

GEOLOGIC NOTES

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NOTES ON RELATIONSHIPS OF PIEDMONT METASEDIMENTARY ROCKS
WITH EMPHASIS ON THE POOR MOUNTAIN - CHAUGA RIVER AREA,
OCONEE COUNTY, S. C.

By

T. E. SHUFFLEBARGER, JR. 1/

ABSTRACT

IT IS SUGGESTED THAT THE METAMORPHIC ROCKS WHICH SPANNED THE INTERVAL FROM THE CAROLINA GNEISS TO THE ARVONIA SLATE-VOLCANIC SERIES, TOGETHER WITH THEIR AGE-EQUIVALENTS, MAY HAVE FORMED A CONTINUOUS SEQUENCE THROUGHOUT THE PIEDMONT.

THE MARBLE AND DOLOMITIC MARBLE THAT CROP OUT IN THE VICINITY OF POOR MOUNTAIN, OCONEE COUNTY, S. C., ARE THOUGHT TO BE PART OF THE BREVARD BELT AND MAY CORRELATE WITH MARBLE OF THE EVINGTON GROUP OF VIRGINIA. HENCE, THE 'POOR MOUNTAIN MARBLE' AS WELL AS THE 'CHAUGA RIVER DOLOMITIC MARBLE' MAY BE EARLY PALEOZOIC IN AGE.

THE PRINCIPAL STRUCTURES OF THE POOR MOUNTAIN AREA APPEAR TO BE SHEAR FOLDS IN THE UPPER PLATE OF AN OVERTHRUST. IT IS SUGGESTED THAT POOR MOUNTAIN IS AN ALLOCTHONOUS MASS OF METASEDIMENTS, POSSIBLY FOLDED PRIOR TO FAULTING. THIS OVERTHRUST HAS APPARENTLY DISPLACED THE YOUNGER, MARBLE-BEARING SEQUENCE WITH RESPECT TO THE OLDER OVER-RIDDEN GNEISS.

INTRODUCTION

A MAJOR PORTION OF THE BEDROCK OF THE PIEDMONT PROVINCE CONSISTS OF METASEDIMENTS AND METAVOLCANICS WHICH PROBABLY RANGE IN AGE FROM CAMBRIAN TO MID-PALEOZOIC.

LESS METAMORPHOSED, PROBABLY YOUNGER, METASEDIMENTARY AND METAVOLCANIC ROCKS CROP OUT IN SEPARATE, ARCULATE ZONES IN THE PIEDMONT AND FOOTHILLS OF THE BLUE RIDGE MOUNTAINS AS FAR SOUTH AS ALABAMA. THE WIDEST OF THESE OUTCROP ZONES IS IN THE CAROLINAS WHERE IT INCLUDES ROCKS OF THE CAROLINA SLATE BELT. THESE ARCULATE ZONES ARE NOT CHARACTERIZED BY AN ORDERLY STRATIGRAPHIC SUCCESSION AND MAY REPRESENT EROSIONAL REMNANTS WHICH OCCUPY TIGHTLY FOLDED SYNCLINAL STRUCTURES. LIMITED DATA INDICATES THAT THE AGE OF THE ROCKS IN THESE ZONES INCREASES FROM EAST TO WEST.

IT IS SUGGESTED THAT THESE METAMORPHIC ROCKS, SPANNING THE INTERVAL FROM THE CAROLINA GNEISS TO THE ARVONIA SLATE-VOLCANIC SERIES, TOGETHER WITH THEIR AGE EQUIVALENTS, MAY HAVE FORMED A CONTINUOUS SEQUENCE THROUGHOUT THE PIEDMONT.

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TABLE 1 IS NOT INTENDED TO DEPICT SPECIFIC CORRELATIONS BUT RATHER TO SHOW WHAT MAY BE INFERRED FROM THE REGIONAL DISTRIBUTION OF DOMINANT ROCK TYPES.

THE INJECTION COMPLEX OR CRYSTALLINE BASEMENT

THE GNEISS AND GRANITIC ROCKS THAT FORM THE CORE OF THE BLUE RIDGE ANTICLINORIUM EITHER UNDERLIE OR INJECT THE LYNCHBURG GNEISS (JONAS, 1927), CAROLINA GNEISS (KEITH, 1901, 1903), AND ASHLAND SCHIST (?) (SMITH AND McCALLIE, 1904; ADAMS, 1926). THESE BASEMENT ROCKS EXHIBIT NO COMMONLY DISTINCTIVE PETROLOGICAL FEATURES OTHER THAN THEIR METAMORPHIC RANK AND STRUCTURAL POSITION.

PALEOZOIC (?) METASEDIMENTARY AND METAVOLCANIC ROCKS

ISOLATED VESTIGES OF PALEOZOIC (?) ROCKS REMAIN IN AREAS WHERE FAULTING OR DEEP FOLDING OCCURRED. IN CENTRAL AND WESTERN NORTH CAROLINA, THESE INFOLDED OR DOWN-FAULTED METASEDIMENTS AND METAVOLCANICS INCLUDE THE MURPHY MARBLE (KEITH, 1907), WHICH IS THE OLDEST AND WESTERMOST; THE BREVARD SCHIST (KEITH, 1905); AND THE SLATE BELT ROCKS (LANEY, 1917), WHICH ARE APPARENTLY THE YOUNGEST AND HAVE TENTATIVELY BEEN ASSIGNED AN ORDOVICIAN AGE (FIG. 1).

MURPHY MARBLE AND CORRELATIVES (?)

FURCRO (1953) SUGGESTS THAT THE MURPHY MARBLE CORRELATES WITH THE NORTHEASTERN END OF THE TALLADEGA SERIES, WHICH CONTAINS THREE DISTINCT CARBONATE HORIZONS (CRICKMAY, 1936) AND HAS BEEN PROVEN BY FOSSILS TO BE PALEOZOIC IN AGE (BUTTS, 1926; GRIFFIN, 1951).

OTHER ROCK UNITS THAT ARE SIMILAR TO THOSE CONSTITUTING THE MURPHY MARBLE, AND WHICH OCCUR ALONG ITS STRIKE, ARE EITHER SPARSELY DISTRIBUTED OR INADEQUATELY DESCRIBED NORTH-EAST OF THE GREAT SMOKY SALIENT. THE OCONEE SERIES, WHICH BORDERS THE MURPHY MARBLE ON BOTH SIDES, IS NOT KNOWN TO INCLUDE LARGE MARBLE BEDS AT ITS TYPE LOCALITY.

CORRELATIVES (?) OF CAROLINA SLATE BELT ROCKS

THE STRUCTURAL FEATURES IN THE VIRGINIA SYNCLINORIUM APPEAR TO EXTEND THROUGH THE CAROLINAS INTO GEORGIA (BROWN, 1954). THE VIRGINIA ROCKS, WHICH ARE ORDOVICIAN IN AGE (LANEY, 1917), AND THOSE OF THE ARVONIA TYPE ARE PROBABLY PENE-CONTEMPORANEOUS AS WELL AS STRUCTURALLY RELATED TO THEIR COUNTERPARTS AS FAR SOUTH AS NORTH-CENTRAL GEORGIA. HENCE, THE SLATE BELT ROCKS OF THE CAROLINAS AND THE LITTLE RIVER SERIES OF NORTHERN GEORGIA MAY BE RELATED TO THE VIRGINIA ROCKS ALTHOUGH THEY ARE DESCRIBED AS RANGING FROM PRE-CAMBRIAN TO LOWER PALEOZOIC IN AGE (PARDEE AND PARK, 1948).

EXPLANATION

- MA
Possible correlatives of Mount Athos formation
- AC
Possible correlatives of Archer Creek formation
- C
Possible correlatives of Candler formation
- CLO
Carolina and Lynchburg type gneisses
- T_1, T_2
Interpretations of possible thrusting

PRE-
EARLY
CAMBRIAN
PALEOZOIC
(?)

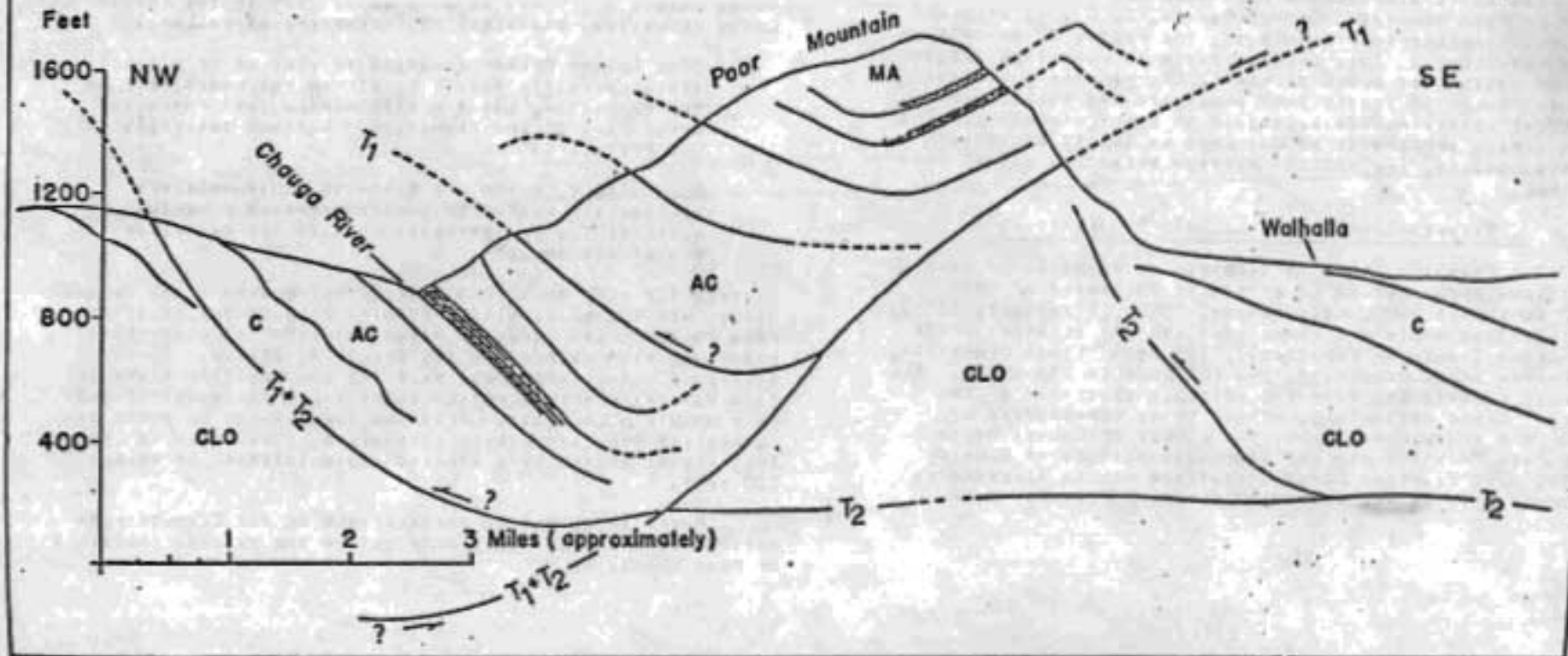


FIG. 2. SKETCH SHOWING SUGGESTED STRUCTURE IN VICINITY OF POOR MOUNTAIN,

BOONE COUNTY, SOUTH CAROLINA

CORRELATIVES (?) OF THE BREVARD SCHIST OF OCONEE COUNTY, S.C.

THE BREVARD SCHIST CROPS OUT ON POOR MOUNTAIN AND ALONG CHAUGA RIVER IN OCONEE COUNTY, SOUTH CAROLINA. IT HAS BEEN DESCRIBED AS LOWER PALEOZOIC (?) IN AGE (STUCKEY AND CONRAD, 1955) TOGETHER WITH THE LITHOLOGICALLY SIMILAR KING'S MOUNTAIN GROUP.

LITHOLOGIC SEQUENCES SIMILAR TO THOSE WHICH CROP OUT IN THE POOR MOUNTAIN AREA HAVE BEEN DESCRIBED IN VIRGINIA AS MEMBERS OF THE EVINGTON GROUP (BROWN, 1954; ESPENSHADE, 1954). THE EVINGTON GROUP, WHICH IS SIMILAR TO BREVARD SCHIST LITHOLOGIC TYPES, HAS BEEN ASSIGNED A CAMBRIAN AGE (JONAS, 1927; STOSE, 1946). THE SIMILARITY OF RECURRENT ROCK SEQUENCES IN THE BREVARD AND EVINGTON GROUPS SUGGESTS THAT THEY ARE AT LEAST PARTLY CORRELATIVE. THE BREVARD SCHIST MAY THEREFORE BE RELATED TO THE LOW-RANK METAMORPHIC ROCKS WHICH INCLUDE THE EVINGTON GROUP AND CONSTITUTE THE JAMES RIVER SYNCLINORIUM AND, THUS, MAY BE PARTLY UPPER CAMBRIAN IN AGE (BROWN, 1954; ESPENSHADE, 1954).

STRATIGRAPHY OF THE POOR MOUNTAIN — CHAUGA RIVER AREA

THE WHITE SILICEOUS MARBLE THAT CROPS OUT ON THE CREST OF POOR MOUNTAIN, OCONEE COUNTY, S. C., IS overlain BY A QUARTZ-FELDSPAR-MICA GNEISS, THE FABRIC OF WHICH SUGGESTS CATACLASIS. THIS GNEISS, WHICH IS CHARACTERIZED IN PART BY AUGEN-LIKE BLENDS OF QUARTZ AND FELDSPAR, TOGETHER WITH THE CHLORITE SCHIST THAT UNDERLIES THE MARBLE, MAY REPRESENT METAMORPHOSED SILICEOUS OR SHALY LIMESTONE. THE AUGEN GNEISS APPEARS TO BE overlain BY QUARTZ-BERICITE SCHIST; HOWEVER, THE CONTACT BETWEEN THESE TWO MAY BE GRADATIONAL.

BREVARD-EVINGTON LITHOLOGIC SIMILARITIES

THE EVINGTON GROUP IN VIRGINIA IS COMPOSED OF FOUR FORMATIONS REPRESENTING AN AGGREGATE THICKNESS OF FROM 3,200 TO ALMOST 8,000 FEET (BROWN, 1954; ESPENSHADE, 1954). IN DESCENDING ORDER THE FORMATIONS ARE (1) SLIPPERY CREEK GREENSTONE (YOUNGEST FORMATION), (2) MOUNT ATHOS FORMATION, (3) ARCHER CREEK FORMATION, AND (4) CANDLER FORMATION. ALL OF THESE FORMATIONS, WITH THE POSSIBLE EXCEPTION OF THE SLIPPERY CREEK GREENSTONE, APPEAR TO BE REPRESENTED BY LITHOLOGIC EQUIVALENTS ALONG THE VALLEY OF CHAUGA RIVER OR ON POOR MOUNTAIN AND ITS COMPANION HEIGHTS IN OCONEE COUNTY. THE SLIPPERY CREEK GREENSTONE MAY BE REPRESENTED BY AMPHIBOLITE ON THE NORTHWEST SLOPE OF POOR MOUNTAIN,

THE POOR MOUNTAIN MARBLE MEMBER IS TENTATIVELY CONSIDERED TO CORRELATE WITH THE MOUNT ATHOS FORMATION, DESCRIBED BY ESPENSHADE (1954) AS FOLLOWS:

"THE MOUNT ATHOS FORMATION COMPRISES QUARTZITE, CONGLOMERATE, CALCAREOUS QUARTZITE, MARBLE, SILICEOUS MICA SCHIST THE LOWEST BEDS ARE COMPOSED OF A CHARACTERISTIC SILICEOUS, MUSCOVITE SCHIST AND PORPHYROBLASTS OF BLACK BIOTITE...

THE QUARTZITE OF THE MOUNT ATHOS FORMATION IS WHITE TO LIGHT GRAY IN COLOR... THE TEXTURE RANGES FROM FINE-GRAINED... TO CONGLOMERATE WITH FLATTENED BLUE-QUARTZ OR FELDSPAR PEBBLES... CHLORITE, ZIRCON, ZIRCON, GARNET, AND TOURMALINE ARE PRESENT IN SOME MYLONITIZED QUARTZITE...

THE CALCAREOUS QUARTZITE... MAY CONTAIN AS MUCH AS 40 PERCENT OF WHITE TO TAN CARBONATE. ALSO PRESENT IS... WHITE TO TAN MARBLE — GENERALLY COARSE- TO MEDIUM GRAINED."

THE DOLOMITIC MARBLE AND GRAPHITE SCHIST WHICH OCCUR ALONG CHAUGA RIVER MAY BE RELATED TO PART OF THE ARCHER CREEK FORMATION, DESCRIBED BY ESPENSHADE AS FOLLOWS:

"THE ARCHER CREEK FORMATION IS MADE UP OF A SILICEOUS GRAPHITIC SCHIST MEMBER IN THE LOWER PART OF THE FORMATION, AND A BLuish MARBLE THAT FORMS THE UPPER PART OF THE FORMATION. MAXIMUM THICKNESS IS 900 FEET...

BLUE MARBLE, WHICH HAS FINE- TO MEDIUM-GRAINED TEXTURE AND RESEMBLES UNMETAMORPHOSED LIMESTONE overlies AND IS INTERLAYERED WITH THE GRAPHITIC SCHIST MEMBER..."

NEITHER THE BLUE DOLOMITIC MARBLE THAT OCCURS ALONG CHAUGA RIVER NOR THE WHITE MARBLE FORMING PART OF THE CREST OF POOR MOUNTAIN ARE KNOWN TO OCCUPY DISTINCT STRATIGRAPHIC POSITIONS WITH RESPECT TO THE ENCLOSING STRATA. WHITE SILICEOUS MARBLE CROPS OUT NEAR THE SOUTHEASTERN SLOPE OF RICH MOUNTAIN, APPROXIMATELY THREE MILES SOUTHWEST OF THE POOR MOUNTAIN LOCALITY. ALTHOUGH THE MARBLES OF THESE TWO LOCALITIES ARE LITHOLOGICALLY SIMILAR, THEY OCCUR AS LENSES THAT ARE SEPARATED BY A STRATIGRAPHIC INTERVAL OF NEARLY 200 FEET.

ROCKS WHICH MAY BE CORRELATIVES OF THE CANDLER FORMATION (ESPENSHADE, 1954) CROP OUT IN THE EASTERN FOOTHILLS OF POOR MOUNTAIN.

INDICATED AGE, YOUNGEST MEMBER	VIRGINIA	NORTH CAROLINA	SOUTH CAROLINA	ALABAMA AND GEORGIA
POST-SILURIAN	— ? —	— ? —	— ? —	ERIN SHALE
SILURIAN-DEVOONIAN	QUARTZITE SLATE SANDWICH SLATE VIRBILINA ROCKS	VOLCANIC SERIES (SLATE BELT)	VOLCANIC SERIES (SLATE BELT)	— ? —
UPPER CAMBRIAN	EVINGTON GROUP EVINGTON Limestone SLIPPERY CREEK GREENSTONE MT. ATHOS FORMATION ARCHER CREEK FORMATION CANDLER FORMATION	SHINE MOUNTAIN GROUP SILVERADO SCHIST CARDWATE ROCKS IN PART MURPHY MARBLE	BEVERLY SCHIST 'SAFFNEY' MARBLE 'POOR MOUNTAIN' MARBLE 'EMAUSSA RIVER' GOLDWITE	JUNCO GOLDWITE SYLAEUSA MARBLE SARVEN Limestone
UPPER PRE-CAMBRIAN	CATOCTIN GREENSTONE LYNCHBURG GNEISS	DEECE SERIES CAROLINA GNEISS	DEECE SERIES CAROLINA GNEISS	BOOKE SERIES

*Revised July 2, 1958
G-1-57*

TABLE 1.



FIG. 1. LOCALITY INDEX, POOR MOUNTAIN, DEWEE COUNTY, SOUTH CAROLINA.

STRUCTURAL ANALYSIS OF THE POOR MOUNTAIN AREA

IN GENERAL, THE FOLIATION OF THE ROCKS UNDERLYING THE POOR MOUNTAIN AREA DIPS SOUTHEAST AND STRIKES NORTH-EAST. IMMEDIATELY SOUTHEAST OF POOR MOUNTAIN THE DIP OF FOLIATION RANGES FROM 10 TO 35 DEGREES WHILE THE SCHISTOSITY OF ROCKS CROPPING OUT IN THE BREVARD BELT SEVERAL MILES NORTHWEST OF POOR MOUNTAIN REACHES A MAXIMUM OF 45 DEGREES.

IN THE EASTERN FOOTHILLS OF POOR MOUNTAIN, THE POSSIBLE CORRELATIVES OF THE CANDLER FORMATION APPEAR LOCALLY TO CONSTITUTE THE SOLE OF A MAJOR THRUST FAULT. IN THE VICINITY OF CHAUGA RIVER WEST OF POOR MOUNTAIN, INTENSELY FOLDED SCHIST AND GNEISS CONSTITUTE THE OVERRIDDEN PLATE; PHYLLITE, GRAPHITE SCHIST AND DOLOMITIC MARBLE COMPRISE THE OVERRIDING MEMBER.

THE ATTITUDE OF THE SCHISTOSITY OF THE ROCKS EXAMINED IN THE LAST-MENTIONED LOCALITIES SUGGESTS THAT BREVARD SCHIST-TYPE ROCKS, WHICH PROBABLY WERE FOLDED PRIOR TO DISPLACEMENT, CONSTITUTE THE UPPER PLATE OF THE THRUST FAULT.

TWO RELATIVELY WIDE FLEXURES, A SHALLOW SYNCLINE AND AN ANTICLINE, FORM THE STRUCTURAL FRAMEWORK OF POOR MOUNTAIN AND BUZZARDS ROOST MOUNTAIN. THE FLEXURES, PERHAPS MORE APTLY DESCRIBED AS SHEAR FOLDS, APPEAR TO BE THE RESULT OF DISPLACEMENT IN THE UPPER PLATE OF THE THRUST. LENSES OF WHITE MARBLE FORM PART OF A BROAD SYNCLINAL FOLD WITH ITS AXIS TRENDING SOUTHWEST ALONG THE CRESTS OF POOR AND BUZZARDS ROOST MOUNTAINS. WITHIN THE AREA OF THE SYNCLINE, THE DIP OF FOLIATION RANGES FROM 3 TO 20 DEGREES NORTHWEST.

AN ABRUPT REVERSAL IN THE DIP OF FOLIATION CHARACTERIZES THE ROCKS EXPOSED ON THE SOUTHEASTERN SLOPE OF THESE TWO MOUNTAINS. THE CHANGE IN ATTITUDE OF FOLIATION AS WELL AS THE STEEP NORTHWEST PLUNGE OF LINEATION IN THE MARBLE INDICATES ANTICLINAL FOLDING. THE NOW-ERODED CREST OF THE ANTICLINE PROBABLY ROSE AT LEAST A MILE SOUTH OF THE PRESENT CREST OF POOR MOUNTAIN. THE TRACE OF THE AXIAL PLANE OF THE ANTICLINE PROBABLY PARALLELS THAT OF THE SYNCLINE.

THE ROCKS WHICH CROP OUT IN THE VALLEY OF CHAUGA RIVER NORTHWEST OF POOR MOUNTAIN APPEAR TO OCCUR IN A SYNCLINAL FOLD. ALTHOUGH LOCAL STEEPENING OF THE FOLIATION INDICATES MINOR FAULTING, THE ORDERLY SOUTHEAST DIP OF BEDROCKS BETWEEN POOR MOUNTAIN AND CHAUGA RIVER SUGGEST AN UNBROKEN STRATIGRAPHIC SEQUENCE. IT IS SUGGESTED THAT THE 'POOR MOUNTAIN GROUP' AND THE 'CHAUGA RIVER GROUP' FORM THE UPPER PLATE OF AN OVERTHRUST (SEE FIG. 2).

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GEOLOGIC RELATIONS INFERRED FROM THE PROVISIONAL GEOLOGIC MAP OF THE CRYSTALLINE ROCKS OF SOUTH CAROLINA¹

By

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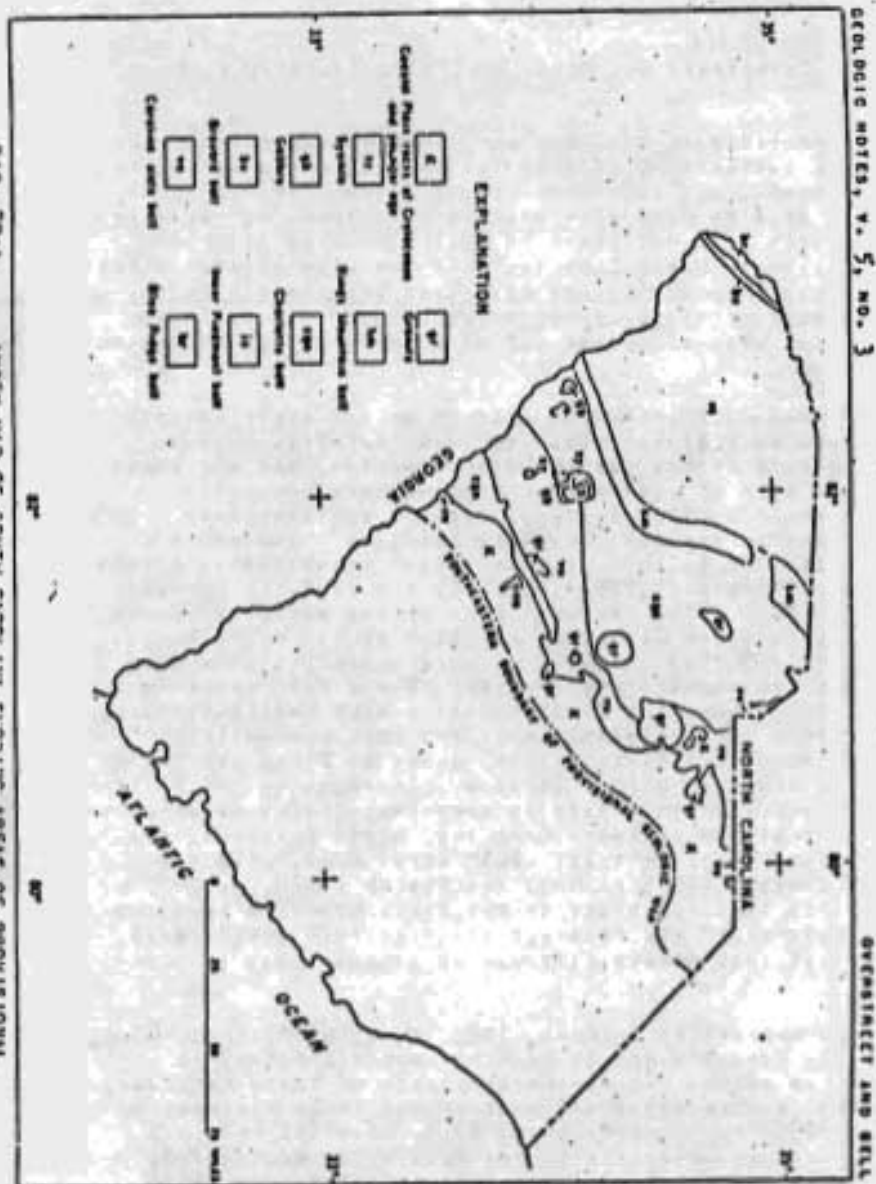
A PROVISIONAL GEOLOGIC MAP, SHOWING THE CRYSTALLINE ROCKS AND THE OVERLAPPING EDGE OF THE COASTAL PLAIN SEDIMENTS IN SOUTH CAROLINA, HAS BEEN COMPILED ON A SCALE OF 1:250,000. FEW GEOLOGIC STUDIES HAVE BEEN MADE IN THIS AREA, BUT WE HAVE FOUND FROM FIELD RECONNAISSANCE IN SOUTH CAROLINA AND FROM DETAILED STUDIES IN NORTH CAROLINA THAT THE MAIN BEDROCK TYPES CAN BE INFERRED FROM THE COUNTY SOIL MAPS AND REPORTS OF THE U. S. DEPARTMENT OF AGRICULTURE; THESE COUNTY SOIL MAPS AND REPORTS ARE THE MAIN SOURCE OF THE DATA SHOWN ON THE PROVISIONAL GEOLOGIC MAP.

FIGURE 87.1 SHOWS THE PORTION OF THE STATE COVERED BY THE MAP AND SOME CONSPICUOUS GEOLOGIC FEATURES. THOUGH THE ABSOLUTE AGES OF THE MAP UNITS ARE UNKNOWN, THE MAP SHOWS THAT A NARROW BELT OF LOW-RANK METASEDIMENTARY AND METAVOLCANIC ROCKS (FIG. 87.1, UNIT KM) EXTENDS SOUTHWESTWARD ACROSS THE CENTRAL PIEDMONT OF SOUTH CAROLINA. THE ROCKS AT THE NORTHERN END OF THIS BELT HAVE BEEN DESCRIBED BY ARTHUR KEITH AND D. B. STERRETT (1931, P. 4-6) AND BY T. L. KESLER (1944, P. 758-759). THE NORTHERN PART OF THE BELT, INCLUDING ITS EXTENSION IN NORTH CAROLINA, HAS BEEN CALLED BY P. B. KING (1955, P. 350-352) THE KINGS MOUNTAIN BELT, AND WE HAVE EXTENDED THIS DESIGNATION FOR THE BELT TO THE PART CROSSING SOUTH CAROLINA. WHERE THE KINGS MOUNTAIN BELT ENTERS GEORGIA, ITS NORTHWESTERN EDGE COINCIDES WITH THE MOST NORTHWESTERLY EXPOSURE OF THE LITTLE RIVER SERIES, SHOWN BY STOBE AND SMITH (1939) ON THE GEOLOGIC MAP OF GEORGIA. INASMUCH AS THE EASTERN PART OF THE LITTLE RIVER SERIES IS COEXTENSIVE WITH ROCKS KNOWN FARTHER NORTHEASTWARD IN SOUTH CAROLINA, NORTH CAROLINA, AND VIRGINIA AS THE "CAROLINA SLATE BELT" (FIG. 87.1, UNIT VU) KEITH AND STERRETT (1931, P. 4-5) AND KESLER (1936, P. 34) HAVE POSTULATED THAT THE ROCKS IN THE KINGS MOUNTAIN BELT AND "CAROLINA SLATE BELT" ARE POSSIBLE STRATIGRAPHIC EQUIVALENTS. WE SUGGEST THAT THIS POSSIBILITY MAY BE DEMONSTRATED IN GEORGIA.

THE BREVARD BELT (KING, 1955, P. 356-358) (FIG. 87.1, UNIT BV) WHICH CONSISTS OF LOW-RANK METAMORPHIC ROCKS, IS SHOWN TO EXTEND ACROSS THE NORTHWEST CORNER OF SOUTH CAROLINA, SEPARATING THE BILLIMAHITIC GNEISSES OF THE INNER PIEDMONT BELT (KING, 1955, P. 352-356) (FIG. 87.1, UNIT IS) FROM THE KYANITIC SCHISTS AND GNEISSES OF THE BLUE RIDGE BELT (KING, 1955, P. 358-363) (FIG. 87.1, UNIT BR). ALTHOUGH THE ROCKS OF THE BREVARD BELT RESEMBLE IN MANY WAYS THE ROCKS IN THE KINGS MOUNTAIN BELT, NO OTHER EVIDENCE FOR CORRELATION HAS BEEN FOUND.

¹REPRINTED FROM U. S. GEOLOGICAL SURVEY PROF. PAPER 400-B, 1960

FIG. 87-1.
INDEX MAP OF SOUTH CAROLINA SHOWING AREAS OF PROVISIONAL
GEOLOGIC MAP AND PROPOSED GEOLOGIC FEATURES.



EAST OF THE KINGS MOUNTAIN BELT AND MOSTLY WEST OF THE CAROLINA SLATE BELT IS A GROUP OF PLUTONIC ROCKS, LARGELY GNEISSES, CALLED BY KING (1955, P. 346-350) THE CHARLOTTE BELT (FIG. 87.1, UNIT CGY); THIS BELT THINS SOUTHEASTWARD. THE MAP SHOWS FOR THE FIRST TIME CIRCULAR AND RING-SHAPED AREAS OF SYENITE AND GABBRO WITHIN THE CHARLOTTE BELT NEAR THE GEORGIA BORDER. THE MAP ALSO DISCLOSES THAT SEVERAL GRANITIC BODIES IN THE EASTERN PIEDMONT ARE SMALL PLUTONS, QUITE UNLIKE THE NORTHEASTWARD ELONGATE BATHOLITHS THAT ARE GENERALLY SUPPOSED TO EXIST IN THE AREA (STOBE AND LJUNGBEDT, 1932). THE AGE OF THE PLUTONS IS NOT KNOWN, BUT SOME OF THEM CUT THE CAROLINA SLATE BELT, AND WE THINK THEY ARE SLIGHTLY OLDER THAN THE SYENITE.

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