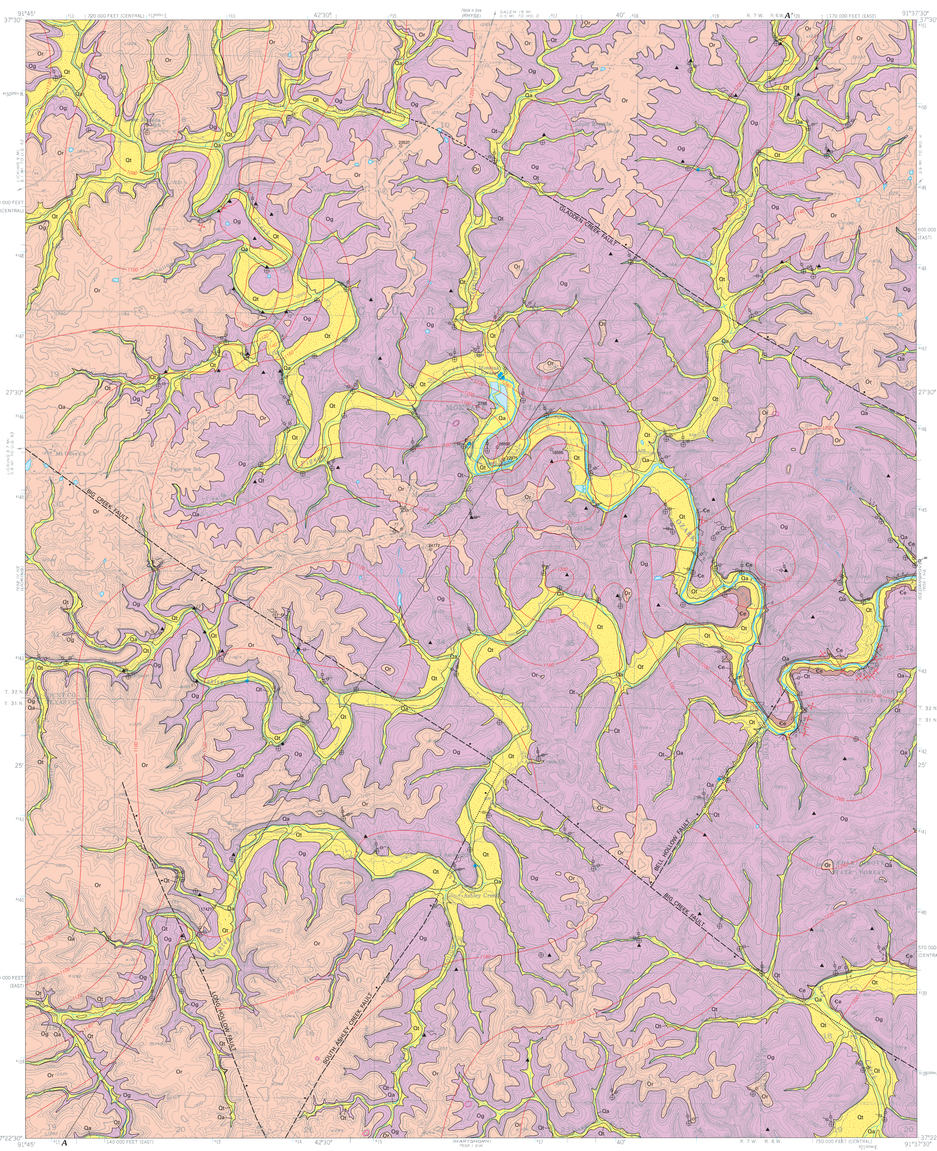
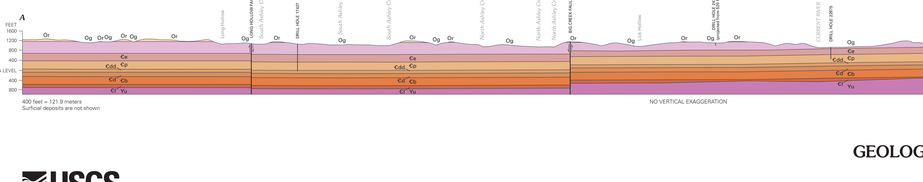
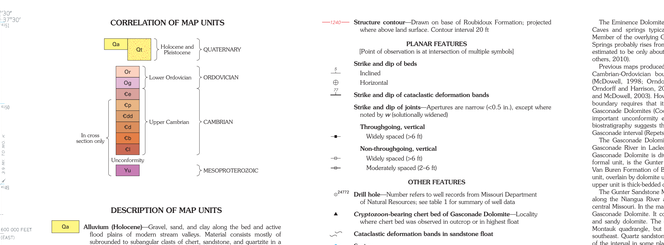




CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Alluvium (Holocene)—Gravel, sand, and clay along the bed and active flood plains of modern stream valleys. Material consists mostly of subrounded to subangular clasts of chert, sandstone, and quartzite in a matrix of sand containing silt and clay. Thickness ranges from 0 to as much as 20 ft

Terrace deposits (Holocene and Pleistocene)—Large cobble-size to sand-size, subrounded to subangular clasts of chert, sandstone, and quartzite within a matrix of sand, silt, and clay. In some locations a significant fraction of the matrix is reworked silt-size loess. The deposits occur in relatively flat areas along the flanks and walls of modern stream valleys, but above normal seasonal floods of present streams. Terraces along the Jacks Fork River and major streams usually are at least 6 to 10 feet above normal pool level. Thickness is at least 10 ft, possibly more along larger stream courses

Roubidoux Formation (Lower Ordovician)—Dolomite, cherty dolomite, sandy dolomite, dolomitic sandstone, quartz sandstone, orthoquartzite, and bedded chert. Dolomite is very light gray to medium gray, pale orange, or pinkish gray, very fine to medium grained, thick bedded or laminated, evenly to irregularly bedded; interbedded with quartz sandstone that is white to pale orange (weathers pinkish), light brown or reddish brown (where weathered), very fine to coarse grained, poorly sorted, thin to thick bedded, commonly cross-bedded or ripple marked; well-rounded quartz grains commonly have angular overgrowths; most beds are dolomite cemented; some beds are dolomite. Dolomite is commonly replaced by white, gray, or brown chert, frequently stromatolitic and occasionally oolitic or fossiliferous. The lower and upper parts of the formation are sandstone rich; the middle part is predominantly dolomite. Fossils are rare except for coprolite impressions of the snail *Lecanospira*. Bedding surfaces of sandstone beds commonly contain trilobite and brachiopod impressions. The lower contact of the formation was mapped at the base of the lowest orthoquartzite or sandstone bed underlying the Gasconade Dolomite. The uppermost part of the formation is missing and truncated throughout the quadrangle by erosion. Up to about 220 ft of the Roubidoux Formation crops out in the Montauk quadrangle

Gasconade Dolomite (Lower Ordovician)—Dolomite, chert, sandstone, and orthoquartzite. The formation is bedded into an upper unit, a middle unit, and a lower unit (fig. 2). The lower unit is the formal Gunter Sandstone Member; the middle and upper units are informal. None of these units are stratigraphically equivalent to the Gasconade units exposed in the Big Spring quadrangle (Harrison and others, 2000). 1,480±42 Ma for granite obtained from a core hole in the Winona quadrangle (Denny, 2008). Vertical offset along the length of the Big Creek fault, 1,473±15 Ma for granite obtained from a core hole in the Round Spring quadrangle to the southeast (Denny and others, 1983). A U-Pb age of 1,470.4±2.7 Ma was also obtained from the "Rhyolite of Shut In Mountain" in the Segmil Mountain quadrangle to the southeast (Harrison and others, 2000).

Paleozoic Stratigraphy

The Montauk quadrangle is underlain by about 2,000 ft of lower Paleozoic marine strata, chiefly comprising dolomite, chert, sandstone, and orthoquartzite from oldest to youngest, these units are the Upper Cambrian Lamotte Sandstone, Bonneterre Formation, Davis Formation, Derby-Doerun Dolomite, and the Lower Ordovician Eminence, Potosi, and Roubidoux Formations. Only the last three units are exposed in the map area. The idealized stratigraphic column (fig. 2) summarizes the general lithologies and thickness of the Paleozoic strata that are exposed in the Montauk quadrangle. No drill holes in the quadrangle penetrated the Derby-Doerun Dolomite; therefore, the actual thickness of the lowest four Paleozoic formations listed here are unknown. Thicknesses listed here for units below the Potosi Dolomite, and as shown on the cross section (A–A'), are estimates based on the averages of thicknesses reported in two relatively nearby, more southerly drill holes. The first drill hole, number 21956 (refer to the Missouri Department of Resources, Division of Geology and Land Survey, well database at *http://www.dnr.mo.gov/geosurvey/logmain/index.htm*), is located in the Round Spring quadrangle (Orndorff and Weary, 2009) about 11.5 mi to the east-southeast of the southeastern corner of the Montauk quadrangle. The second drill hole, number 25824, is located in the Prescott quadrangle about 12.5 mi west of the Montauk quadrangle.

During the Late Cambrian, the Ozark region was flooded by an extensive epicontinental sea that covered most of the midwestern part of the United States. Because of topographic relief on the Mesoproterozoic paleosurface, initially only low areas were covered by the sea, and high areas remained above water as islands. In the map area, the basal Cambrian unit, the Lamotte Sandstone, collaps the flanks of these Mesoproterozoic bedrock hills and probably overlaps them in the quadrangle. The thickness of the Lamotte is variable, but averages about 145 ft in the Montauk quadrangle.

During deposition of the Bonneterre Formation, algal reefs developed along the flanks of the remnant islands of Mesoproterozoic rocks in the Late Cambrian sea (Lyle, 1972). These reefs, especially to the northeast along the Viburnum Trend (fig. 1), later became the locus of precipitation of Mississippi Valley-type base-metal deposits (Thacker and Anderson, 1977). The Bonneterre is estimated to be about 315 ft thick in the Montauk quadrangle.

The Davis Formation probably was named for exposures on Davis Creek, St. Francois County, Mo. (Buehler, 1907). The Davis Formation conformably overlies the Bonneterre Formation and comprises shale, siltstone, sandstone, dolomite, and limestone conglomerate. Shales within the Davis have low primary permeability and act as aquitards (part of the St. Francois confining unit) between the underlying St. Francois aquifer and the overlying Ozark aquifer (Kleeschulte and Seeger, 2008). The Davis is estimated to be about 175 ft thick in the Montauk quadrangle.

The Derby-Doerun Dolomite (usage of Missouri Geological Survey, 1979) was originally two separate formations described from outcrops near mines operated by the Derby Lead Co. and the Doe Run Lead Co. in St. Francois County, Mo. (Thompson, 1995). The formation comprises thin- to medium-bedded dolomite intercalated with thin-bedded siltstone and shale. The Derby-Doerun is estimated to be 125 ft thick in the Montauk quadrangle.

The Derby-Doerun is overlain by the Upper Cambrian Potosi Dolomite. The name Potosi was originally used by Winslow (1894), in a much broader sense, for rocks exposed near the town of Potosi in Washington County, Mo. Dake (1930), who reviewed descriptions of the Potosi, revised and redefined the formation into its current usage. The Potosi is a vuggy, fine to medium-grained, light-brownish-gray to pale-yellowish-brown dolomite having siliceous druse as a replacement of the dolomite or as vug linings. A fetid odor emanating from freshly broken surfaces is a minor yet diagnostic characteristic indicative of trace organic material. With the exception of algal structures (stromatolites), the Potosi is characteristically unfossiliferous. A single drill hole (17427) penetrated the full thickness of the Potosi in the map area and documented a thickness of 325 ft (table 1). The lithologic difference between the Potosi and the overlying Eminence Dolomite is thought to be the result of a secondary alteration of the Potosi that includes dissolution of carbonate, precipitation of silica, and introduction of hydrocarbons.

The Eminence Dolomite was first described by Ulrich (1911) from exposures in the vicinity of the town of Eminence, Mo. The Eminence comprises mostly massive to thick-bedded, medium- to coarse-grained, light-gray dolomite and cherty dolomite; chert occurs as nodules and angular fragments. Many of the beds are stromatolitic, with pits and vugs developed between the algal laminae. Other beds may be crossbedded. Exposures of the thick, non-cherty dolomite beds commonly weather into irregular pinnacles, especially beds lying subjacent to sandstone of the overlying Gunter Sandstone Member of the Gasconade Dolomite. Bridge (1930) reported the Eminence to be abundantly fossiliferous, especially with trilobites and gastropods in residual cherts. No such fossils were observed during the course of this study. As much as 40 ft of the Eminence Dolomite is exposed along Big Creek in the southeastern part of the map area and along the Current River in the east-central part of the map area. These are the farthest upstream exposures of the Eminence Dolomite along the Current River. Drill holes record an average of about 250 ft of Eminence Dolomite in the subsurface of the Montauk quadrangle.

The Eminence Dolomite is one of the main cave-bearing formations in the region. Caves and springs typically are concentrated just below the Gunter Sandstone Member of the overlying Gasconade Dolomite (Orndorff and others, 2006). Montauk Springs probably rises from conduits developed in the Eminence, the top of which is estimated to be only about 10 to 20 ft below the surface at that locality (Lowell and others, 2010).

Previous maps produced by this U.S. Geological Survey (USGS) project placed the Cambrian-Ordovician boundary in the upper part of the Eminence Dolomite (McDowell, 1998; Orndorff and others, 1999; McDowell and Harrison, 2000; Orndorff and Harrison, 2001; Harrison and others, 2002; Weems, 2002; Harrison and McDowell, 2003). However, recent international agreement on redefinition of this boundary requires that it be placed at the contact between the Eminence and underlying Cotter Dolomite (Cooper and others, 2001). Bridge (1930) speculated that an important unconformity exists at the base of the Gasconade (fig. 2). Considerable biostratigraphic evidence suggests that there may be multiple unconformities within the Gasconade interval (Repetski and others, 2000).

The Gasconade Dolomite was named by Nason (1892) for exposures along the Gasconade River in Laclede, Pulaski, and Phelps Counties in central Missouri. The Gasconade Dolomite is divided into one formal and two informal units. The one formal unit, is the Gunter Sandstone Member. The middle unit includes the former Van Buren Formation of Bridge (1930), which occupies the lower part of the middle unit, overlain by dolomite up to and including a persistent Cryptozoon chert bed. The upper unit is thick-bedded dolomite.

The Gunter Sandstone Member was named by Ball and Smith (1903) for exposures along the Pomme de Terre River in Gunter (now Hahatonka) Springs, Camden County, in central Missouri. In the map area, the member comprises the basal 10 to 20 ft of the Gasconade Dolomite. It consists of interbedded dolomite, sandstone, orthoquartzite, and sandy dolomite. The quartz sandstone content of the Gunter varies within the Montauk quadrangle, but on average, it is less than any other unit within the Gasconade. Quartz sandstone and (or) orthoquartzite compose up to about 20 percent of the interval in some places and as little as zero percent in others. In areas, where quartz sandstone or orthoquartzite are absent from the stratigraphic interval, it is instead occupied by dolomite or sandy dolomite containing floating quartz grains. Where exposed in the Montauk quadrangle, the contact between the Gunter Sandstone Member and the underlying Eminence Dolomite commonly exhibits an irregular surface overlain with discontinuous lenses of white quartz sandstone and (or) orthoquartzite up to 2 ft thick (fig. 3). These lenses are rarely seen in-situ but commonly washout out of the surrounding dolomite and produce belts of float marking the approximate location of the Gasconade-Eminence contact (fig. 4).

Bridge (1930) named the Van Buren Formation for the medium-bedded, non-cherty and cherty dolomite overlying the Gunter Sandstone Member and extending upward to a thin cobble zone in the middle part of the middle unit of the Gasconade Dolomite (fig. 2). Bridge's Van Buren Formation was defined by its faunal content, but the name is no longer used (Thompson, 1995). Pratt and others (1992) described a lower unit and an upper part of the Gasconade Dolomite that are divided by a persistent Cryptozoon chert bed, which is located about 80 to 100 ft below the top of the Gasconade, at the top of the upper part of the middle unit (fig. 2). The Cryptozoon chert typically contains gastropod molds, and it forms a low ledge with a distinctive light-brownish-gray to pale-yellowish-brown dolomite having siliceous druse as a replacement of the dolomite or as vug linings. A fetid odor emanating from freshly broken surfaces is a minor yet diagnostic characteristic indicative of trace organic material. With the exception of algal structures (stromatolites), the Potosi is characteristically unfossiliferous. A single drill hole (17427) penetrated the full thickness of the Potosi in the map area and documented a thickness of 325 ft (table 1). The lithologic difference between the Potosi and the overlying Eminence Dolomite is thought to be the result of a secondary alteration of the Potosi that includes dissolution of carbonate, precipitation of silica, and introduction of hydrocarbons.

The Eminence Dolomite was first described by Ulrich (1911) from exposures in the vicinity of the town of Eminence, Mo. The Eminence comprises mostly massive to thick-bedded, medium- to coarse-grained, light-gray dolomite and cherty dolomite; chert occurs as nodules and angular fragments. Many of the beds are stromatolitic, with pits and vugs developed between the algal laminae. Other beds may be crossbedded. Exposures of the thick, non-cherty dolomite beds commonly weather into irregular pinnacles, especially beds lying subjacent to sandstone of the overlying Gunter Sandstone Member of the Gasconade Dolomite. Bridge (1930) reported the Eminence to be abundantly fossiliferous, especially with trilobites and gastropods in residual cherts. No such fossils were observed during the course of this study. As much as 40 ft of the Eminence Dolomite is exposed along Big Creek in the southeastern part of the map area and along the Current River in the east-central part of the map area. These are the farthest upstream exposures of the Eminence Dolomite along the Current River. Drill holes record an average of about 250 ft of Eminence Dolomite in the subsurface of the Montauk quadrangle.

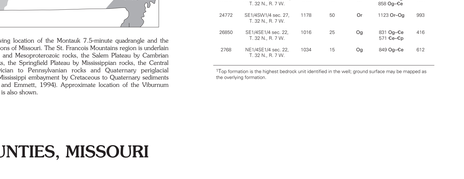


Figure 1.—Map showing location of the Montauk 7.5-minute quadrangle and the geomorphic subdivisions of Missouri. The St. Francois Mountains region is underlain mostly by Cambrian and Mesoproterozoic rocks, the Salem Plateau by Cambrian and Ordovician rocks, the Springfield Plateau by Mississippian rocks, the Central Lowland by Ordovician to Pennsylvanian rocks and Quaternary periglacial sediments, and the Mississippi embayment by Cretaceous to Quaternary sediments. (adapted from Imes and Emmett, 1994). Approximate location of the Viburnum Trend mining district is also shown.

The Gasconade Dolomite and Roubidoux Formation. Only the last three units are exposed in the map area. The idealized stratigraphic column (fig. 2) summarizes the general lithologies and thickness of the Paleozoic strata that are exposed in the Montauk quadrangle. No drill holes in the quadrangle penetrated the Derby-Doerun Dolomite; therefore, the actual thickness of the lowest four Paleozoic formations listed here are unknown. Thicknesses listed here for units below the Potosi Dolomite, and as shown on the cross section (A–A'), are estimates based on the averages of thicknesses reported in two relatively nearby mineral exploration drill holes. The first drill hole, number 21956 (refer to the Missouri Department of Resources, Division of Geology and Land Survey, well database at *http://www.dnr.mo.gov/geosurvey/logmain/index.htm*), is located in the Round Spring quadrangle (Orndorff and Weary, 2009) about 11.5 mi to the east-southeast of the southeastern corner of the Montauk quadrangle. The second drill hole, number 25824, is located in the Prescott quadrangle about 12.5 mi west of the Montauk quadrangle.

During the Late Cambrian, the Ozark region was flooded by an extensive epicontinental sea that covered most of the midwestern part of the United States. Because of topographic relief on the Mesoproterozoic paleosurface, initially only low areas were covered by the sea, and high areas remained above water as islands. In the map area, the basal Cambrian unit, the Lamotte Sandstone, onlaps the flanks of these Mesoproterozoic bedrock hills and probably overlaps them in the quadrangle. The thickness of the Lamotte is variable, but averages about 145 ft in the Montauk quadrangle.

During deposition of the Bonneterre Formation, algal reefs developed along the flanks of the remnant islands of Mesoproterozoic rocks in the Late Cambrian sea (Lyle, 1972). These reefs, especially to the northeast along the Viburnum Trend (fig. 1), later became the locus of precipitation of Mississippi Valley-type base-metal deposits (Thacker and Anderson, 1977). The Bonneterre is estimated to be about 315 ft thick in the Montauk quadrangle.

The Davis Formation probably was named for exposures on Davis Creek, St. Francois County, Mo. (Buehler, 1907). The Davis Formation conformably overlies the Bonneterre Formation and comprises shale, siltstone, sandstone, dolomite, and limestone conglomerate. Shales within the Davis have low primary permeability and act as aquitards (part of the St. Francois confining unit) between the underlying St. Francois aquifer and the overlying Ozark aquifer (Kleeschulte and Seeger, 2008). The Davis is estimated to be about 175 ft thick in the Montauk quadrangle.

The Derby-Doerun Dolomite (usage of Missouri Geological Survey, 1979) was originally two separate formations described from outcrops near mines operated by the Derby Lead Co. and the Doe Run Lead Co. in St. Francois County, Mo. (Thompson, 1995). The formation comprises thin- to medium-bedded dolomite intercalated with thin-bedded siltstone and shale. The Derby-Doerun is estimated to be 125 ft thick in the Montauk quadrangle.

The Derby-Doerun is overlain by the Upper Cambrian Potosi Dolomite. The name Potosi was originally used by Winslow (1894), in a much broader sense, for rocks exposed near the town of Potosi in Washington County, Mo. Dake (1930), who reviewed descriptions of the Potosi, revised and redefined the formation into its current usage. The Potosi is a vuggy, fine to medium-grained, light-brownish-gray to pale-yellowish-brown dolomite having siliceous druse as a replacement of the dolomite or as vug linings. A fetid odor emanating from freshly broken surfaces is a minor yet diagnostic characteristic indicative of trace organic material. With the exception of algal structures (stromatolites), the Potosi is characteristically unfossiliferous. A single drill hole (17427) penetrated the full thickness of the Potosi in the map area and documented a thickness of 325 ft (table 1). The lithologic difference between the Potosi and the overlying Eminence Dolomite is thought to be the result of a secondary alteration of the Potosi that includes dissolution of carbonate, precipitation of silica, and introduction of hydrocarbons.

The Eminence Dolomite was first described by Ulrich (1911) from exposures in the vicinity of the town of Eminence, Mo. The Eminence comprises mostly massive to thick-bedded, medium- to coarse-grained, light-gray dolomite and cherty dolomite; chert occurs as nodules and angular fragments. Many of the beds are stromatolitic, with pits and vugs developed between the algal laminae. Other beds may be crossbedded. Exposures of the thick, non-cherty dolomite beds commonly weather into irregular pinnacles, especially beds lying subjacent to sandstone of the overlying Gunter Sandstone Member of the Gasconade Dolomite. Bridge (1930) reported the Eminence to be abundantly fossiliferous, especially with trilobites and gastropods in residual cherts. No such fossils were observed during the course of this study. As much as 40 ft of the Eminence Dolomite is exposed along Big Creek in the southeastern part of the map area and along the Current River in the east-central part of the map area. These are the farthest upstream exposures of the Eminence Dolomite along the Current River. Drill holes record an average of about 250 ft of Eminence Dolomite in the subsurface of the Montauk quadrangle.

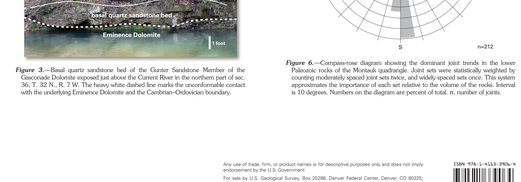


Figure 3.—Basal quartz sandstone bed of the Gunter Sandstone Member of the Gasconade Dolomite exposed just above the Current River in the northern part of sec. 36, T. 32 N., R. 7 W. The heavy white dashed line marks the unconformable contact with the underlying Eminence Dolomite and the Cambrian-Ordovician boundary.

Figure 4.—Orthoquartzite lenses at the base of the Gunter Sandstone Member of the Gasconade Dolomite. The hammer lying on the outcrop is approximately 19 inches long. Note the float boulder of orthoquartzite in the near background.

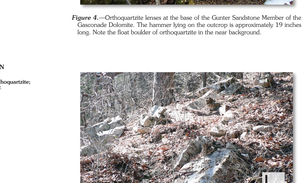


Figure 2.—Idealized stratigraphic column of outcropping lower Paleozoic formations in the Montauk quadrangle showing formal and informal units of the Gasconade Dolomite. Ss., sandstone.

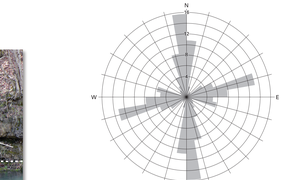


Figure 6.—Compass-rose diagram showing the dominant joint trends in the lower Paleozoic rocks of the Montauk quadrangle. Joint sets were statistically weighted by counting moderately spaced joint sets twice, and widely spaced sets once. This system approximates the importance of each set relative to the volume of the rocks. Interval is 10 degrees. Numbers on the diagram are percent of total. n, number of joints.

REFERENCES CITED

Albertson, P.E., Marvart, Dennis, and Butler, Grant, 1995, Geomorphic evaluation of Fort Leonard Wood U.S. Army Corps of Engineers, Waterways Experiment Station, Technical Report GL-95-19, 455 p., *http://www.dtic.mil/dtic/tr/fulltext/u2/a305286.pdf*.

Ball, S.H., and Smith, A.F., 1903, The geology of Miller County: Missouri Geological Survey [Reports], 2d Series, v. 1, 207 p.

Bickford, M.E., Harrower, K.L., Hoppe, W.J., Nelson, B.K., Nusbaum, R.L., and Thomas, J.J., 1981, Rb-Sr and U-Pb geochronology and distribution of rock types in the Precambrian basement of Missouri and Kansas: Geological Society of America Bulletin, v. 92, no. 6, p. 323–341, *http://pubs.geoscienceworld.org/gsa/gsabull/article-pdf/92/6/323/3439294/i0016-7606(1981)92<323:RUAPGO>2.0.CO;2.pdf*.

Bretz, J.H., 1965, Geomorphic history of the Ozarks of Missouri: Missouri Geological Survey and Water Resources [Reports], 2d Series, v. 41, 147 p.

Bridge, Josiah, 1930, Geology of the Eminence and Cardareva quadrangles: Missouri Geological Survey [Reports], 2d Series, v. 24, 228 p., 3 pls. in pocket, scale 1:62,500.

Buehler, H.A., 1907, The lime and cement resources of Missouri: Missouri Geological Survey [Reports], 2d Series, v. 6, 255 p., 1 pl. in pocket.

Clendenin, C.W., Newendorp, C.A., and Lowell, G.R., 1989, Reinterpretation of faulting in southeast Missouri Geology, v. 17, no. 3, p. 217–220, *https://pubs.geoscienceworld.org/content/17/3/217.full.pdf+html?ijkey=1141105jfwe43&keytype=ref&siteid=geology*.

Cooper, R.A., Nowlan, G.S., and Williams, S.H., 2001, Global stratotype section and point for base of the Ordovician System: Episodes, v. 24, no. 1, p. 19–28, *https://www.stratigraphy.org/bak/TremadocIon.pdf*.

Cox, R.T., 1995, Interplate deformation during the Appalachian-Ouachita orogeny as recorded by mesoscale structures on the Ozark Plateau of North America: Columbia, Mo., University of Missouri, unpublished Ph.D. dissertation, 229 p.

Crane, G.W., 1910, The iron ores of Missouri: Missouri Geological Survey [Reports], 2d Series, v. 10, 634 p.

Dake, C.L., 1930, The geology of the Potosi and Edgehill quadrangles: Missouri Geological Survey [Reports], 2d Series, v. 23, 233 p., 2 pls. in pocket, scale 1:62,500.

Davis, G.H., 1999, Structural geology of the Colorado Plateau region of Southwestern Utah, with special emphasis on deformation bands: Geological Society of America Special Paper 342, 157 p., *https://specsi/papers.gsapubs.org/content/342/1.full.pdf+html?siteid=ecf26222-3106-8db8-b830-b183c45c5c74*.

Denny, S.J., 1983, Linear unit-response functions as indicators of recharge areas for large karst springs, in Back, William, and LaMoreaux, P.E., eds., U.S. Springfield Symposium; Processes in Karst Hydrology: Journal of Hydrology, v. 61, no. 1–3, p. 31–44, *http://www.sciencedirect.com/science/journal/00221694/61/1-3*.

Ebens, R.J., and Connor, J.J., 1980, Geochemistry of loess and carbonate residuum: U.S. Geological Survey Professional Paper 954-G, 32 p. [Also available at *http://pubs.er.usgs.gov/publication/pp954G*].

Fenneman, N.M., 1938, Physiography of the eastern United States: New York, McGraw-Hill, 714 p.

Gott, J.D., 1975, Soil survey of Mark Twain National Forest area, Missouri (parts of Carter, Oregon, Ripley, and Shannon Counties): U.S. Department of Agriculture, Forest Service and Soil Conservation Service, in cooperation with Missouri Agricultural Experiment Station, 56 p., 40 map sheets, scale 1:24,000, *https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/missouri/marktwainNF_1972972*.

Grawe, O.R., 1943, Manganese deposits of Missouri: Missouri Geological Survey and Water Resources, 62d Biennial Report, Appendix 5, 77 p.

Harrison, R.W., and McDowell, R.C., 2003, Geologic map of the Wilkerseens and Shady quadrangles, Oregon, Carter, and Ripley Counties, Missouri: U.S. Geological Survey Geologic Investigations Series Map I-2801, scale 1:24,000. [Also available at *http://pubs.er.usgs.gov/publication/i2801*].

Harrison, R.W., and Schultz, A.P., 2002, Tectonic framework of the southeastern margin of the Illinois basin and its influence on neotectonism and seismicity: Seismological Research Letters, v. 73, no. 5, p. 698–731, *https://pubs.geoscienceworld.org/srl/article-pdf/73/5/698/2614284/srl0730500698.pdf?casa_token=J4Sc5z07rE5AAAAA:0ZGe4Ic6Sk3Ff35ibo5k3ie91ll_Ed_Ie3e_Ge_Ge_Ge