GEOLOGIC MAP
OF
MONTGOMERY COUNTY
AND THE
DISTRICT OF COLUMBIA

STATE OF MARYLAND
DEPARTMENT OF GEOLOGY, MINES AND WATER RESOURCES
JOSEPH T. SINGEWALD, JR., DIRECTOR

Geology of the crystalline rocks by
ERNST CLOOS

Geology of the coastal plain deposits by
C. WYTHE COOKE
SENIOR GEOLOGIST, U. S. GEOLOGICAL SURVEY

1953

Scale 1:62500

Contour interval 20 feet.
Datum is mean sea level.

U. S. Naval Weapons Plant
LIBRARY
JUL 3 1956
MAP COLLECTION

LEGEND

QUATERNARY

PLEISTOCENE AND RECENT
- Qal — Alluvium (Shown only along major streams)
- Qt — Terrace gravels (Remnants of gravels on terraces bordering Potomac River and larger streams)
- Qp — Pamlico formation and Recent alluvium (undifferentiated) (Gravel, sand, and silt. Stream deposits passing upward into estuarine deposits to a maximum altitude of 35 feet above sea level. Also includes colluvium and artificial fill)

PLEISTOCENE
- Qw — Wicomico formation (Gravel, sand, and silt. Stream deposits passing upward into estuarine deposits to a maximum altitude of 140 feet above sea level. About 50 feet thick)
- Qs — Sunderland formation (Gravel, sand, and silt. Stream deposits passing upward into estuarine deposits to a maximum altitude of 65 feet above sea level. About 30 feet thick)

TERTIARY

PLIOCENE (?)
- Tb — Brandywine gravel (Ancient alluvial fans sloping gently downward from an altitude of approximately 500 feet above sea level. The Potomac fan includes many pebbles of chert. About 40 feet thick)
- Tbm — Bryn Mawr gravel (Ancient alluvial fans for the most part higher than 350 feet above sea level. Contains many rounded pebbles of chert in red sand and silt. About 40 feet thick)

CRETACEOUS

UPPER CRETACEOUS
- Kp — Patapsco formation and Arundel clay (undifferentiated) (Dark gray massive clay containing lignitized wood and marine fauna overlain by massive maroon clay and variegated sand and clay. Probably an outwash deposit. About 100 feet thick)

LOWER CRETACEOUS
- Kpx — Patuxent formation (Large rounded pebbles, fine white, pink, or yellow sand, and thin lenses of white or iron-stained clay and boulds. The sand beds commonly contain diamond-mined kaolin. Probably an outwash deposit. About 100 feet thick)

IGNEOUS ROCKS

UPPER TRIASSIC IGNEOUS ROCKS — TRIASSIC
- Trd — Diabase (Dike and dikes intrusive into Triassic sediments and older crystallines. Contact metamorphism is thinner in the non-crystalline wall rocks)
- Trdg — Contact metamorphic aureole (Adjacent to diabase intrusions)
- Rno — Newark Group, largely New Oxford formation (Red to purple sandstone and shale with some light-gray or yellowish arkosic sandstone. Locally, as in Montgomery conglomerate is widely distributed consisting of well-rounded pebbles in a red shaly matrix)

UNCONFORMITY

Metamorphic facies grade from coarse garnetiferous mica schist in the east into fine-grained mica schist in the west in the western portion of the County. This change may be paralleled by a change of stratigraphic facies

SUGARLOAF MOUNTAIN ANTICLINORIUM — CAMBRIAN
- Ch — Harpers phyllite (Well-banded or laminated phyllite, with thin quartz layers, sandstone or quartzite beds, and calcareous beds. Overlying Sugarloaf quartzite)
- Cs — Sugarloaf quartzite (Composed of several quartzite beds. A massive light quartzite composed of round white or blue quartz grains underlies Sugarloaf Peak. The layers below are commonly thin-bedded with shale or phyllite partings. The Sugarloaf series consists of four prominent beds with phyllite interbeds)

CENTRAL MONTGOMERY COUNTY — AGE UNCERTAIN
- Wws — Wissahickon formation, oligoclase-mica facies (Banded or laminated quartz-rich phyllites and schists with magnetite, quartz veins, and sandstone beds. Commonly composed of muscovite, chlorite, albite, quartz. Grading into coarser schist to the east. Included some Marburg schist. May be the equivalent of Harpers to the west. Calcareous layers are common. Interbeds with Damsville phyllite. ss: sandstone beds)
- Dj — Damsville phyllite (Buff purple or green phyllite and slate in places with flattened amygdules. Composed of muscovite, chlorite or chloritoid, quartz, and fine ilmenite or iron oxide dust. Probably the equivalent of Wissahickon schist. In part equivalent to Marburg schist in Frederick County. Underlain by quartzite bed)

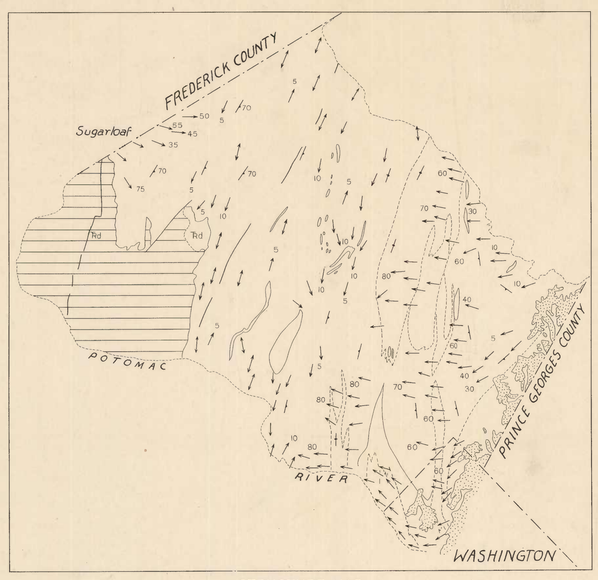
EASTERN MONTGOMERY COUNTY — AGE UNCERTAIN
- Sy — Sykesville formation (Formerly Sykesville granite. Crushed, sheared, and recrystallized rock of uncertain composition, quartz pebbles, quartz, grading into schist east and westward. Probably granitized schist)
- Lgn — Laurel gneiss (Lenses migmatite on Howard County map. Very similar to Sykesville formation and possibly its equivalent sheltered of the Wissahickon. Grades from migmatite to massive granitic-looking rock with intrusions. Grading into Wgn. Contains porphyroblasts, microcline, rich in quartz)
- Wgn — Wissahickon formation, oligoclase-mica facies (Garnetiferous quartz-muscovite schist of variable composition. Banded)

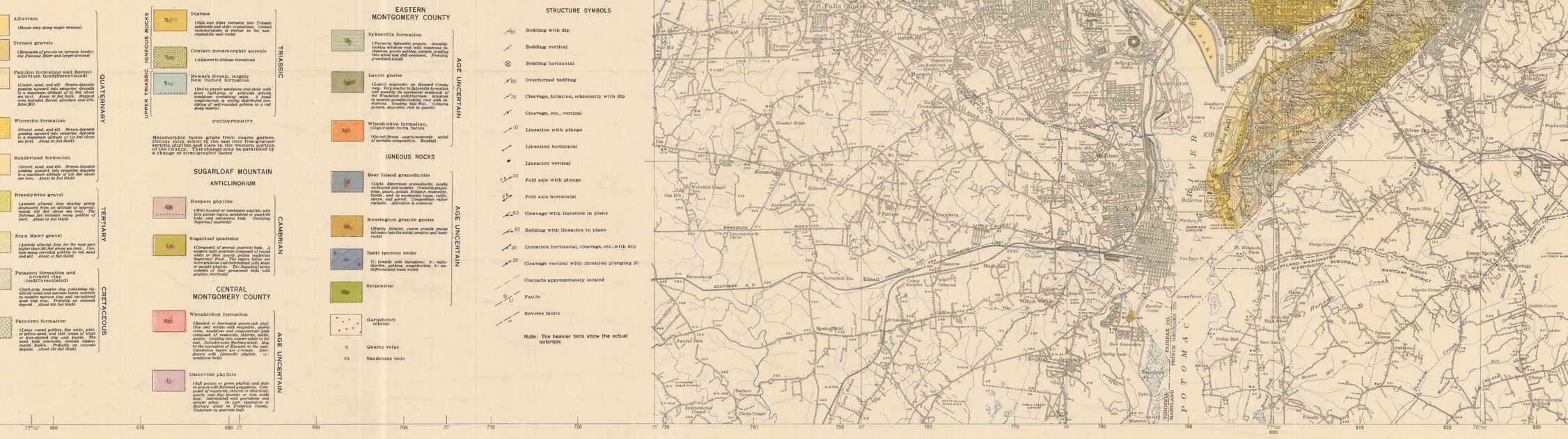
IGNEOUS ROCKS — AGE UNCERTAIN
- Gb — Bear Island granodiorite (Light, dikecordant granodiorite, mostly unfoliated and massive. Contains plagioclase, quartz, potash feldspar, muscovite, biotite, and as accessories topaz, rutile, zircon, and garnet. Composition rather variable. Alteration is common)
- Gk — Kensington granite gneiss (Mighty foliated, coarse granite gneiss recharter into the schist complex and basic rocks)
- b, m, b — Basic igneous rocks (b: tonalite with inclusions. m: metadiorites, gabbros, amphibolites; b: undifferentiated basic rocks)
- Sp — Serpentine
- Garnet-rich schists
- q — Quartz veins
- ss — Sandstone beds

STRUCTURE SYMBOLS
- 50 — Bedding with dip
- Bedding vertical
- Bedding horizontal
- 60 — Overturned bedding
- 70 — Cleavage, foliation, schistosity with dip
- Cleavage, etc., vertical
- 10 — Lineation with plunge
- Lineation horizontal
- Lineation vertical
- 20 — Fold axis with plunge
- Fold axis horizontal
- 60 — Cleavage with lineation in plane
- 60 — Bedding with lineation in plane
- 30 — Lineation horizontal, cleavage, etc., with dip
- 20 — Cleavage vertical with lineation plunging 20
- Contacts approximately located
- D — Faults
- U — Reverse faults

Note: The heavier tints show the actual outcrops

STRUCTURE MAP





G3843
.M6C5
1953