EXPLANATION

The purpose of this map is to describe geologic map units in terms of physical properties useful for engineering and land management. Map units are derived from the published geologic map by Collins (1954), modified from data obtained by recent detailed mapping in parts of this quadrangle and adjacent quadrangles, and from interpretation of aeromagnetic data. Unlike a geologic map, this map is not concerned with relative stratigraphic position, and geologic names are omitted. Units are designated by letter and most units include a variety of rock types each with significantly different physical properties. These variations are too small to delineate at the map scale. This explanation is keyed to a bedrock-properties matrix (Table I) that classifies the bedrock in terms of significant physical properties. Rock terms underlined below correspond to specific rock types listed and described in Table 1.

Bedrock in the Ellington quadrangle is separable into two major divisions by the prominent north-south trending fault near the center of the quadrangle. Rocks to the west are relatively soft, pervious sedimentary rocks almost entirely covered by glacial debris. Rocks east of the fault are hard, relatively impervious metamorphic and igneous rocks covered by a patchy mantle of thin glacial debris.

Color terms describe fresh rock.

A

Lithology: light-gray, poorly layered gneiss.
Occurrence: extreme southeast corner of quadrangle, two small exposures.

B

Lithology: dark-greenish-gray to greenish-black platy schist, layers 1 to 10 feet thick, interlayered with medium-greenish-gray layered gneiss in about equal proportions. Dark-greenish-gray massive gneiss common locally.
Occurrence: in southeast corner of quadrangle, a northeast-trending band mostly of platy schist rests on E; good exposure in road cuts on Bald Hill Road where it crosses ridge (701, 800 E; 387, 400 W - Connecticut State Coordinates, in feet). Block immediately to west mostly of massive gneiss, intertongues northeast with C. Well exposed on Soapstone Mountain and in several smaller areas near center of quadrangle, mostly layered gneiss with massive gneiss particularly near crest of mountain; these areas enclosed by unit G. Several large blocks along west side of major fault and at northern border of quadrangle, mostly interlayered platy schist and layered gneiss; representative outcrops in scarps at south end Bald Mountain just north of County Road (690, 150 E; 419, 700 N) where contact with unit G is exposed.
Prospects and quarries: at least two prospects on southeast slope Soapstone Mountain from which an inferior grade of soapstone has been quarried.

C

Lithology: mostly medium-gray, medium-to-fine-grained layered gneiss with minor light-gray, finer-grained layered gneiss. Distinguished from unit B, with which it intertongues, by lack of greenish color; less subject to parting along layers than unit B. Physical properties similar to that of unit G, but less massive.
Occurrence: southeast corner of quadrangle, fine-grained, granular layered gneiss, intertongues with unit B. Northeast trending band through Newell Hill and area of hill 663 north of Hopkins Road, mostly medium-grained layered gneiss to massive gneiss. In two other structural blocks outcrops are poor and presence is inferred. Representative exposure on crest of hill 663.

B, C

Lithology: blocks in which B and C are interlayered or undifferentiated
Occurrence: interlayered B and C exposed in triangular shaped block west and southwest of Crystal Lake. Representative exposures: 1. in gravel pit between Burbank Road and State Highway 30 (699, 400 E; 400, 750 N), greenish gray to black platy schist and layered gneiss interlayered with light-gray layered gneiss. 2. road cuts on State Highway 30 at Crystal Lake (701, 300 E; 403, 800 N). Exposures of unit B west of road highly contorted by faulting; thinly layered gneiss of unit C exposed east of road. Undifferentiated B,C in blocks with no exposed bedrock on southeast side of fault along Martins Brook. Presence inferred.

D

Lithology: light-gray flaggy quartzite in beds as much as one foot thick interlayered with 1/16 to one inch-thick beds of light-to-medium-gray mica-rich schist.
Occurrence: two bands in southeast corner of quadrangle well exposed in bedrock ridges. Unit commonly has high magnetic susceptibility and occurrence in area of no exposure inferred in part from magnetic anomaly. Representative exposure in small abandoned quarry at road intersection (elevation 816) on Hunter Rd. 3000 ft. southeast of Crystal Lake Rd. (701, 400 E; 397, 300 N).
Prospects and quarries: unit has been quarried for flagstone and building stone at several localities; no operating quarries in quadrangle.

E

Lithology: gray platy schist interlayered with gray mica-rich schist in beds 1/16 to 6 inches thick; thin quartzite lenses amounting to less than 5 percent of the unit.
Occurrence: northeast trending band about 1/2 mile wide along northwest side of fault in southeast corner of quadrangle. Generally poorly exposed; representative outcrop just west of Hunter Road (648, 500 E; 389, 600 N) but here the layered rocks are more conspicuously folded than elsewhere.

F

Lithology: brown-weathering mica-rich schist about 75 percent and rust-weathering sulfidic schist about 25 percent, interlayered on scale of 1/16 inch to 5 feet.
Occurrence: mostly buried by surficial debris, but exposed in 3 small, widely separated outcrops. Aerial extent of blocks on map largely interpretive. 1. Outcrop on State Highway 30 just north of Grant Brook (697, 950 E; 394, 300 N). 2. Outcrop on State Highway 190 just west of Scitly Road intersection (686, 700 E; 419, 400 N). Here unit F is in contact with greenish-gray platy schist of unit B. 3. North border of quadrangle on west side of major fault.

G

Lithology: medium-to light-gray, medium-grained massive gneiss with minor thickly layered gneiss.
Occurrence: occurs in most of the large structural blocks between the major fault and the fault along Martins Brook. Unit G is bordered by and encloses units B and C and contains many more inclusions of B and C, too small to show on map. Accessible representative exposures crop out along Shenipsit Lake; extensive outcrops also along the crest and east slope of Bald Mountain.

H

Lithology: mottled dark-and-light-greenish-gray, medium-to-coarse-grained massive gneiss.
Occurrence: exposed on several small knobs within unit G in northeast part of the quadrangle.

J

Lithology: rock breccia more or less cemented by silica; i.e. silicified rock.
Occurrence: mapped in two narrow slivers along major fault. Probably occurs at other localities along major fault and may be present along other faults. Representative exposures in small excavation north of Mountain View Road (683, 500 E; 415, 260 N): greenish-gray platy schist fragments cemented by silica. Quartz veins as much as 6 inches wide are common.

K

Lithology: dark-gray, dense diabase; greyish-brown weathered rind commonly about 1 cm. thick.
Occurrence: narrow linear features less than 200 feet wide extending in a north to northeast direction. Principal body extends for a distance of about 4 miles along a fault zone that passes just east of Soapstone Mountain. Representative exposure on east side of eastern road to Soapstone Mountain lookout (692, 150 E; 410, 000 N).
Prospects and quarries: diabase is quarried for road metal and crushed stone aggregate outside of quadrangle; no operating quarries in quadrangle.

L

Lithology: consists of reddish-brown sandstone, 60 percent; and conglomerate with pebbles as large as 3 to 4 inches, 30 percent; with minor amounts of siltstone and shale. Exposures elsewhere in Connecticut suggest that conglomerate becomes more common and coarser toward the major fault.
Occurrence: underlies entire area west of major fault. Crops out only in small exposures in southwest corner of quadrangle and a few exposures to the north. Also encountered in several water wells.
Prospects and quarries: sandstone has been quarried for dimension stone at many localities in the Connecticut Valley, but no commercial quarries are known to have operated in the Ellington quadrangle.

Symbols

Contact

Boundaries between mapped geologic units. The symbol may represent a sharp lithologic break or, more commonly, a gradational zone. Contacts are rarely exposed.

Fault

Boundary between blocks of bedrock along which displacement probably has occurred. May be narrow surface or a zone of rupture several hundred feet wide within which rock generally is weak, and joints and fractures are closely spaced tending to decrease in abundance outward. Zone of weakness may extend to depths of hundreds of feet and act as channels for groundwater or mineral-bearing solutions. Breccia (severely fragmented rock) and gouge (pulverized clayey material) may be common. Fault traces generally form troughs of low relief or scarps carved in weak fractured rock and subsequently covered by overburden.

Strike and dip of foliation

Symbol defines the attitude at a specific locality of a surface or surfaces formed by preferred orientation of minerals in metamorphic rocks. In the Ellington quadrangle this foliation is parallel to layering. The line is oriented parallel to the strike of foliation and indicates the direction in which the foliation trends on a horizontal (or map) surface. The solid triangle indicates the direction in which the layering or foliation is inclined; the number represents degrees of inclination. The known data concerning distribution and attitude of exposed bedrock is shown by these symbols on the geologic map.

Strike and dip of bedding

Symbol defines the attitude of bedding (layering) in sedimentary rocks. The line represents the strike and indicates the direction that the bedding trends on a horizontal (or map) surface. The short line represents the dip at right angles to the strike and indicates the direction in which the bedding or layering is inclined; the number represents degrees of inclination.

References

Collins, G. E., 1954, The bedrock geology of the Ellington quadrangle, Connecticut: State Geological and Natural History Survey, Quadrangle Report No. 4.

Pitkin, J. A., Philbin, P. W., and Gilbert, F. P., 1969, Aeromagnetic map of the Ellington quadrangle and part of the Rockville quadrangle, Hartford and Tolland Counties, Connecticut: U. S. Geological Survey Geophysical Investigations Map GP-648.

To accompany:
Plate 1
Bedrock Lithology
Ellington Quadrangle, Connecticut
by
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1972

U.S. Geological Survey
OPEN FILE MAP
This map is preliminary and has not been edited or reviewed for conformity with Geological Survey standards or nomenclature.