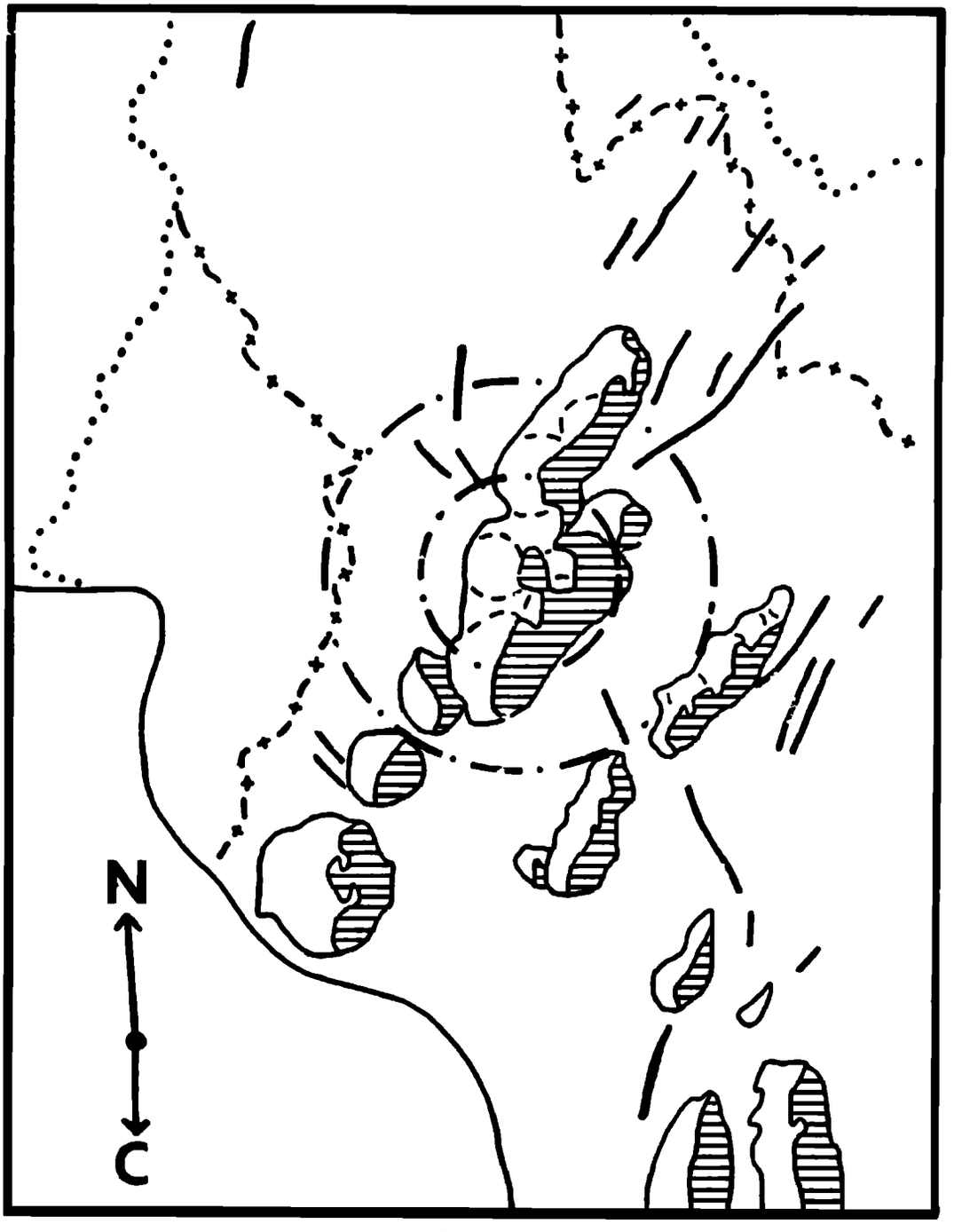

Fig. 7b

composition of the rays. When a crater first forms, the rays are composed of freshly exposed material that is inherently brighter than the undisturbed substrate if the two are of the same composition. At visible (photographic) wavelengths, immature soils from the Apollo collection are distinctly brighter than mature soils of the same approximate composition [*Adams and McCord*, 1971, 1973). For fresh bright-rayed craters in the maria or highlands, crater rays are visible largely because new immature material is either deposited or excavated along the rays. As the surface material ages it becomes darker owing to the alteration processes that occur during soil formation [*Adams and McCord*, 1973]. If the substrate is the same composition as the ejecta forming the ray, the feathery visible parts of the ray will gradually disappear, leaving only the larger secondary craters to mark the ray's location. Copernicus is not, however, a very young crater and has been shown to exhibit mature soils for areas that have not been subsequently disturbed [*McCord et al.*, 1972*a*, *b*].

The albedo contrast between many of the rays of Copernicus and the surrounding mare is thus now largely a compositional difference and not one of surface maturity. Even though Copernicus is one of the most prominent bright-rayed craters on the moon, it is by no means typical. The albedo distinction of Copernicus's rays allows their spatial characteristics to be readily studied, but it should be noted that the rays are not representative of freshly emplaced crater rays. The