



Published by The Division of Geology and Mineral Resources
Charlottesville, Virginia 22903

VOL. 48

MAY/AUGUST 2002

NO. 2/3

A GUIDE TO THE EDUCATIONAL ROCK AND MINERAL GARDEN: SAMPLES OF VIRGINIA'S GEOLOGICAL DIVERSITY

John Marr and Roy Sites

Virginia has a very interesting and varied geologic history that spans nearly one and one-half *billion* years. Rocks exposed throughout the Commonwealth reflect a long and complex geologic history that resulted in unique and exotic geologic terranes. Across Virginia, the landscape exhibits all rock types: igneous, metamorphic, and sedimentary.

The Educational Rock and Mineral Garden was designed to display a portion of Virginia's geological variety. The educational display will contribute to the understanding of the geology and rock types found throughout the Commonwealth. The idea for the garden came from a casual remark; that remark has grown to a 43,312-pound reality. The garden is located at the offices of the Department of Mines, Minerals and Energy in the Fontaine Research Park,

Charlottesville. The garden is open to the public. The authors wish to thank those who have made this garden possible (see acknowledgements).



Figure 1. The rock and mineral garden at the Division of Mineral Resources offices.

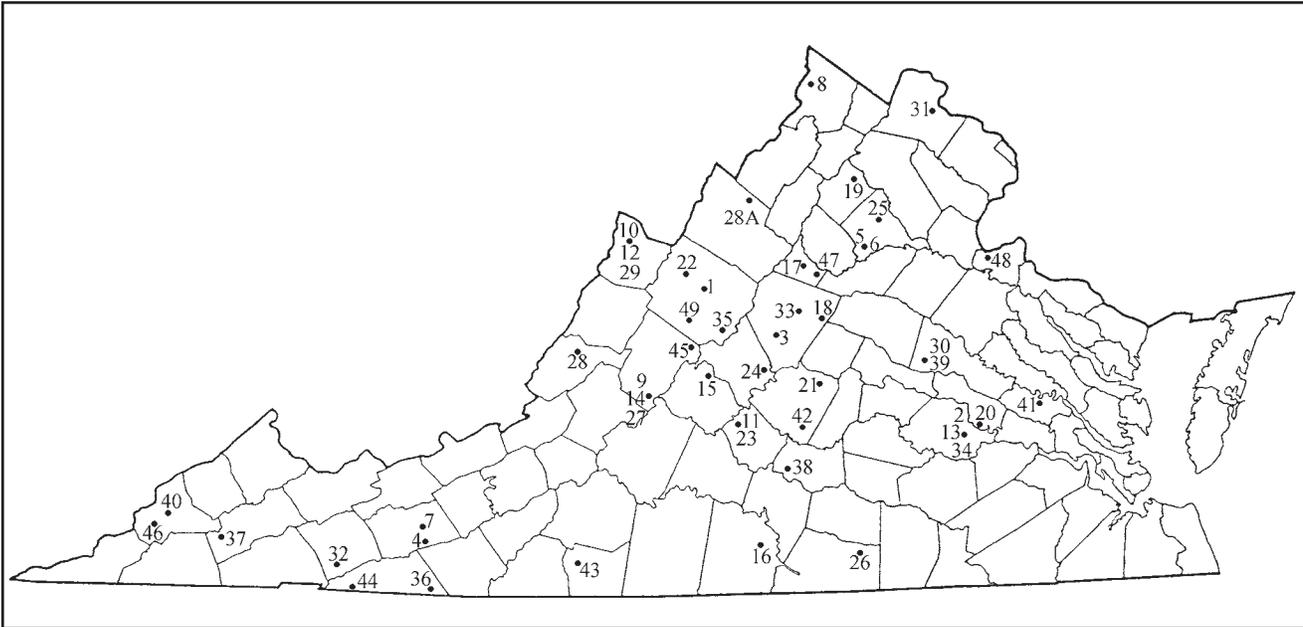


Figure 2. Approximate collection locations of specimens in the Educational Rock and Mineral Garden.

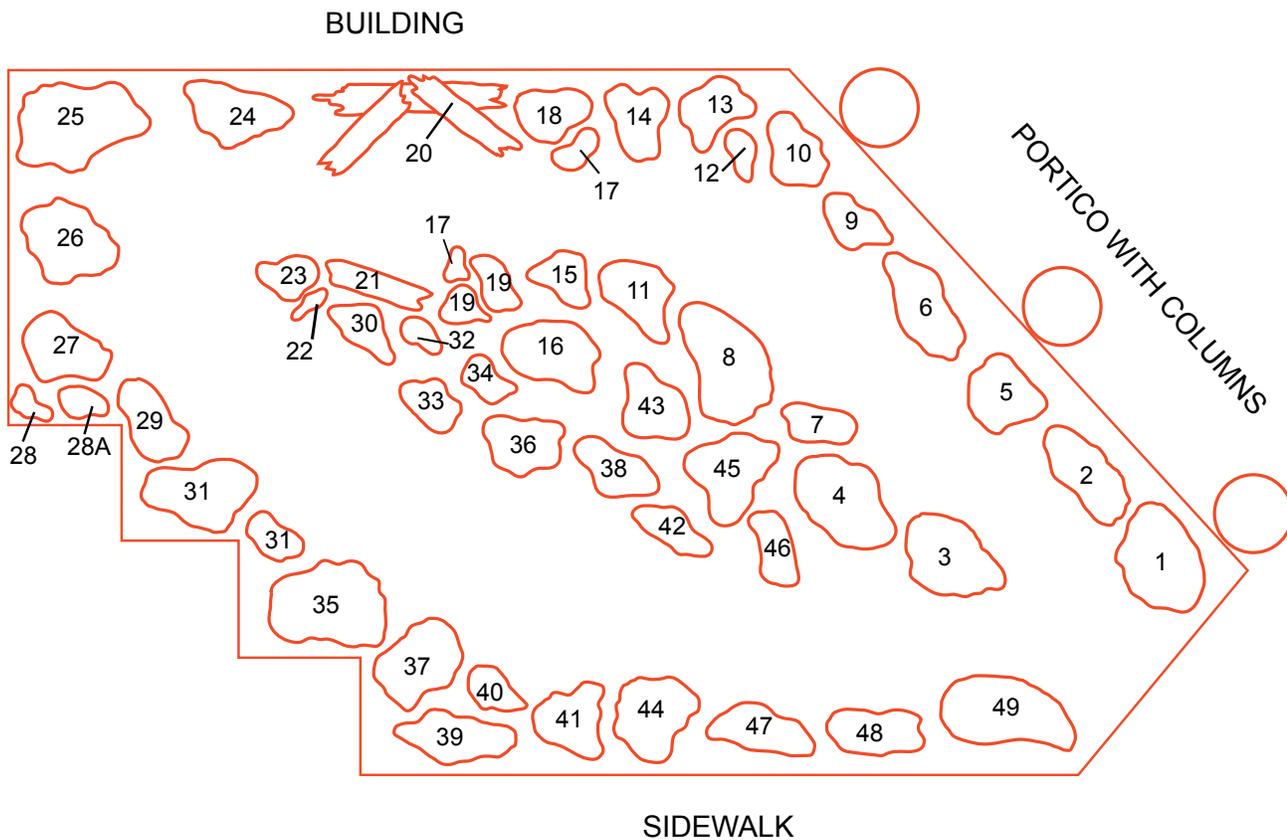


Figure 3. Location of specimens in the Educational Rock and Mineral Garden. Numbers refer to the descriptions on the following pages.

DESCRIPTIONS OF SPECIMENS IN THE ROCK AND MINERAL GARDEN

1. Black and Gray Limestone

Augusta County

Donated By: *Rockydale Quarries Corporation, Staunton Lime Company*

Black and gray, thinly-layered limestone; layering reflects rhythmic changes in depositional environment. Lincolnshire Formation, Ordovician (440 – 505 Ma*).



2. Tightly-folded, Biotite-Quartz-Feldspar Gneiss

Chesterfield County

Donated By: *Vulcan Materials Company, Dale Quarry*

Isoclinally folded, biotite, quartz, and feldspar gneiss interpreted as sedimentary rocks metamorphosed during Grenville-age regional metamorphism (approx. 900 – 1200 Ma). Maidens gneiss; original rock Middle Proterozoic (900 – 1600 Ma).



3. Biotite - Feldspar Granofels

Albemarle County

Donated By: *Martin Marietta Aggregates, Red Hill Quarry*

Medium- to coarse-grained, aggregate of biotite, hornblende, quartz, and monocrystalline feldspar, with little or no lineation/foliation. Interpreted as primary igneous assemblage that crystallized from a magmatic melt (granite-like) which was later metamorphosed. Related rocks have been radiometrically dated at approximately 1004 Ma. Basically a porphyroblastic augen gneiss; Middle Proterozoic (900 – 1600 Ma).



4. Ribbon Limestone

Wythe County

Donated By: *Austinville Limestone Company, Inc.*

Thinly layered limestone and calcite, with feathery texture; probably diagenetic deformational features. Patterson Member (“Ribbon Rock”) of the Shady Dolomite, Cambrian (505 – 544 Ma).



* Ma = million years ago



- 5. Hydrothermally-altered Diorite
(Furtharwite)**
Culpeper County
Donated By: *Cedar Mountain Stone Corporation,*
Mitchells Plant

Hydrothermal fluids recrystallized and mineralized a zone within diabase. Sample contains byssolite (white), prehnite (light green), epidote (pistachio green), and feldspars (white, tan to pink). Intrusive diabase, Jurassic - Triassic (146 – 245 Ma).



- 6. Gabbro**
Culpeper County
Donated By: *Cedar Mountain Stone Corporation,*
Mitchells Plant

Coarse grained, composed of amphibole crystals (black) and plagioclase feldspar (gray). Large size amphibole crystals indicates a slow cooling rate from the original magma. Magma intruded into sediments in the Culpeper Basin; Jurassic - Triassic (146 – 245 Ma).



- 7. Orthoquartzite**
Wythe County
Donated By: *Wythe Stone Company,*
Lots Gap Quarry

Spotted sedimentary quartzite showing rounded areas of iron-stained, loose, large sand grains. Erwin Formation, (equivalent to Antietam Formation) of the Chilhowee Group, Cambrian (505- 544 Ma).



- 8. Sandstone with Assorted Fossils**
Frederick County
Donated By: *Unimin Corporation,*
Gore Plant

Sandstone showing diverse community of fossils, mostly brachiopods (*Costispirifer* & *Eospirifer*), gastropods, crinoids, trilobites, and pelecypods. Oriskany Formation, Devonian (360 – 410 Ma).

9. Fractured Limestone
Rockbridge County
Donated by: *Rockbridge Stone Products, Inc.,*
Glasgow Plant

Limestone exhibiting fractures filled with calcite. Small vugs are filled with calcite crystals. Shady Formation, Cambrian (505 – 544 Ma).



10. Limestone with Stromatoporoid Fossils
Highland County
Donated By: *Miracle Ridge Limestone*

Fossilized limestone showing stromatoporoids, crinoids, and bryozoans. Stromatoporoids are extinct benthic, marine, sponge-like organisms. Tonoloway Formation, Silurian (410 – 440 Ma).



11. Deformed, Pink and Gray Marble
Appomattox County
Donated By: *Rockydale Quarries Corporation,*
Appomattox Lime Company

Light-pink and dark-gray, laminated, fine- to medium-grained marble. Archer Creek Marble Member of the Mt. Athos Formation, Late Proterozoic to Cambrian (744 – 505 Ma).



12. Storm-deposited Limestone
Highland County
Donated By: *Miracle Ridge Limestone*

Limestone showing depositional environment of storm related rip-up of carbonate strata. Tonoloway Formation, Silurian (410 – 440 Ma).





- 13. Pegmatite**
Chesterfield County
Donated By: *Vulcan Materials Company,*
Dale Quarry

Coarsely crystalline rock, with pink potassium feldspar, gray quartz, biotite and muscovite. Result of very slow cooling of granitic melt. Pegmatites similar to this one have been radiometrically dated at approximately 260 Ma. Intrusive into pre-Cambrian age Maidens Gneiss, Pennsylvanian (286 - 325 Ma).



- 14. Red Shale and Siltstone**
Rockbridge County
Donated By: *Rockbridge Stone Products, Inc.,*
Glasgow Plant

Reddish-brown, shale and siltstone showing ancient horizontal worm burrows, trail markings, and mud cracks. Rome Formation, Cambrian (505 - 544 Ma).



- 15. Anorthosite**
Amherst County
Donated By: *Boxley Aggregates,*
Piney River Plant

Specimen is non-foliated, and extremely coarse grained. Mineralogy consists of yellowish-white anorthite feldspar, clinopyroxene, apatite, and ilmenite. Patches and blobs of dark reddish-brown rutile are evident. Commercially marketed as "Virginia Aplite". Radiometrically dated at 1045 Ma. Roseland Anorthosite, Middle Proterozoic (900 - 1600 Ma).



- 16. Amphibole Gneiss**
Halifax County
Donated By: *Vulcan Materials Company,*
South Boston Quarry

Medium-grained, light-gray to light-pink, foliated, gneiss. Light-pink to white feldspar augen (blobs) are common in a gray hornblende-biotite groundmass. Foliation is cut by both pink and white pegmatite veins. Metavolcanic rock, Ordovician (440 - 505 Ma).

17. Blue Quartz
Greene County
Donated By: Rev. Henry D. Aylor

Quartz can be found in a variety of colors: white, blue, pink, green, and clear. Blue quartz from the Blue Ridge Mountains is valued as a decorative stone and for jewelry. Blue quartz is found in the older basement rocks of the Blue Ridge Province. Probable age, around Grenville time; Middle Proterozoic (900 – 1600 Ma).



18. White Quartz
Albemarle County
Donated By: David Warren

Silica in the form of quartz occurs in lenticular veins throughout much of Virginia. The veins formed where fluids moved through rock fractures. A few of the larger veins have been mined. Quartz can be used as a flux in the steel industry and as decorative stone. Probable age of Ordovician - Cambrian (440 - 544 Ma).



19. Deformed Gneiss with Blue Quartz Vein
Rappahannock County
Donated By: Lisle Carter and Jane Livingston

Segregation-layered, migmatitic (partially-melted), quartzo-feldspathic, polydeformed biotite gneiss. Blue quartz veins are common. Radiometrically dated at 1081 Ma., making this one of Virginia's oldest rock formations. Flint Hill Gneiss, Early Proterozoic (1600 – 2500 Ma).



20. Petrified Logs
Henrico County
Donated By: Vulcan Materials Company, Mideast Division

These logs were buried in the sediments of the James River near Curles Neck. After burial, silica replaced the rotting wood, preserving the structure of the tree. Likely from Cretaceous (146-65 Ma) sediments, overlain by Pleistocene (11,000 years - 1.8 Ma) fluvial sand and gravel.





- 21. Slate**
Buckingham County
Donated By: *Buckingham – Virginia Slate Corporation*

Dark gray, lustrous, very-fine-grained, highly-foliated slate. Composed of chlorite, muscovite, plagioclase, quartz, and biotite. Cleaves readily along foliation. Used for roofing shingles, patio stone, laboratory table tops, and road aggregate. Arvonite Slate, Ordovician (440 – 505 Ma).



- 22. Calcite Vein in Dolostone/Limestone**
Augusta County
Donated By: *John Marr and Roy Sites*

Gray dolostone/limestone with a large fracture filled with calcite crystals from fluids moving through the rock (post 505 Ma). Beekmantown Formation, Ordovician (440 – 505 Ma).



- 23. Calcite**
Appomattox County
Donated By: *Rockydale Quarries Corporation, Appomattox Lime Company*

Fluids circulating through fractures in a dominantly carbonate rock sequence produced large zones of homogenous calcite (post 505 Ma).



- 24. Soapstone**
Nelson County
Donated By: *New World Stone Company*

Medium- to fine-grained, bluish gray to grayish green, moderately schistose soapstone. Composed of talc, chlorite, serpentine, amphibole, magnetite, and pyrite. It is a soft rock with high heat-retaining capabilities. Can be sawed and carved into desirable forms. Favorite of sculptors. Can also be used to construct stoves and cabinet tops. Part of a metamorphosed, mafic igneous complex, Cambrian – Late Proterozoic (505 – 900 Ma).

25. Siltstone with Mud Cracks
Culpeper County
Donated By: *Martin Marietta Aggregates,*
Culpeper Quarry

Interbedded maroon siltstone and brownish shale showing mud cracks and trail markings. Balls Bluff Siltstone, Triassic (208 – 245 Ma).



26. Granodiorite with Pegmatite Vein
Mecklenburg County
Donated By: *Vulcan Materials Company,*
Mecklenburg Quarry

Light-gray to white, medium-grained, foliated granodiorite gneiss. Sample contains granitic and pegmatitic injection veins. Deformation and injection veins indicate that this rock had a complex tectonic history; probable Cambrian – Late Proterozoic age (505 – 900 Ma).



27. Breccia
Rockbridge County
Donated By: *Rockbridge Stone Products, Inc.,*
Glasgow Plant

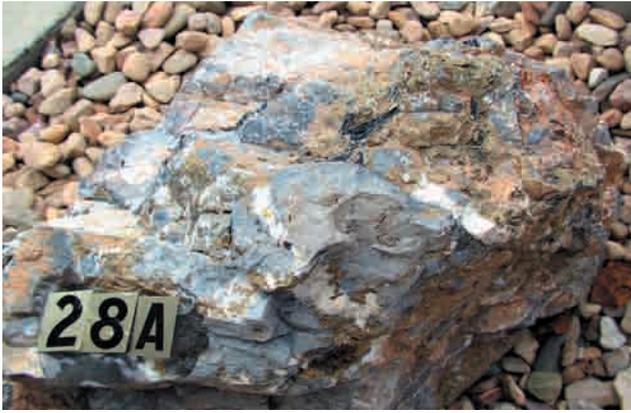
Light brown fragments of quartzite (Antietam Formation) welded together by a dark brown matrix of manganese – iron oxide. Breccia formed by faulting during, or near, the end of the Permian (245 - 286 Ma).



28. Iron Ore
Alleghany County
Donated By: *Gerald P. Wilkes*

Result of secondary mineralization caused by groundwater percolating downward through iron-bearing shale formations and precipitating iron oxides upon reaching a lower sandstone formation (Oriskany Formation). From the Jordan Mines. Undetermined age; probably within the last 200 million years.





28A. Zinc Ore
Rockingham County
 Donated By: *C. L. Custer*

Result of secondary mineralization by fluids moving through a collapse breccia of limestone and dolostone, Beekmantown Formation, Ordovician (440 – 505 Ma). Zinc-bearing sphalerite is the primary ore mineral, with scattered pyrite. From the Bowers-Campbell Mine. Undetermined age; probably pre-Permian (286 Ma).



29. Mineralized Limestone
Highland County
 Donated By: *Miracle Ridge Limestone*

Zone of mostly calcite mineralization within the Tonoloway Formation, Silurian (410 – 440 Ma). Possibly related to igneous injections and hot fluid movement during the Tertiary Period (1.8 – 65 Ma).



30. Open-folded, Biotite-Hornblende-Feldspar Gneiss
Hanover County
 Donated By: *U. S. Silica Corporation, Montpelier Quarry*

Open-folded, biotite, hornblende, quartz, and feldspar gneiss with scattered anorthite and garnets. Interpreted as sediments that were metamorphosed during Grenville-age regional metamorphism (approx. 900 – 1200 Ma). Montpelier Meta-anorthosite, Middle Proterozoic (900 – 1600 Ma).



31. Conglomerate
Loudoun County
 Donated By: *Town of Leesburg, Ida Lee Park*

Composed of rounded to subangular pebbles and cobbles of mixed lithologies including limestone, dolostone, quartzite, gneiss, schist, and greenstone in a fine- to medium-grained maroon, silty sandstone matrix. Approximately 240 million years ago North America and South America separated from Europe and Africa. This breakup resulted in the creation of several down-dropped rift basins that filled with sediment. This conglomerate formed from debris falling into the basin along the western margin of the Culpeper Basin. Leesburg Member of the Balls Bluff Siltstone, Triassic (208 – 245 Ma).

- 32. Rhytmite**
Smyth County
Donated By: James Lovett

Maroon and greenish sandstone / siltstone exhibiting cyclic sedimentation. Konnarock Formation, Late Proterozoic (544 – 900 Ma).



- 33. Mineralized Metabasalt (Greenstone)**
Albemarle County
Donated By: Luck Stone Corporation,
Charlottesville Plant

Grayish-green, to dark-yellowish-green, fine-grained, schistose metabasalt. Composed of chlorite, actinolite, albite, epidote, quartz, and magnetite. Fractured zone is filled with pink plagioclase, white quartz, and pistachio-green epidote. Result of eruption of flood basalts. Catoclin Formation, Late Proterozoic (544 – 900 Ma).



- 34. Granite Gneiss with Pink Pegmatite Veins**
Chesterfield County
Donated By: Vulcan Materials Company,
Dale Quarry

Light-gray, equigranular, medium-grained, foliated granite gneiss. Multiple intrusive phases common. Composed of quartz, sodic and potassium feldspars, biotite, and hornblende. This granite gneiss, commonly called the Petersburg Granite, has been radiometrically dated at 330 Ma; Mississippian (325 – 360 Ma).



- 35. Quartzite with Skolithos Tubes**
Augusta County
Donated By: Boxley Aggregates,
Stuarts Draft Plant

White quartzite with vertical tubes (worm burrows) called *Skolithos linearis*. Antietam Formation of the Chilhowee Group, Cambrian (505 – 544 Ma).





36. Hydrothermally Altered Ultramafic Rock

Grayson County

Donated By: *Cardinal Stone Company, Grayson Quarry*

Greenish-black, fine- to medium- grained, massive, metaperidotite. Composed of serpentine, amphibole, chlorite, and magnetite. The upper surface of this sample displays “slickensides”. Slickensides form between two rock units when they are faulted (ground) against each other. These slickensides are composed of chlorite and epidote. Ultramafic rocks form deep in the earth and are brought to the surface by tectonism. Alligator Back/Ashe Formation of the Lynchburg Group, Cambrian – Late Proterozoic (505 – 900 Ma).

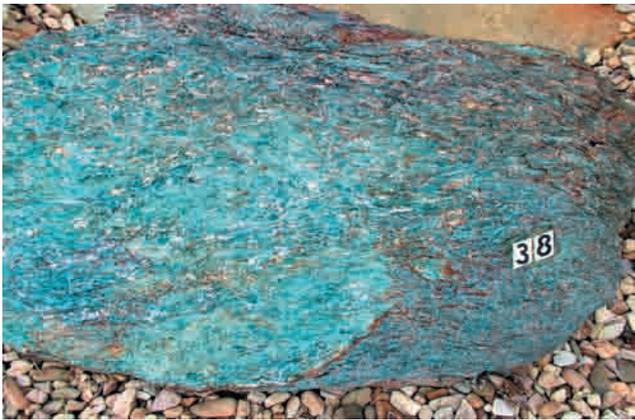


37. Pebble Conglomerate

Russell County

Donated By: *Town of Saint Paul*

Sandstone conglomerate composed of rounded, “jelly-bean” quartz pebbles. Lee Formation, Pennsylvanian (286 – 325 Ma).



38. Blue Kyanite

Prince Edward County

Donated By: *Kyanite Mining Corporation, Baker Mountain Plant*

Matted, intergrown mass of blue kyanite crystals. Formed by metamorphism of aluminum-rich sediments; kyanite has the characteristic of being resistant to high temperatures. It is used in high temperature resistant products such as brake linings, spark plugs, molds for steel castings, and tiles on the space shuttle. Probable Ordovician age (440 – 505 Ma).



39. Garnet-Hornblende-Feldspar Gneiss

Hanover County

Donated By: *U. S. Silica Corporation, Montpelier Quarry*

Gneiss composed of hornblende, biotite, and feldspar with large garnets and pods of anorthosite. Interpreted as sedimentary rocks that were metamorphosed during Grenville-age regional metamorphism (approx. 900 – 1200 Ma). Montpelier Meta-anorthosite, Middle Proterozoic (900 – 1600 Ma).

40. Bituminous Coal**Wise County****Donated By: Coastal Coal Company, LLC**

Combustible organic rock with a high percentage of carbon. Coal is Virginia's most valuable mineral resource. This specimen was treated to prevent deterioration. Wise Formation, Pennsylvanian (286 – 325 Ma).

**41. Shelly Calcareous Sandstone****New Kent County****Donated By: Mr. & Mrs. George, Jr. and Becky Philbates****Philbates Auto Wrecking, Inc.**

Brownish-yellow to gray, fine- to coarse-grained, calcareous sandstone with abundant shell material mixed with clay. Yorktown Formation, Pliocene (1.8 to 5 Ma).

**42. White Kyanite****Buckingham County****Donated By: Kyanite Mining Corporation, Willis Mountain Plant**

Matted, intergrown and layered white kyanite crystals in a quartz matrix. Kyanite has the characteristic of being resistant to high temperatures. Kyanite is used in many high temperature resistant products such as, brake linings, steel castings, spark plugs, and tiles on the space shuttle. Probable Ordovician age (440 - 505 Ma).

**43. Garnetiferous Biotite Gneiss****Henry County****Donated By: Boxley Aggregates, Fieldale Plant**

Sample is light- to medium-gray, medium-grained, polydeformed, polymetamorphosed, porphyroblastic, irregularly-layered, garnetiferous biotite gneiss. Interpreted as a highly metamorphosed sedimentary rock showing incipient melt zones. Fork Mountain Formation, Cambrian – Late Proterozoic (505 – 900 Ma).





- 44. Granite Gneiss**
Grayson County
Donated By: *Lyall Stone, Inc.*

Equigranular, medium-grained, lineated quartz, feldspar, biotite, monzonite gneiss, with scattered blebs of blue quartz and chalcopyrite. Radiometrically dated at 1050 - 1080 Ma. Cranberry Gneiss (?) of the Elk Park Plutonic Group, Middle Proterozoic (900 - 1600 Ma).



- 45. Unakite**
Rockbridge County
Donated By: *Bob Kopecko*

Coarse-grained, metamorphic rock of a granite composition. Reddish-brown microcline feldspar, pistachio green epidote, white plagioclase feldspar, and light gray quartz. It is valued as a semi-precious stone for making jewelry. Probable formation during Grenville time (900 - 1200 Ma). Found in Blue Ridge basement complex, Middle Proterozoic (900 - 1600 Ma).



- 46. Fossil Tree Trunk**
Wise County
Donated By: *Coastal Coal Company, LLC*

Sand-impregnated, fossilized, lycopod (scale tree) trunk (*Sigillaria/Lepidodendron*) from ancient swamp-land sedimentation comprising coal measures. Wise Formation, Pennsylvanian (286 - 325 Ma).



- 47. Garnet-Biotite-Hornblende Gneiss**
Greene County
Donated By: *Luck Stone Corporation, Greene Plant*

Light and dark colored, medium- to coarse-grained, biotite-rich, quartzo-feldspathic gneiss. It is composed of biotite, quartz, feldspar, garnet, hornblende, and muscovite. A Blue Ridge basement rock with a Grenville-age metamorphic overprint (900 - 1200 Ma); original igneous pluton Middle Proterozoic (900 - 1600 Ma).

48. Sandstone with *Turritella* Fossils
King George County
Donated By: Village of Fairview Beach

Glauconitic quartz sandstone with large, high-spired gastropods, *Turritella mortoni*. Aquia Formation, Paleocene (54 to 65 Ma).



49. Collapse Breccia
Augusta County
Donated By: Plecker Construction Company

Collapse breccia formed in a splay of the Staunton Fault zone. It has been cemented with calcite and dolomite crystals. Conococheague Formation, Cambrian (505 – 544 Ma).



ACKNOWLEDGEMENTS

Mark Ashley, Cardinal Stone Company, Galax, Va.
Rev. Henry D. Aylor, Mountain Breeze Farm, Madison, Va.
B. Charles Baldwin, Unimin Corporation, Gore, Va.
Wayne Banty, Martin Marietta Aggregates, Red Hill, Va.
Kenny Barlow, New Kent, Va.
Dr. James Beard, Virginia Museum of Natural History, Martinsville, Va.
Mike Blewett, Williamsburg, Va.
Chuck Bowie, Fairview Beach, Va.
James G. Bryant, Miracle Ridge Limestone, Monterey, Va.
Doug Bywaters, Virginia Department of Transportation, Culpeper District
Junie Carlton, New Kent, Va.
Lisle Carter, and Jane Livingston, Flint Hill, Va.
James Coffey, Rockbridge Stone Products Inc., Glasgow, Va.
Jamey Collins, Wythe Stone Company, Wytheville, Va.
Colonial Williamsburg Foundation, Williamsburg, Va.
Michael H. Condoulis, Luck Stone Corporation, Charlottesville, Va.
Ronnie D. Conway, U. S. Silica Corporation, Montpelier, Va.

C. L. Custer, Hinton, Va.
Edward C. Dalrymple, Cedar Mountain Stone Corporation, Mitchells, Va.
Guy Dixon, Kyanite Mining Corporation, Dillwyn, Va.
Clancy Donnelly, Boxley Aggregates, Stuarts Draft, Va.
Cline Dooley, Boxley Aggregates, Martinsville, Va.
Thomas C. Erskine, Staunton Lime Company, Staunton, Va.
Dr. Nick Evans, Barboursville, Va.
Greg Farrish, Virginia Department of Forestry, Charlottesville, Va.
Anthony Gillespie, Teacher's Edition, Charlottesville, Va.
Amy Gilmer, DMME, Division of Mineral Mining, Charlottesville, Va.
Dick Goodall, U. S. Silica Corporation, Montpelier, Va.
Richard A. Gray, Vulcan Materials Company, Mideast Division, Richmond, Va.
Larry D. Gravely, Vulcan Materials Company, Mideast Division, Richmond, Va.
Sam Graybeal, VDOT, Bristol District
Melvin Grow, Leesburg Public Works Dept., Leesburg, Va.
Carter's Grove Plantation, Williamsburg, Va.
John Grub, Luck Stone Corporation,

Ruckersville, Va.
Carlín Hall, VDOT, Northern Virginia District, Leesburg, Va.
Kay Hasenauer, DMME, Division of Mineral Resources, Charlottesville, Va.
Dale Hazlewood, Luck Stone Corporation, Burkeville, Va.
Dick Hazelwood, General Shale Brick, Blue Ridge, Va.
Sam Hollins, U. S. Silica Corporation, Montpelier, Va.
Dave Hubbard, DMME, Division of Mineral Resources, Charlottesville, Va.
Tom Hughes, Buckingham Virginia Slate Corporation, Arvonnia, Va.
Ron Jenkins, Virginia Department of Forestry, Charlottesville, Va.
David Johnson, Luck Stone Corporation, Ruckersville, Va.
Dr. Gerald Johnson, Williamsburg, Va.
Stanley S. Johnson, Charlottesville, Va.
Jack Kiser, Mayor, Saint Paul, Va.
Bob Kopecko, Vesuvius, Va.
Danny Koczan, Martin Marietta Aggregates, Red Hill, Va.
Charles Layman, Boxley Aggregates, Martinsville, Va.
Chris Lephew, Wythe Stone Company, Wytheville, Va.

Postmaster:
Send address corrections to:
Virginia Division of Mineral Resources
P.O. Box 3667
Charlottesville, VA 22903

Virginia Minerals
Second-class postage paid at
Charlottesville, VA
ISSN0042-6652

ACKNOWLEDGEMENTS (continued)

Dickie Lephew, Wythe Stone Company, Wytheville, Va.
Bob Lilly, Town Manager, Leesburg, Va.
David N. Lipscomb, Faber, Va.
James Lovett, DMME, Division of Mineral Resources, Abingdon, Va.
Allen Lowery, Miracle Ridge Limestone, Monterey, Va.
John Lydzinski, Coastal Coal Company, Abingdon, Va.
James MacDonald, Appomattox Lime Company, Appomattox, Va.
Jack McCarthy, Boxley Aggregates, Piney River, Va.
John Michner, Austinville Limestone Company Inc., Austinville, Va.
Mark Miller, Staunton Lime Company, Staunton, Va.
Bruce Mills, VDOT, Culpeper District
Dr. Chip Morgan, Wintergreen, Va.
Wayne Orr, Vulcan Materials Company, Chester, Va.
Roger Paries, Vulcan Materials Company,

South Boston, Va.
Al Penick, Lexington, Va.
Mr. and Mrs. George and Becky Philbates, Jr., Philbates Auto Wrecking, Inc., New Kent County Va.
George Philbates III, New Kent County, Va.
Timmy Plecker, Plecker Construction Company, Staunton, Va.
David Queen, Virginia Department of Forestry, Charlottesville, Va.
Eugene Rader, DMME, Division of Mineral Resources, Charlottesville, Va.
Roger Ramey, Wythe Stone Company, Wytheville, Va.
Anne Rose, Ida Lee Park, Town of Leesburg, Va.
Gerald Shifflett, Virginia Department of Forestry, Charlottesville, Va.
Wallace Shumaker, Kyanite Mining Corporation, Dillwyn, Va.
Earl Smith, Fairview Beach, Va.
Kierk Ashmore-Sorensen, New World

Stone Company, Schuyler, Va.
David Spears, DMME, Division of Mineral Resources, Charlottesville, Va.
Clay Stowers, VDOT, Bristol District
Palmer Sweet, DMME, Division of Mineral Resources, Charlottesville, Va.
Foster Taliaferro, Martin Marietta Aggregates, Culpeper, Va.
Chuck Tuggle, Lyall Stone Inc., Mouth of Wilson, Va.
David Warren, Keswick, Va.
Tommy Whalen, Williamsburg, Va.
Gerald Wilkes, DMME, Division of Mineral Resources, Charlottesville, Va.
John Wilkinson, Lyall Stone Inc., Mouth of Wilson, Va.
Paul Willis, Vulcan Materials Company, South Hill, Va.
Lucy Wood, Appomattox Lime Company, Appomattox, Va.
Monte Wood, Luck Stone Corporation, Charlottesville, Va.