EXPLANATION

Dc

Chiputneticook Quartz Monzonite

Gray biotitic quartz monzonite

This rock, named for and best exposed on islands and shores of the Chiputneticook chain of lakes on both sides of the International Boundary between Maine and New Brunswick, crops out most commonly in the Danforth, Forest, and Vanceboro quadrangles, Maine. The type locality is at Greenland Cove in East Grand Lake in the Danforth quadrangle. In the Forest quadrangle, the best outcrops indicated are east of Mills Hill. The rock is light gray, coarse-grained, porphyritic, and has an average grain size larger than 1/4 inch, and where porphyritic, the euhedral potassic feldspar phenocrysts range from 1/4 by 1 inch to 1/2 by 2 inches, in places showing rapakivi texture. The porphyritic texture commonly extends to within a few feet of the border. Outcrops of a pegmatite were reported (Forsyth, 1955) on the southwest slope of Greenland Mountain. The quartz monzonite is an easterly-trending elliptical pluton exposed for approximately 16 miles in a northerly direction and 40 miles along the easterly axis. The composition ranges from quartz monzonitic to granitic. The geologic age as determined by the potassium-argon method is about 400 m.y. in the Danforth quadrangle (Paul, Stern, Thomas, and Elmore, 1963) and 380 m.y. in the Fosterville, N.B. area (Tupper and Hart, 1961). The mass intrudes metasedimentary rocks of known Silurian age, and is considered to be of Devonian age. The rock is indicated as Dg on the geologic map of the Danforth quadrangle (Larrabee and Spencer, 1963).

Sd

Daggett Ridge Formation

Quartzite, metaconglomerate, metasiltstone, and slate

The Daggett Ridge Formation is named for the ridge on which the rock is best exposed in the Danforth quadrangle, Maine; its type locality is along and south of the Maine Central Railroad. Chloritic argillaceous quartzite, quartzite metaconglomerate with fractured pebbles and cobbles as large as 8 by 12 inches, gray and gray-green slate and metasiltstone, and thin lenses of magnetite-bearing interbedded black slate and metasiltstone comprise the formation. The magnetite-bearing slate and metasiltstone unit crops out in the eastern part of the Vanceboro quadrangle, Maine, and is believed present in other parts of the Danforth and nearby quadrangles on aeromagnetic evidence. Thin green charty lenses of rhyolitic metatuff occur along Baskhegan Stream near South Bancroft in the Danforth quadrangle. The best outcrops in the Forest quadrangle are northeast of Fresh Lake, and there it is a hornfels on Pirate Hill, and Nobel Mountain. The formation is exposed over a width of about 5,000 feet in the Danforth quadrangle, where quartzite and metaconglomerate form most of the thickness, which is estimated to be several hundreds to one thousand feet. Inadequate exposures and isoclinal folding prevent an accurate determination of thickness of the formation or any of its members. The formation is assigned a Silurian age based upon meager paleontological evidence; a single dorsal valve of an orthoid brachiopod with branching costae and an apparent faint concentric ornamentation was found in the metaconglomerate unit (Neuman, R. B., and Cloud, P. E., written com-

[redacted]

Sk

Kellyland Formation

Gray metasiltstone, metasandstone, and slate

The Kellyland Formation of Silurian(?) age, named for the village closest to its largest and most representative outcrop at Grand Falls of the St. Croix River, in the Kellyland quadrangle, Maine, is interbedded sericitic pale gray metasiltstone, arenaceous metasiltstone, argillaceous metasandstone and quartzite, and thin beds of darker gray slate. Most beds contain iron carbonates; the metasiltstone and coarser beds contain more carbonate than does the slate. Some of the coarser beds are tuffaceous. Slate commonly occurs in beds from 1 to 8 inches thick, and locally from 1/5 inch to 3 or 4 feet thick. The metasiltstone and metasandstone beds commonly range from 4 inches to 4 feet in thickness, ranging locally to 20 feet. Rarely, beds of metasiltstone contain thinly laminated layers of light and dark metasandstone. Thin beds of quartz granule metaconglomerate are associated with metasandstone and quartzite beds in places. The metasiltstone beds in many places show good gradation in texture and cross-bedding. Outcrops are sparse in the Forest quadrangle. The average content of slate in the formation is about 20 percent, and the thickness of the formation has not been ascertained because of the lack of continuous outcrops and isoclinal folding. However, it appears to exceed 1,000 feet. The Kellyland Formation is the stratigraphic equivalent of at least part of the Pole Hill Division of the Carlowbo Group in New Brunswick (Alcock, 1946), and is believed to be the stratigraphic equivalent of any unit Sd in the Danforth and adjacent quadrangles in Maine (Larrabee and Spencer, 1963).

DEVONIAN

SILURIAN

SILURIAN (?)

O€u

Cambrian or Ordovician, undifferentiated

Chloritic quartzite, and green and red slates

A considerable thickness of greenish argillaceous and chloritic quartzite, sandy metasiltstone, thin beds of green slate, and rarely, thin beds and lenses of red and purplish slates comprise the rocks of unknown but presumably Ordovician or Cambrian age: there is a remote possibility of a Lower Silurian age, as was indicated more positively on the Danforth geologic quadrangle map by Larrabee and Spencer (1963). The quartzite and sandy metasiltstone, commonly in 1/4 to 1/2 inch beds separated by paper-thin laminae of green slate, have been minutely crumpled by slippage along the slate laminae, and the foliation developed was later folded. This predominantly impure quartzite unit contains beds and lenses of green slate from a few inches to 1 or 3 feet thick, and occasional lenses of red to purplish slate from 1 to 6 inches thick and commonly less than 100 feet long. Rarely, a thin pinkish quartz and feldspar granule metaconglomerate is present. These rocks are best exposed along the southeast shore of Baskhegan Lake, and the purplish-gray slate, locally much thicker, is exposed along Route 1, in the southeastern corner of the Danforth quadrangle. These rocks are well-exposed along the south shore of Baskhegan Lake in the Straggly Lake quadrangle. The rocks extend northeastward into the Forest quadrangle, where they are well-exposed on islands in and on the east shore of Drake Lake. All except the red slate crop out along the Maine Central Railroad between Forest and Kossuth stations. Although outcrops are lacking over wide areas where needed for determination of structural and stratigraphic relations with rocks of other ages, the rocks of Ordovician or Cambrian age are thought to have been faulted up into the area. A well for oil was fruitlessly drilled in these rocks at Brookton in the Danforth quadrangle, in the 1950's. Well cuttings were chloritic quartzite, and red and green slates. The well was approximately 390 feet deep when measured in 1959.

CAMBRIAN OR ORDOVICIAN

References

Alcock, F. J., 1946, Preliminary map, Honeydale, New Brunswick: Canada Geol. Survey Paper 46-3, geologic map with descriptive notes, scale 1 in. = 1 mi.

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1963, Ages of intrusion and metamorphism in the Northern Appalachians: Am. Jour. Sci., v. 261, p. 1-18, index map, 1 inch = 50 miles.

Forsyth, W. T., 1955, Airborne magnetometer investigations in eastern Maine: Maine State Geologist Rept. for 1953-54, p. 34-35, Geologic map of the Forest City area, scale 1 inch = 4 miles.

Larrabee, D. M., and Spencer, C. W., 1963, Bedrock geology of the Danforth quadrangle, Maine: U. S. Geol. Survey GQ-221, map scale 1:62,500 (in press).

Tupper, W. M., and Hart, S. R., 1961, The age of granite complexes in the Central Highlands and western part of the Southern Highlands of New Brunswick: Carleton University Dept. of Geology, Geological Paper 61-1, 9 p. with map, scale 1 in. = 36 mi.

Outcrop or group of outcrops

Contact

Solid line where approximately located, short dashed where inferred

Contact

Located by aeromagnetic survey

Approximate limit of hornfels zone

Stippled area has been contact metamorphosed

Fault

Short dashed where inferred

Direction and plunge of minor fold

Strike and dip of beds

Dot indicates top of beds known from sedimentary textures or structures

Strike of vertical beds

Dot indicates top of beds known from sedimentary textures or structures

Strike and dip of overturned beds

Dot indicates top of beds known from sedimentary textures or structures

Strike and dip of foliation

Strike of vertical foliation

Strike and dip of foliation and beds where parallel. Dot indicates top of bed known from sedimentary textures or structures

Strike and dip of slaty cleavage

Strike and dip of slaty cleavage and beds where parallel. Dot indicates top of bed known from sedimentary textures or structures

Gravel pit

Passable truck roads

Located approximately from aerial photographs