THE CHERT OF THE NIAGARA SERIES OF THE CHICAGO AREA

BY

JOHN R. SCHULTZ

Northwestern University, Evanston, Illinois

The chert of the Niagara series in the Chicago area shows the following field relationships, which are believed to be diagnostic:

(1) Many of the chert bands branch laterally into two.

(2) Many nodules show finger-like projections which penetrate the wall rock at right angles to the bedding.

(3) Several steeply inclined layers or "feeders" of chert, which connect above and below with nearly horizontal bands, were observed in the Joliet quarry.

Other important features, but of less diagnostic value, are (a) silicified fossils in the chert and wall rock, (b) irregular inclusions of wall rock in the centers of many nodules, (c) silicification along joints and bedding planes, (d) distribution of the chert along bedding planes and along the tops of shale intercalations, and (e) arching of shale stratification around chert nodules.

It is thought that the chert has originated through segregation of siliceous material from out of the Devonian shales which formerly covered the area, and in part from the finely divided siliceous matter originally present in the Niagaran series itself. The agent effecting the segregation was, in all probability, circulating ground water. Colloform structures in the chert indicate that the silica was carried in solution as a colloid, and was precipitated by reaction with the carbonate wall rock.

Microscopic evidence indicates that the silica was originally precipitated as a gel, which later crystallized into various forms of hydrated, crystalline silica, later recrystallization of which converted a part of the mass into quartz.

The chert replaced, and to a smaller extent displaced, the surrounding wall rock. Cavity filling seems to have been relatively unimportant.