a time of about 10^{-6} sec. The temperature decreases slower than the pressure in accordance with the thermoconductivity process.

2. Orthosilicates

2.1. *Forsterite*

The typical appearance of shocked powder is shown in fig. 2. The distinct clear zone is noticeable here in the axial part of the specimen. The dark and intermediate zones are observable on the periphery of the specimen. The insignificant changes of the initial powder are fixed in this zone. The observation of the specimens after compression is insufficient, evidently, for the single-significant determination of shock-wave configuration. Nevertheless, it is possible to compare the axial zone with the place of presumably three-shock configuration. No new phases are found in the experiment shown in fig. 2, but the structure of material in the axial zone suggests the formation of neogenic forsterite from the phase other than the initial one. The broadening of lines, the appearance of two new weak lines and the dissapearence of several weak lines, were observed in the X-ray pattern in the intermediate zone. The refractive index in the axial zone for natural olivine (N_g = 1.686, from kimberlite) was found to be equal to the pure forsterite (N_g = 1.670). Olivine in the dark border of the intermediate zone had a higher refractive index (N_g = 1.693). A redistribution of Fe from the axial zone into the intermediate one is probable in this process.

2.2. *Zircon*

The transformations in the powder of natural zircon ($ZrSiO_4$) are shown in fig. 3 (DOBRETSOV *et al.*, 1968). Distinctive axial zone 1, intermediate zone 2 and zone of the insignificant changes of initial powder 3 were observed in this experiment. The existence and width of these zones depend somewhat on the weight of explosive, but the composition of the material in zone 1 changes with weight of explosive. The relics of $(ZrSiO_4)^1$ with the destroyed lattice similar to the natural metamict zircon were found in zone 1. The amorphous glass-like phase of SiO_2, monoclinic ZrO_2 and some rhombic modification of ZrO_2, that is stable under high static pressure (BENDELIANI *et al.*, 1967), were also found in zone 1. It is necessary to emphasize that the

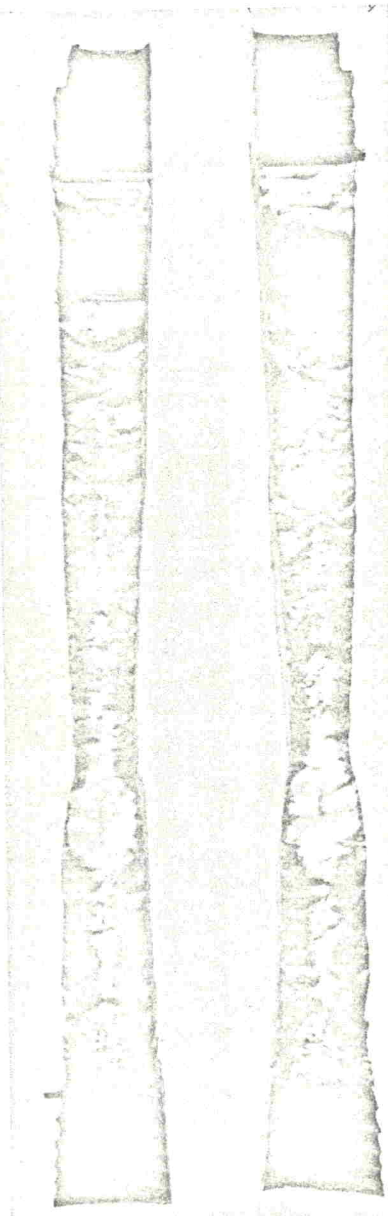

Fig. 2. Shocked powder of Mg_2SiO_4.

last phase was definitely established in the experiments with the large charges of explosive. The quantity of "metamict" zircon $(ZrSiO_4)^1$ (lines in fig. 3 are marked by x), was decreased with the increase of the explosive weight.

Investigations of zone 1 by microsonde (fig. 4) confirmed the existence of the isolations of pure SiO_2. The particles of SiO_2 and ZrO_2 were very small in the ground part of zone 1 (less than 1–2 μ). These sizes are