# Some Geologic Relations in and between the Esmont and Arvonia Slate Districts, Virginia*

By William R. Brown and Harvey C. Sunderman

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*Presented with the permission of the State Geologist of Virginia.

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(Abstract)

The west-central Piedmont of Virginia includes part of the granitized complex rocks, and the southeastern flank of the Catoctin-Blue Ridge anticlinorium and the relatively less metamorphosed rocks of the James River synclinorium. In the central Piedmont, Ordovician Arvonia slate lies in another synclinal structure.

In the Covesville quadrangle on the northwest, rocks of the granitized complex are overlain unconformably by the Lynchburg formation and this in turn by the Catoctin greenstone. The Catoctin dips southeastward beneath the Candler formation, which includes the Esmont slate. The Candler outcrop belt is continuous southeastward to a belt of submarine (?) greenstone volcanics in the western part of the Dillwyn quadrangle, interpreted by the writers to be (a facies of the) Catoctin greenstone re-exposed on the west limb of a large anticline. A second belt of greenstones occupies the east flank of this structure. The mica-quartz schists in the intervening core of the anticline, called "Peters Creek quartzite" by the Stoses, are probably a part of the Lynchburg formation. Greenstones of the eastern belt underlie, in part, the Arvonia slate. In that the Candler formation lies upon Catoctin greenstone and Arvonia slate lies upon probable Catoctin, the Candler and Arvonia formations may be equivalent in part.

An increase in the degree of metamorphism in the "knotted" slate portion of the Arvonia slate with approach to the Columbia granite appears to indicate that this granite is younger than the slate, rather than older as previously thought.

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| Speaker: | William R. Brown |
| Time: | At least 15 minutes |
| Equipment Needed: | Projectors for 2"x2" kodachromes and standard 3¼" x 4" black and white slides. |

Copy of revised abstract, approved for presentation and publication; copies sent Wm R. Brown, and Phil King, Chairman of Program Committee for Sec. section GSA meeting. See correspondence files.

Wm M McKee

# Some Geologic Relations in and between the Esmont and Arvonia Slate Districts, Virginia*

By Wm. R. Brown and H. C. Sunderman

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The west-central Piedmont of Virginia includes part of the granitic core rocks and the southeastern flank of the Catoctin-Blue Ridge anticlinorium and the relatively little-metamorphosed rocks of the James River synclinorium immediately to the southeast. In the central Piedmont, Ordovician Arvonia slate lies in another synclinal structure. During the summers of 1952 and 1953, a continuous strip from the granitic rocks of the western Piedmont southeastward across the Arvonia district was mapped in an effort to relate these areas geologically. Mapping included portions of the Covesville, Scottsville, and Dillwyn quadrangles.

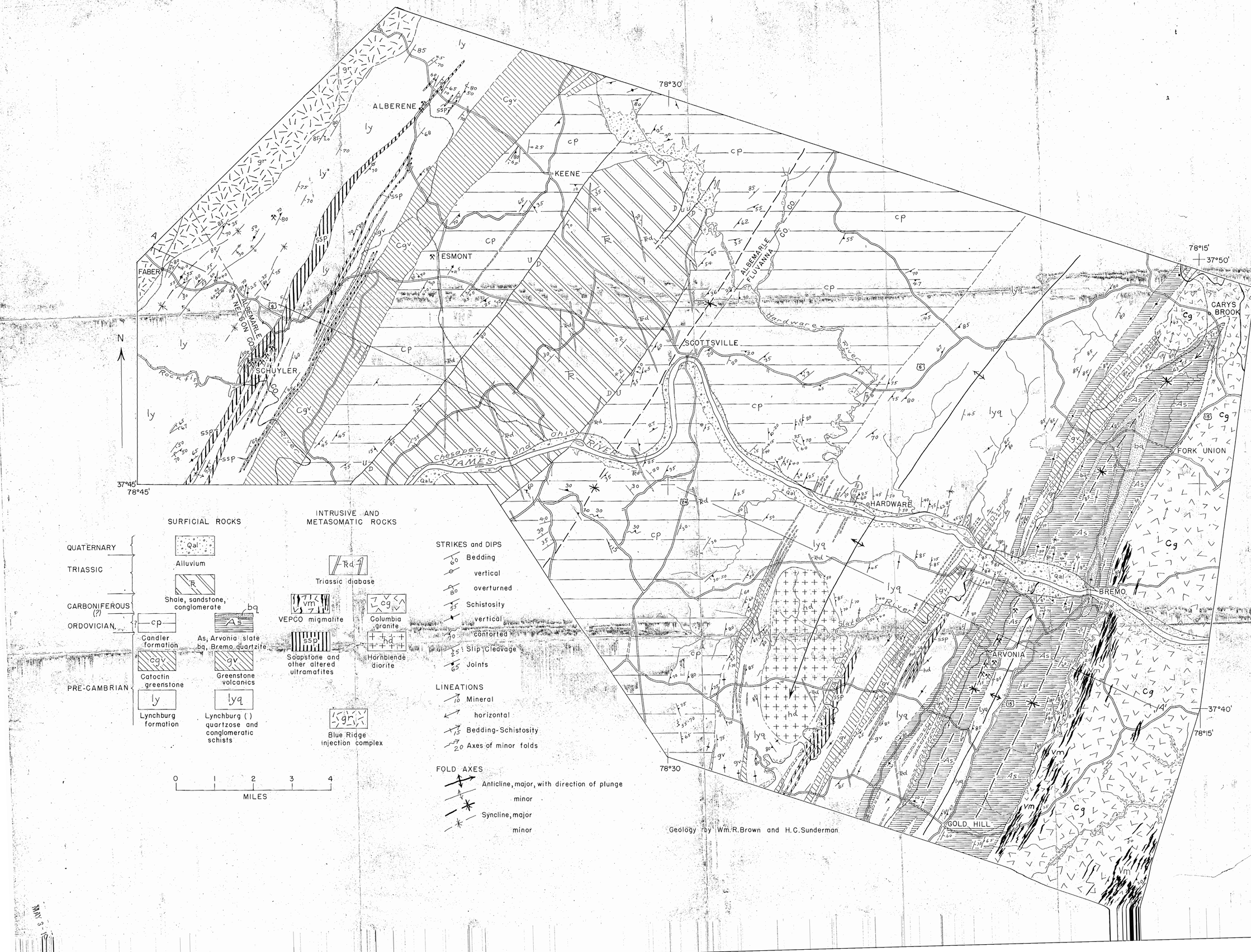
In the Covesville quadrangle on the northwest, granitic basement rocks are overlain unconformably by Lynchburg formation and this in turn by Catoctin greenstone. The Catoctin dips southeastward beneath Candler phyllite and slate (including Esmont commercial slate) of the James River synclinorium. The Candler outcrop belt is continuous southeastward to a belt of submarine (?) greenstone volcanics in the western part of the Dillwyn quadrangle interpreted by the writers to be Catoctin greenstone reesposed on the west limb of a large anticline. A second belt of greenstone occupies the east flank of this structure. The mica-quartz schists in the intervening core of the anticline, called "Peters Creek formation" by the Stoses, are probably a continuation of the Lynchburg formation. Greenstones of the eastern belt underlie, in part, the Arvonia slate. In that the Candler formation lies upon Catoctin

greenstone and Arvonia slate lies upon probable Catoctin, the Candler and Arvonia may be partly equivalent.

Increasing metamorphic grade in the "knotted" slate portion of the Arvonia slate with approach to the Columbia granite appears to indicate that this granite is younger than the slate, rather than older as previously thought.

Speaker: Wm. R. Brown
Time: At least 15 minutes
Equipment: Projectors for 2"x2" kodachromes and standard $3\frac{1}{4}$" x 4" black and white slides.

This is a copy of abstract prepared by Wm. R. Brown and per Mehill with map and cross-section. May 3rd. 1954 for corrections and for permission to publish.
See attached copy (1 p.) of revised or corrected abstract, which was approved for presentation before April 15-17, 1954 meeting of the SE. Section G.S.A. at Columbia, S.C. and for publication.
The original abstract submitted by Brown was published in the Dec. 1954 issue (Vol 65 No. 12, pt 2) of the Bulletin G.S.A., which see.


ALBERENE
KEENE
ESMONT
FABER
SCHUYLER
SCOTTSVILLE
HARDWARE
CARYS BROOK
FORK UNION
BREMO
ARVONIA
GOLD HILL
ALBEMARLE CO.
NELSON CO.
FLUVANNA CO.
Rockfish River
Chesapeake and Ohio
JAMES RIVER
Hardware River
Slate River
78°30'
78°15'
37°50'
37°45'
78°45'
37°40'
N
A
A'
SURFICIAL ROCKS
Qal Alluvium
INTRUSIVE AND METASOMATIC ROCKS
Rd Triassic diabase
QUATERNARY
TRIASSIC
R Shale, sandstone, conglomerate
CARBONIFEROUS (?)
ORDOVICIAN
cp Candler formation
bq, As Arvonia slate, Bremo quartzite
vm VEPCO migmatite
cg Columbia granite
ssp Soapstone and other altered ultramafites
hd Hornblende diorite
PRE-CAMBRIAN
cgv Catoctin greenstone
gv Greenstone volcanics
ly Lynchburg formation
lyq Lynchburg ( ) quartzose and conglomeratic schists
gr Blue Ridge injection complex
STRIKES and DIPS
Bedding
vertical
overturned
Schistosity
vertical
contorted
Slip Cleavage
Joints
LINEATIONS
Mineral
horizontal
Bedding-Schistosity
Axes of minor folds
FOLD AXES
Anticline, major, with direction of plunge
minor
Syncline, major
minor
0 1 2 3 4
MILES
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