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

STRUCTURE-SECTION SHEET

MONTANA
LITTLE BELT MTS. QUADRANGLE

LEGEND

IGNEOUS ROCKS (continued)

SHEET SYMBOL | SECTION SYMBOL

NEOCENE

- Nrp — Rhyolite-porphyry
- Ngr — Castle granite
- Ndi — Robinson diorite

EOCENE

- Edi — Loco diorite
- Egr — Crazy Mt. granite
- Eap — Andesite-porphyry
- Etp — Trachyte-porphyry
- Eth — Theralite

Basic dikes and sheets
(diabase, db, basalt, minette, vogesite, kersantite, monchiquite, and theralite, those of Crazy Mts. are mainly theralite.)

Acidic dikes and sheets
(phonolite, ph, and porphyries of rhyolite, syenite, trachyte, and andesite; those of Crazy Mts. are mainly andesite-porphyry; those of Castle Mt. are mainly rhyolite-porphyry; those of Little Belt Mts. are mainly syenite-porphyry.)

- bp — Barker porphyry (granite-porphyry)
- dp — Diorite-porphyry
- sy — Syenite and syenite-porphyry
- mz — Monzonite
- sh — Shonkinite
- pd — Pinto diorite (partly gneissoid)
- np — Neihart porphyry (altered rhyolite-porphyry)

Faults

- 20° Dip and strike of stratified rocks
- Vertical dip and strike of stratified rocks
- Horizontal stratified rocks
- Mineral bearing veins

Known productive formations

- Coal (Cascade and Laramie formations containing coal seams at the top; and portions of the Yellowstone and Livingston formations directly underlain by the coal.)
- Silver (contact zones favorable for ore deposits)

LEGEND

SURFICIAL ROCKS

SHEET SYMBOL

PLEISTOCENE

- Pal — Alluvium
- Pbg — Bench gravels
- Pgd — Glacial drift and moraines

SEDIMENTARY ROCKS

SHEET SYMBOL | SECTION SYMBOL

NEOCENE

- Ns — Smith River lake beds (sand, conglomerate, clay, and volcanic ash.)

CRETACEOUS ?

- Iv — Livingston formation (sandstone, conglomerate, and tuff; largely andesitic material, with sandstone and shale above; includes probably Fort Union beds at the top.)

CRETACEOUS

- Kl — Laramie formation (sandstone and shale, containing several workable coal seams)
- Ky — Yellowstone formation (shale, containing limestone concretions, with sandstone at the base and top.) — Embraces Dakota, Colorado, and Montana formations
- Kcd — Cascade formation (sandstone and shale with coal seam at the top)

JURATRIAS

- Je — Ellis formation (limestone grading upward into sandstone, and with pebbly sandstone at the base.)

CARBONIFEROUS

- Cq — Quadrant formation (sandstone, green and red shales, and white limestone.) — (Big Snowy Mts.)
- Cm — Madison limestone (thinly bedded limestone.)

DEVONIAN and probably Silurian

- Dm — Monarch formation (brown and black granular limestone capped by shale.) — Jefferson limestone and Three Forks formation.

CAMBRIAN

- Ꞓb — Barker formation (limestone and micaceous shale, containing beds of limestone conglomerate, and quartzite at the base.) — Flathead and Gallatin formations

ALGONKIAN

- Ab — Belt formation (clay slate, shale, and impure limestone.)
- An — Neihart quartzite (basal member of the Belt formation.)

Contact metamorphic rocks (pre-Eocene sediments altered by igneous intrusion.)

UNCLASSIFIED CRYSTALLINE ROCKS

SHEET SYMBOL | SECTION SYMBOL

ARCHEAN

- Ꞓrgn — Gneiss and schist

IGNEOUS ROCKS

SHEET SYMBOL

NEOCENE

- Nb — Basalt
- Nr — Rhyolite
- Nrb — Rhyolite breccia and tuff

Legend is continued on the left margin.

E. M. Douglas, Topographer in charge.
Triangulation by Northern Transcontinental Survey.
Topography by Northern Transcontinental Survey and R. H. Chapman.
Surveyed in 1882 and 1896.

R.H.C.
N.T. Survey

Scale 1/250 000
2 1 0 2 4 6 8 10 Miles
2 1 0 2 4 6 8 10 Kilometers

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Assisted by Louis V. Pirsson.
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