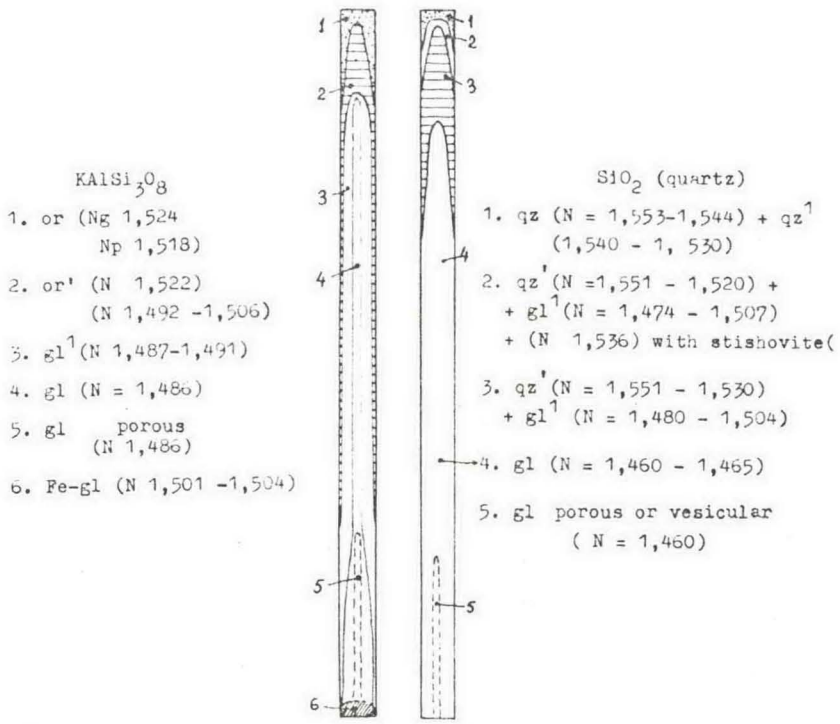

Fig. 7. Shocked powder of SiO_2 and $KAlSi_3O_8$ with zones of variable density.

the partial destruction of the lattice. The small quantity of the very dense glass (N = 1.536, constant density) was found in zone 2. This glass contained the needle-shaped grains which were hardly observed in the microscope, with these grain being possibly a coesite or stipoverite (stishovite). The stipoverite was found in SiO_2 after shock compression after treatment by a solution of HF and HNO_3 (DERIBAS *et al.*, 1967; DE CARLI and MILTON, 1965) and the coesite was found in some of our previous experiments (DERIBAS *et al.*, 1966). In the present experiments with large explosive charges (fig. 7) some coesite, tridimite (hexagonal) (coesite ≥ tridimite) and sometimes (in experiments with initial glass of SiO_2) neogenic quartz were found in zones 1, 2, 3. Some tridimite, traces of coesite and sometimes (in experiments with initial glass of SiO_2) α-cristobalite were found in zones 4–5. We suppose that the formation of tridimite and cristobalite is connected with the high residual temperature after shock compression. Zones 2 and 3 moved along the detonation and their sizes increased with explosive charge. Zones 1 and 2 disappeared with the largest explosive charges. Simultaneously, the appearance of stipoverite instead of coesite is possible.

According to this phenomenon, we considered in the previous paper (DERIBAS *et al.*, 1966) three different regimes of stability of quartz, coesite and stipoverite according to the weight of explosive charge. The present investigation shows that the detection of different zones in one experiment is more correct. It is necessary to note that the appearance of coesite instead of stipoverite depends on many factors little understood at present.

3.2. *$KAlSi_3O_8$*

The behaviour of $KAlSi_3O_8$ in shock experiments (fig. 7) is similar to that of SiO_2 in general. The glass-like phase (gl') appeared in zones 2 and 3 with higher variable density (N up to 1.505). The relics of potassic feldspar with strongly destroyed lattice were observed. The presence of leucite and the variations of composition of glass were not found. The comparison of these data with the phase-diagram of a system K_2O–Al_2O_3–SiO_2 (SCHAIRER and BOWEN, 1955) shows that these effects are not simple melting at high temperature. The new high-pressure phase of $KAlSi_3O_8$ recently discovered (RINGWOOD *et al.*, 1967) was not found definitely. Probably a very small quantity of this phase was formed in our experiments.