



QUATERNARY
AGE UNCERTAIN
ORDOVICIAN-SILURIAN
CAMBRIAN
LOWER PALEOZOIC (?)
UPPER PRECAMBRIAN (?)
LOWER PALEOZOIC (?)

EXPLANATION

Qal Alluvium
Unconsolidated stream deposits of gravel, sand, silt and clay.

my Porphyroclastic mylonite and ultramylonite
Porphyroclastic mylonite, medium-bluish-gray to light-gray, fine-grained, thinly laminated, well-sorted; contains rounded to lenticular felsic porphyroclasts. Groundmass composed mainly of quartz 15%, plagioclase (albite) 10%, microcline 1-5%, muscovite-sericite as much as 72%, biotite-chlorite less than 5%, and opaque minerals. Grades into cataclastic schist and phylonite. Ultramylonite, medium-gray, very fine grained, highly siliceous (fracture appearance). Highly fractured; some fractures cemented by silica.

fs Cataclastic schist, phylonite, and mylonite
Cataclastic schist and phylonite, light-colored to dark-gray, medium- to fine-grained; with variable development of "fish-scale" texture formed by curved mica flakes. Major minerals are quartz 15-40%, muscovite-sericite 45-75%, biotite-chlorite 2-24%, garnet, opaque minerals, and locally graphite and staurolite. Interlayered calcareous zones from a few inches to several feet thick. Mylonite, light-bluish-gray, fine-grained groundmass with rounded to lenticular felsic porphyroclasts; strongly foliated. Composition generally the same as the my unit.

m Marble
Marble, light-gray to light-bluish-gray, fine- to medium-grained; as continuous poth and calcareous layers within the cataclastic schist. Maximum thickness 145 feet. Major minerals are calcite-dolomite 50-55%, muscovite-sericite 30-40%, quartz 1-5%, and opaque minerals.

ps Pegmatite
Pegmatite, coarse-grained (locally fine grained). Composed of quartz, plagioclase, microcline, and muscovite, with minor amounts of biotite and apatite. Mainly concordant, lenticular, tabular, or pod-shaped bodies as much as 50 feet thick.

ps Pegmatite
Pegmatite, coarse-grained (locally fine grained). Composed of quartz, plagioclase, microcline, and muscovite, with minor amounts of biotite and garnet. Mainly concordant, lenticular, tabular, or pod-shaped bodies; as much as 50 feet thick.

OSeg Granitic gneiss
Biotite granitic gneiss (quartz monzonite composition), light-gray, medium-grained, poorly foliated. Contains plagioclase (albite) 26%, quartz 33%, microcline 30%, biotite 6%, muscovite, ilmenite, epidote, zircon, and opaque minerals. Differs from augen gneiss in lack of augen and slightly lighter color. Interlayered with biotite augen gneiss (Cag). Equivalent to part of the Henderson Granite of Keith. Zircon elongation ratios, from reduced major axes, average 2.6, suggesting an igneous origin.

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Cag Augen gneiss
Biotite augen gneiss (quartz monzonite composition), medium-gray to medium-bluish-gray; evenly massive, homogeneous, and well-foliated. Comminuted felsic (chiefly microcline) augen in a medium-grained matrix of quartz 23%, plagioclase (albite) 31%, microcline (average, including augen) 25%, biotite 14%, muscovite 2%, epidote 1%, allanite, zircon, and opaque minerals. Cataclasis increases irregularly westward toward the Brevard fault zone. Interlayered with biotite granitic gneiss (OSeg). Equivalent to part of the Henderson Granite of Keith. Zircon elongation ratios, from reduced major axes, average 2.6, suggesting an igneous origin.

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mg Muscovite-biotite gneiss
Muscovite-biotite gneiss, light-gray, medium- to fine-grained, medium- to thin-layered. Contains quartz 16-26%, plagioclase (albite) 0-25%, microcline 1-25%, muscovite-sericite 5-55%, biotite-chlorite 0-4%, and opaque minerals. Toward the Brevard fault zone the degree of cataclasis increases. May be the cataclastic equivalent of the augen gneiss (Cag).

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mng Mixed mica gneiss
Muscovite gneiss, light-yellowish-gray to medium-brown, medium- to fine-grained and poorly foliated. Contains alternating bands of felsic gneiss, white to light-gray and medium-grained amphibolite, dark-gray, and medium-grained; and muscovite gneiss. Discontinuous poth and stringers of coarse-grained, white pegmatite containing mainly felspar and quartz. Biotite schist, dark-gray to black, lustrous, and medium-grained, occurs as enclaves around some of the pegmatite and as layers within the alternating bands of gneiss and amphibolite. Biotite augen gneiss (Cag) and granitic gneiss (OSeg) occur as isolated lenses. Unit shows variation in degree of plastic flow.

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am Amphibolite
Amphibolite, black to dark-gray, medium-grained and foliated. Composed of hornblende 62%, plagioclase (albite) 14%, quartz 10%, epidote 4%, and opaque minerals 4%. Generally occurs as a discontinuous, concordant body.

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gms Garnetiferous muscovite schist
Garnetiferous muscovite schist, lustrous-white to dark-gray, medium-grained. Composed mainly of muscovite, biotite, quartz, garnet and feldspar. Probably derived from argillaceous rocks with minor sandy layers.

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mg Layered muscovite gneiss and schist
Biotite-muscovite gneiss, light- to dark-gray, medium- to coarse-grained. Composition averages quartz 40%, plagioclase (albite) 25%, microcline 10%, muscovite-sericite 15%, biotite 10%, garnet 5%, and opaque minerals. Interlayered with subordinate amounts of garnet muscovite schist and biotite schist. Probably derived from felsipathic sandstone, interbedded with mudstone and siltstone.

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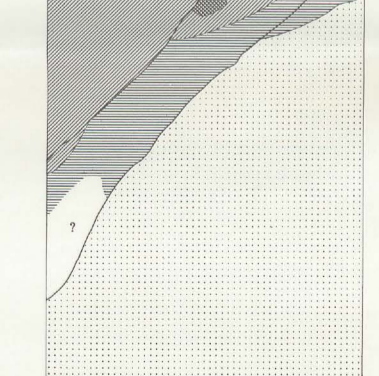
bw Biotite meta-sandstone
Biotite meta-sandstone, medium-bluish-gray to yellowish-gray, medium- to fine-grained, thick- to thin-layered. Major minerals are quartz, feldspar, biotite, and muscovite; locally contains garnet. Probably derived from felsipathic sandstone.

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ms Garnetiferous muscovite and muscovite-biotite schist
Muscovite and muscovite-biotite schist, lustrous-white to yellowish-gray, medium-grained; generally contains garnet porphyroblasts. Composed of muscovite-sericite 30-60%, biotite-chlorite 10-30%, quartz 1-30%, garnet 1-5%, and opaque minerals. Interlayered with miscellaneous felsipathic meta-sandstone. Probably derived from argillaceous rocks with minor sandy layers.

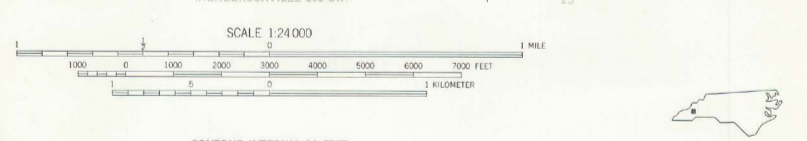
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ZONES OF REGIONAL METAMORPHISM
FRUITLAND QUADRANGLE

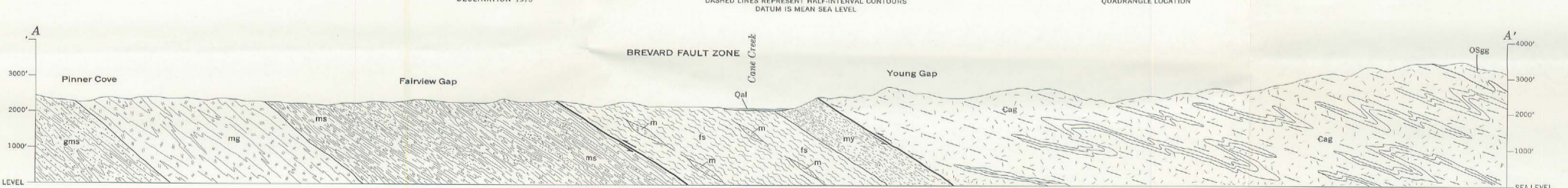


Chlorite-biotite retrogressive zone
Garnet zone
Garnet staurolite zone
Staurolite-kyanite zone (Aluminous-amphibolite facies)

Base topographic map by USGS-TVA 1965
Geologic map cartography and printing by TVA
10,000-foot grid based on North Carolina Coordinate System
The field and office compilation sheets used in the preparation of this geologic map are on an open file and available for inspection at the North Carolina Department of Natural and Economic Resources, Office of Earth Resources, Raleigh, N.C. 27611



Geology mapped in 1970-71
Map preparation and editing by R. E. Lemmon and R. J. Floyd



SECTION ALONG A-A'
No vertical exaggeration

GEOLOGIC MAP OF THE FRUITLAND QUADRANGLE, NORTH CAROLINA

By
Robert E. Lemmon and David E. Dunn
1973

- QUARRIES, PITS, PROSPECTS, AND OCCURRENCES
- 1-Pinner Creek marble quarry
 - 2-Robinson Creek marble quarry
 - 3-Groves Lake marble quarry
 - 4-Groves Lake marble quarry
 - 5-Gravelly Creek marble quarry
 - 6-Cane Creek-Brook Creek marble occurrence
 - 7-Unnamed marble occurrence
 - 8-Unnamed crushed stone quarry
 - 9-Unnamed crushed stone and dimension stone quarry
 - 10-Unnamed crushed stone quarry
 - 11-Unnamed crushed stone quarry
 - 12-Unnamed crushed stone quarry
 - 13-Unnamed crushed stone quarry
 - 14-Christ School dimension stone quarry
 - 15-Unnamed dimension stone quarry
 - 16-Burton mica prospect
 - 17-Moland-Drysdale Brick Corp. clay pits
 - 18-Unnamed clay pit
 - 19-Unnamed sand and sapphire pit
 - 20-Unnamed sapphire pit