# Peterson, Ben, Geol. of Antelope Peak Area

Snake Mtns. - approved by Bd. of Geographic Names

## Stratigraphy

Lower $P_2$ eastern facies —

Pogonip Group —

① west flank of range —
sev. 100 ft. of tightly-folded, pale yl.-brn. to gy.-or. calc. shales & t/b, m.gy. lst.
up sect. ↓
~30 ft. - m.gy., mass., dolomitic lst.

② along axis of Trout Creek anticline —
sev. 100 ft. of lt.gy., t/b lst.
mass. dolomitic lsts. not seen.

No diagnostic fossils

Eureka Qzt. — measured section
~900' of pink, wh., gy. & bk. orthoqzt. which weathers gy-or-pk to pale rd-brn. Some x-bddg in lower 150'. Upper & lower contacts covered. 99% f.-m. qz. grains w/ silica cement. Grains are sub-rd. to well-rd. No fossils.

Hanson Creek Fm. - measured section
basal 275' — mass., foss., dk.gy. dolomite finely-xline, sdy m. base.
up ↓
45' - mass., lt. gy. lst. c.xl.
60' - dolomite ~ to basal dol.
220' - lt.-m.gy., t/b lst. which grades into mass. lst. m. The top (upper 35') gradational w/ Robr. Mts. Fm. which is more mass & resistant

Base is late M. Ord. (R.J. Ross & L.A. Wilson 1968)
Top is late Ord. (post-Trent. to pre-Rich. re. Oliver, 1968)

# Lower Paleozoic Western Facies

## Valmy (or Vinini fm.)

includes some Silurian
(only located on hill (8,000' elev.) w. of Summer Camp
& NE of Antelope Peak)

Intbdd. cht., sh., sts., cg., lst. & orthoqzt.
tight folds, many unmapped faults.

Snake Mts. —
cht. - orthoqzt. - lst. to the north changes
gradually southward to cht. - cg. - sts.
All Ord. to N. (Gardner's area) O & S to S.

Antler Peak area —
mainly chert (thousands of feet)
Cht. is blk., t/b and nodular, w/ interbeds
of lt. gy., t/lam., siliceous sh.
NW of Summer Camp, siliceous graptolitic sh. + lt. brn.,
t/lam sts. (rusty brn [W])
W. of Summer Camp, chert + cg. are most abund. rx.
cht is dk. brn., nodular, t/b, moderate grn. [W].
cg. is dk. gy., rd-brn. [W], contains angular to s-rd., f. pbbl.
size cht. grains in a f. sd. matrix.
Intbds. of f.-lam. sts. contain Monograptus (Ross, 67)

Ord. re. Ross (Amplexograptus (?), Paraglossograptus (?)
& Orthograptus, inarticulate brachs. Lingulella.

# Peterson's area

(1) SW of Antelope

Hanson Creek, on top of Robt. Mtn. Fm.

Overturn or thrust ?

(2) Check E Facies S & D rx. of

Peterson's & Garsides areas.

↓

D lst — ? — Simonson

Robt. Mtn. Fm. — Sewy

?

Separated by major fault ?

# Late Paleozoic Overlap Assemblage

## Permian sandstone

~~th/bd~~ t/b, yell.-brn., fossil.

sub-angular to sub-rd., m. sand size cht. & qz. grains cemented by silica. 12% = matrix muscovite + lst frags. = 5%. Subgraywacke (Pettijohn, 1957, p. 99-156).

fossils - fairly abund. foss. casts, silicified bryozoans and brachs. Brachs. identified by Peterson as Notospirifer sp. which is characteristic of Perm. in s. hemisphere (re. Yochelson see Bezzerides p. 25.)

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Granodiorite Qiel —

lt. olive gy., m. grn.

hypidiomorphic - granular

xls. from 0.5 - 3.0 mm.

Pg ($An_{30-35}$) highly altered = 50%
1 geot. xls.

Kspar = 10%

Qz = 12%

Bt. - 8%

Chlorite ~ 20%

Mt, Zirc., Ap

# Roberts Mountains Fm. (measured section)

generally forms smooth, scree slopes except for basal units which form steep cliffs & prominent ridges.

25' – mass., dolomitic lst. lt.gy (F & W)

base ↓ Top

25' – blk., t/b cht. in bds. separated by 1/4" laminae of dk. gy. lst. Only 12 ft. tk. in Trout Creek anticline.

950' – v. t/b., lt.gy. – lt. brn. lst. lower 15' contains Monograptus very uniform – few cherty zones sev. ft. thick.

~500' – th – m bdd., foss., lt.gy. lst (prominent ridge e. of Antelope Pk.). Overlain by Dev. lst. of similar appearance, can't be distinguished on lithologic criteria.

fossils are middle (?) to Late Sil.

Corals from lowest unit Sil. or Dev., prob. Sil. (Oliver, 67)

Monograptus base of 3rd unit

Corals in upper lst. – late Sil. (Merriam, '68)

Upper lst. more lithologically similar to Lone Mtn. Dol.

## Devonian Lst.

poorly exposed & broken up. Strat. sequence & thickness difficult to ascertain.

base drawn where thin-med. bdd. lst. (Sil.) grades upward into predominantly med. bdd. lst. Obvious on air photos. Beds above appear lighter & have higher drainage density.

No dolomite

Local lt. brn. sts. & shale

Some bk. cht. nodules in sty lst. nr. e. border.

Regional considerations suggest the Devonian should be Dol + Lst here.

corals are probably Mid. Dev. (Merriam, 1968)

may be ~ to parts of Wenban Lst. (Gilluly & Masursky, 1965, p. 29) and the Van Duzer lst. (Decker, 1962, Table 1)

Probably allocthonous.

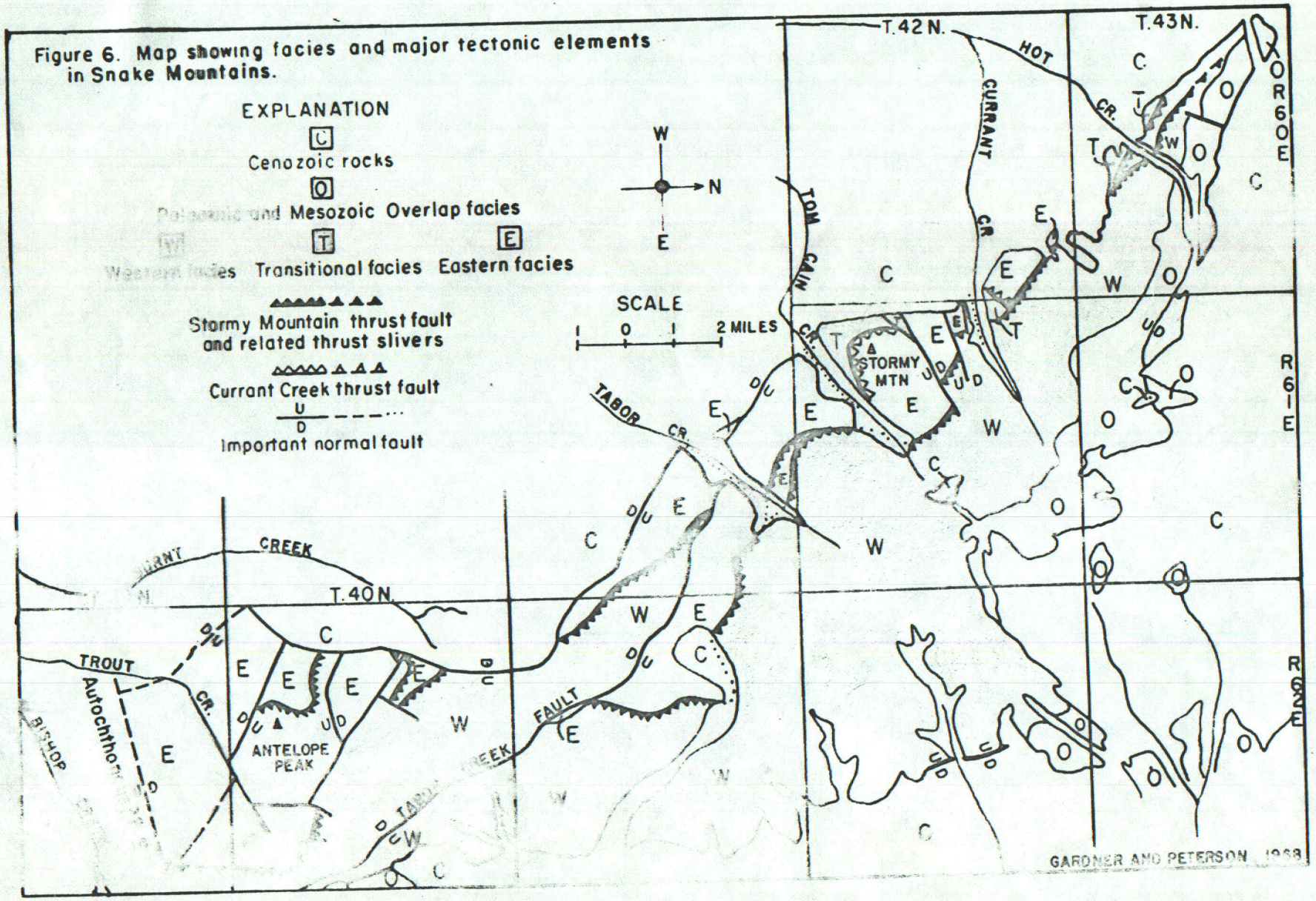



Figure 6. Map showing facies and major tectonic elements in Snake Mountains.

Figure 7. Schematic northwest to southeast section showing thrust fault relationships through the northern and central parts of the Snake Mountains.

EXPLANATION

OVERLAP FACIES

Pp Phosphoria Formation
PPs Undifferentiated Pennsylvanian and Permian
Mdp Diamond Peak Formation

WESTERN FACIES

Ov Valmy Formation (includes undifferentiated Silurian in Antelope Peak area)

ALLOCHTHONOUS EASTERN FACIES

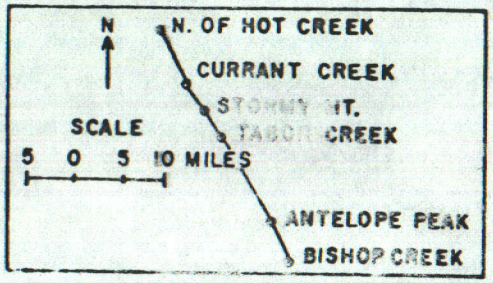
Dl Middle Devonian limestone
Srm Roberts Mountains Formation
Ohc Hanson Creek Formation
Oe { Oeu, Oem, Oel } Eureka Quartzite
Op? Pogonip Group?

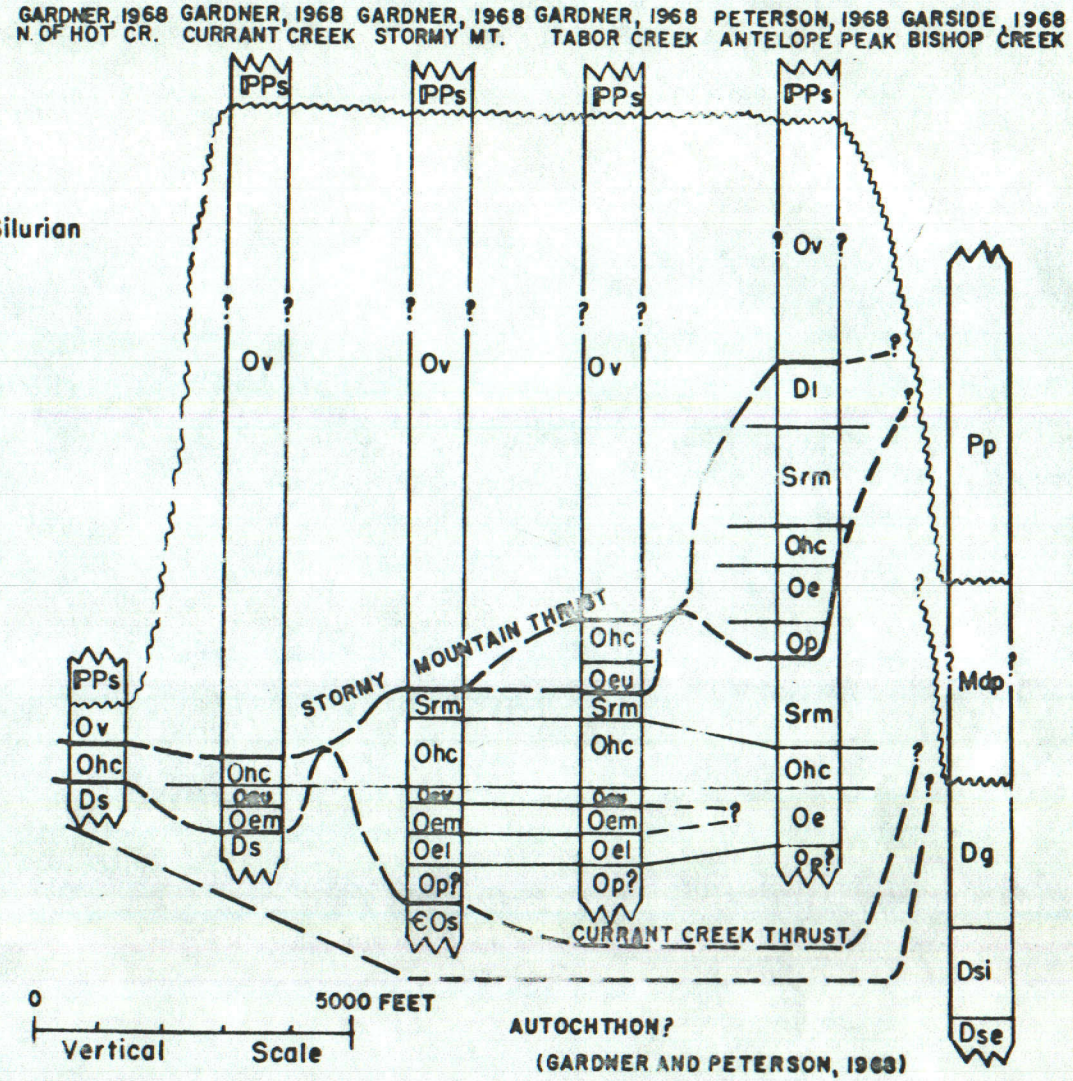
TRANSITIONAL FACIES

Ds Devonian siltstone, limestone, and shale
€Os Shale and limestone

AUTOCHTHONOUS? EASTERN FACIES

Dg Guilmette Formation
Dsi Simonson Dolomite
Dse Sevy Dolomite




(GARDNER AND PETERSON, 1968)

## APPENDIX

### Measured Sections

#### Eureka Quartzite

The Eureka Quartzite was measured in the northeast corner of T. 39 N., on the southeast limb of the Trout Creek anticline. The formation forms a prominent but poorly exposed outcrop.

| Unit No. | Thickness (Feet) | Description |
|---|---|---|
| Hanson Creek Formation | | |
| 1 | | Covered; float consists of orthoquartzite and limestone from the Hanson Creek Formation. |
| Eureka Quartzite | | |
| 2 | 55 | Orthoquartzite (9.9-0.1, Boggs), light gray with moderate red streaks, weathers dark reddish brown; very thin-bedded, crossbedded: fine and medium sand-sized grains, well rounded; tangential grain contacts; hematite concentrated along bedding planes. |
| 3 | 150 | Orthoquartzite (9.9-0.1, Boggs), light gray, weathers grayish red; massive, jointed; fine sand-sized grains, rounded; tangential grain contacts, large well rounded grains of tourmaline and zircon comprise 5 percent of sample. |
| 4 | 200 | Orthoquartzite (9.9-0.1, Boggs), light gray, weathers same; massive, jointed; medium and fine sand-sized grains, well rounded. |
| 5 | 150 | Orthoquartzite (9.9-0.1, Boggs), pale reddish brown, weathers dusky red; thin- to thick-bedded, jointed; fine sand-sized grains, rounded, fairly well size-sorted; tangential and long grain contacts; zircon, hematite. |

| Unit No. | Thickness (Feet) | Description |
|---|---|---|
| 6 | 15 | Covered, probably consists of orthoquartzite. |
| 7 | 30 | Orthoquartzite (9.9-0.1, Boggs), weathers pale yellowish brown; massive, jointed: fine sand-sized grains, rounded, fairly well size-sorted; tangential grain contacts 70 percent, sutured, concavo-convex contacts 30 percent; zircon. |
| 8 | 300 | Orthoquartzite (9.9-0.1, Boggs), medium gray, weathers moderate orange pink; massive; medium to fine sand-sized grains, well-rounded; sutured grain contacts; secondary Boehm lamellae; zircon, hematite, and pyrite less than one percent. |
| | 900 | TOTAL MEASURED THICKNESS Eureka Quartzite |
| Pogonip Group (?) | | |
| 9 | 20 | Covered; float comprised of Eureka Quartzite talus. |
| 10 | 250 | Limestone, medium gray, weathers same; massive; dolomitic, finely crystalline; probably is part of Pogonip Group (?) |

## Hanson Creek Formation

The Hanson Creek Formation was measured in the southwest corner of T. 40 N. in the crest of the faulted limb of the Trout Creek anticline. The section is well exposed.

| Unit No. | Thickness (Feet) | Description |
|---|---|---|
| **Roberts Mountains Formation** | | |
| 1 | 12 | Chert, black, weathers same; thin-bedded with quarter-inch interbeds of limestone, dark gray. |
| 2 | 25 | Limestone, light gray, weathers same; massive; dolomitic; fossiliferous, Coelenterata: Cladopora sp., Favosites sp. |
| **Hanson Creek Formation** | | |
| 3 | 35 | Limestone (Biomicrite, Folk), light gray, weathers same; massive, irregular fracture; sparry calcite fracture fillings; fossiliferous, Coelenterata: "Deircorallium" sp. |
| 4 | 20 | Limestone (Fossiliferous pelmicrite, Folk), medium gray, weathers same with red oxidation spots; thin-bedded; fossiliferous, Bryozoa and Brachiopoda fragments. |
| 5 | 15 | Limestone (Dolomitized Biosparudite, Folk), medium dark gray, weathers same; thin-bedded; hematite; fossiliferous, Brachiopoda: Sowerbyella (?) sp., Leptellina (?) sp. |
| 6 | 150 | Limestone (Biomicrite, Folk), light gray, weathers same, thin-bedded; fossiliferous, Trilobita: Cryptolithoides sp., Anataphrus sp. |
| 7 | 60 | Dolomite, dark gray, weathers light brown with "elephant hide" texture; massive; finely crystalline; quartz fracture fillings. |
| 8 | 45 | Limestone (Intrasparudite, Folk), light gray, weathers reddish gray; massive; quartz fracture fillings; Intraclasts. |
| 9 | 275 | Dolomite, dark gray, weathers same with "elephant hide" texture, silicified pelmatazoan columnals stand out on weathered |

| Unit No. | Thickness (Feet) | Description |
|---|---|---|
| | | surface; massive; finely crystalline; quartz fracture fillings; fine sand-sized quartz grains near base; fossiliferous, Brachiopoda: Pa[illegible]rura (?) sp., Dinorthis sp., Sowerbyella sp.; Conodonts: Belodina sp., Trichonodella cf. exacta Ethington, Ozarkodina sp., Prioniodina (?) sp., Drepanodus homocurratus Lindstrom. |
| | 600 | TOTAL THICKNESS<br>Hanson Creek Formation |
| Eureka Quartzite | | |
| 10 | 5 | Covered; float contains orthoquartzite. |
| Roberts Mountains Formation | | |
| | | Generalized section compiled from east flank of Antelope Peak. |
| Middle Devonian limestone | | |
| 1 | 1000± | Limestone, medium gray to light gray; thin- to medium-bedded, fossiliferous, Digonophyllum-like rugose coral. |
| Roberts Mountains Formation | | |
| 2 | 500 | Limestone, medium to light gray; thin- to medium-bedded, fossiliferous, . . . "previously referred to as either Spongophyllum or Australophyllum . . . ," but now reclassified as a new genus of rugose coral (C. W. Merriam, 1968, written communication). |
| 3 | 935± | Limestone, light brown, weathers same; thin-bedded to very thin-bedded; poorly exposed. |

| Unit No. | Thickness (Feet) | Description |
|---|---|---|
| 4 | 15 | Limestone, light gray, weathers same; thin-bedded to very thin-bedded; fossiliferous, Monograptus. |
| 5 | 25 | Chert, black, weathers same; thin-bedded alternating with quarter-inch laminations of dark gray limestone; chert beds were broken into sections less than one foot in length prior to consolidation. |
| 6 | 25 | Limestone, light gray, weathers same; massive; dolomitic; fossiliferous, Coelenterata: Cladopora sp., Favosites sp. |
| | 1500± | TOTAL THICKNESS<br>Roberts Mountains Formation |
| Hanson Creek Formation | | |
| 7 | | Limestone, light gray, weathers same; massive, irregular fracture. |

| AGE | FORMATION OR GROUP | THICKNESS | ROCK TYPE | DESCRIPTION |
|---|---|---|---|---|
| QUATERNARY | | few feet | | Alluvium, sand and gravel, and colluvium on steep slopes. |
| | | few feet | | Pediment gravel, pebbles and boulders |
| TERTIARY | "Humboldt Fm." | Few hundred ft. | | Conglomerate, sandstone, ash, and tuff |
| | | | | UNCONFORMITY |
| PERMIAN | Sandstone unit near Summer Camp | 2,000+ ft. | | Subgraywacke, thin-bedded, fossiliferous, yellowish dusky brown |
| | | | | UNCONFORMITY |
| ORDOVICIAN | Valmy Formation | Thousands of ft. | | Chert, thin-bedded, nodular, black to dusky brown. Interbedded sandstone, siliceous shale, and chert pebble conglomerate. Includes undivided black chert and siltstone of Silurian age |
| | | | | STORMY MOUNTAIN THRUST FAULT |
| DEVONIAN | Middle Devonian Carbonate unit southeast of Antelope Peak | 1,000 ∓ ft. | | Limestone, medium- to thick-bedded, fossiliferous, light to medium gray |
| SILURIAN | Roberts Mountains Formation | 1,500 ∓ ft. | | Limestone, thin-bedded, light brown. Upper part consists of thick-bedded fossiliferous limestone. Basal part consists of 12 to 30 feet of thin-bedded black chert underlain by 25 feet of massive, fossiliferous, dolomitic, light gray limestone. |
| | | | | Limestone, thin-bedded, fossiliferous, medium to dark gray. Basal third of of the formation is composed of thick-bedded, finely crystalline, dark gray, fossiliferous dolomite. |
| ORDOVICIAN | Hanson Creek Formation | 600 ft | | |
| | Eureka Quartzite | 900 ft. | | Quartzite, thick bedded to massive, pink to grayish pink. Weathers pink to dusky red |
| | | | | Limestone, massive, dolomitic, medium gray. Brown to orange shale in lower part |
| | Pogonip Group? | 250 ft. | | |

Figure 5. Stratigraphic column of rocks exposed in the Antelope Peak area.

Peterson