations support Cruikshank's (1977) conclusion of a low albedo for the other pole, and support Dunlap and Gehrels' (1969) general rotation model for a very elongated object whose pole lies fairly close to the ecliptic. Hektor is thus interpreted to be the largest and by far the most elongated known Trojan asteroid (roughly 150 x 300 km, vs. roughly 150 x 150 km for the second-largest Trojan), as well as the most elongated of any asteroid in its general size range. Since this makes it an unlikely candidate for a fragment, and since it is photometrically unlike a co-orbiting binary pair, we propose that it may be an example of a dumbbell-shaped partially coalesced pair of planetesimals that underwent a low-velocity collision. Collisions of this sort may have occurred in Jupiter's early Lagrangian clouds, and may represent an underappreciated type of planetesimal collision midway between cratering and catastrophic fragmentation.

8.17 Phase-Color Relationships for Solar System Objects, JOHNSON, T. V., and MATSON, D. L., Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA - Measurements of ever increasing photometric precision have revealed a wide variety of phase related effects for many bodies. The high quality lunar data of Lane and Irvine (1973) provide photometric parameters, such as phase coefficients and phase integrals, for a range of wavelengths and therefore of albedos. These data show a clear inverse correlation of phase coefficient with geometric albedo. We have investigated the consistency of the phase coefficients of a wide variety of objects, including asteroids and satellites, with this lunar correlation. There is a surprisingly close correlation of albedo with phase coefficient for this group. It is virtually identical to the lunar correlation. Since most bodies show considerable variation of albedo with wavelength, the phase coefficient-albedo correlation would predict systematic variation in scattering properties with color. We found that such a color effect does exist for objects ranging from different lunar regions to the Galilean satellites and that the variation is statistically consistent with the predictions of the lunar phase-albedo correlation. There are several interesting exceptions to this general behavior. Most striking are Io, which has an extremely small color phase effect considering its large variation in spectral albedo and (16) Psyche which has a very small phase coefficient for a low albedo body. This suggests that these bodies have highly anomalous surface textures, relative to other objects, perhaps resulting from a unique surface composition and history in the case of Io and the presence of large amounts of iron in the case of (16) Psyche.

8.18 Asteroid Phase Coefficient Size Dependence. E. F. TEDESCO, Lunar and Planet. Lab. - Reliable phase coefficients are available for 16 main belt asteroids smaller than 250 km in diameter. These asteroids are either type S or M and are plotted as such in the figure where the line is the mean regression line fit only to the 12 S points. The smaller asteroids have higher phase coefficients, in agreement with van Houten et al.'s (1970 Astron. Astrophys. Suppl. 2, 339) photographic results. Since the albedoes of objects in this sample are similar (0.14 ±0.04) and since shape induced brightness changes have been allowed for we conclude that this effect implies smaller asteroids have greater surface roughness than larger ones and conjecture that Bowell's (1977 BAAS 9, 459) finding of possible differences among phase coefficients for various compositional types may, at least in part, be attributable to this effect.