

obvious source. The zircon determinations reported here strengthen the suspicion of Powell and Fischer (1976) that the Meers Quartzite contaminated the Mount Sheridan Gabbro, but do not support the possibility that the pods represent recrystallization of the quartzite. Analysis of zircon from the Meers Quartzite will be undertaken in the future to test this hypothesis. If the older contaminating zircons are indeed from the Meers Quartzite, and yield middle Proterozoic ages, it would indicate a much older source than is known in the subsurface to the north. An alternative hypothesis for the origin of the contaminant zircon is that it was incorporated during production and rise of the gabbroic magma, and thus was derived from some unknown lower crustal source.

If the pegmatitic pods are late-stage fractionation products of the Mount Sheridan Gabbro, the older contaminant fraction must have been mostly incorporated in the initial stage of crystallization of the gabbro. Bickford and others (1981a) and Aleinikoff and others (1981) have reported similar relationships in which young magmas have been contaminated with older zircons and the coarsest (first to crystallize) fractions have the highest proportion of older core material, whereas the fine fractions have the smallest amount.

CONCLUSIONS

U/Pb isotopic studies of zircon from the Mount Sheridan Gabbro and its associated pegmatitic pods indicate that the gabbro and pegmatite crystallized approximately 552 ± 7 m.y. ago. The gabbro zircons contain an older xenocrystic component, which indicates that the parental magma was contaminated with crustal material during emplacement. We plan to test zircons from the Meers Quartzite as a possible source of the contaminating zircon. A crystallization age of 552 ± 7 m.y. for the Mount Sheridan Gabbro suggests that available Rb/Sr and K/Ar calculated ages in the Wichita province are approximately correct, and that they were not reset by the intrusion of the Wichita granites.

ACKNOWLEDGMENTS

This research was supported by a special grant from the Department of Geology of the University of Kansas, and by National Science Foundation grant EAR 79-19544. M. E. Bickford critically read the manuscript and suggested many improvements. Susan C. Kent helped collect the samples, and John E. Gray prepared the thin sections.