PRELIMINARY BEDROCK GEOLOGIC MAPS OF THE NEWPORT AND PRUDENCE ISLAND QUADRANGLES AND PART OF THE SAKONNET POINT QUADRANGLE, RHODE ISLAND

BY GEORGE E. MOORE, JR. 1975

m

Minette Dikes--Medium-gray fine- to medium-grained minette where least altered; soft punky yellow-brown rock where most altered. Contains abundant biotite or alteration products of biotite, potassium-feldspar, plagioclase near albite in composition, quartz, pyroxene, much apatite, and generally abundant calcite, pyrite, epidote, white mica, and other secondary minerals. Generally massive, locally biotite expresses a flow structure parallel to the dike walls; contacts sharp, chilled borders as much as 5 inches wide in some places; inclusions numerous. Narrow vuggy veinlets of quartz, pink feldspar, chlorite, and carbonate are common.

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d

Diabase--Medium-gray to dark greenish-gray highly-altered diabase in sills as much as 150 feet thick. Fine-grained in chilled border zones to coarse-grained near centers of sills. Mostly massive, but locally along edges of the sills the rock shows weakly-developed cleavage. Composed of highly epidotized and chloritized plagioclase (now An_{5-10}); several varieties of amphiboles including some with brown pleochroism that perhaps is an original mineral, greenish actinolitic hornblende, and colorless tremolite; accessory biotite, sphene, apatite, and magnetite-ilmenite; and much chlorite and epidote as alteration products.

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Rhode Island Formation

Pris — Sandy and conglomeratic facies made up of cross-bedded medium- to coarse-grained light-gray, blue-gray, and dark-gray quartzose granular schist, impure quartzite, and pebble conglomerate, and minor thin beds of dark phyllite. Most of these rocks contain abundant metacrysts of biotite, and some contain small garnets; most of the pebbles in the conglomerate are quartzite and sandstone, some are slate, and a few are feldspar.

Prip — Phyllitic or argillaceous facies, mostly black and gray slate and fine-grained phyllite, but some fine- to coarse-grained light- to dark-gray meta-sandstone and meta-graywacke, pebble- to coarse-conglomerate (cgl), thin beds of impure and graphitic meta-anthracite and graphitic slate, and a few beds of hornblende schist and gneiss. Many of the rocks of this unit, in the appropriate metamorphic grade, contain metacrysts of ilmenite, chlorite, biotite, and garnet. The slate and phyllite locally contain fossil impressions of leaves and stems.

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Pric

Coarse conglomerate, including the Purgatory conglomerate of Foerste (1899, p. 366) and possibly others, locally with thin beds and lenses of quartzite and slate. The most abundant clasts are medium-grained light-gray to dark blue-gray medium-grained quartzite, others are light-gray fine- to medium-grained sandstone, light-gray thin-bedded and cross-bedded quartzite, coarse-grained white quartzite, light-gray felsic volcanic rock containing phenocrysts of quartz and feldspar, chlorite schist and greenstone containing metacrysts of magnetite, blue-gray quartzite containing fossils of linguloid brachiopods, black slate and slaty quartzite, and medium-grained light-gray massive granite. In much of the conglomerate the largest clasts are no more than 12 inches long, some is much coarser and the largest clast measured is 17 by 25 by 77 inches in demensions. In most places the clasts have been deformed into elongate ellipsoids oriented so as to produce well-developed lineation and a less marked foliation.

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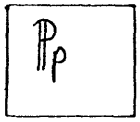

Pondville Conglomerate--Blue-gray arkosic conglomerate, and conglomerate and coarse-grained gritty sandstone containing dark smoky-gray quartz in a sparse sericite or black slaty matrix; in much of these rocks the feldspar clasts have been altered to sericite; locally contains thin slaty beds.

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md

Metamorphosed Dikes and Sills--Felsic to basaltic dikes and sills, older than the regional metamorphism, and exposed locally along the south shores of Conanicut and Aquidneck Islands. These bodies contain fine-grained silvery-gray, medium-gray, green-gray, and gray-green phyllitic rocks that bear differing amounts of the minerals quartz, muscovite-sericite, chlorite, biotite, hornblende, carbonate, montmorillonite (?), pyrite, and magnetite-ilmenite-leucoxene. Most are 1 to 10 feet thick, some are as much as 25 feet thick.

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pg

Porphyritic Granite--Light-gray, greenish-gray, and pink-gray coarse-grained massive granite, porphyritic in most places with abundant phenocrysts of flesh-colored to salmon euhedral to subhedral microcline microperthite as much as 3 inches long. Main constituents are microcline microperthite, albite, quartz, hornblende, biotite, chlorite, and epidote. Effects of deformation and hydrothermal activity include a maze of closely-spaced small joints and faults, granulation of mineral grains, alteration of plagioclase and biotite, and narrow veinlets of secondary minerals.

fg

Flesh-colored to pinkish-gray fine-grained, medium-grained, and aplitic massive granite in small irregular bodies and dikes. Is intrusive into the porphyritic granite in some places and grades into it in other places.

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vs	Meta-volcanic and volcanic-sedimentary rocks--Mostly medium-gray, dark-gray, blue-gray, gray-green, green, and purplish-gray very fine-grained dense flinty to fine-grained rocks; even-grained in most places but some has grains of quartz, feldspar, and rock fragments as much as 3 mm in diameter; probably contains tuff, lapilli tuff, volcanic sandstone, and volcanic siltstone: some more massive parts may be flows and small intrusive bodies; bedding most evident on weathered or glacially-polished surfaces; some beds cross bedded and graded bedded. These rocks grade into light-gray, dark-gray, and greenish-gray volcanic breccia that contains fragments of volcanic rocks in general appearance similar to the matrix and, locally, contains scattered pebbles of quartz. Near base of unit, conglomerate beds as much as 50 feet thick contain pebbles of quartzite, quartz, granite, and volcanic rocks, and a few thin beds and lenses of white to gray marble.

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sm

Slate and Meta-sandstone--Pale-red-purple to grayish-red-purple and green, gray-green, green-gray, light-gray, and dark-blue-gray slate, sandy slate, and phyllite interbedded with fine- to coarse-grained meta-graywacke, meta-sandstone, quartzite, and fine-grained conglomerate. Most beds no more than a few inches thick, but some a few tens of inches thick. Graded bedding common; cross-bedding occurs locally. The red-purple color cuts across bedding and is secondary. Slump structures resulting from penecontemporaneous deformation locally abundant. Most argillaceous beds have slaty cleavage, not parallel to bedding in most places; coarser clastic beds have fracture cleavage. Minor lenses of fine-grained white to light-gray marble that weathers white to light buff, in the upper part of the unit. This unit appears to grade into the overlying unit.

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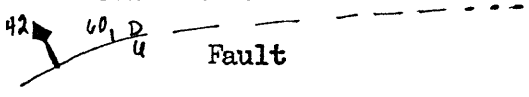
SYMBOLS

Bedrock outcrops and areas of closely spaced bedrock outcrops.

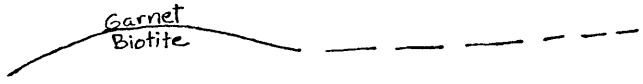
Contact

Long dashed where approximate; short dashed where indefinite; dotted where concealed.

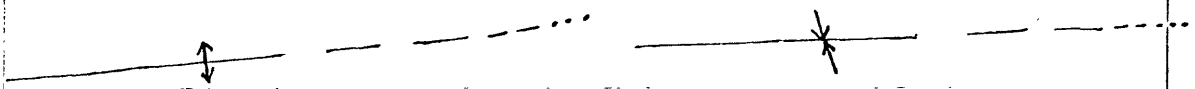


Fault

Dip of fault plane shown where observed. U, upthrown side; D, downthrown side. Long dashed where approximate; short dashed where indefinite; dotted where concealed. Arrow indicates bearing and plunge of slickensides.



Mineral Isograd in Rocks of the Rhode Island Formation.



Axial trace of anticline Axial trace of syncline

Long dashed where approximate; short dashed where indefinite; dotted where concealed.

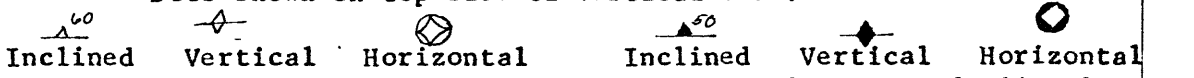
Planar Features

(symbols for planar features, linear features, and minor folds are commonly combined)

Inclined Vertical Overturned Horizontal

Strike and Dip of Bedding

Top side of beds known in some places, determined by means of graded bedding, • ; crossbedding, •• ; or channeling, ••• . Dots shown on top side of vertical beds.

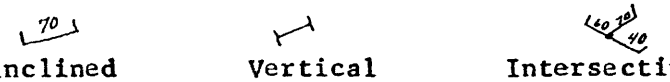


Inclined Vertical Horizontal Inclined Vertical Horizontal

Slaty cleavage and schistosity Fracture cleavage and slip cleavage

Foliation resulting fromparallelism of flattened elongated pebbles in conglomerate

Strike and Dip of Foliation



Inclined Vertical Intersecting Joints

Strike and Dip of Joints

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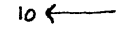
Linear Features



Plunging

Horizontal

Bearing and Plunge of Lineation

Lineation expressed by pebbles P, by mineral grains M, by crinkles C, or by a fold axis F.

Minor Folds

Inclined axial plane and inclined axis

Vertical axial plane and inclined axis

Inclined axial plane and horizontal axis

Horizontal axial plane and horizontal axis

Foliation parallel to axial plane of fold, axis inclined

Strike and Dip of Axial Plane of Minor Fold; Bearing and Plunge of Fold Axis

Map pattern of fold shown where determined

f

fossil plant locality

stone quarry; most are long abandoned

coal mine, long abandoned

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