

CLEATING IN COAL

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Cleating in bituminous coal has been observed for many years in districts where it has a marked influence upon the mining of coal although in other states such as Illinois it has been passed by unnoticed. Although most pronounced in bituminous coals, it does not seem to be a criterion of rank since it may be observed in all coals ranging from lignite through bituminous; anthracite however exhibits columnar structure. Reger and Behre in West Virginia and Pennsylvania came to the conclusion that the average strike direction of the principal cleating paralleled the local structure which in turn paralleled the principal ranges of the Appalachians.

In order to determine the persistence of the strike direction of cleating in Illinois coals, numerous readings were taken at various points. In Perry county, three miles south of Pinckneyville, the cleating in the No. 6 coal fell into two systems, N. 7°-37° W. and N. 52°-55° E. The limestone overlying the coal showed jointing in two series as follows, N. 16°-39° W. and N. 55°-65° E. At Pyatts the same coal possessed three cleat systems, (1) N. 45°-59° E., (2) N. 5°-35° W., and (3) N. 84°-85° E. Ten miles southeast at Hallidayboro, the coal showed three systems of cleats, one direction being less prominent than the others. These are listed as follows:

N. 35°-70° W.; N. 10°-19° W.; and N. 30°-40° E. (least prominent). Here as at Pinckneyville the overlying limestone was jointed in two directions, N. 53°-73° E. and N. 7°-23° W. Two miles north of Marion the same coal showed well developed cleat in a direction of N. 30°-40° W. and a poorly marked one N. 15°-38° E. Along the LaSalle anticline, at Lowell, strike directions of cleats were N. 46°-48° E. and N. 33°-55° W., while jointing in the non-carbonaceous material was exceedingly prominent in the following two systems, N. 35°-47° W. and N. 46°-55° E.

At all points of observation jointing in the non-carbonaceous strata paralleled cleating, and the prominent direction of jointing was always the strike of the pronounced cleat. It was further apparent that cleating was more pronounced along the axes of anticlines and became less marked away from the folds. Such observations are in direct accord with the conclusions of Behre and Reger for the Appalachian district. It is believed therefore, that jointing in sedimentary strata and cleating in coal are closely related, being formed contemporaneously by the same tectonic stresses rather than the result of processes of drying or coalification.