reached 1980°C. The corundum + hydrosanidine association is retained in the cold zone, but "c" type neogenic material is observed in the hot zones. The boundary between the zones of formation of these associations corresponds approximately to the 1800°C isotherm.

The neogenic fine flaky mineral is similar in appearance to mica, but has X-ray data similar to those of muscovite. However, further research will be required to determine whether this association is equilibrial or consists of a "quenched phase."

CONCLUSIONS

Study of conversions of muscovite at 66 kbar in the range 900-2000°C revealed that muscovite is unstable at 1050-1350°C and breaks down into kyanite and K-analcime.

In the range 1350-1800°C the kyanite + K-analcime association is converted to an association consisting of corundum, hydrosanidine, and a third (unidentified) mineral, which is apparently not in equilibrium.

In those parts of the thin section where the temperature was above 1800°C, fine flaky micaceous material was observed. The available petrographic data do not enable us to decide whether this material is formed by replacement of the corundum + hydrosanidine association, or is a quenching phase formed from the melt as the specimen cools.

From the geological point of view, interest attaches to the kyanite + K-analcime association, first observed in our experiments, because it indicates the important part played by kyanite in geological processes. This might expand present ideas on the geochemistry of aluminum in abyssal processes.

Since the presence of potassium in corundum and kyanite is improbable, and the other minerals of the "a" and "b" associations have relatively low densities (less than 3 g/cm^3), the results confirm the previously determined pattern (Markov et al., 1966; Markov et al., 1968) of behavior of potassium-containing minerals at high pressures and temperatures. This is further confirmation of our hypotheses on the causes of removal of potassium into the outer layers of the earth.

REFERENCES

Barrer, R. M., and Baynham, J. W., 1956, HYDROTHERMAL CHEMISTRY OF SILICATES: Jour. Chem. Soc. (London), no. 8, Pt. VII.

Larsen, E., and Berman, G., 1965, IDENTIFICATION OF TRANSPARENT MINERALS UNDER THE MICROSCOPE: Moscow, Nedra Press, p. 192.

Markov, V. K., Livshits, L. D., Delitsin, I. S., Ryabinin, Yu. N., and Petrov, V. P., 1965, CONVERSIONS IN MAGNESIUM METASILICATE AT HIGH PRESSURES AND TEMPERATURES: AN SSSR Izv., Ser. Geol., no. 7.

Markov, V. K., Petrov, V. P., Delitsin, I. S., and Ryabinin, Yu. N., 1968, CONVERSIONS OF BIOTITE AND LEPIDOMELANE AT HIGH PRESSURES AND TEMPERATURES: AN SSSR Izv., Ser. Geol., no. 2.

________ 1966, CONVERSION OF PHLOGOPITE AT HIGH PRESSURES AND TEMPERATURES: AN SSSR Izv., Ser. Geol., no. 6.

________ 1968, POSSIBLE CAUSES OF REMOVAL OF POTASSIUM INTO OUTER LAYERS OF THE EARTH: AN SSSR Inst. Fizika Zemli Trudy, no. 2.

Mikheyev, V. I., 1957, X-RAY DETERMINATIVE TABLE FOR MINERALS: GNTI, Moscow.

Petrov, V. P., 1965, THE IMMERSION METHOD: Supplement to the book by E. Larsen and G. Berman, "Identification of Transparent Minerals under the Microscope;" Russian translation published by Nedra, Moscow.

Seki, Y., and Kennedy, G.C., 1964, BREAKDOWN OF POTASSIUM FELDSPAR, $KAlSi_3O_8$ AT HIGH TEMPERATURES AND HIGH PRESSURES: Am. Mineralogist, v. 49, nos. 11-12.

Ryabinin, Yu. N. et al., 1963, SUBSEQUENT INFORMATION ON CONDITIONS OF FORMATION OF COMPACT SILICA MODIFICATIONS AT HIGH PRESSURES AND TEMPERATURES: AN SSSR Izv., Ser. Geol., no. 8.

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