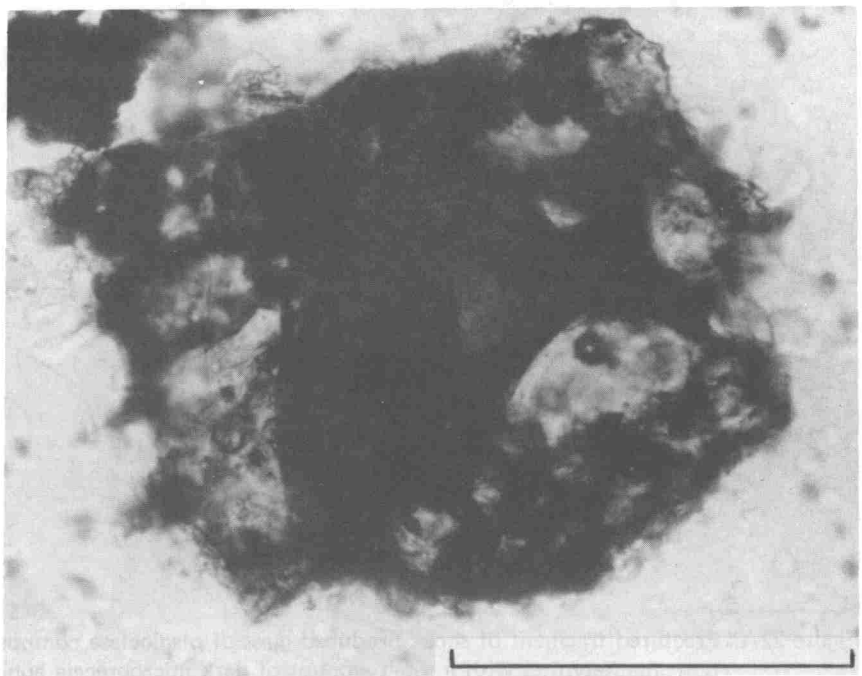

Figure 21. Heterogeneous glassy fragment, composed of a red-brown core which may be incipiently shock-melted pyroxene, surrounded by irregular clear areas which are apparently partly melted plagioclase. The red-brown material in the center is isotropic. If the identification is correct, this fragment represents the highest stage of recognizable shock metamorphism observed in pyroxene. Fragment 318,283; plane polarized light; scale bar 0.1 mm.

(2) Brightly reflecting spherules (Ni-Fe or troilite?) commonly present in the flowed heterogeneous glasses (Figure 27B) and in microbreccia matrices.

(3) Distinctive flow lines (schlieren) in heterogeneous glasses, composed of bands of glasses of different colors and implying partial mixing of materials of different compositions (Figures 29-31).

(4) Intimate mixing of glass and diverse rock fragments, some of which show shock-metamorphic effects (Figures 30-34).

(5) Incipient fusion of some mineral grains included in glassy fragments (Figures 33, 34), indicating superheating of the glass and disequilibrium between crystals and glass.

The character of the glassy material in the Luna-16 sample is virtually identical to that observed in the Apollo specimens (e.g., 7) and almost certainly reflects origin by meteorite impact. The preponderance of impact-produced

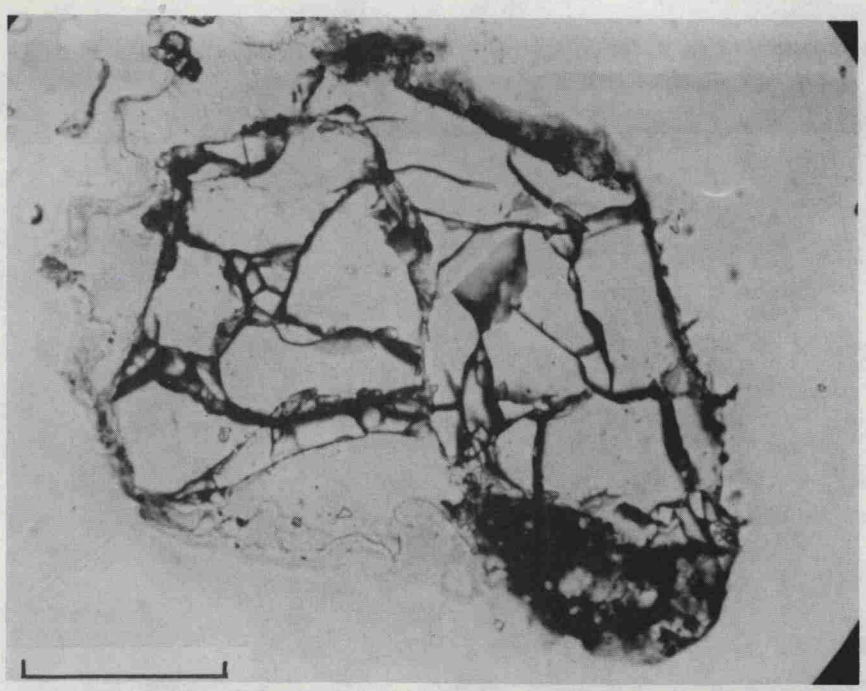

Figure 22A. Fractured fragment of shock-produced glass of plagioclase composition (maskelynite) with a small amount of dark microbreccia adhering at lower right. Fragment 301,42; plane polarized light; scale bar 0.1 mm.

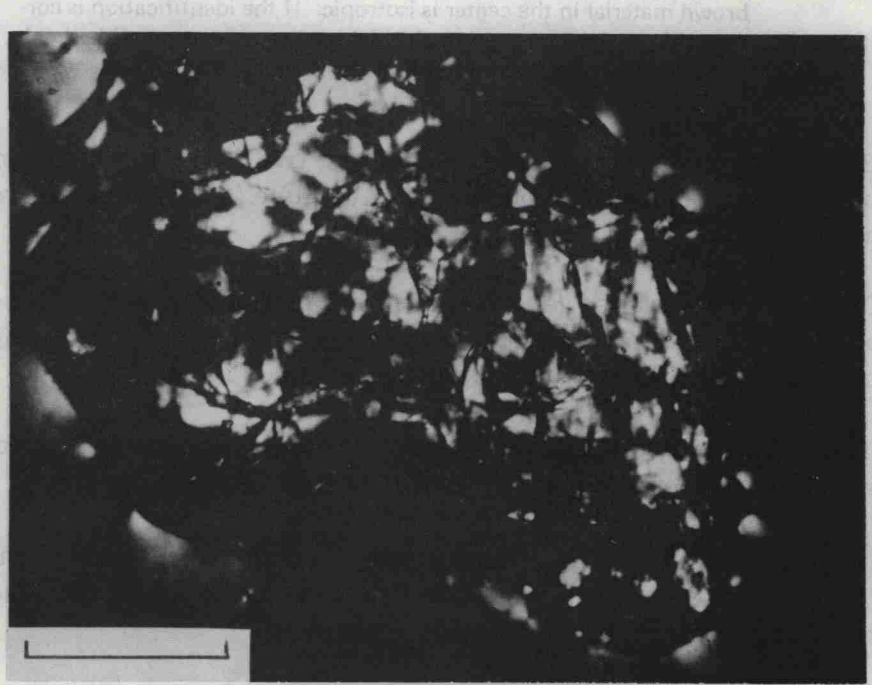

Figure 22B. Same view as Figure 22A; crossed polarizers. The fragment is largely isotropic with some internal birefringence. The birefringence pattern is patchy and irregular rather than spherulitic, suggesting that the birefringence may arise from relict crystalline structure in the maskelynite rather than from post-shock devitrification.