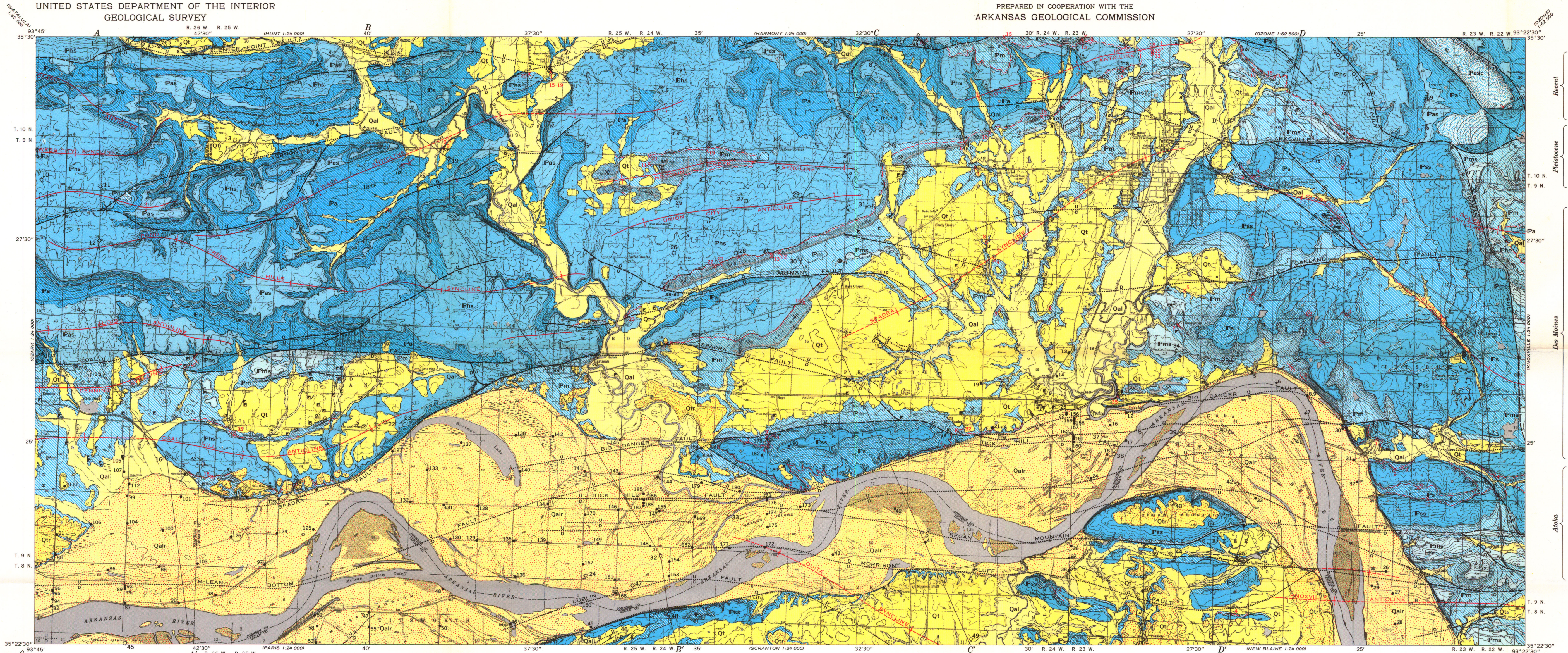
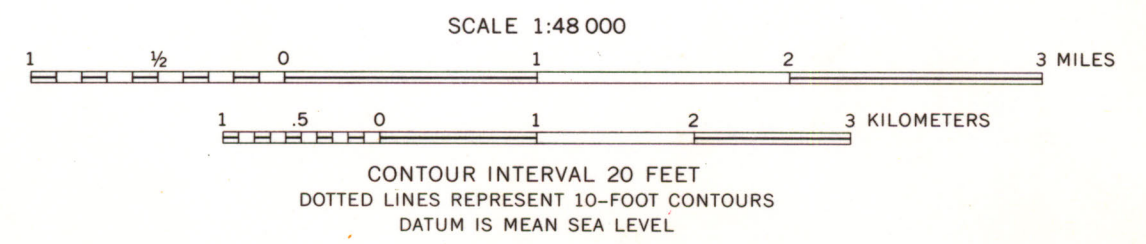




GEOLOGIC MAP OF COAL HILL, HARTMAN, AND CLARKSVILLE QUADRANGLES
JOHNSON COUNTY AND VICINITY, ARKANSAS



EXPLANATION

Contact
Dashed where approximately located

Fault, showing dip
Dashed where approximately located; dotted where concealed. U, upthrown side; D, downthrown side

Anticline Folds Syncline
Showing trace of axial plane. Dashed where inferred

Inclined Horizontal
Strike and dip of beds

Symbols in areas of alluvial deposits were measured on bedrock exposures too small to be shown on this map

Shale sample locality
Invertebrate fossil locality
Coal bed
Dashed where approximately located
Exposure of coal bed
Number is thickness of coal, in inches
Surface opening to coal bed
Mine shaft
Shallow hole
Number designates hole listed in table in text
Strip mine or quarry
Gravel pit
Structural section shown on plate 4
Gas producing
Show of gas
No show of gas
Wells
Number designates well described in table in text

INDEX SHOWING LOCATIONS OF QUADRANGLES

QUATERNARY

Qal
Qair

Alluvium
Deposits along stream channels. In some places include parts of lowermost terrace
Qal, stream alluvium
Qair, river alluvium

Qt
Qtr

Terrace deposits
Alluvial deposits on two terrace levels
Qt, stream terrace deposits
Qtr, river terrace deposits

UNCONFORMITY

Des Moines

Krebs Group

Atoka

Atoka Formation
Alternating units of predominant shale or predominant sandstone
Pa, shale, siltstone, and thin beds of sandstone and silty sandstone
Pss, sandstone, silty sandstone, or interbedded sandstone, siltstone, and shale

Hartshorne Sandstone
Alternating units of predominant shale or predominant sandstone
Ph, shale and siltstone
Phs, sandstone, silty sandstone, or interbedded sandstone, siltstone, and shale

McAlester Formation
Alternating units of predominant shale or predominant sandstone
Fm, shale, siltstone, and thin beds of sandstone and silty sandstone
Fms, sandstone, silty sandstone, or interbedded sandstone, siltstone, and shale

Savanna Formation
Alternating units of predominant shale or predominant sandstone
Ps, shale, siltstone, and thin beds of silty sandstone
Pss, sandstone, silty sandstone, or interbedded sandstone, siltstone, and shale

QUATERNARY

QUATERNARY

QUATERNARY

Base from U.S. Geological Survey, 1:24,000

APPROXIMATE MEAN DECLINATION, 1968

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D.C.—1968—G68093
Geology by E. A. Merewether and Boyd R. Haley 1961-63