UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

BULLETIN 1215-B
PLATE 3

GENERALIZED STRATIGRAPHIC SECTION OF EXPOSED ROCKS

SYSTEM	SERIES	GROUP	FORMATION	MEMBER	THICKNESS IN FEET
PERMIAN	Lower Permian	Council Grove	Johnson Shale		20
			Foraker Limestone	Long Creek Limestone	5
				Hughes Creek Shale	25–40
				Americus Limestone	2.5–5.7
		Admire	Janesville Shale	Hamlin Shale	30–40
				Five Point Limestone	4–8
				West Branch Shale	26–47
			Falls City Limestone		3.2–17
			Onaga Shale	Hawxby Shale	12–26
				Aspinwall Limestone	1.5–11.5
				Towle Shale	6.5–140
			Wood Siding Formation	Brownville Limestone	1–2.9
				Pony Creek Shale	5–11
				Grayhorse Limestone	0.5–4
				Plumb Shale	7–105
				Nebraska City Limestone	0.3–2.5
			Root Shale	French Creek Shale	19–29
				Jim Creek Limestone	0.4–2.4
				Friedrich Shale	12–30
			Stotler Limestone	Grandhaven Limestone	1.2–6
				Dry Shale	0.1–16
				Dover Limestone	1–4.8
			Pillsbury Shale		33–60
			Zeandale Limestone	Maple Hill Limestone	1.2–2
				Wamego Shale	9–35
				Tarkio Limestone	2–13
			Willard Shale		14–56
			Emporia Limestone	Elmont Limestone	2.5–5.2
				Harveyville Shale	4.3–15
				Reading Limestone	1.3–4.6
		Wabaunsee	Auburn Shale		30–70
			Bern Limestone	Wakarusa Limestone	1.7–4
				Soldier Creek Shale	6.6–15
				Burlingame Limestone	1–7
			Scranton Shale	Silver Lake Shale	20–36
				Rulo Limestone	0.6–3.6
				Cedar Vale Shale	25–29+
				Happy Hollow Limestone	0.4–3.4
				White Cloud Shale	50–60+
			Howard Limestone	Utopia Limestone	2–12
				Winzeler Shale	0.6–6.2
				Church Limestone	0.3–2.2
				Aarde Shale	0.7–5.5
			Severy Shale		30
CARBONIFEROUS	PENNSYLVANIAN	Virgil			

f12956 — 19463-PC — Coal bed — f12957 — Lorton coal bed — 19462-PC (f12959), f12958, f12960, f12961, 19461-PC — 19460-PC (f12964), f12963, f12962 — 19459-PC (f12965), f12966, f12969 — f12970 — 19458-PC (f12972) — f12974 — Elmo coal bed — Coal bed — Nodaway coal bed

FEET: 0, 10, 20, 30, 40, 50

STRATIGRAPHIC SECTION EXPLANATION

- Sandstone
- Siltstone
- Sandy siltstone
- Claystone
- Silty claystone
- Calcareous claystone
- Limestone
- Conglomeratic limestone
- Argillaceous limestone

Presence and depth of channel uncertain

19459-PC (f12965) Fossil collection from mapped area

©19463-PC Fossil collection from outside mapped area

MAP EXPLANATION

- Qal — Alluvium
- Qn — Newman terrace deposits
- Qb — Buck Creek terrace deposits *Queried where correlation uncertain*
- Qk — Terrace deposits of Kansan Glaciation *Mapped only along Mission Creek*
- Qg (Pp) — Glacial drift (Pp), *underlying formation identified where known*
- Pj — Johnson Shale
- Pf — Foraker Limestone
- Pjf / Pjfp — Janesville Shale and Falls City Limestone. Pjfp, *Five Point Limestone Member of Janesville Shale*
- Po / Poa — Onaga Shale. *Queried where correlation uncertain.* Poa, *Aspinwall Limestone Member*
- Pws — Wood Siding Formation. *Queried where correlation uncertain*
- Pr / Prj — Root Shale. *Algal limestone of the Grandhaven Limestone Member of the Stotler Limestone mapped with unit* Pr, *Jim Creek Limestone Member mapped locally*
- Pst — Stotler Limestone
- Pp — Pillsbury Shale
- Pz — Zeandale Limestone
- Pw — Willard Shale
- Pe — Emporia Limestone
- Pa — Auburn Shale
- Pb — Bern Limestone
- Psr / Ps / Psh — Scranton Shale. Psr, *Rulo Limestone Member*; Psh, *Happy Hollow Limestone Member mapped locally; queried where correlation uncertain*
- Ph — Howard Limestone
- Psv — Severy Shale

Recent; Pleistocene: Wisconsin, Illinoian, Kansan — QUATERNARY

Lower Permian: Council Grove Group, Admire Group — PERMIAN

Virgil Series; Wabaunsee Group — PENNSYLVANIAN

CARBONIFEROUS

Contact — *Dashed where approximately located; short dashed where inferred; dotted where concealed; queried where continuity of bed is unknown*

1200 Structure contours — *Drawn on base of Zeandale Limestone. Dashed where approximately located; short dashed where datum is eroded. Contour interval 20 feet. Datum is mean sea level*

◎19460-PC USGS Permian and Carboniferous fossil locality

◎f12970 USGS foraminiferal collection locality

Dry and abandoned well, R, *reported location*

Dry hole; show of gas, R, *reported location*

Dry hole; show of oil

Dry hole; show of oil and gas, R, *reported location*

Gravel quarry, a, *abandoned*

Coal mine shaft, a, *abandoned*

Coal mine adit, a, *abandoned*

Mine or quarry, a, *abandoned*

NOTE: Minor deviations between the geologic contacts and the topographic contours are due to slumping, changes in soil thickness, and variations in thickness of the shale units

Base from U.S. Geological Survey 1:24 000 topographic quadrangles: Auburn, Burlingame, Dover, Grove, Harveyville, Rossville, Silver Lake, and Willard, 1952; Maple Hill and St. Marys, 1953
Roads revised, 1963; contours not modified

APPROXIMATE MEAN DECLINATION, 1966

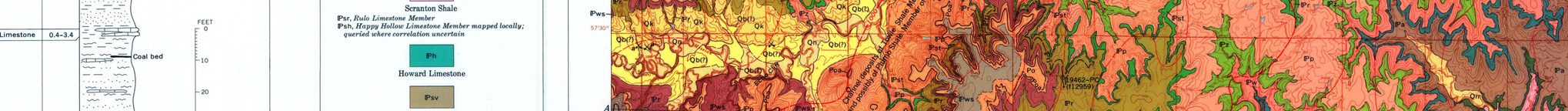
SCALE 1:48 000

1 ½ 0 1 2 3 4 5 MILES

1 5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

Geology mapped by W. D. Johnson, Jr., and H. C. Wagner, 1954–57; assisted by H. J. Hyden, 1957



HORIZONTAL EXAGGERATION × 2
VERTICAL EXAGGERATION × 8

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1966—G65274

GEOLOGIC MAP OF WESTERN SHAWNEE COUNTY AND PARTS OF ADJACENT COUNTIES, KANSAS