Split and Channel Sandstone Cutout in Coal V in the Dresser Area, Vigo County, Indiana[1]

S. A. FRIEDMAN, Indiana Geological Survey

Introduction

A split and sandstone cutout in Coal V in the area of the Dresser mine, Vigo County, Indiana, were produced by deposition of sand and clay in the channel and on the flood plain of a stream contemporaneously with the formation of peat in the swamp of Coal V time.

The Dresser mine is in the north-eastern part of the Eastern Interior Coal Basin and produced Coal V, which is at the top of the Petersburg formation of Allegheny age. Walter Bledsoe and Company, operators of the mine from 1925 to 1953 (1), outlined by drilling an area where coal mining was impossible owing to a split and sandstone cutout. A preliminary coal map of Vigo County shows this cutout (2).

The writer compiled subsurface data from the Dresser area during 1954 and 1955 as a part of a cooperative project of the Indiana Geological Survey and the U. S. Geological Survey to study the geology and coal resources of the Terre Haute and Dennison quadrangles. A study of this data permits the development of a hypothesis to explain the origin of the split and sandstone cutout.

Distribution and Origin of the Split and Sandstone Cutout

The area called a "sandstone fault" on the latest available map of the Dresser mine has a dendritic pattern. A study of the drilling data shows that the area of the dendritic pattern contains the split as well as the sandstone cutout (fig. 1). Dendritic tributaries converge down the regional dip, which is 20 to 30 feet to the mile toward the southwest. These facts suggest that a stream and its tributaries flowing down the regional dip produced the split and sandstone cutout. Coal V is 4 to 5 feet thick outside the area of the split, but within this area it is too thin to mine because shale has taken the place of part of the coal (fig. 2). Sandstone as much as 40 feet thick was deposited in the channel area.

History of Sedimentation

A stream developed during the early phase of peat formation in the swamp of Coal V time (fig. 3, a). This stream cut down through the peat into clay and shale and later deposited sand in its channel (fig. 3, b). The stream meandered, cut laterally, and deposited mud on its flood plain (fig. 3, c). Tributary streams deposited smaller amounts of mud and sand. Locally peat formed where the swamp encroached upon the flood plains. Alternate deposition of peat and mud resulted in intertonguing of these sediments (fig. 3, d). This intertonguing is the best evidence in favor of contemporaneous deposition of the sand, mud, and peat.

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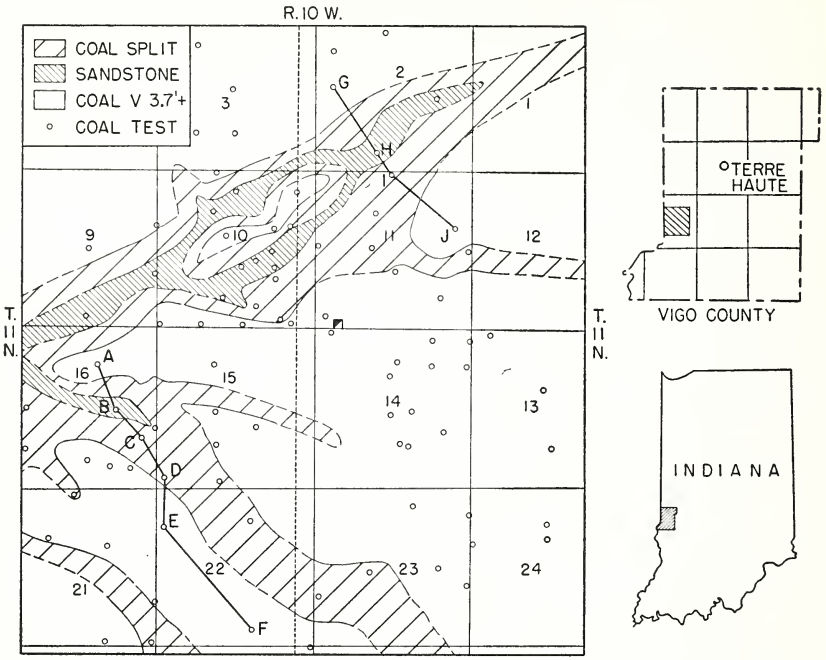

Fig. 1. Map showing distribution of split and sandstone cutout in Coal V.

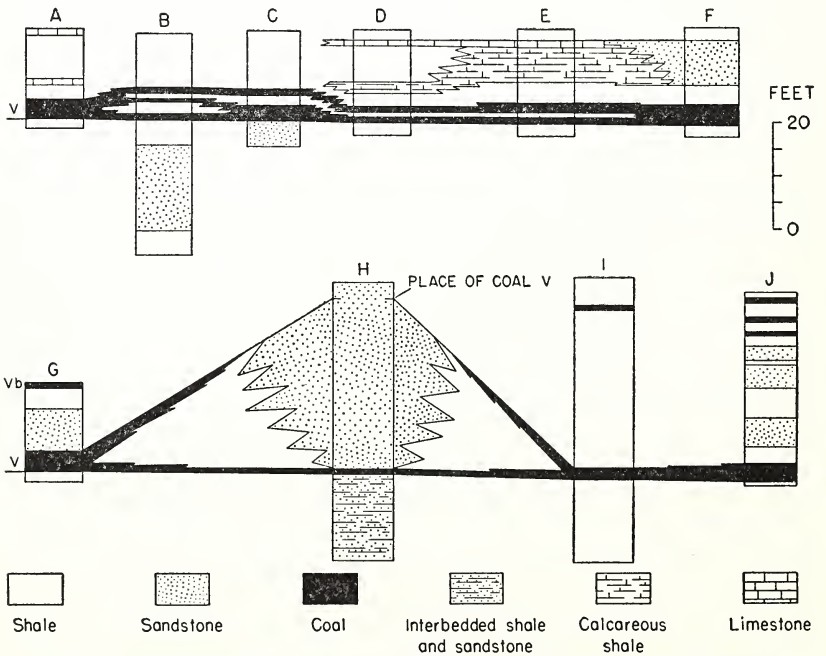

Fig. 2. Stratigraphic cross sections showing lithologic relationships in the subsurface.

The main stream divided and flowed around a peat island (fig. 1). The southern channel was abandoned toward the end of peat deposition and was overgrown with 5 or 10 feet of peat (fig. 3, e). Renewed stream action eroded the peat locally. At this stage the channel area probably

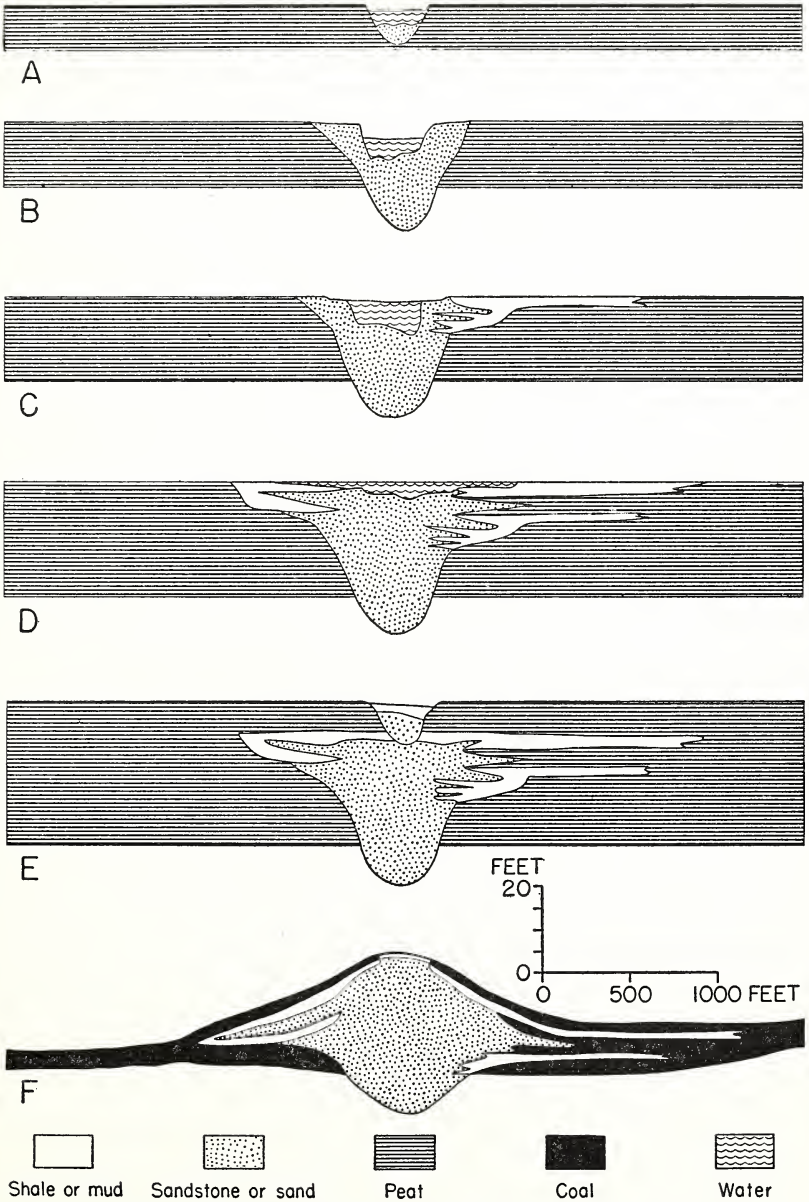

Fig. 3. Sequence of idealized diagrams showing development of split and channel sandstone cutout in Coal V in the Dresser area.

contained 40 feet of sand, and the peat probably was equally thick outside the stream area. Compaction of this thickness of peat formed 4 to 5 feet of bituminous coal.

Vertical pressure from sediments deposited later resulted in differential compaction of the coal, shale, and sandstone (fig. 3, f). The top of the lenticular sandstone is thus relatively higher than the shale and coal on its flanks, because the volumes of coal and shale were reduced more than the volume of the lenticular sandstone.

The intertonguing of shale and coal and the dendritic pattern of the sandstone and the split in coal indicate that the shale in the split and the lenticular sandstone are probably of fluviatile origin and were formed contemporaneously with the coal.

Literature Cited

1. Ind. Bur. Mines and Mining. 1926-1953. Annual reports.
2. WIER, C. E. 1952. Distribution, structure, and mined areas of coals in Vigo County, Ind. Ind. Geol. Survey Prelim. Coal Map 1.