TABLE OF FORMATION NAMES.

System.	Series.		1866. Eastern Kansas (Swallow).[a]	1894. Southeastern Kansas and Adjacent Areas (Haworth and Kirk).[a]	1896. Southeastern Kansas (Haworth).[a]	1898. Southeastern Kansas (Haworth).[a]	1903. Southeastern Kansas and Adjacent Areas (Adams, Girty, and White).[a]	1904. Iola Quadrangle (Adams, Haworth, and Crane).[a]	1907–8. Independence Quadrangle (Schrader and Haworth).[a]	
Quaternary		1		Alluvium.			Alluvium.	Alluvium.	Alluvium.	1
Carboniferous	Pennsylvanian	2	Wellrock series	Shale.	Shale.	Lecompton shales and Elgin sandstone.	Kanwaka shales.		Elgin sandstone, base of Kanwaka shales.	2
		3	Wellrock series	Burlington or Garnett limestone. (Limestone. Shale. Limestone.)	Oread limestone. (Limestone. Shale. Limestone.)	Douglas formation. — Oread limestone. (Limestone. Shale. Limestone.)	Oread limestone.		Oread limestone (Painterhood).	3
		4	Wellrock series	Leroy shales	Lawrence shales	Douglas formation. — Lawrence shales.	Leroy shales		Buxton formation — Sandstone and shale.	4
		5	Wellrock series	Leroy shales	Lawrence shales	Douglas formation. — Lawrence shales.	Leroy shales		Buxton formation — Shale.	5
		6	Wellrock series	Leroy shales	Lawrence shales	Douglas formation. — Lawrence shales.	Leroy shales		Buxton formation — Limestone lentils.	6
		7	Wellrock series	Leroy shales	Lawrence shales	Douglas formation. — Lawrence shales.	Leroy shales		Buxton formation — Shale.	7
		8	Wellrock series	Leroy shales	Lawrence shales	Douglas formation. — Lawrence shales.	Leroy shales		Buxton formation — Sandstone.	8
		9	Wellrock series	Leroy shales	Lawrence shales	Douglas formation. — Lawrence shales.	Leroy shales		Buxton formation — Shale.	9
		10	Wellrock series	Leroy shales	Lawrence shales	Douglas formation. — Lawrence shales.	Leroy shales		Buxton formation — Limestone lentil.	10
		11	Wellrock series	Leroy shales	Lawrence shales	Douglas formation. — Lawrence shales.	Leroy shales		Buxton formation — Shale.	11
		12	Stanton limestone series: Stanton limestone, No. 151; shales; sandstones; and coal.	Carlyle limestone.	Garnett limestone (?), Iola limestone.	Pottawatomie formation. — Garnett limestone — Iola limestone.	Stanton limestone, Iola limestone.	Piqua limestone.	Wilson formation — Piqua limestone.	12
		13	Stanton limestone series: Stanton limestone, No. 151; shales; sandstones; and coal.	Leroy shales.	Thayer shales, Lane shales.	Pottawatomie formation. — Garnett limestone — Vilas shales.		Vilas shale.	Wilson formation — Vilas shale (with sandstone lentil).	13
		14	Stanton limestone series: Stanton limestone, No. 151; shales; sandstones; and coal.	Carlyle limestone.	Garnett limestone, Iola limestone, Carlyle limestone.	Pottawatomie formation. — Garnett limestone — Earlton limestone.	Stanton limestone.	Allen limestone.	Wilson formation — Allen limestone.	14
		15	Stanton limestone series: Stanton limestone, No. 151; shales; sandstones; and coal.	Shale.	Thayer shales.	Pottawatomie formation. — Lane shales.	Lane shales.	Concreto shale.	Wilson formation — Concreto shale (with coal lentil).	15
		16	Stanton limestone series: Stanton limestone, No. 151; shales; sandstones; and coal.	Iola limestone.	Iola limestone.	Pottawatomie formation. — Earlton limestone, Iola limestone.	Earlton limestone,[b] Iola limestone.	Iola limestone.	Wilson formation — Iola limestone.	16
		17	Stanton limestone series: Stanton limestone, No. 151; shales; sandstones; and coal.	Chanute shale.	Thayer shales.	Pottawatomie formation. — Thayer shales, Vilas shales.	Chanute shales, Vilas shales.	Chanute shale.	Wilson formation — Chanute shale (upper part).	17
		18	Stanton limestone series: Stanton limestone, No. 151; shales; sandstones; and coal.	Erie limestone.	Erie limestone — Limestone (upper member).	Pottawatomie formation. — Erie limestone. — Independence limestone.	Drum limestone.	Chanute shale.	Drum formation (limestone with shale lentils).	18
		19	Marais de Cygnes coal series.		Erie limestone — Shale.	Pottawatomie formation. — Erie limestone. — Cherryvale shales.	Cherryvale shales.		Coffeyville formation — Cherryvale shale.	19
		20	Marais de Cygnes coal series.	Erie limestone.	Erie limestone — Limestone[b] (upper member).	Pottawatomie formation. — Erie limestone. — Independence limestone.[b]	Dennis limestone.	Dennis limestone.	Coffeyville formation — Dennis limestone.	20
		21	Marais de Cygnes coal series.		Erie limestone — Shale.	Pottawatomie formation. — Erie limestone. — Cherryvale shales.	Galesburg shales (?).	Galesburg shale.	Coffeyville formation — Galesburg shale.	21
		22	Marais de Cygnes coal series.	Erie limestone.	Erie limestone — Limestone (middle member).	Pottawatomie formation. — Erie limestone. — Mound Valley limestone.	Dennis limestone.	Mound Valley limestone.	Coffeyville formation — Mound Valley limestone.	22
		23	Marais de Cygnes coal series.		Erie limestone — Shale.	Pottawatomie formation. — Erie limestone. — Mound Valley shale.	Galesburg shales.	Ladore shale.	Coffeyville formation — Ladore–Dudley shale.	23
		24	Marais de Cygnes coal series.	Erie limestone.	Erie limestone — Altamont(?)limestone; [c] Bethany Falls limestone, No. 78.	Pottawatomie formation. — Erie limestone. — Limestone.[c]	Hertha limestone.	Hertha limestone.	Coffeyville formation — Ladore–Dudley shale.	24
		25	Marais de Cygnes coal series.	Laneville shales — Shale.	Pleasanton shales	Marmaton formation. — Pleasanton shales. — Upper Pleasanton shales.	Dudley shales.	Dudley shale.		25
		26	Bethany Falls limestone, No. 166.	Laneville shales — Limestone.	Pleasanton shales	Marmaton formation. — Pleasanton shales. — Altamont limestone.	Parsons limestone — Upper Parsons limestone.	Parsons limestone	Parsons formation — Upper limestone.	26
		27	Bethany Falls limestone, No. 166.	Laneville shales — Shale.	Pleasanton shales	Marmaton formation. — Pleasanton shales. — Altamont limestone.	Parsons limestone	Parsons limestone	Parsons formation — Shale.	27
		28	Bethany Falls limestone, No. 166.	Laneville shales — Sandstone.	Pleasanton shales	Marmaton formation. — Pleasanton shales. — Altamont limestone.	Parsons limestone — Limestone.[c]	Parsons limestone	Parsons formation — Lower limestone.	28
		29	Bethany Falls limestone, No. 166.	Laneville shales — Shale.	Pleasanton shales	Marmaton formation. — Lower Pleasanton shales.	Bandera shales.	Bandera shale.	Bandera shale.	29
		30	Pawnee limestone series. — Pawnee limestone, No. 203.		Pawnee limestone.	Marmaton formation. — Pawnee limestone.	Pawnee limestone.	Pawnee limestone.	Pawnee limestone.	30
		31	Pawnee limestone series.		Shale.	Marmaton formation. — Labette shales.	Labette shales.	Labette shale.	Labette shale.	31
		32	Fort Scott coal series — Fort Scott limestone, No. 212; shales; sandstone; and limestone.	Oswego limestone. (Limestone. Shale. Limestone.)	Oswego limestone. (Limestone. Shale. Limestone.)	Marmaton formation. — Oswego limestone.	Fort Scott limestone.	Fort Scott limestone.	Fort Scott limestone.	32
		33	Fort Scott marble series. Lower coal series.	Cherokee shale. — Shale; Swallow limestone; shale; Columbus sandstone; shale.	Cherokee shales.	Cherokee shales.	Cherokee shales.	Cherokee shale.	Cherokee shale.	33
	Mississippian	34	Lower Carboniferous.	Mississippian. — Galena limestone.	Mississippian.	Mississippian or sub-Carboniferous.	Mississippian series.	Boone formation.	Boone limestone.	34

[a] Swallow, G. C., Section of the rocks in eastern Kansas: Prel. Rept. Geol. Survey Kansas, 1866, pp. 9–18; also Proc. Am. Assoc. Sci., vol. 15, 1866, pp. 57–82.

[a] Haworth, Erasmus, and Kirk, M. Z., A geologic section along the Neosho River from the Mississippian formation of Indian Territory to White City, Kans., and along the Cottonwood River from Wyckoff to Peabody: Kansas Univ. Quart., vol. 2, 1894, pp. 101–115.

[a] Haworth, Erasmus, Résumé of the stratigraphy and correlations of the Carboniferous formations: Univ. Geol. Survey Kansas, vol. 1, 1896, pp. 145–217.
[b] In the Iola quadrangle the Dennis limestone was mistaken for the Drum.
[c] Trans. St. Louis Acad. Sci., vol. 2, 1861–1866, p. 320; Rept. Missouri Geol. Survey, 1872, pt. 2, p. 77.

[a] Haworth, Erasmus, Stratigraphy of the Kansas coal measures: Univ. Geol. Survey Kansas, vol. 3, 1898, pp. 9–105.
[b] In the Iola quadrangle the Dennis limestone was mistaken for the Drum.
[c] The Bethany Falls limestone of Gallaher, J. A., Bienn. Rept. Missouri Geol. Survey, 1898; and No. 78 of Broadhead, G. C., Rept. Missouri Geol. Survey, 1892, pt. 2, p. 97.

[a] Adams, George I., Girty, George H., and White, David, Upper Carboniferous rocks of Kansas: Bull. U. S. Geol. Survey No. 211, 1903.
[b] Not recognized at Earleton as the Iola limestone.
[c] Regarded by Adams as the Oologah limestone of Drake in Oklahoma (Proc. Am. Phil. Soc., vol. 36, 1897, p. 337).

[a] Adams, George I. Haworth, Erasmus, and Crane, W. R., Economic geology of the Iola quadrangle, Kansas: Bull. U. S. Geol. Survey No. 238, 1904, Pl. III. Certain miscorrelations in the survey of the Iola quadrangle were not discovered until after the text of Bulletin No. 238 was printed. The necessary corrections were made on Pls. I and II and indicated on an "errata" slip at the beginning of that report; they have also been incorporated in the above list.

[a] Schrader, Frank C., and Haworth, Erasmus, Economic geology of the Independence quadrangle, Kansas: Bull. U. S. Geol. Survey No. 296, 1907. Schrader, Frank C., Independence folio, Geologic Atlas U. S., 1908.

COLUMNAR SECTIONS

GENERALIZED SECTION OF ROCKS EXPOSED IN THE INDEPENDENCE QUADRANGLE.

SCALE: 1 INCH = 100 FEET.

System.	Name and Description of Formations.	Symbol.	Columnar Section.	Thickness in Feet.	Members.	Detailed Description of Rocks.
CARBONIFEROUS (Pennsylvanian series)	Elgin sandstone.	Ce		10		Hard ferruginous sandstone; weathers rough.
	Oread limestone.	Co		12		Reddish-gray, thin-bedded, fine-grained, semicrystalline, profusely fossiliferous limestone.
	Buxton formation. Shale and friable shaly sandstone in about equal amounts, with a few heavy beds of harder sandstone, seams of coal, and thin limestone lentils.	Cb		(48)	Sandstone and shale.	
				(20)	Shale with limestone lentils.	
				(45)	Sandstone.	
				(22)	Shale with limestone lentils.	
				(20)	Sandstone.	
				320	Limestone lentil.	
				(165)	Shale.	
	Wilson formation. Principally heavy-bedded drab shale and gray to brownish sandstone, with limestone lentils and seams of coal.	(Cp)		(0–50)	Piqua limestone.	Heavy-bedded light-gray crystalline limestone that weathers to rough blocks; pure in northern part of quadrangle; thins toward the south and is locally conglomeratic, shaly, arenaceous, or absent.
				(0–80)	Vilas shale.	Compact drab to pale-yellowish shale and sandstone, the latter thickening toward the south; variable in thickness and locally absent.
		(Ca)		(0–70)	Allen limestone.	Massive, semicrystalline, compact to coarse-grained dark-blue fossiliferous limestone; thins toward the south and is absent in the southern half of the quadrangle.
		Cw		280		
				(60)	Concreto shale.	Compact argillaceous to arenaceous shale and brownish thin- to heavy-bedded sandstone, with thin coal seams.
		(Ci)		(0–3)	Iola limestone.	Crystalline to argillaceous, medium-grained, fossiliferous limestone in thin lentils; absent in southern part of quadrangle.
				(75)	Upper part of Chanute shale.	Compact, heavy-bedded drab shale and thin- to heavy-bedded sandstone in about equal amounts, with seams of coal and a few thin limestone lentils.
	Drum limestone.	Cdr		2–100	Limestone. Shale. Limestone.	Gray to blue, fine-grained, crystalline, heavy-bedded to flaggy limestone. Toward the south contains drab to black shale, in part arenaceous.
	Coffeyville formation. Drab shale and brownish sandstone in alternating heavy beds, with limestone lentils.			(100)	Cherryvale shale (lower part of Chanute shale).	Light-drab to reddish or yellowish, compact, fragile shale, with some friable sandstone and seams of coal.
		(Cd)		(0–50)	Dennis limestone.	Medium-grained, hard, bluish-gray, semicrystalline, fossiliferous limestone, usually massive and chert bearing; absent in southern part of quadrangle.
				(40)	Galesburg shale.	Red to drab arenaceous shale, heavy beds of micaceous sandstone, and thin seams of coal.
		Cc		250		
		(Cm)		(0–15)	Mound Valley limestone.	Hard, compact, semicrystalline, fossiliferous, thin-bedded to massive limestone; absent in southern part of quadrangle.
				(90)	Ladore–Dudley shale.	Soft, brown, compact, argillaceous to arenaceous, thin-bedded shale, with very little sandstone.
	Parsons formation. Crystalline fossiliferous limestone and compact shale.	Cpr		(20)	Limestone.	Reddish, medium-grained, tough, heavy- to thin-bedded limestone; nodular and impure at the base.
				(45)	Shale.	Dark, slate-colored, hard, compact shale, with nodules of impure limestone.
				80		
				(15)	Limestone.	Compact, bluish-gray, semicrystalline, chert-bearing, fossiliferous limestone, with massive beds of *Chœtetes* and a thin bed of dark slaty shale.

GENERALIZED SECTION OF ROCKS ENCOUNTERED IN DRILLING IN THE INDEPENDENCE QUADRANGLE.

SCALE: 1 INCH = 100 FEET.

System.	Series.	Formation Name.	Thickness in Feet.	Columnar Section.	Thickness and Character of Rocks.
CARBONIFEROUS	PENNSYLVANIAN	Parsons formation.	80		20′ limestone. 45′ shale. 15′ limestone.
		Bandera shale.	140		14′ shale. 4′ sandstone. 32′ shale. 6′ sandstone. 24′ shale. 4′ sandstone. 56′ shale.
		Pawnee limestone.	30		Massive limestone.
		Labette shale.	110		30′ shale. 0–6″ coal. 7′ shale. 6′ sandstone. 66′ shale.
		Fort Scott limestone.	40		10′ limestone. 15′ shale and oil-bearing sandstone 15′ limestone.
		Cherokee shale.	450		17′ shale. 10′ oil and gas sand. 11′ shale. 0–6″ coal. 25′ shale. 1′ coal. 19′ shale. 6′ sandstone. 22′ shale. 8′ coal. 45′ shale. 18′ oil sand. 23′ shale. 1′ coal. 22′ shale. 7′ oil sand. 11′ shale. 0–3″ coal. 23′ shale. 4′ oil sand. 40′ shale. 40′ oil and gas sand. 31′ shale. 2 coal. 31′ shale. 2′ limestone. 13′ shale. 2′ oil sand. 11′ shale.
	MISSISSIPPIAN	Boone limestone.	250		Chert-bearing limestone.