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A STRUCTURAL AND PETROLOGICAL NOTE
ON THE MAZARN SYNCLINORIUM

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Abstract

During the fall of 1964, 3500 readings were taken on planar surfaces (S-surfaces) over a 288 square mile portion of the Mazarn Synclinorium. Fold solutions were plotted in the field by locating two points lying in the axial plane of the fold, one generally being the fold axis and the other the rake of the trace of the axial plane on the face of the outcrop. Pole points of planar elements from the northwest, southeast and northeast areas of the Mazarn Synclinoria were plotted on a Schmidt “equal area” net and contoured. The data when contoured shows the fold geometry of the basin. From this geometry a maximum depth of about 15,300 feet was calculated and a dynamic system of uplift and gravity slide proposed.

Deformation undergone by the Mississippian Stanley Shale and the Ordovician Big Fork Chert were compared and classified by fold style. It was found that the Stanley Shale was folded by flexural flow and flexural slip mechanisms, with the interlayered sandstones exerting the strongest influence on the geometry of the folding, while the Big Fork Chert folded quasi-flexurally. The difference in deformation between the two formations probably being due to a higher mean ductility in the Big Fork as compared to the mean ductility of the Stanley Shale.

Samples of the sandstones were taken randomly throughout the basin. Thin section studies show the sandstones, classified on the basis of mineral composition, to be quartzites and arkoses.

Readings taken in the Mazarn Synclinorium as well as a traverse south on State Highway 7 to the Hot Springs, Clark County border suggests that deformation of the basin decreases in the western portion of, as well as south of, the synclinorium.

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