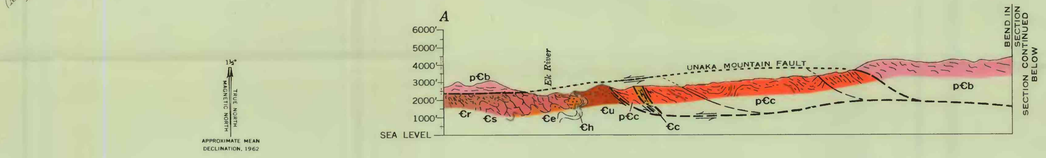
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

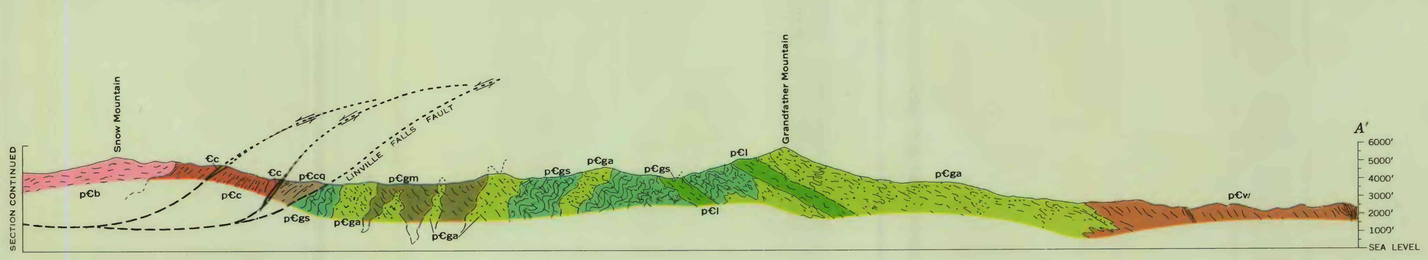
BULLETIN 1121-L
PLATE 1

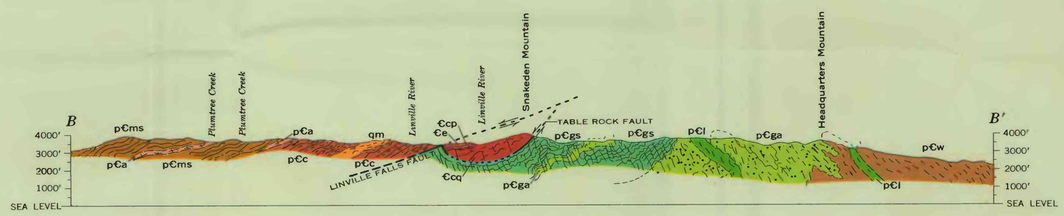
Base map by Topographic Division
U. S. Geological Survey, 1934—1935

Geology by Bruce Bryant, 1956–59, assisted by C. E. Fritts, 1956–57, F. G. Lesure, 1957, William Van Horn, 1958, C. E. Harris, 1958, and K. E. Billau, 1959

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—10468







EXPLANATION

ROCKS OF THE MOUNTAIN CITY WINDOW

CAMBRIAN

Lower Cambrian

Cr — Rome formation
Dirty-green to red siltstone and shale with local beds of white quartzite

Cs — Shady dolomite
Dark- to light-gray, blue-gray, and white dolomitic limestone; commonly ribboned

CAMBRIAN(?) AND CAMBRIAN

Lower Cambrian(?) and lower Cambrian

Chilhowee group

Ce — Erwin formation
Light-gray to green vitreous quartzite and arkosic quartzite; thin-bedded siltstone and shale

Ch — Hampton formation
Gray thin-bedded shale, siltstone, and quartzite

Cu — Unicoi formation
Light-green to gray medium- to coarse-grained arkosic quartzite and quartzite

ROCKS OF UPPER PLATE

QUATERNARY

Pleistocene and Recent

Qac — Alluvial and colluvial deposits
Gravel, sand, and silt in valley bottoms; angular to round boulders in unstratified to crudely stratified matrix of clay, silt, and pebbly sand on slopes and in fan deposits; angular boulders and cobbles in talus

LOWER OR MIDDLE PALEOZOIC(?)

Pzg — Light-colored granodiorite and pegmatite
White coarse-grained to pegmatitic muscovite-quartz-plagioclase rock containing varying proportions of microcline; commonly granodioritic

Pzu — Ultramafic rocks
Light- to dark-green and greenish-gray pyroxene-bearing dunite, olivine pyroxenite, and serpentinite

CAMBRIAN(?)

Chilhowee group

Cc — Quartzite, arkosic quartzite, and conglomerate

ROCKS OF THE GRANDFATHER MOUNTAIN WINDOW

CAMBRIAN(?)

Lower Cambrian(?)

Chilhowee group

Allochthonous sequence

Ce — Erwin formation
White to light-tan thick- to thin-bedded sugary quartzite with minor interbeds of dark-gray phyllite

Ccp — Phyllite
Dark-steel-gray to blue-gray phyllite, and minor siltstone and quartzite interbeds

Ccq — Quartzite
Light-green to gray generally thin-bedded quartzite, phyllite, and arkose; contains rare beds of quartz pebble conglomerate

PRECAMBRIAN

Upper Precambrian

Ocoee group

Autochthonous(?) sequence

pCl — Linville metadiabase
Blue-green to gray fine- to coarse-grained metadiabase to greenschist containing amphibole porphyroclasts

pCga, pCgm, pCgp, pCgs — Grandfather Mountain formation
Interbedded and intertonguing metamorphosed arkose, siltstone, and shale containing lava flows in the upper part
pCgs, dark-blue-gray to gray thin-bedded biotite- and chlorite-bearing sericite siltstone, phyllite, and graywacke containing calcareous and dolomitic beds and lenses in some areas
pCga, green, light-green, tan, and gray thin-bedded to massive sericitic metamorphosed arkose and arkosic quartzite; contains minor interbeds of green sericite phyllite. Lenticular beds of conglomerate locally common
pCgm, Montezuma member; green, blue-green and blue-gray schistose to massive greenschist to greenstone containing knots, lenses, and veinlets of epidote and quartz and dark-blue-gray nonschistose amygdaloidal units.
pCgp, greenish-gray metamorphosed porphyritic quartz latite containing abundant porphyroclasts of plagioclase and microperthite

Lower Cambrian

pCw — Wilson Creek gneiss
Coarse-grained cataclastic quartz monzonite gneiss ranging from quartz diorite to granite; rarely layered. Zones of phyllonite and phyllonitic gneiss shown by cross ruling

PRECAMBRIAN

Upper Precambrian(?)

pCbg — Bakersville gabbro
Dark-gray to black massive to schistose locally porphyritic metagabbro to metabasalt. Where strongly sheared and recrystallized, indistinguishable from rocks of the amphibolite unit. As mapped, may contain some older amphibolite and layered gneiss

Lower Precambrian

pCb — Beech granite
Light-pink to white coarse-grained cataclastic granite gneiss with conspicuous lineation formed by aggregates of fine-grained biotite and epidote crystals

qm — Quartz monzonitic gneiss
Light-pink to gray nonlayered coarse-grained cataclastic quartz monzonitic gneiss

pCcq, pCc, pCcp — Cranberry gneiss
pCc, intimately mixed, layered and nonlayered cataclastic granitic gneiss containing layers and lenses of amphibolite and epidote-biotite schist and gneiss; some parts grade to quartz dioritic gneiss. Granitic parts range from diorite to granite and average quartz monzonite
pCcq, quartz dioritic gneiss predominant.
pCcp, mafic porphyroclastic gneiss
Lines indicate areas containing many phyllonite zones

pCm — Mixed rocks
Amphibolite, hornblende gneiss, hornblende-biotite gneiss, biotite-muscovite schist and gneiss, and subordinate granitic gneiss. Biotite-hornblende-plagioclase porphyroclastic gneiss common. Unit as mapped may include small bodies of Bakersville gabbro

pCms — Biotite-muscovite schist and gneiss
Gray to light-gray fine- to coarse-grained biotite-muscovite schist and gneiss; contains some layers of amphibolite and hornblende gneiss

pCa — Amphibolite and hornblende gneiss
Black to black and white amphibolite and hornblende gneiss; contains some layers of biotite-muscovite schist and gneiss

Contact
Dashed where gradational or inferred; dotted where concealed

Thrust fault
Dashed where inferred; dotted where concealed. T, on upper plate

Anticline
Showing trace of axial plane and direction of plunge

Syncline
Showing trace of axial plane and direction of plunge

Overturned anticline
Showing trace of axial plane and direction of plunge

Overturned syncline
Showing trace of axial plane and direction of plunge

PLANAR FEATURES

Horizontal; Inclined (30); Vertical (90); Overturned (75); Top uncertain (25); Generalized (35)
Strike and dip of bedding in rocks containing relict sedimentary textures

Horizontal; Inclined (60); Vertical
Strike and dip of crystallization foliation in medium-grade metamorphosed rocks, cataclastic foliation in low-grade metamorphosed rocks, and cleavage in bedded rocks

Inclined (20); Vertical; Generalized (15)
Strike and dip of compositional layering

Inclined (60); Vertical
Strike and dip of foliation in phyllonite zones

LINEAR FEATURES
May be combined with any of the planar features

Horizontal; Plunging (10)
Bearing and plunge of axis of minor fold or crenulation

Horizontal; Plunging (50)
Bearing and plunge of mineral alinement, stretching, streaking, or grooving

Prospect or small mine; Mine or quarry, active; Mine or quarry, inactive; Gravel pit, active; Gravel pit, inactive

A, *anthophyllite*
Au, *gold*
Cu, *copper*
F, *feldspar*
Fe, *iron*
M, *mica*
Pb, *lead*
Rm, *road metal*
St, *building stone*
U, *uranium*

PRELIMINARY GEOLOGIC MAP AND SECTIONS OF THE LINVILLE QUADRANGLE, NORTH CAROLINA–TENNESSEE

SCALE 1:62 500

1 ½ 0 1 2 3 MILES

CONTOUR INTERVAL 50 FEET
DATUM IS MEAN SEA LEVEL