

Distribution of the Inglefield and Dicksburg Hills Sandstone Members in Posey and Vanderburgh Counties, Indiana¹

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This study of the Inglefield and Dicksburg Hills Sandstone Members of the Patoka Formation (8) was initiated after the senior author had experienced great difficulty in tracing across Gibson and Vanderburgh Counties the upper Pennsylvanian coals and limestones that occur above the West Franklin Limestone Member. Nearly all data for this report came from interpretation of electric logs of oil and gas test wells. Four wells per section (one well per quadrant) were used where possible, but some sections contained either no drill holes or only a few. Some of those sections with only a few drill holes did not have any usable records. Approximately 900 records were used. In areas adjacent to the outcrop of these sandstones electric logs were not always reliable, and the sandstone units were not recorded. In this area the upper 100 feet of the hole either is not logged or cannot be interpreted because the effect of fresh surface water distorts the reading. Few outcrop data are included in the present interpretation, but even much additional fieldwork along the outcrop area would not improve the data substantially because each outcrop exposes only a small part of the total thickness.

The Inglefield Sandstone Member was named and accorded formational status by Fuller and Ashley in 1902 (3). Originally the name was applied to 80 to 100 feet of sandstone above the Ditney Coal (fig. 1) in the vicinity of Inglefield, a small village 9 miles north of Evansville in Vanderburgh County. Later Fuller and Clapp (4) stated that the Inglefield Sandstone unconformably overlies the Ditney Coal and adjacent shale, underlies the Parker Coal, and is 100 to 150 feet thick. The sandstone at the type locality and most of the sandstone that they mapped as Inglefield occur in the lower half of the interval between the Ditney and the Parker Coals.

The Dicksburg Hills Sandstone Member was named as a formation by Malott in 1939 (5) for a 50-foot exposure of massive sandstone in the Dicksburg Hills in southern Knox County. As defined by Malott, this sandstone is equivalent to the upper part of the Inglefield of Fuller and Clapp. Malott felt that it was necessary to name the Dicksburg Hills Sandstone as a separate unit because he was able to map a 20-foot shale unit that contained three thin coal beds and two thin limestone beds in a position halfway between the Ditney and the Parker Coals. He named this unit the Hazelton Bridge Formation for outcrops west of Hazelton in Gibson County (5). Thus he redefined the Inglefield as the sandstone occurring in the lower half of the Inglefield of Fuller and Clapp, that is, above the Ditney Coal and below the Hazelton Bridge Formation of Malott. The Dicksburg Hills Sandstone member is

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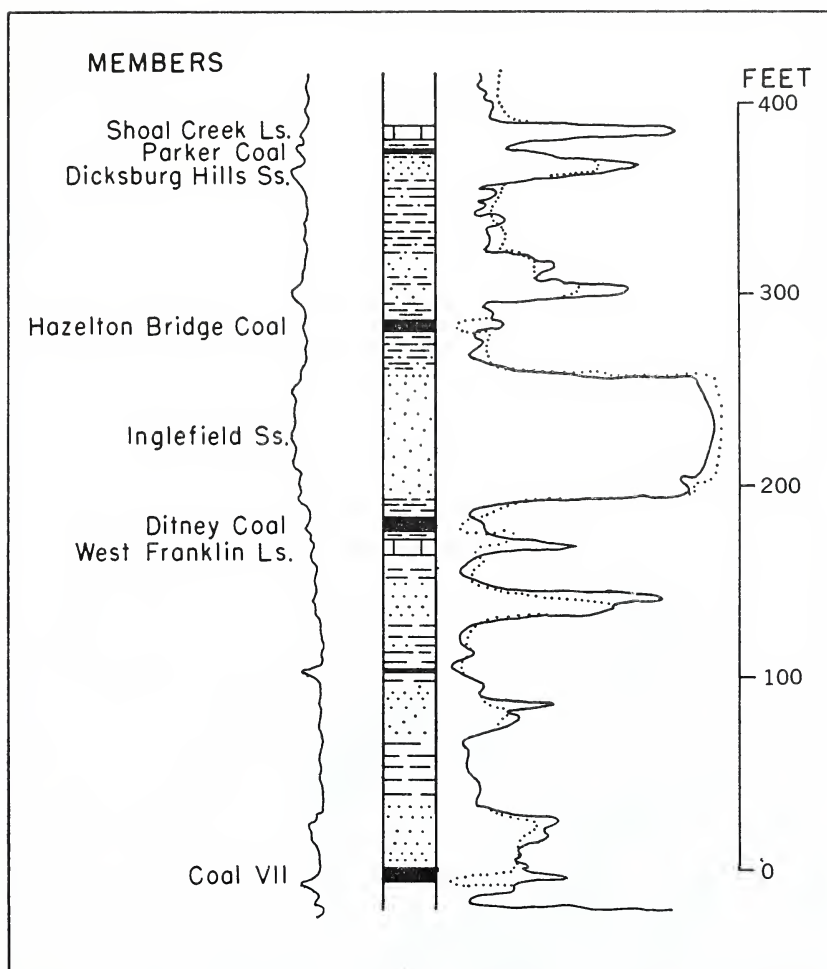


Figure 1. Representative electric log illustrating the stratigraphic position of the Inglefield and Dicksburg Hills Sandstone Members.
Nomenclature from Wier (8).

a sandstone that lies in the upper part of the Inglefield of Fuller and Clapp and is above the Hazelton Bridge Formation of Malott and below the Parker Coal. The thickest and most widespread coal in Malott's Hazelton Bridge Formation is now called the Hazelton Bridge Coal (8). Some confusion still exists as to the correlation of the Inglefield Sandstone with other named sandstones. Earlier workers incorrectly called the Inglefield Sandstone the Merom Sandstone, because outcrops of the Inglefield look like those of the Merom that are 75 miles to the north at Merom, Sullivan County (7). Malott (6) continued to mistake the Inglefield for the Merom Sandstone in the southwestern part of the State, and later workers followed his example (2). The Merom Sandstone, however,

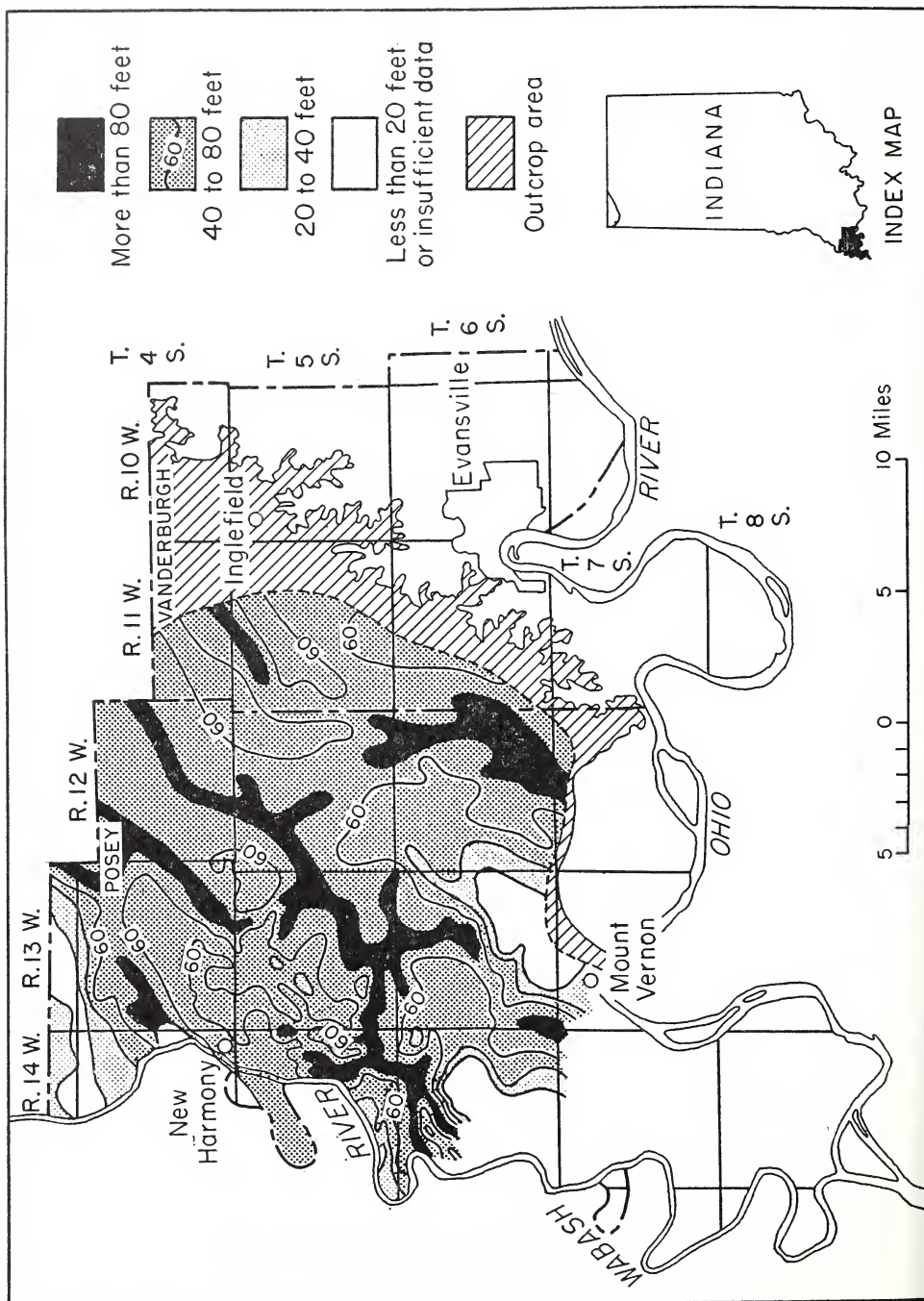


Figure 2. Map of Posey and Vanderburgh Counties showing thickness of the Inglesfield Sandstone Member.

is now known to be approximately 200 feet higher stratigraphically than the Inglefield.

Both the Inglefield and the Dicksburg Hills Sandstone Members have sharp variations in thickness and irregular areal distribution in much the same manner as other Pennsylvanian sandstones. The interval between the Ditney and the Parker Coals may contain sandstones that are tens of feet thick and that weather out as impressive massive vertical bluffs; it may consist of bands of sandstone and shale, or it may be entirely a shale that is not exposed or is poorly exposed at the surface. Because the most obvious and thicker outcrops of the stratigraphic interval between coals were sandstones, some earlier workers believed that the entire interval was filled with sandstone.

The Inglefield Sandstone crops out in a diagonal line from northeast to southwest across Vanderburgh County (fig. 2). In northern Vanderburgh County outcrops of this massive sandstone are common. West of the outcrop the Inglefield Sandstone is well developed and is more than 125 feet thick in some localities. The sandstone is more than 20 feet thick over almost the entire area of Vanderburgh and Posey Counties where data are available. The thick areas of sandstone are irregular lenses extending in a northeast-southwest direction (fig. 2). These are interpreted as channel-fill sandstones and are continuously more than 80 feet thick. Some sandstone that is nearly 80 feet thick in the adjacent area may be part of the channel fill, but essentially all sandstone that is less than 60 feet thick surely represents the sheet phase of deposition. However, Posey County may have been the site of a delta at the time that the Inglefield Sandstone was deposited. The pattern of thickness in Tps. 5 and 6 S., Rs. 13 and 14 W., seem to show a distributary pattern. Sandstone deposited in the sheet phase is, in most places, less than 20 feet thick. Only in two small areas where data were available was the Inglefield Sandstone less than 20 feet thick: in a nearly east-westward-trending area in northwestern Posey County and in a northeast-southwestward-trending area in southern Posey County just north of Mt. Vernon. The Ditney Coal is missing in some records in an area where the sandstone is more than 80 feet thick and the sandstone rests directly on the West Franklin Limestone. In T. 5 S., R. 13 W., the entire West Franklin is missing in a few records, and the interval occupied in other places by the West Franklin is filled with sandstone. A sandstone in this position below the Inglefield Sandstone and immediately below the Ditney Coal was mapped in southern Illinois by Andresen (1) as the Trivoli Sandstone. Perhaps the lower part of the sandstone here mapped as Inglefield is actually the Trivoli, but the present authors could not separate this lower part and thus concluded that this sandstone represented a channel that had been cut into the Ditney Coal and West Franklin Limestone and filled with Inglefield Sandstone.

The Dicksburg Hills Sandstone crops out farther west in an area along each side of the Vanderburgh-Posey county line (fig. 3). Much of the west side of the area indicated on the isopach map as outcrop area is really covered with thick unconsolidated materials, and there the

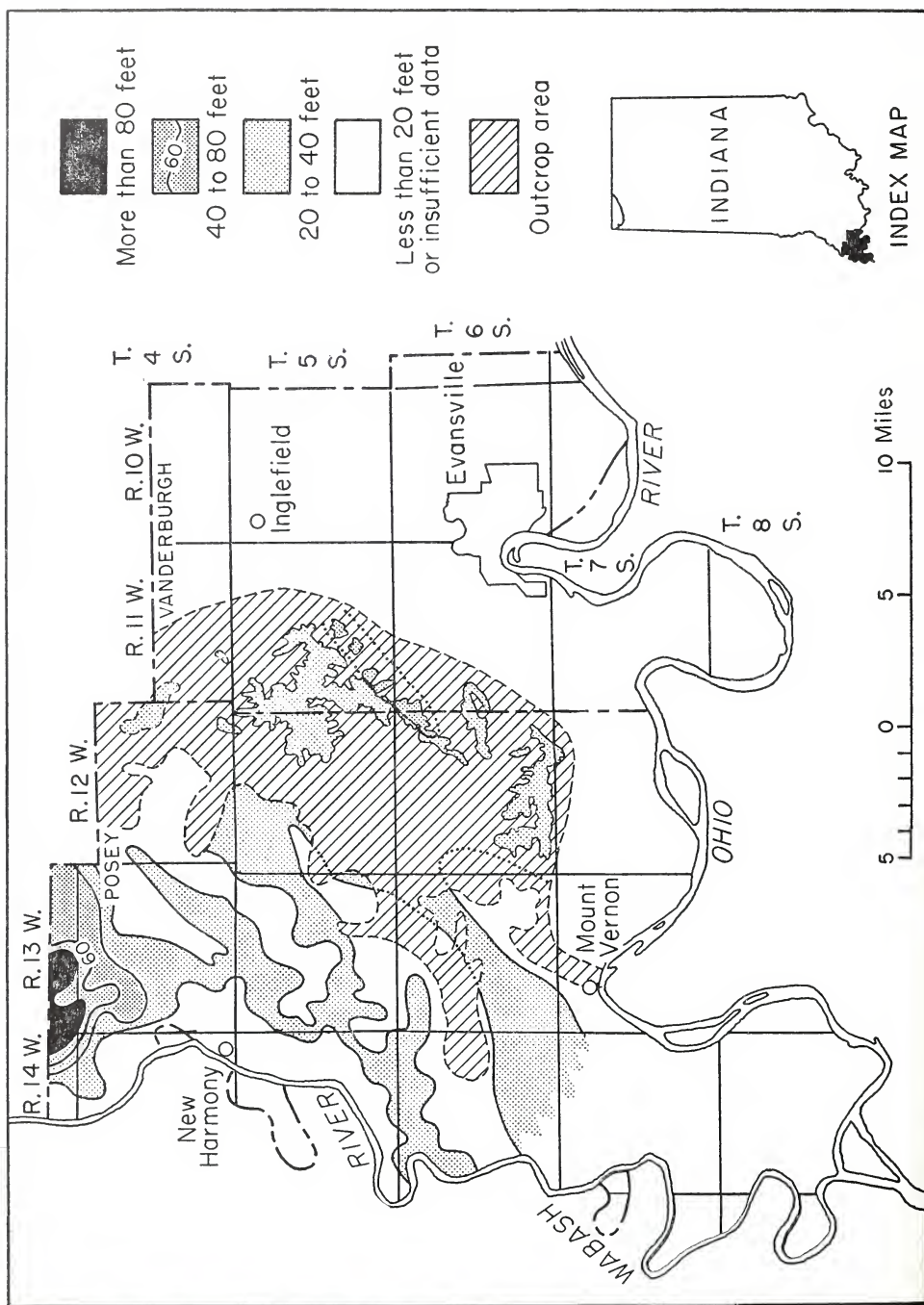


Figure 3. Map of Posey and Vanderburgh Counties showing thickness of the Dicksburg Hills Sandstone Member.

sandstone is not exposed. The Dicksburg Hills Sandstone is much thinner in Posey and Vanderburgh Counties than the Inglefield. It is not more than 40 feet thick over most of the two counties and is either less than 20 feet thick or absent in nearly half of Posey County. Only in the extreme northwestern part of Posey County is it more than 80 feet thick. Like the Inglefield Sandstone, it shows channel-fill sandstone areas trending northeast-southwestward. These channels, however, contain only 20 to 40 feet of sandstone.

On most electric logs the Dicksburg Hills Sandstone is easily separated from the Inglefield. In a few records it was difficult to separate the two because the entire interval was filled with alternating beds of sandstone and shale, and neither the Hazelton Bridge Coal nor its superjacent limestone could be identified with certainty. Nowhere in Vanderburgh and Posey Counties was the entire interval between the Ditney and Parker Coals filled completely with sandstone.

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