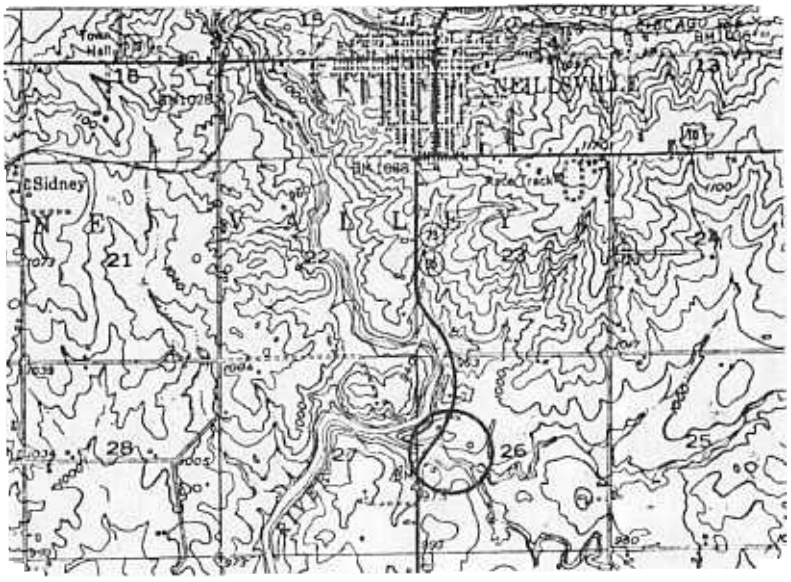
TITLE: Cunningham Creek Augen Gneiss and Mylonite Gneiss

LOCATION: NW1/4, SW1/4, Sec. 26, T 24 N, R 2 W, Neillsville 15' quadrangle

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SUMMARY OF FEATURES:

Folded, micaceous mylonite schist and augen gneiss are the main rock types in a major shear zone extending N80°E and S30°W from here. The shear zone is at least 2 kilometers wide. Cataclastic foliation in the schist has been strongly folded about axes which dip steeply westward. Axial planes of these folds strike northeast and are nearly vertical: they indicate right-lateral deformation of cataclastic lamination.

Augen gneiss, exposed in roadcuts along Highway 95 just north of Cunningham Creek, is conposed of very coarse, pink K-feldspar crystal fragments (porphyroclasts) in a flow-laminated matrix of schistose crush debris composed of feldspar, quartz, and biotite (figure 1). The K-feldspar augen (eyes) show Carlsbad twinning and effects of ablational rounding and fragmentation with mylonite injection along cleavages and fractures. The rock probably flowed as an inhomogeneous, granular mass. The precataclastic parent rock was probably a coarsely porphyritic quartz monzonite or granite.

Phacoidal (lensoidal) mylonite schist is well-exposed along Cunningham Creek east of Highway 95. In addition to variable quantities of essential feldspar, quartz, muscovite, and biotite, the schist contains significant quantities of pyrite, which locally is weathered to limonite. Felsic layers are more resistant to weathering and erosion, while micaceous layers are readily eroded away to form depressions. Primary cataclastic schistosity was strongly compressed into chevron-type folds which generally plunge 70° southwest to vertical. Locally chaotic fold orientations suggest torsion and detachment of schist blocks. During tectonic reactivation of the shear zone, primary cataclastic foliation and layering were thrown into a system of steeply plunging folds showing right-lateral displacement.

Gneissic granite(?) well-exposed along the north side of Black River 2.4 km southwest of here (SE 1/4, NE 1/4 Sec. 33) contains large xenoliths of shear folded gneiss and mylonite. The gneissic granite(?) intruded a shear zone. Foliation in the granite(?) may have been developed during or after intrusion. This granite(?)

is mesoscopically identical to the "Neillsville granite" and probably represents the eastern contact zone of a large granitic mass. The Cunningham Creek shear zone, extended west-southwest along strike, connects with a major contact between the "Neillsville granite" on the north and and diorites on the south. The eastern edge of the diorite body is strongly sheared along the Black River shear zone.

Thus, field relations indicate that older porphyritic granite, diorite, and rocks of unknown parentage were cataclastically deformed along a shear zone extending up the Black River and bending northeastward near the mouth of Cunningham Creek. After subsequent intrusion of the "Neillsville granite(?)" the Cunningham Creek portion of the shear zone was reactivated by right-lateral shearing stress: this later movement may have juxtaposed the "Neillsville granite(?)" and the diorites to the south.

It will be noticed that the valley of the Black River is remarkably devoid of glacial deposits. What are some possible explanations for this?

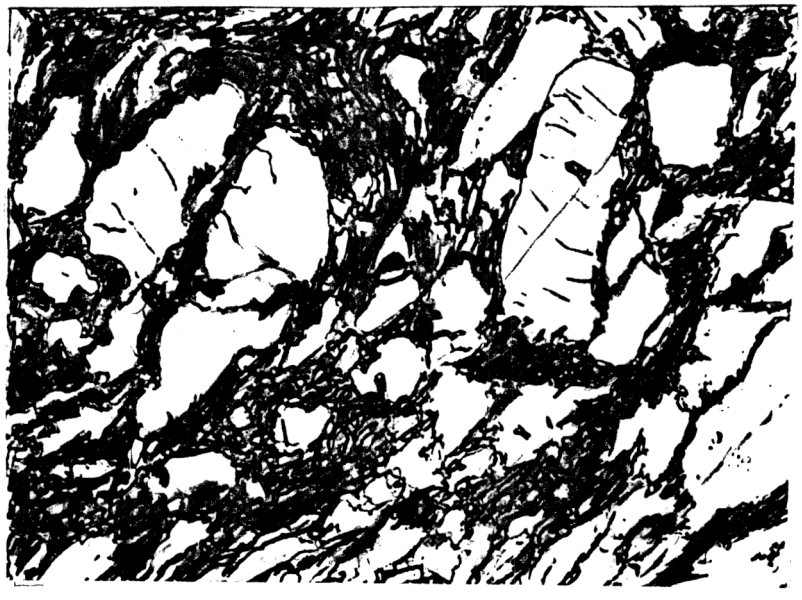

Figure 1 -- Flow-oriented K-feldspar porphyroclasts in mylonitic augen gneiss. White areas are feldspar. Matrix is composed of foliated crush debris. Note segmentation of feldspar porphyroclasts and intrusion of mylonite along fractures in the fragments. Actual size.