Open Report

STATE OF CONNECTICUT
GEOLOGICAL AND NATURAL HISTORY SURVEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

QUADRANGLE REPORT NO. 32
PLATE 1

BEDROCK GEOLOGY OF THE SOUTH CANAAN QUADRANGLE, CONNECTICUT

By Robert M. Gates, 1964, 1966-1971

Base map by U.S. Geological Survey
Control by USGS, USC&GS, and Connecticut Geodetic Survey
Topography from aerial photographs by multiplex methods
Aerial photographs taken 1941 and 1944. Field checked 1948.
Revised 1956
Revisions of culture and drainage from aerial photographs taken 1969
Polyconic projection. North American datum
10,000-foot grid based on Connecticut coordinate system

MN GN 13° 231 MILS 1°08' 20 MILS
UTM GRID AND 1969 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000
1 ½ 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

CONNECTICUT
QUADRANGLE LOCATION

EXPLANATION

ROCK UNITS

METAMORPHIC ROCKS

PALEOZOIC

ORDOVICIAN

Owsg / Ows / Owm

Walloomsac Formation

Owsg: Lustrous, silvery-gray to dark-gray muscovite quartz schist with abundant porphyroblasts of garnet and staurolite.

Ows: Dark-gray to black, flaggy, granulitic muscovite-biotite-plagioclase-quartz schist commonly characterized by small 1/8 - 1/4 in. clots of biotite.

Owm: Interlayered, heterogeneous assemblage of schistose marble, massive white calcitic marble, gray to black, rusty-weathering impure quartzites, and gray-weathering calcite-diopside-quartz granulite.

Unconformity

CAMBRIAN AND ORDOVICIAN

O€se / O€sd / O€sc / O€sb / O€sbq / O€sa

Stockbridge Formation

O€se: Mottled, white, gray, or cream-colored, coarse-grained calcite marble with minor micaceous quartz-schist layers.

O€sd: Interlayered assemblage of rusty-weathering quartzite, sheared, light-gray, fine-grained dolomite marble, brownish micaceous calcite marble, and calcitic dolomite marble with white quartz pods.

O€sc: Massive to sheared, iron-gray to white, fine-grained calcite-cemented dolomite marble; white quartz pods, rusty-weathering quartz streaks, and coarse dolomite crystals characterize some layers; massive, friable white dolomite marble with white platy diopside crystals up to 1 in.

O€sb: Gray to white, calcite-cemented, fine-grained dolomite marble with fine brownish schist partings; 1-2 ft beds of rusty-weathering calcitic, feldspathic quartzite and quartzite beds common; craggy weathering surfaces.

O€sbq: Very craggy weathering calcite-tremolite-quartz rock with sunbursts of very coarse-grained tremolite.

O€sa: Massive, white, fine- to coarse-grained dolomite marble with sparse tremolite, diopside, and phlogopite.

CAMBRIAN

€d

Dalton Formation

Interlayered gray-to tan-weathering, very fine-grained, thinly laminated, quartz-microcline granulites and granulitic gneiss, two mica, quartz-feldspar schists with large black tourmaline porphyroblasts on foliation planes, and minor impure quartzites and diopsidic quartzite.

€cmbg / €cmgs₂ / gg / €cmmg / €cmgs₁ / €cmfg

Canaan Mountain Formation

€cmbg: Light-rusty to gray weathering, biotitic two mica, plagioclase-quartz gneiss; generally smooth weathering in outcrop; grades into €cmgs₂ as garnet and sillimanite increase in the mica-plagioclase-quartz gneiss and as layers of the garnet-sillimanite-bearing gneiss alternate with the plain two mica, plagioclase-quartz gneiss.

€cmgs₂: Coarse-grained massive appearing, gray- to rusty-weathering, garnet-sillimanite, two mica, plagioclase-quartz with abundant accessory magnetite; weathered surface is rough and nubbly owing to garnet and sillimanite; lithologically very similar to €cmgs₁.

€cmmg: Interlayered and intergradational assemblage of mixed gneisses; light rusty-weathering quartz-plagioclase granulitic gneiss, two mica, plagioclase-quartz gneiss, and garnet-sillimanite, two mica, plagioclase-quartz gneiss; all rock types intergrade.

gg: Gray, fine-grained, smooth-weathering biotite-quartz-plagioclase granulite or granulitic gneiss; commonly occurs irregularly near contact with €cmgs₁ and €cmgs₂ and also within the unit. Outcrop areas indicated by gg.

€cmgs₁: Coarse-grained, with tan- to gray-weathering, nubbly, garnet-sillimanite, two mica, plagioclase-quartz gneiss with abundant accessory magnetite; weathered surface is rough and nubbly like €cmgs₂; lithologically similar to €cmgs₂.

€cmfg: Medium grained, two mica, plagioclase-quartz gneiss with sparse knots of muscovite-sillimanite-quartz and with porphyroblasts of crossed muscovite; minor microcline.

€wgs / €wfg

Waramaug Formation

€wgs: Light rusty-weathering, nubbly garnet-sillimanite, two mica, plagioclase-quartz gneiss with megascopic accessory magnetite.

€wfg: Light tan- to gray-weathering, fine- to medium-grained muscovite-biotite-plagioclase-quartz gneiss.

PRECAMBRIAN

p€hm / p€hma / p€hmrfg / p€hmbg / p€hm

Housatonic Highlands Massif

p€hm: Gray- to light-rusty-weathering, fine- to medium-grained granitic to two mica, quartz-plagioclase gneisses; mafic biotite-hornblende-quartz-plagioclase gneisses and amphibolites; these lithologies intergrade and are interlayered on a scale ranging from an inch to tens of feet; calc-silicates and pelitic gneisses are subordinate.

p€hmbg: Gray-and-white banded, fine- to medium-grained granitic gneiss.

p€hmrfg: Rusty-weathering quartz-plagioclase gneiss with variable amounts of biotite and with sparse muscovite-sillimanite knots.

p€hma: Fine- to medium-grained amphibolite.

PALEOZOIC PLUTONIC ROCKS

gr

Granite

Syntectonic to post tectonic granite; white to gray, fine- to medium-grained, massive to gneissic biotite granite.

SYMBOLS

OUTCROPS

Single outcrop or closely spaced outcrop.

Contact

Short dashed where approximately located; dotted where concealed by excessive soil or surficial deposits

Thrust Fault

Dashed where approximately located; dotted where concealed; teeth on upper plate.

U / D

Steep Fault

Dashed where approximately located; dotted where concealed. U, upthrown side; D, downthrown side.

35

Inclined

Strike and dip of beds or compositional layering

35 Inclined — Vertical — 35 Generalized where undulatory

Strike and dip of foliation

Horizontal — Subhorizontal

Strike and dip of foliation parallel to bedding or compositional layering.

25 Inclined — Horizontal — 35 Generalized where undulatory

Bearing and plunge of axes of mesoscopic folds or small crenulations on S surfaces. May be combined with planar symbols.

Note: All data recorded and plotted to nearest 5°.

Pit in sand, gravel or till — Abandoned bedrock quarry — (11) Drill hole