UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Preliminary reconnaissance geologic maps of the Garnet Range, western Montana

By

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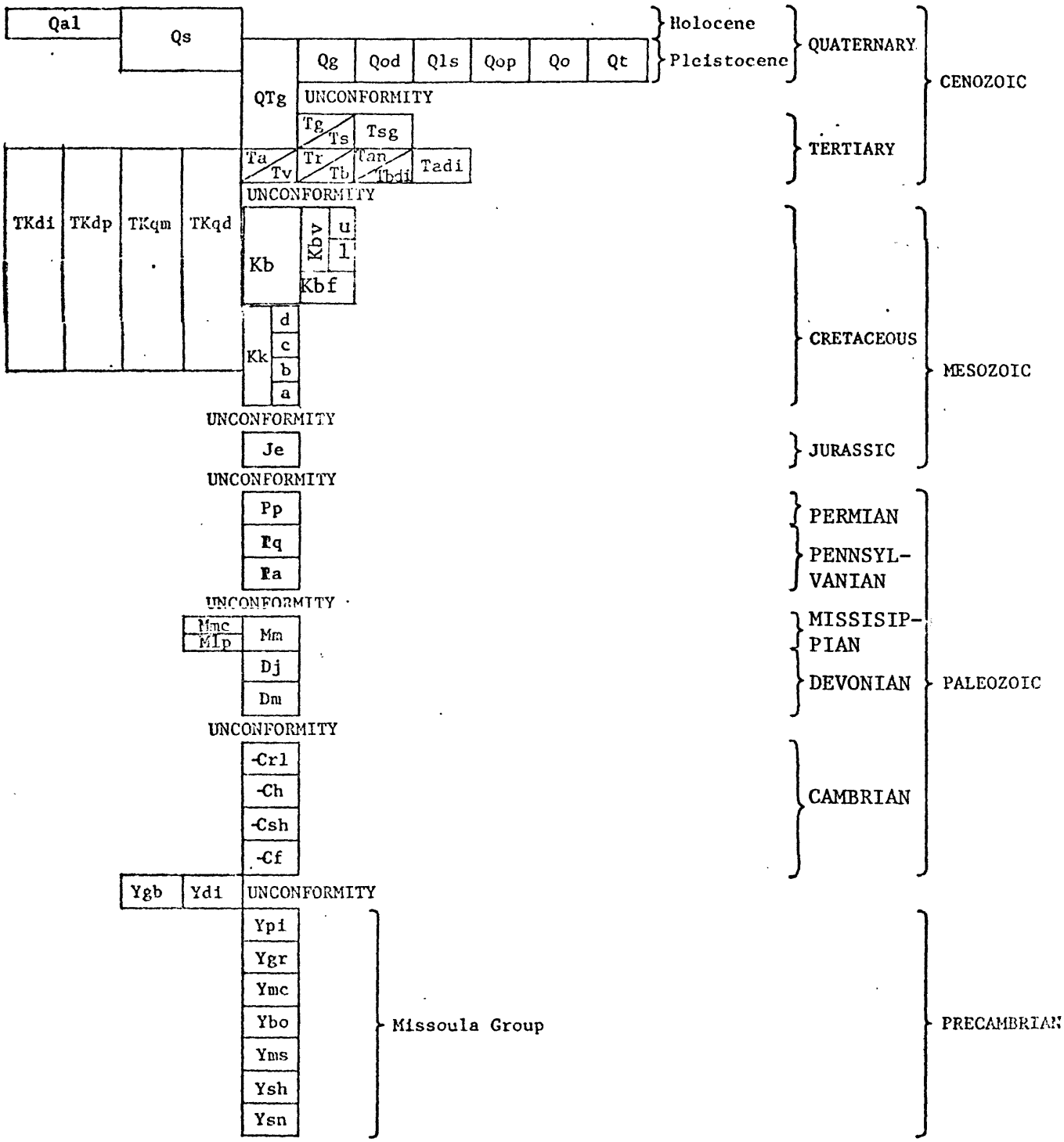
The information on these maps is preliminary and questionable areas have not been field checked for accuracy. The mapping was done at a level of detail that was compatible for compilation, at 1:250,000 scale, of the Butte 1^{o} x 2^{o} quadrangle, Montana. Slightly more detailed study was made on the overthrust-fault zone of the Garnet Range, however. These maps do not represent the standards of mapping common to U.S.G.S. 1:24,000 quadrangles, and these maps should be considered as rough-draft field compilations.

This Open-File Report shows reconnaissance geology of the following quadrangles in the Garnet Range, western Montana at the scale 1:62,500 on plate 1:

	Quadrangle name	Original scale
Figure 1.	Drummond----------	1:62,500
2.	Browns Lake----------	1:24,000
3.	Chamberlain Mountain--	1:24,000
4.	Chimney Lakes---------	1:24,000
5.	Wild Horse Parks------	1:24,000

CORRELATION OF MAP UNITS



NOMENCLATURE OF ROCK UNITS*

SURFICIAL DEPOSITS AND SEDIMENTARY ROCK UNITS

Qal	ALLUVIAL DEPOSITS (QUATERNARY)
Qs	LANDSLIDE DEPOSITS (QUATERNARY)
Qg	ALLUVIAL GRAVEL AND FAN GRAVEL DEPOSITS (PLEISTOCENE)
Qod	GLACIAL OUTWASH DELTA DEPOSITS (QUATERNARY)
Qls	GLACIAL LAKE DEPOSITS (QUATERNARY)
Qop	PITTED GLACIAL OUTWASH DEPOSITS (QUATERNARY)
Qo	GLACIAL OUTWASH DEPOSITS (QUATERNARY)
Qt	TILL (QUATERNARY)
QTg	ALLUVIAL GRAVEL AND FAN GRAVEL DEPOSITS (QUATERNARY AND TERTIARY)
Tg	ALLUVIAL GRAVEL AND FAN GRAVEL DEPOSITS (TERTIARY)
Ts	LAKE DEPOSITS AND VOLCANIC ASH (TERTIARY)
Tsg	LAKE DEPOSITS AND VOLCANIC ASH MANTLED BY GRAVEL (TERTIARY)
Kb	BLACKLEAF FORMATION
Kbv	Vaughn Member
Kbvu	Upper part
Kbvl	Lower part
Kbf	Flood Member
Kk	KOOTENAI FORMATION (CRETACEOUS)
Kkd	Upper calcareous member
Kkc	Upper clastic member
Kkb	Lower calcareous member
Kka	Lower clastic member
Je	ELLIS GROUP--Includes Morrison Formation (JURASSIC)
Pp	PHOSPHORIA FORMATION (PERMIAN)
Pq	QUADRANT FORMATION (PENNSYLVANIAN)
Pa	AMSDEN FORMATION (PENNSYLVANIAN)
Mm	MADISON LIMESTONE (MISSISSIPPIAN)
Mmc	Mission Canyon Member
Mlp	Lodgepole Member
Dj	JEFFERSON FORMATION (DEVONIAN)
Dm	MAYWOOD FORMATION (DEVONIAN)
Crl	RED LION FORMATION (CAMBRIAN)
Ch	HASMARK FORMATION (CAMBRIAN)
Csh	SILVER HILL FORMATION (CAMBRIAN)
Cf	FLATHEAD QUARTZITE (CAMBRIAN)
Ypi	PILCHER QUARTZITE (PRECAMBRIAN Y)
Ygr	GARNET RANGE FORMATION (PRECAMBRIAN Y)
Ymc	McNAMARA FORMATION (PRECAMBRIAN Y)
Ybo	BONNER QUARTZITE (PRECAMBRIAN Y)
Yms	MOUNT SHIELDS FORMATION (PRECAMBRIAN Y)
Ysh	SHEPARD FORMATION (PRECAMBRIAN Y)
Ysn	SNOWSLIP FORMATION (PRECAMBRIAN Y)

IGNEOUS ROCK UNITS

ROCK OF PROBABLE TERTIARY AGE

Ta	TRACHYANDESITE PORPHYRY
Tan	ANDESITE PLUGS, LAVA FLOWS, AND DIKES
Tadi	TRACHYANDESITE AND DIABASE DIKES
Tbdi	BASALT DIKE
Tv	UNDIFFERENTIATED VOLCANIC AND HYPABYSSAL ROCK
Tr	RHYOLITE PLUGS, LAVA FLOWS, AND VOLCANIC ASH
Tb	BASALT PLUGS, AND LAVA FLOWS

ROCK OF PROBABLE TERTIARY OR CRETACEOUS AGE

TKdi	DIABASE PLUGS AND DIKES
TKdp	DIORITE PORPHYRY STOCKS
TKgd	GRANODIORITE STOCKS AND PLUTONS
TKqm	QUARTZ MONZONITE STOCKS AND PLUTONS

ROCK OF PROBABLE PRECAMBRIAN AGE

Ydi	DIABASE DIKES AND SILLS
Ygb	GABBRO SILLS

ROCK OF UNKNOWN AGE

* Rock units queried where identification is uncertain because of metamorphism or poor exposure

GEOLOGIC MAP SYMBOLS

CONTACT--Dashed where approximately located and dotted where covered by younger deposits

FAULT--Dashed where approximately located, and dotted where covered by younger deposits. Bar and ball on downthrown side

THRUST FAULT--Dashed where approximately located and dotted where covered by younger deposits. Queried where presence of thrust fault is suggested by stratigraphic information and by prominent trace on air photograph. Sawteeth on upper plate

ANTICLINE--Showing axial plane and direction of plunge. Approximately located; dashed where covered by younger deposits

SYNCLINE--Showing axial plane and direction of plunge. Approximately located; dashed where covered by younger deposits

OVERTURNED ANTICLINE--Showing axial plane and direction of plunge. Limbs of anticline dip in direction of arrows. Approximately located; dashed where covered by younger deposits

OVERTURNED SYNCLINE--Showing axial plane and direction of plunge. Limbs of syncline dip in direction of arrows. Approximately located; dashed where covered by younger deposits

STRIKE AND DIP OF BEDS

30 Inclined

Horizontal

Vertical

SHEAR ZONE

SILICIFIED SHEAR ZONE