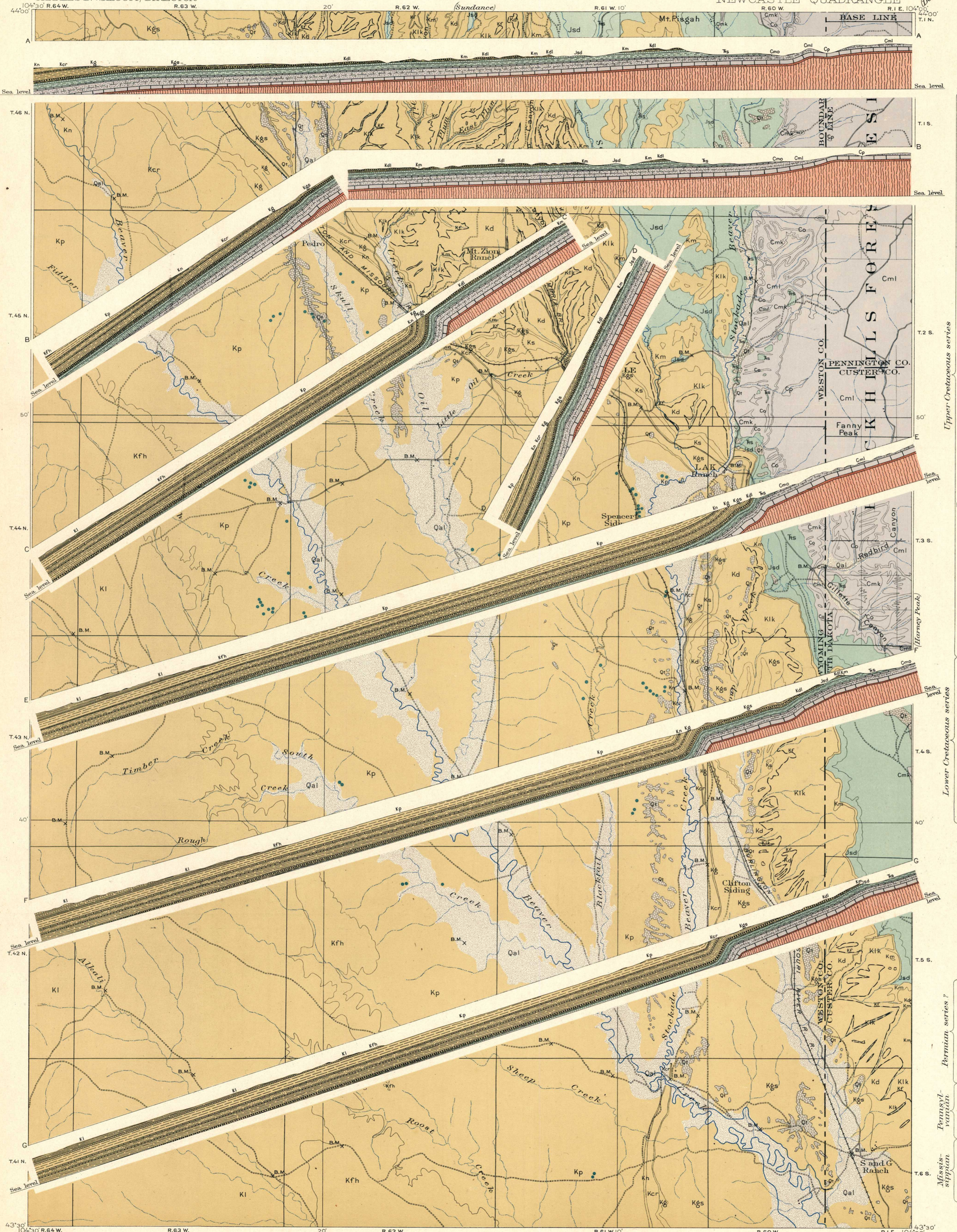


U.S. GEOLOGICAL SURVEY
CHARLES D. WALCOTT, DIRECTOR

STRUCTURE SECTIONS

WYOMING-SOUTH DAKOTA
NEWCASTLE QUADRANGLE



LEGEND

SEDIMENTARY ROCKS

SHEET SYMBOL SECTION SYMBOL

Qal Alluvium (only the larger gravels represented)

Or Older terrace deposits (gravel and loam)

Kl Laramie formation (sandstone and carbonaceous shale)

Kfh Fox Hills formation (sandstone and sandy shale)

Kp Pierre shale (dark gray shale or clay with concretions)

Limestone lentils in Pierre shale (form 2000 feet)

Kn Niobrara formation (tiny shale and impure shale)

Kcr Carille formation (gray shale and thin sandstone)

Kg Greenhorn limestone (impure stony limestone)

Kgs Graneros formation (exclusive of sandstone lentil) (dark fissile shale containing an extensive sandstone lentil)

Ks Sandstone lentil in Graneros formation

Kd Dakota sandstone (brownish sandstone, mostly massive)

Kf Fusion formation (shale and sandstone)

Klk Lakota sandstone (massive buff sandstone with local red beds near base)

Km Morrison shale (massive sandy shale, gray, greenish, and maroon)

Jsd Sundance formation (buff sandstone and red and greenish gray shale)

Rs Spearfish formation (red sandy shale with beds of gypsum and beds)

Cmk Minnekahta limestone (very thin bedded gray limestone)

Co Opache formation (bright red sandy shale)

Cml Mimmelsa sandstone (gray red and buff; tiny sandstone)

Cp Pahasapa limestone (massive gray limestone includes thin bedded English limestone at the base)

Deadwood sandstone (does not outcrop in this quadrangle)

Schist including granite (do not outcrop in this quadrangle)

QUATERNARY

CRETACEOUS

JURASSIC

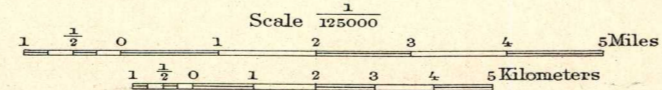
TRIASSIC ?

CARBONIFEROUS

CAMBRIAN

ALGONKIAN

E.M. Douglas, Geographer in charge.
Triangulation by Frank Tweedy and R.H. Chapman.
Topography by W.H. Herron.
Surveyed in 1899.



Edition of April 1904.

DIAGRAM OF TOWNSHIP

6	5	4	3	2	1
7	6	5	4	3	2
8	7	6	5	4	3
9	8	7	6	5	4
10	9	8	7	6	5
11	10	9	8	7	6
12	11	10	9	8	7
13	12	11	10	9	8
14	13	12	11	10	9
15	14	13	12	11	10
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20	19	18	17	16	15
21	20	19	18	17	16
22	21	20	19	18	17
23	22	21	20	19	18
24	23	22	21	20	19
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27	26	25	24	23	22
28	27	26	25	24	23
29	28	27	26	25	24
30	29	28	27	26	25
31	30	29	28	27	26
32	31	30	29	28	27

Geology by N.H. Darton.
Assisted by C.A. Fisher.
Surveyed 1899-1901.

