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## The Western Interior Geosyncline and Its Bearing on the Origin and Distribution of the Coal Measures

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# THE WESTERN INTERIOR GEOSYNCLINE AND ITS BEARING ON THE ORIGIN AND DISTRIBUTION OF THE COAL MEASURES.

FRANCIS M. VAN TUYL.

(*ABSTRACT.*)

Late studies of the Mississippian formations of southeastern Iowa for the Iowa Geological Survey have shown that these formations were tilted to the southwestward and partly truncated in late Mississippian time. There is convincing evidence that this tilting was related to deformation over a wide area in southern Iowa, southeastern Nebraska, eastern Kansas and northwestern Missouri which outlined a southwestwardly pitching geosyncline in which the Coal Measures of the Western Interior coal field were deposited. This geosyncline was shallow in early Pennsylvanian time and probably did not greatly exceed 700 feet in depth at the close of the Cherokee stage. At the present time, however, it is approximately 2400 feet deep at the deepest known point which is at McFarland, Kansas. An important part of the deepening is believed to have been brought about by subsidence during the post-Cherokee stages of the Pennsylvanian.

The magnitude and significance of the basin has been demonstrated by the construction of 100 foot contours on the base of the Coal Measures from data furnished by the reports of the State Geological Surveys of Iowa, Missouri and Kansas.

The presence of this basin not only explains the great dissimilarity between the Coal Measures of this field and those of the Eastern Interior field which were undoubtedly deposited in a distinct basin, but also explains the belted arrangement of the outcrops of the Pennsylvanian formations, particularly in Iowa, Missouri and Kansas, where the younger members are approximately confined to the center of the basin, progressively older ones being exposed towards its margins. The present distribution has resulted from post-Paleozoic erosion of the dipping beds but there are reasons for believing that the Missouri formations were never as extensive as those of the Des Moines and that the younger members of the Missouri itself were more restricted than the older ones.

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