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Coal are also found in Chesterian strata in the quadrangle, within the Tygett Sandstone Member of the Clere Formation, and in the Palesburg, Wabersburg, and Tar Springs formations. These coals consistently occur just above the base of the Tygett Sandstone. The Tar Springs is exposed in the railroad cut of Illinois Central in Section 12, T13S, R4E, and is 6 inches thick. Coal in the Wabersburg is up to 12 inches thick and has been mined for local use south of Lake Quadrangle, near the center of Section 9, T12S, R4E, and is the Palesburg is the Palesburg is 12 inches thick and has been mined for local use and is 1 inch thick. In borehole G42, 19 inches of coal with high sulfur and ash.

The Raun Fault Zone (Baxter et al., 1967; Nelson, in press.) is represented in this quadrangle by two subparallel high-angle faults 2 to 2 1/2 miles apart of the Lusk Creek Fault Zone. A minor fault north of Highway 146 juxtaposes sandstone of the Caseyville on the southeast with the Kinkaid Limestone on the northwest. This fault dies out to the southwest beneath the alluvium of Root Lick Branch. The main, high-angle, normal fault of this zone was projected under the alluvium across the southeastern corner of the quadrangle. Stratigraphic evidence from the Reevesville and Brownfield Quadrangles, and direct observations of the fault trend in the Waltersburg Quadrangle, indicate that this fault runs beneath the surficial alluvium of Root Lick Branch Creek. A seismic profile indicates that the Raun Fault Zone dips to the northwest and has a 10 to 15° angle.

Five small anticlines occur in the quadrangle. Two of these occur within the Lusk Creek Fault Zone. The other three occur in flat-lying strata of the Clore Formation. The latter three anticlines are 3 to 50 feet wide. The axes of four out of five of the anticlines roughly parallel the trend of the Dixon Springs Graben. The fifth anticline, well exposed in a railroad cut at Robbs, strikes perpendicularly to the graben. These anticlines all are sharp upward buckles, having steeply dipping limbs and sharp crests in the form of an inverted "V". They are believed to reflect minor adjustments, in incompetent, shaly strata, in response to compressional stresses induced by reverse displacement along the Lusk Creek Fault Zone.

**ECONOMIC GEOLOGY**

Coal has been mined for local use by property owners, but there has been no commercial mining in this quadrangle. Two discontinuous coal beds (or seams) occur within the lower Pennsylvanian rocks. The lower of the two is found in the Wayside Sandstone Member and ranges from 2 to 4 inches thick. This coal has a wavy underlayer in places elsewhere it consists of rapid coal stringers. The coal in the Wayside Sandstone Member is a thin, coal-ash to coal-steel-bore (Gd-1), in Sections 11 and 12, T12S, R4E, and Sections 9 and 15 of T12S, R5E. The upper coal occurs in the Drury Member of the Caseyville Formation, in a similar stratigraphic position as the Gentry Coal bed in Hardin County, to the east. However, spores found in the coal in the Drury in the Glendale Quadrangle indicate it is slightly younger than the Gentry Coal bed (Russell A. Appers, personal communication). The upper coal is 1 to 2 feet thick in sections SW 1/4 of Section 14 and SW 1/4 of Section 5, T12S, R5E. It is 3 to 5 inches thick in SW 1/4 of Section 10 and SW 1/4 of Section 5, T12S, R5E. It has 3 to 5 inch stringers and forms one to three stringers with intervening shale benches.

In summary, the prospects for commercial coal mining in the Glendale Quadrangle are remote.

Fluorspar and barite prospecting was described by Bradbury (1959) and Tippie (1944) from the eastern half of Section 9, T13S, R5E, of the Glendale Quadrangle, within the Lusk Creek Fault Zone. Only traces of fluorite and barite have been found in prospect pits and in inclined diamond drill holes in Section 9. Some of the boreholes encountered the Ste. Genevieve and St. Louis Limestones near the surface (Tippie, 1944). The Ste. Genevieve Limestone is the principal host formation of fluorospar-barite mineralization throughout the Fluorspar District. Although only traces of fluorite and barite have been found in prospect pits and drill holes in Section 9, T13S, R5E, Bradbury (1959) stated that drilling other areas along the Lusk Creek Fault Zone southwest to northeast of this prospect might reveal fluorospar and barite deposits of considerably greater extent.

The Vienna Limestone would make a tough aggregate for skid-resistant asphalt, because of its siliceous nature.

The closest oil and gas production is about 12 miles north of the Glendale Quadrangle near Mitchellville. The oil in the Mitchellville area is produced from sandstones of the Dogonia, Waltersburg, and Cypress Formations (Chesterian). No oil has been produced from this quadrangle. Four of the 57 known boreholes were tests for oil and gas, but no shows of oil were reported. The deepest test in the study area was the Robbs Restenement well No. 2, located in the NW 1/4, SE 1/4, NW 1/4, Section 33, T12S, R10E, about 680 feet in the Henry Limestone Member (Chesterian).

No wells have reached the Cypress, Aux Vases, and Ste. Genevieve outside the fault zone. The oil possibilities of this quadrangle have not been satisfactorily tested.

## REFERENCES

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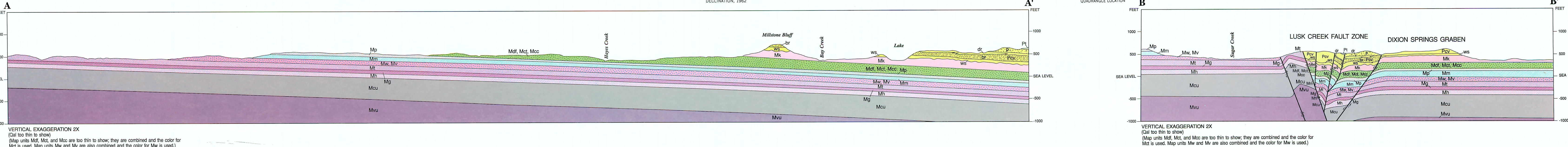
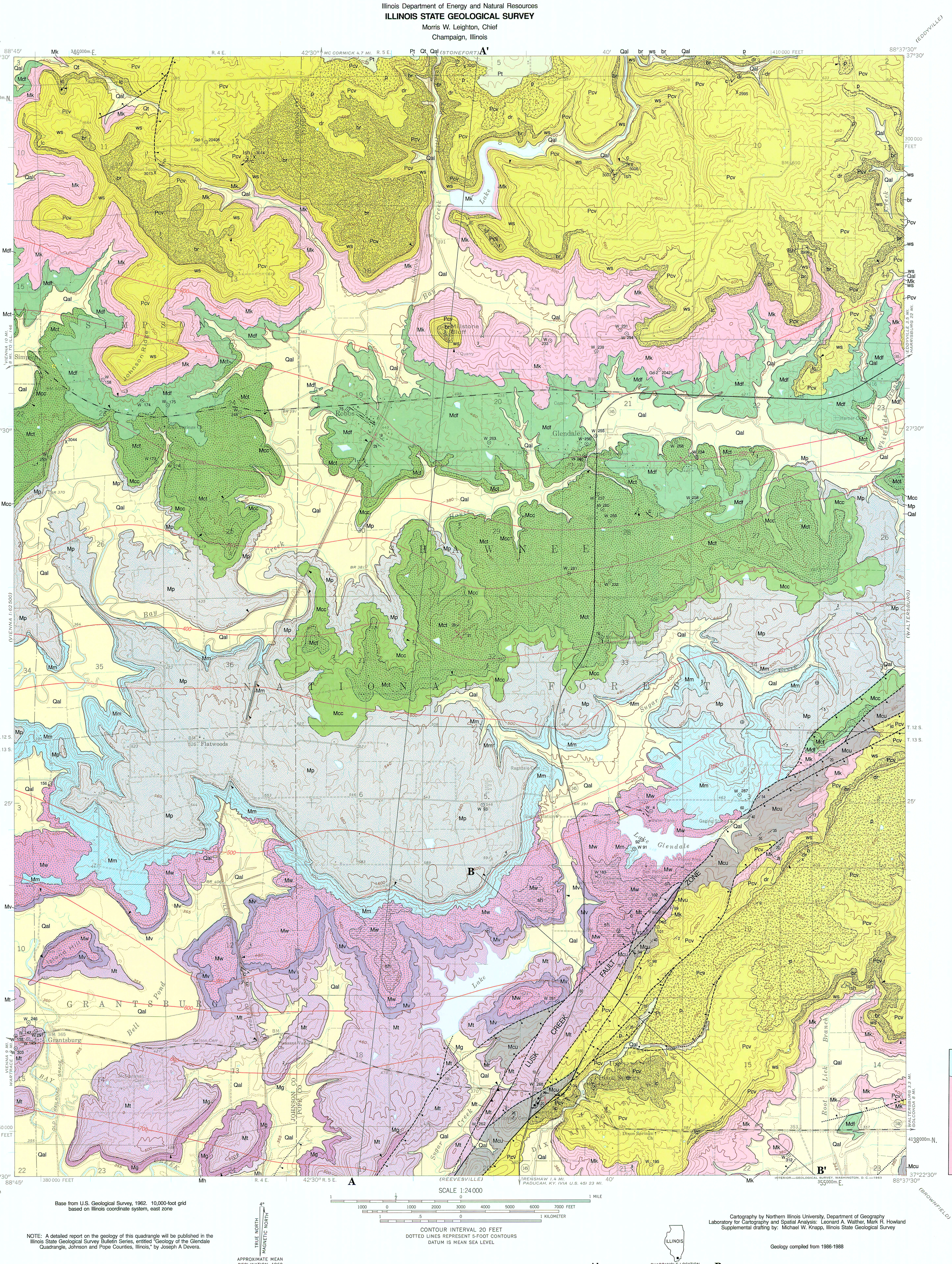
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