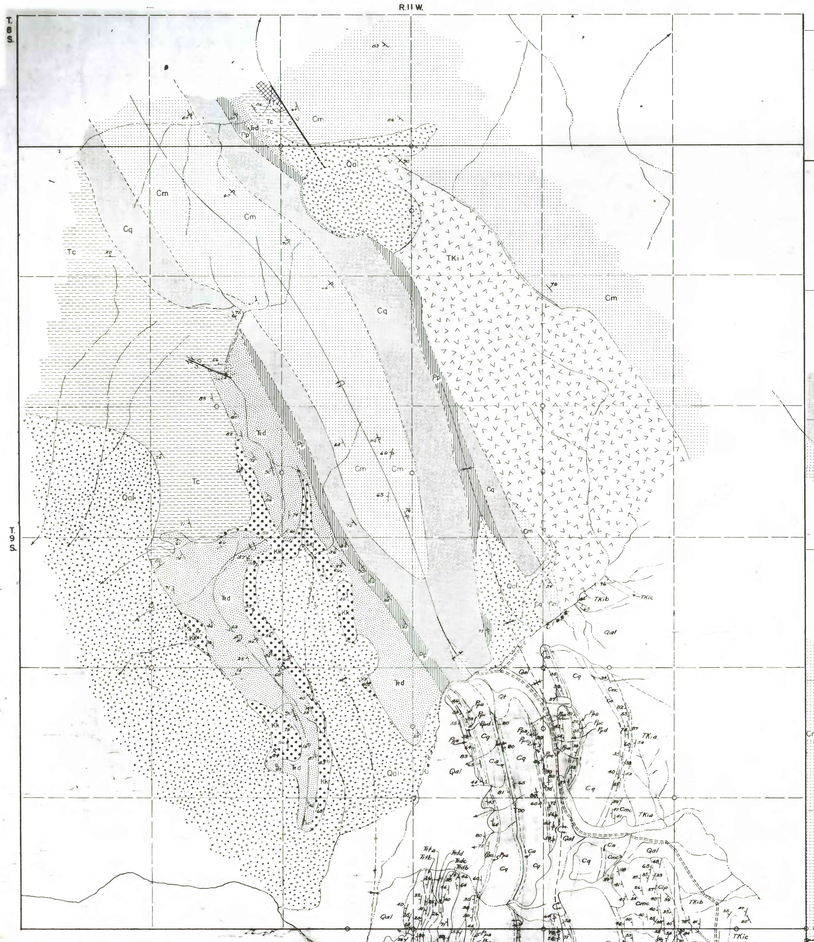
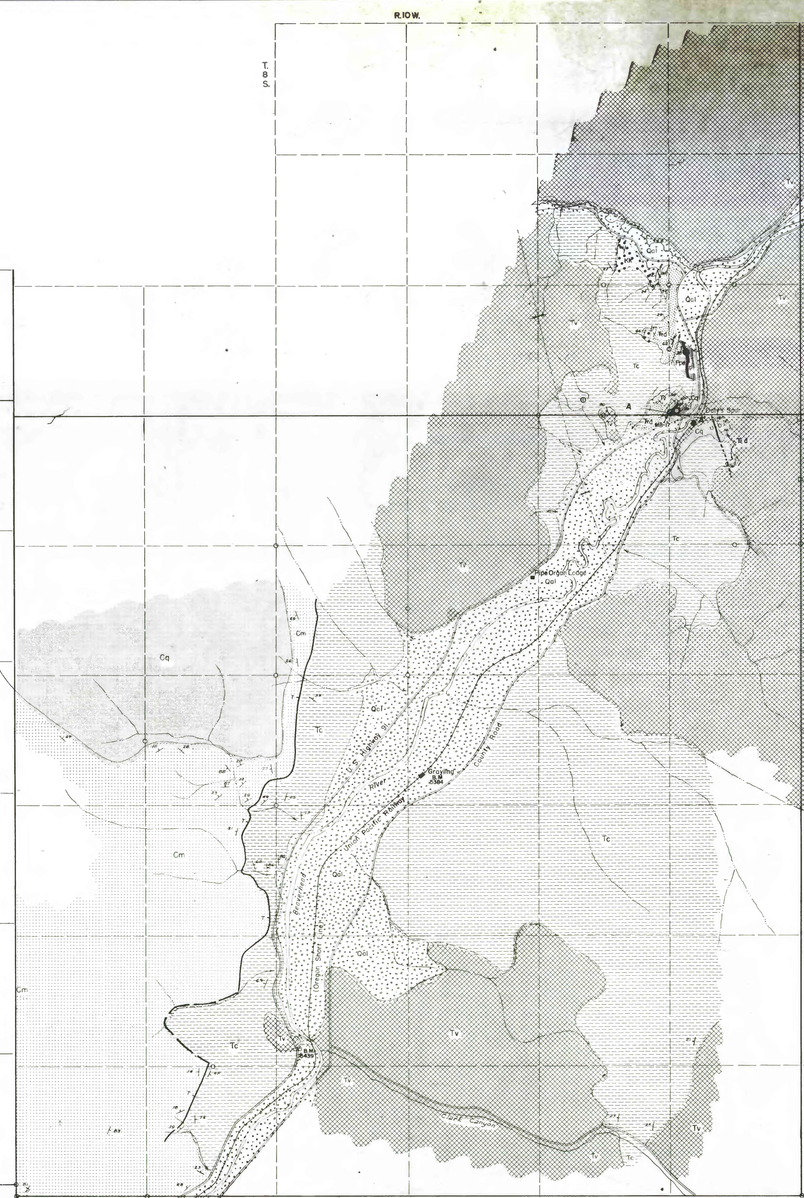
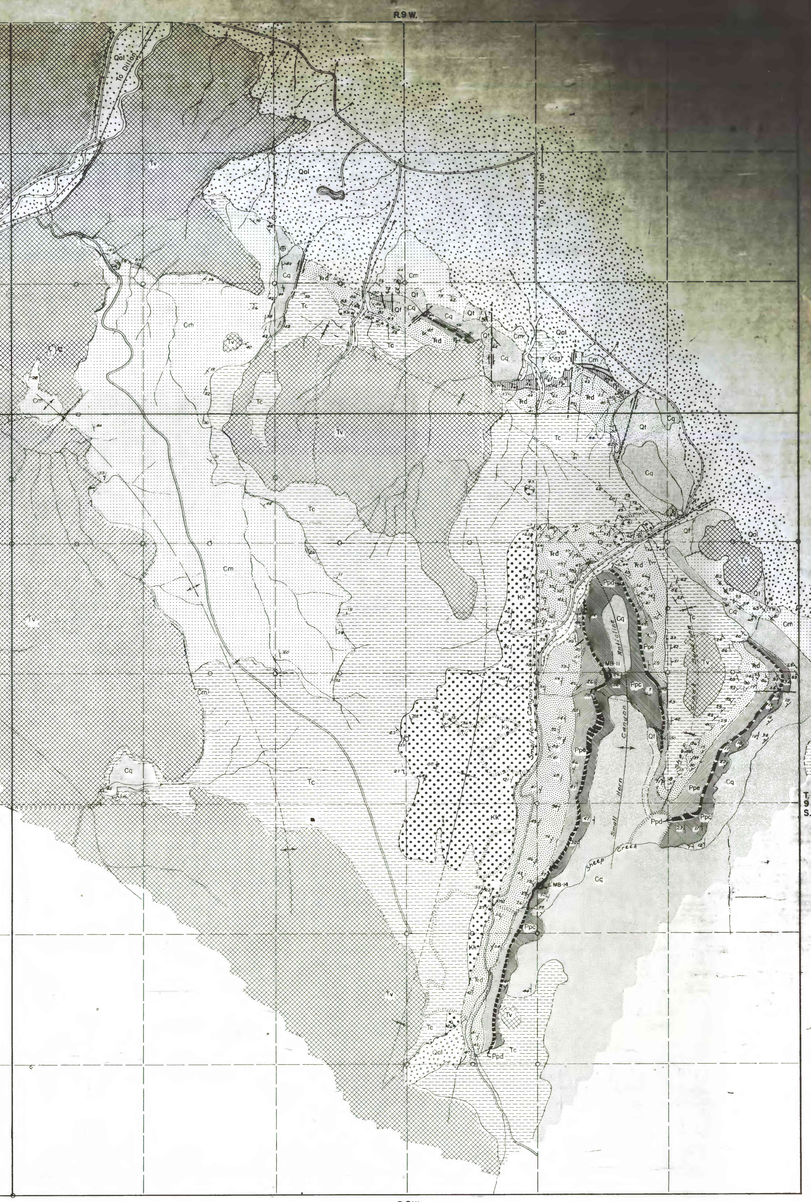
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



CEDAR CREEK AREA





DALY SPUR – SMALL HORN CANYON AREA

SCALE IN FEET
1000 0 1000 2000 3000 4000

EXPLANATION for Detailed survey, south of Cedar creek

ROCK UNITS

QUATERNARY

- Qal — Alluvium and hill wash
- Qt — Talus (mostly from Quadrant quartzite)

TERTIARY

- Tv — Volcanics (undifferentiated)
- Tc — Conglomerate (undifferentiated)
- TKia, TKib, TKic, TKid — Intrusive-metamorphic complex (Intrusive rock may be late Cretaceous or early Tertiary; metamorphic rock is pre-Cambrian) (a–hornblend gneiss; b–granite gneiss; c–garnet schist; d–quartzite)

CRETACEOUS

- Kk — Kootenai formation

TRIASSIC

- Ttr — Thaynes limestone (undifferentiated)
  - Ttrb — Limestone member
  - Ttrs — Sandstone member
- Td — Dinwoody formation (undifferentiated)
  - Tdd — Upper limestone member
  - Tdc — Red shale member
  - Tdb — Lower limestone member

PERMIAN

- Pp — Phosphoria formation (undifferentiated)
  - Ppe — Chert and quartzite member
  - Ppd — Upper phosphatic shale member
  - Ppc — Siliceous and carbonate member
  - Ppa — Carbonate member

CARBONIFEROUS

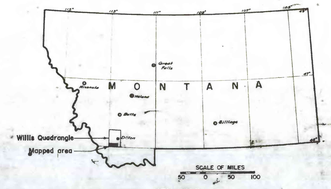
Pennsylvanian

- Cq — Quadrant quartzite
- Ca — Amsden formation

Mississippian

- Cmd — Mission Canyon limestone
- Clb — Lodgepole limestone

For MAP SYMBOLS see Explanation in center of map.



KEY MAP
SHOWING LOCATION OF AREA

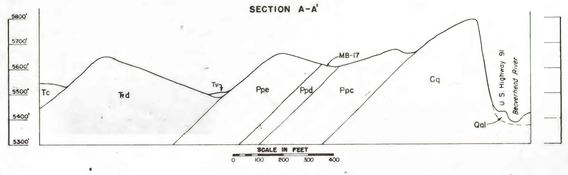
EXPLANATION FOR PATTERNED AREA

ROCK UNITS

- Qal — Alluvium
- Qt — Talus (Mostly from Quadrant quartzite
- Volcanics (undifferentiated)
- Tc — Conglomerate (undifferentiated)
- TKi — Intrusive-metamorphic complex (Intrusive rock may be late Cretaceous or early Tertiary; metamorphic rock is Pre-Cambrian.)
- Kk — Kootenai formation
- Td — Dinwoody formation
- Pp — Phosphoria formation (undifferentiated)
  - Ppe — Chert and quartzite member
  - Ppd — Upper phosphatic shale member (Broken where position uncertain)
  - Ppc — Siliceous carbonate member.
- Cq — Quadrant quartzite
- Cm — Mission Canyon and Lodgepole limestones (undifferentiated)

MAP SYMBOLS

- Strike and dip of beds
- Strike and dip of overturned beds
- Horizontal beds
- Vertical beds
- Contact, long dash where approximate, short dash where inferred
- Axis of syncline, long dash where approximate, short dash where projected from beneath Tertiary and Quaternary rock
- Axis of anticline, long dash where approximate, short dash where projected from beneath Tertiary and Quaternary rock
- Axis of overturned anticline, long dash where approximate, short dash where projected from beneath Tertiary and Quaternary rock
- Axis of overturned syncline, long dash where approximate, short dash where projected from beneath Tertiary and Quaternary rock
- Fault, long dash where approximate, short dash where concealed. (Arrows show relative horizontal movement. U–upthrown, D–downthrown side)
- Thrust fault, T–indicates upper plate, dashed where approximate
- Slump area
- MB-11 — Limestones sampled in 1944. Trenched by A.P. Butler, Jr. and G.W. Chesterman
- Located section corner
- Located quarter-section corner
- Elevations on cross section from barometric traverse



PRELIMINARY GEOLOGIC MAP OF PART OF S.W. 1/4 AND S.E. 1/4 OF WILLIS QUADRANGLE, BEAVERHEAD COUNTY, MONTANA