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GEOLOGY OF THE SOUTHERN PILOT RANGE, ELKO COUNTY, NEVADA, AND BOX ELDER AND TOOELE COUNTIES, UTAH

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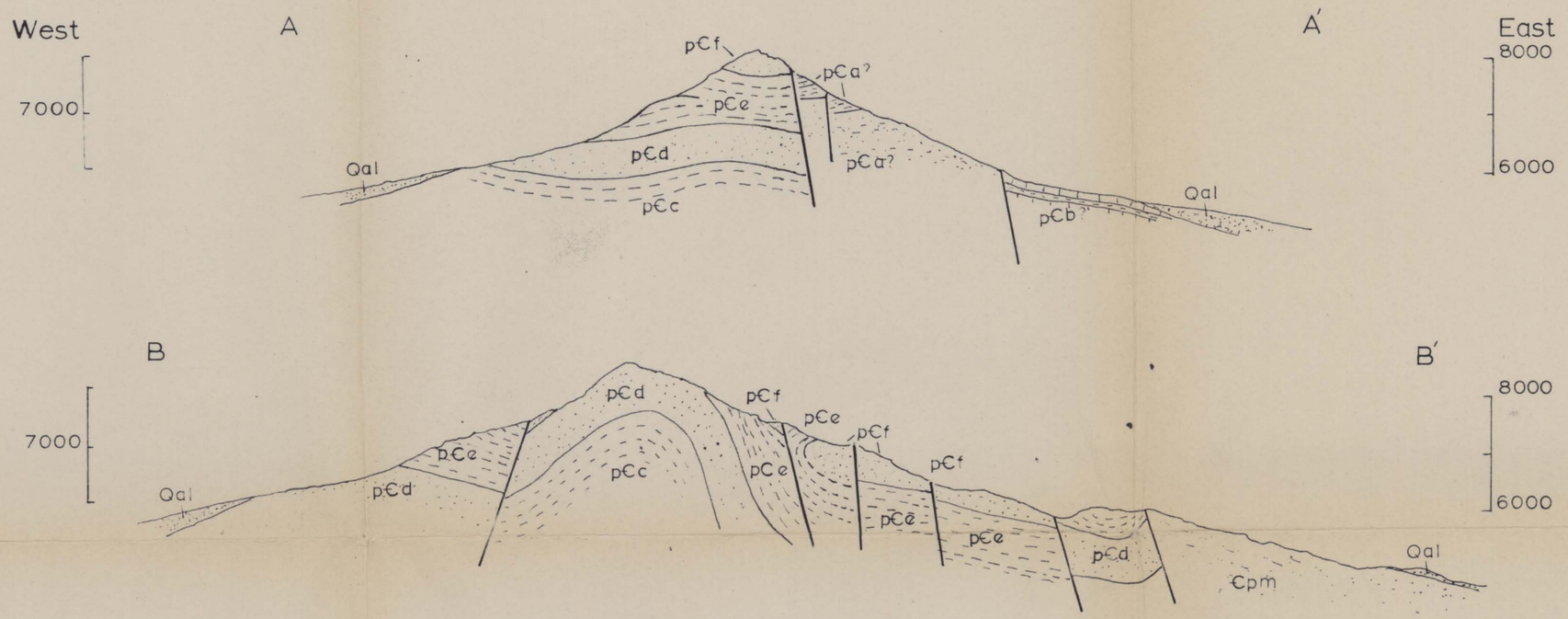
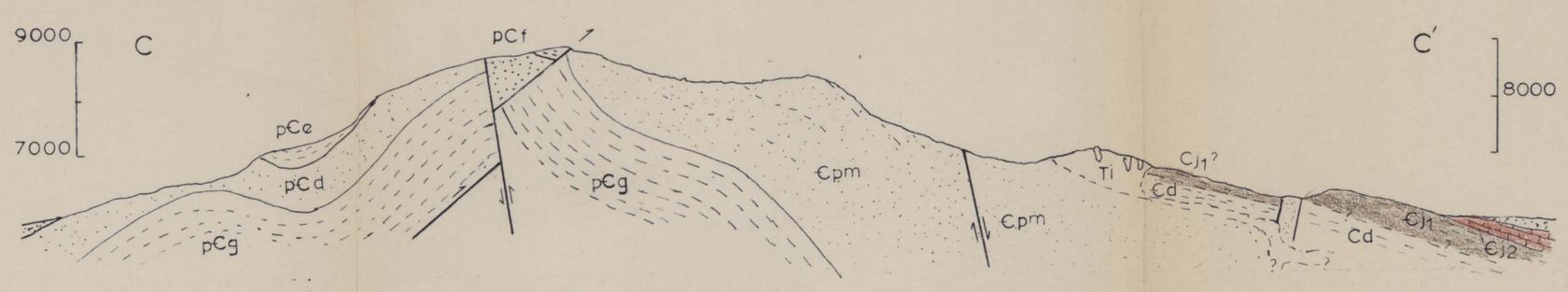
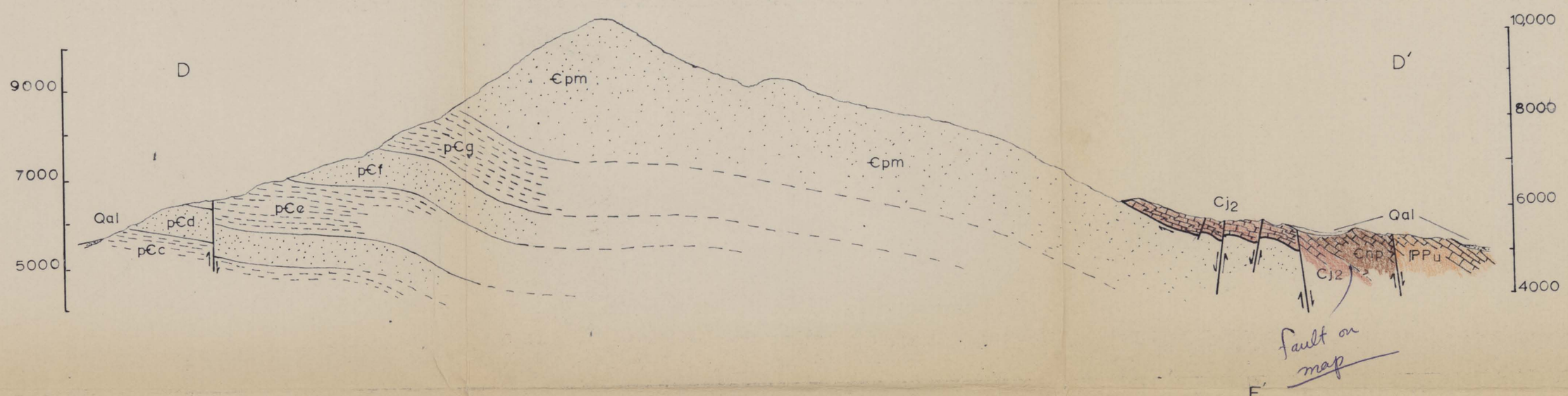
The southern Pilot Range is a slightly sinuous, north-trending mountain range located in the northeastern part of the Great Basin.

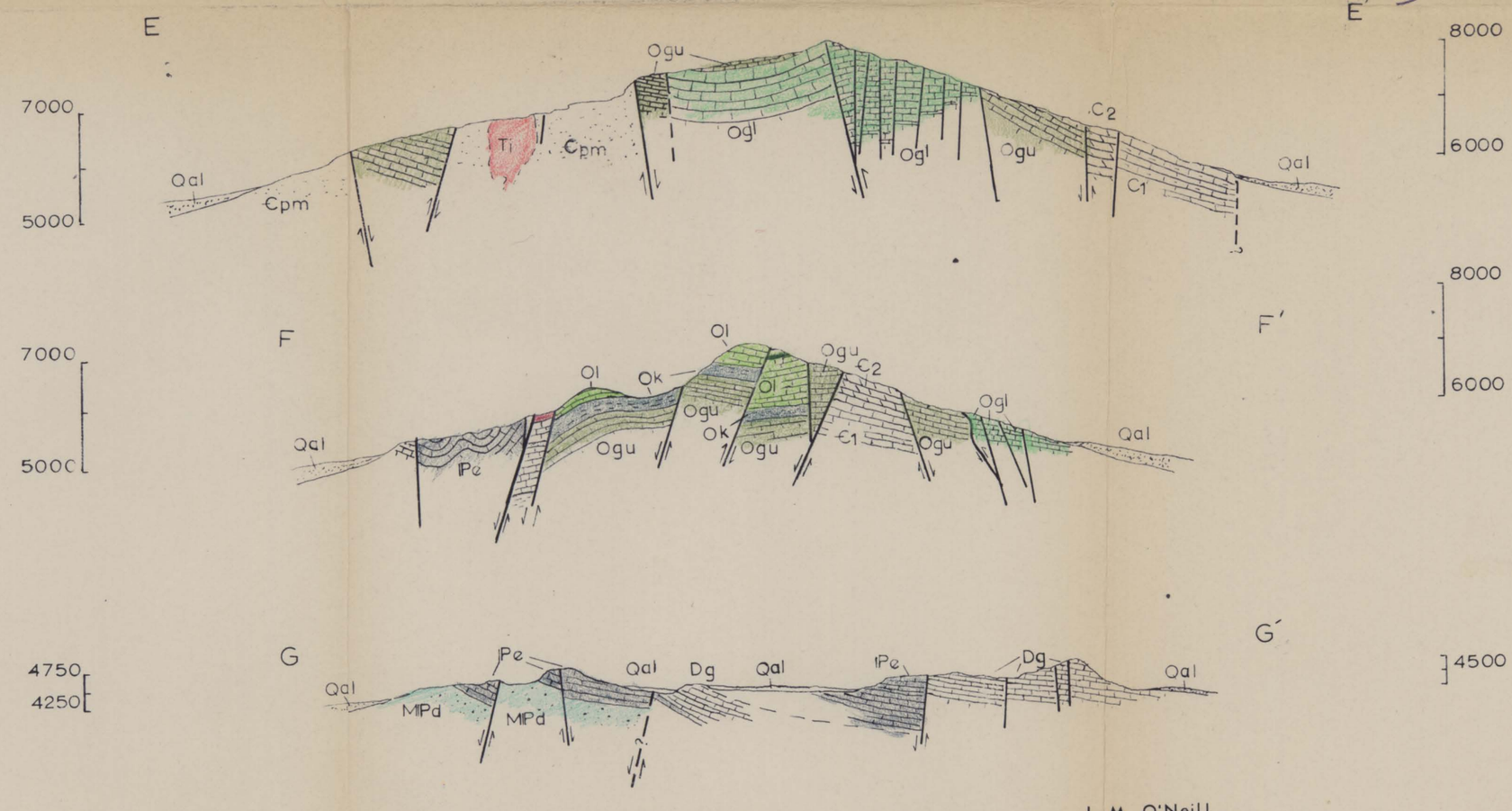
Approximately 18,500 feet of miogeosynclinal sedimentary rocks representing every system from late Precambrian to Permian (?) are exposed in the southern Pilot Range. Because of intense faulting, many of the stratigraphic relationships between the formations are impossible to determine. Mesozoic and Tertiary strata are absent; however, Pleistocene Lake Bonneville deposits are widespread, although thinly distributed. Small igneous stocks, dikes, and sills are common only in the southern two-thirds of the map area. Stocks are principally granodioritic. In several cases the intrusions of the stocks are structurally controlled, occurring primarily along a décollement thrust. Dikes and sills range from

GEOLOGIC CROSS SECTIONS OF THE SOUTHERN PILOT RANGE, UTAH-NEVADA









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Composite Stratigraphic Section

southern Pilot Range

Utah-Nevada

LIMESTONE

DOLOMITE

SHALE, ARGILLITE, PHYLLITE

SANDSTONE

CONGLOMERATE

PLATY

THIN BEDDED

THICK BEDDED

CHERT NODULES

UNCONFORMITY

FAULT

Igneous Rx - dikes, sills & stocks common along eastern base of Pilot Pk & to S. Contact aureoles (Hb-Hfls facies). Dikes usually 1-3' thk. ⇒ 15-20' 100-300' long. Numerous intrusions along pre-existing décollement.

All but 1 stock are granodioritic (dacitic), it is quartz latitic. Phanerotic to aphanitic porphyrite 40% Pl (zoned An→Ol.) 15% K-spar; 20% Qz., 10% Hb.

Dikes - pegmatites uncommon.
Rhyolite dikes relatively common, uniformly aphanitic
Qz-latite porphyry widespread
Dionite dikes relatively widespread
amphibole-rich dikes - uncommon.

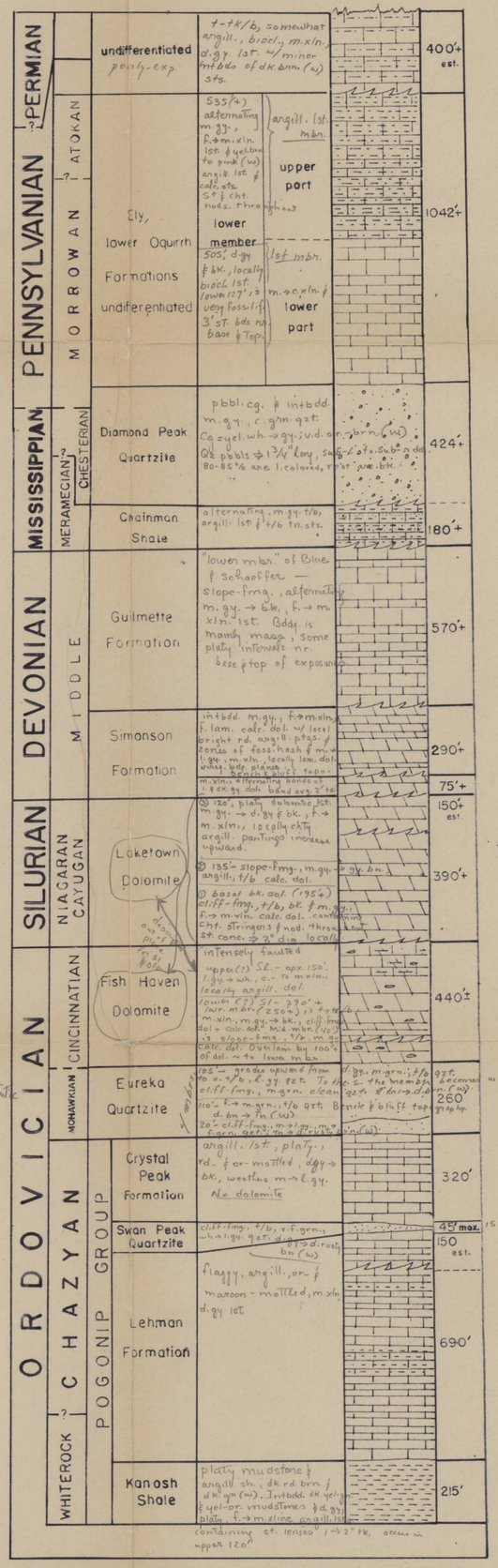
Vertical Scale

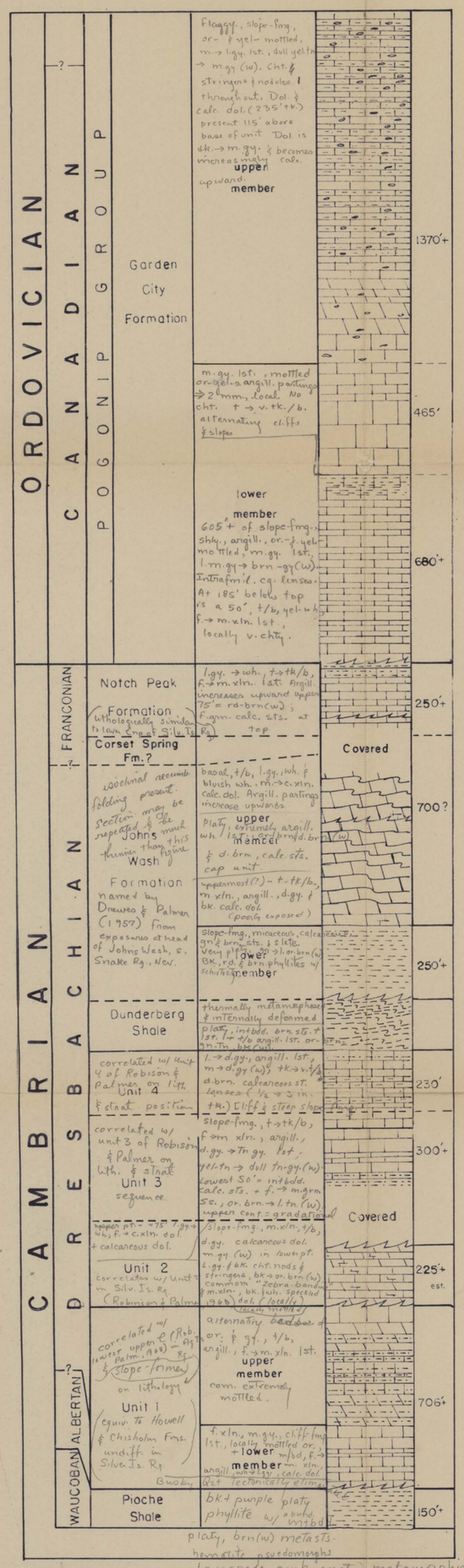
400
200
0
50 100
150 200

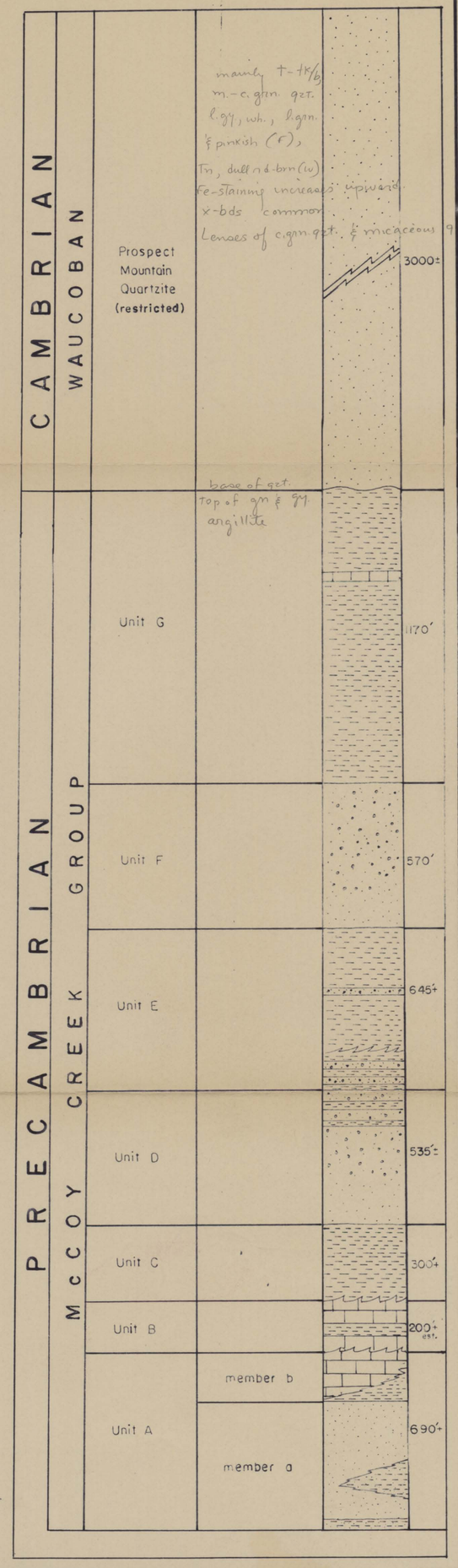
Structure

Mesozoic Thrust Faults
older ↑, younger ↓
younger ↑, older ↓

Folds overturned to eastward







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GEOLOGIC MAP OF THE SOUTHERN PILOT RANGE

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EXPLANATION

Geologic Boundary

D / U — Fault
High angle; U, upthrown side, D, downthrown side; dashed where inferred, dotted where concealed

Thrust Fault
Barbs on upper plate

Folds
anticline, plunging, overturned
syncline, plunging, overturned

Spring

Strike and Dip of Bedding
overturned
vertical

Mine, Prospect

A — A' Structural Cross Section

Measured Section

Contour Line
interval = 200'

Magnetic Declination, 1955
N 17°30'

114° — 41°

TERTIARY

Stocks	Ti
Dikes, Sills	Ti

QUATERNARY

Salts and Clays	Qsc
Talus	Qt
Alluvium	Qal
Pediment Gravels	Qp

PERMIAN

Undifferentiated	PPu

PENNSYLVANIAN

Ely, lower Oquirrh Formations undiff.	Pe

MISSISSIPPIAN

Undifferentiated	MPu
Diamond Peak Quartzite	MPd
Chainman Shale	MPc

DEVONIAN

Guilmette Formation	Dg
Simonson Dolomite	Ds

SILURIAN

Laketown Dolomite	Sl
Fish Haven Dolomite	Oth
Eureka Quartzite	Oe
Crystal Peak Formation	Oxp
Swan Peak Quartzite	Osp
Lehman Formation	Ol
Kanosh Shale	Ok
Garden City Formation upper and lower parts	Ogu, Ogl
Notch Peak Formation	Cnp
Johns Wash Formation upper and lower parts	Cj2, Cj1
Dinesburg Shale	Cd
Unit 4	C4
Unit 3	C3
Unit 2	C2
Unit 1	C1
Pioche Shale	Cp
Prospect Mountain Quartzite (restricted)	Cpm

ORDOVICIAN

CAMBRIAN

PRECAMBRIAN

Unit G	pCg
Unit F	pCf
Unit E	pCe
Unit D	pCd
Unit C	pCc
Unit B	pCb
Unit A upper and lower parts	pCa2, pCa1

SCALE
1 1/2 0 1 2 Miles

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