

NOTES ON THE MINERAL LOCALITIES OF RHODE ISLAND

PART II. REMAINING COUNTIES

LLOYD W. FISHER AND CHARLES G. DOLL, *Brown University*.

MINERALS NOT INCLUDED UNDER PROVIDENCE COUNTY<sup>1</sup>

Almandite	Lignite	Quartz
Apatite	Magnetite sand	Amethystine
Asbestos	Masonite	Asbestiform
Autunite	Monazite	Carnelian
Chabazite	Oligoclase	Flint
Chlorite	Olivine	Jasper
Epidote	Prochlorite	Scapolite
Fluorite	Phlogopite	Sillimanite
Labradorite	Pyroxene	Staurolite
		Stilbite
		Zoisite

BRISTOL COUNTY

The major portion of Bristol County shows sedimentary rocks consisting chiefly of the Rhode Island formation of shales, conglomerates and sandstones. B. K. Emerson<sup>2</sup> has mapped the peninsular portion of Bristol Neck as granodiorite. The low cliffs bordering the Taunton River are made up of a coarse grained to porphyritic pink orthoclase granite cut by numerous quartz stringers and pegmatitic granite. The low cliffs of the Mt. Hope Bay region are mainly agatized quartz similar to the Diamond Hill area of Providence County.

The Bristol area, in the vicinity of Portsmouth Ferry, was famed years ago for the beautiful specimens of amethystine quartz which were found about 1835.

BRISTOL

LOCALITY	MINERALS FOUND	REMARKS
Bristol Highlands	Limonite	After pyrite
	Melanterite	White; encrusting shale.
	Pyrite	Crystals as large as 1 cm.

<sup>1</sup> L. W. Fisher and E. K. Gedney: Notes on the Mineral Localities of Rhode Island. *Am. Mineral.*, 11, No. 12, pp. 334-340, (1926.)

<sup>2</sup> B. K. Emerson: Geology of Massachusetts and Rhode Island. *U. S. G. S. Bull.* 597. See map.

See also A. C. Hawkins, and C. W. Brown: Basic Rocks of Rhode Island. Their correlation and relationship. *Bull. Geol. Soc. Amer.*, 26, pp. 92-93.

LOCALITY	MINERALS FOUND	REMARKS
Bristol Ferry N. of light	Epidote	Along quartz veins.
	Hornblende	½ in. crystals in quartz.
	Muscovite	Large plates in pegmatite.
	Orthoclase	Pink; white; in dikes.
	Quartz	Massive; milky; in veins.
	Rutile	As needles in quartz.
E. of light	Same as above and Chlorite	Pseudomorphous after biotite.
	Ilmenite	In plates in pegmatite.
	Magnetite sand	Along strand line.
	Phlogopite	In 2 in. orthoclase dike.
	Quartz <sup>3</sup>	Amethystine variety.
Mt. Hope Bay area	Agate	In definite, parallel bands; some 2 in. wide; reds and greens predominate.
	Hematite	Thin plates.
	Quartz	Massive, in druses.

## KENT COUNTY

Fringes of sedimentary rocks are found in the east section of this county in contact with a crystalline background which is quite metamorphosed to the west. Minerals are most abundant in the latter areas. The authors have deemed it advisable to include the northern portion of Moosup Valley, which runs northward into Providence County, in this discussion. The rocks of this extreme western area are chiefly Moosup Valley gabbro, Northbridge and Putnam gneisses, quartz stringers, granite pegmatites, granites and various schists.

## TOWN OF COVENTRY

LOCALITY	MINERALS FOUND	REMARKS
Moosup Valley area	Chlorite	In large plates
Bennett Hill <sup>4</sup> 2 mi. S. W.	Epidote	Fair sized crystals, near contact with quartz and schist.

<sup>3</sup> The best locality for amethystine quartz located by the writers is about 100 yards east of the ferry near a spring. It is found in a disintegrating granite. Some excellent blue crystals, four to six inches in length, are in the Museum of the Department of Geology. These were shown at the Centennial in Philadelphia in 1876 by the Providence Franklin Society.

<sup>4</sup> This is the old South Foster Gold mine locality which is said to have produced gold, chiefly from pyritiferous-quartz veins. Four open pits filled with water were visible at the time of the study. The foundations of a rather large stamp mill still stand.

LOCALITY	MINERALS FOUND	REMARKS
Between S. Foster and above.	Hornblende	Three in. long.
	Orthoclase	Large pink crystals.
	Pyrite	Large veins, 4 to 6 in. in width in quartz.
	Pyrrhotite	With pyrite.
	Actinolite	In schist.
	Apatite	Euhedral crystals.
	Biotite	Some 8 in. plates.
	Epidote	Near contacts.
Along Moosup River N. from highway	Garnet	Near contacts.
	Magnetite	Octahedral crystals in pegmatite.
	Scapolite	Large crystals in the scapolite-biotite gneiss.
	Chlorite	In schist with olivine.
	Cyanite <sup>5</sup>	In schist.
6 mi. S. W. of Clayville	Ilmenite	Platy, lamellar.
	Labradorite	Large phenocrysts in gabbro.
	Microcline <sup>5</sup>	In drift boulders.
	Olivine	Large grains in fresh gabbro.
	Serpentine	From the olivine.
N. of W. Greenwich	Chlorite	Platy on quartz crystals.
	Quartz	Massive; milky; smoky; doubly terminated.
	Tourmaline	In quartz veins.
	Magnetite	Octahedral crystals.

EAST GREENWICH

In the northwestern portion of the town there are some excellent exposures of the granite porphyry of the East Greenwich group.<sup>6</sup> The best mineral localities are in this porphyry and are described under Warwick.

LOCALITY	MINERALS FOUND	REMARKS
Bald Hill East slope	Biotite	In the porphyry.
	Magnetite	Where microgranite cuts dark colored granite.
	Microcline	In blue-quartz porphyry.
	Orthoclase	In blue-quartz porphyry and granite porphyry.

<sup>5</sup> Not found by the writers but reported from specimens in the departmental museum. Specimens collected by C. W. Brown and others.

<sup>6</sup> B. K. Emerson and J. H. Perry: Green schists and associated granites and porphyries of Rhode Island. *U. S. G. S. Bull.* 311, p. 58 (1907).

LOCALITY	MINERALS FOUND	REMARKS
	Quartz	Blue; in the blue quartz porphyry.
Bellefont <sup>7</sup>	Agate	In quartz veins.
	Hematite	Small plates.
	Graphite	In shales.
Drum Rock Hill	Epidote	In quartz veins.
W. of Apponaug	Garnet	In conglomerate.
	Hematite	In quartz veins.
	Ottrelite	In conglomerate.
Gaspe Point	Magnetite sand	With small garnets; strand line.
Norwood	Pyrite	Large xls. in shale.
Natick	Chlorite	These minerals occur in or near the contact of quartzite, conglomerate and arkose. They are also found interstitially on high bluff west of village.
	Epidote	
	Garnet	
	Magnetite	
	Ilmenite	
	Orthoclase	In pegmatite.
	Masonite <sup>8</sup>	
Pawtuxet <sup>7</sup>	Quartz	Jasper and carnelian in shales.
Potowomut Neck	Graphite	In shales.
(S. side of Greenwich cove)	Quartz	Asbestiform; milky; and ferruginous.
Spencer Hill	Magnetite	Probably secondary, penetrating microcline.
(S. and W. slope)		
	Quartz	In granite porphyry.
1. mi. southwest	Augite	In diabasic dike.
	Garnet	Almandite in conglomerate.
	Labradorite	In fair sized xls., in diabasic dike.
	Quartz	Bordering biotite in diabasic dike.
Warwick Neck	Augite	Crystals in drift.
	Graphite	In shales.
	Jasper	In shales.
	Limonite	Secondary after pyrite.

<sup>7</sup> These towns are just north of the Pawtuxet River which divides Kent and Providence Counties.

<sup>8</sup> The mineral could not be found in place although boulders with plates of the chloritoid mineral were found. The old locality has been built over. See Charles Jackson; Report on the Geological and Agricultural Survey of Rhode Island, 1840; and The Geology of Rhode Island; Providence Franklin Society, 1887, p. 91.

NEWPORT COUNTY

The geology of this county is quite varied since both igneous rocks and sediments occur. The eastern portion of the county shows chiefly sedimentary rocks with some metamorphics near the northern border. Along the coast line from Tunipus Beach to Sakonnet Point igneous rocks predominate, chiefly a porphyritic granite. Wave action has leached out most of the femic minerals leaving large pits in the rocks.

LITTLE COMPTON

LOCALITY	MINERALS FOUND	REMARKS
Warren's Point a type locality	Epidote	Well developed xls. along aplite dike.
	Hornblende	Along aplite dike.
	Ilmenite	In plates in aplite which cuts granite.
	Orthoclase	Large pink xls. in granite.
Sakonnet Point Tunipus Beach	Quartz	Smoky; milky; in aplite.
	Apatite	Euhedral xls. in minette.
	Chlorite	Plates on quartz.

TIVERTON

Near Four Corners	Pyrite	In greenish slate.
	Quartz	Veins cutting limestone.
Along Sin and Flesh brook	Actinolite	Large needles in hornblende-biotite schist.

MIDDLETOWN

Easton's Beach	Actinolite	In needles in quartz veins which penetrate conglomerate and sandstone.
	Limonite	In argillaceous mica schist, after pyrite.
	Hornblende	Same as actinolite.
	Magnetite	Same as limonite.
Paradise (Hanging Rock)	Rutile	Same as actinolite.
	Chlorite	Same as actinolite.
	Magnetite	
	Mica	Chiefly biotite.
Purgatory	Orthoclase	In porphyritic granite.
	Zoisite	In thin veinlets.
	Garnet	In conglomerate.
	Magnetite	In conglomerate.

LOCALITY	MINERALS FOUND	REMARKS
Sachuest Neck and Point (E. shore)	Augite	In talc schist.
	Garnet	In conglomerate.
	Hematite	" "
	Magnetite	" "
	Quartz	" "
	Talc	In talcose schist.
NEWPORT		
Bailey's Beach	Feldspars	Large xls. in granite.
Bishop Rock	Garnet	Euhedral xls. in conglomerate.
Brenton's Cove Fort Adams, E. side	Calcite	Xls. in argillaceous mica schist.
	Quartz	In mica schist, iron stained.
	Serpentine	In mica schist.
	Chlorite	These minerals occur in a coarsely porphyritic granite.
	Magnetite	
	Oligoclase	
	Orthoclase	
	Titanite	
Zoisite		
Miantonomah Hill (S. side of Coddington Cove)	Chlorite	Large plates in quartz veins in conglomerate.
Ochre Point	Calcite	In shales.
	Serpentine	Serpentinous shales.
	Epidote	Transition product in epidote-chlorite schist.
	Talc	In epidote-chlorite schist.
	Ottrelite	" " " "
PORTSMOUTH <sup>9</sup>		
Near old coal mine, west shore.	Calcite	In shales.
	Chalcopyrite	" "
	Garnet	Near contacts with schist.
	Graphite	In shales. Graphitic anthracite.
	Ottrelite <sup>10</sup>	In metamorphosed shale.
	Quartz	Fibrous, in veins.
	Prochlorite	In schist.
	Staurolite	In schist.
	Siderite	In quartz veins cutting graphitic shales.

<sup>9</sup> For general geology see Geology of Aquidneck Island. N. S. Shaler. *Amer. Nat.*, Vol. 6. 1872.

<sup>10</sup> Specimens labeled Newportite in the Roger Williams Park Museum, Providence, are probably identical with ottrelite. Newportite is mentioned by S. B. Robinson in Catalogue of American Mineral Localities, 1832; by Horace F. Carpenter, Mineral Catalogue of New England Localities, 1860.

NEW SHOREHAM  
(Block Island)

LOCALITY	MINERALS FOUND	REMARKS
South shore	Almandite	In pegmatite.
	Beryl <sup>6</sup>	" "
	Clay iron stone	Concretionary in shale.
	Magnetite	With garnet sands.
	Limonite	In shales.
	Kaolin	In low bluffs.
	Pyrite	With the above.
	Monazite <sup>11</sup>	In sands.
	Sillimanite	
	Zircon	

JAMESTOWN<sup>12</sup>

The island of Conanicut on which Jamestown is located is made up chiefly of a rather fissile, greenish shale accompanied in the southern portion by altered shales and granites. Both types are cut by basic dikes.

LOCALITY	MINERALS FOUND	REMARKS
Hull's Cove	Apatite	In euhedral xls. in minette dike. Same as at Sakonet Point.
	Biotite	In minette dike, n. and s. end of island.
	Titanite	In minette dike.
Mackerel Cove (W. side of cove)	Zircon	" " "
	Siderite	Numerous xls. in hornfels.
Potter's Point	Albite	In phyllitic shale.
	Graphite	" " "
	Hematite	" " "
	Muscovite	" " "
	Tourmaline	Fair sized euhedral xls.
South shore	Calcite	
	Chlorite	From biotite.
	Oligoclase	South shore, eastern portion of Island.
	Orthoclase	From eastern part of Island
	Magnetite	" " " "
	Quartz	" " " "
	Sericite	Platy on feldspars.
	Titanite	Euhedral xls. in feldspars.

<sup>11</sup> From specimens in R. W. Park Museum donated by A. P. Watt.

<sup>12</sup> For Geology see L. V. Pirsson, Geology of Conanicut Island. *Amer. Jour. Sci.*, 3rd Ser., Vol. XLVI, pp. 363-378.

LOCALITY	MINERALS FOUND	REMARKS
West shore midway	Epidote	In altered shales.
between north and south	Garnet	" " "
ends of the island.	Ottrelite	" " "
	Staurolite	" " "

WASHINGTON COUNTY<sup>13</sup>

This county is quite important geologically because of the famous Westerly granite quarries which are worked extensively in the towns of Westerly and Bradford (formerly Niantic). The Westerly granite cuts the Sterling granite gneiss and is in places cut by an olivine diabase dike which is well shown in the Smith quarry, Westerly, and at White Rock 4 miles north of Westerly. The general geology and mineral localities of all districts are somewhat similar. Locally there are pegmatitic phases of the Westerly and these are the best mineral repositories. A few of the prominent localities will be described.

## CHARLESTOWN

LOCALITY	MINERALS FOUND	REMARKS
Kenyons	Sillimanite	In schist; locally distributed.
Quonochontaug	Biotite	In large plates in an orbicular granite.

## HOPKINTON

½ mi. N. of town on Nooseneck Hill road	Biotite	} In Sterling granite-gneiss.
	Chlorite	
	Ilmenite	
	Orthoclase	
	Quartz	

## NORTH KINGSTOWN

Hamilton	Calcite	Perfect xls. in sandstone.
----------	---------	----------------------------

## SOUTH KINGSTOWN

Wakefield	Ilmenite	Large plates in pegmatitic phase of Westerly.
Watch Hill to Point Judith	Magnetite	With garnet in sand.
Usquepaug	Molybdenite	In pegmatitic granite.

<sup>13</sup> E. K. Gedney, joint-author of Providence county localities, assisted in this area.



NARRAGANSETT

LOCALITY	MINERALS FOUND	REMARKS
Tower Hill	Autunite <sup>14</sup>	In pegmatitic phase.
	Orthoclase	In pegmatitic phase, large crystals.

WESTERLY

Smith Quarry, S. E. of Westerly, also in Smalley Quarry, N. of Westerly	Allanite <sup>15</sup>	In granite unless otherwise noted.
	Apatite	
	Beryl	Along contact of the olivine diabase dike and granite.
	Biotite	
	Calcite	
	Chabazite	Along contact of olivine diabase.
	Natrolite	In fractures.
	Stilbite	
	Cyanite	On fracture planes: purple cubes.
	Epidote	
	Fluorite	
	Ilmenite	
	Molybdenite	
	Microcline	
	Muscovite	
	Pyrite	
	Oligoclase	

The largest feldspar crystals, simple, or twinned according to the Carlsbad law are found in the coarse phase of the Westerly granite in the Sullivan quarry, Bradford. In most cases noted the domatic faces of the crystal, which may be a foot or more in size, are coated with biotite which is being chloritized. Smoky and transparent quartz crystals are found in abundance in the same locality and these reach a size of 4 inches. The Sullivan quarry is an ideal mineral collecting ground.

OTHER AREAS OF MINOR IMPORTANCE

The writers have visited all the important or promising mineral localities of the State during the past field season and some regions of minor importance are included. Minerals from these areas are listed here with the finder's name, those not so listed were found by the senior author.

<sup>14</sup> Found by C. W. Brown. Radio-activity determined by Gedney.

<sup>15</sup> See footnote 5.

Burrillville—Amethystine quartz and kaolin. (J. P. Beatty).  
 Chepachet—Magnetite in pegmatite. (A. C. Hawkins).  
 Albité—pericline in chlorite. (A. C. H.).  
 Centredale—Quartz crystals in green schist.<sup>16</sup>  
 Glocester (Durfee Hill)—Epidote, molybdenite, pyrite, pyrrhotite.<sup>17</sup>  
 Harmony (Steere Hill)—Ilmenite in pegmatite  
 Hughesdale—included under Johnston.

### JOHNSTON

The general locality of this area is much the same as discussed under Ochee Springs and Violet Hill, Manton Avenue, Providence, in the first part (see footnote 1). Minerals found in Johnston outside these two localities, are: Actinolite, ankerite, calcite, chalcedony, chalcopyrite, pyrite, hornblende, tremolite, steatite, serpentine, and epidote. Magnetite in good crystals in chlorite Schist (A. S. Packard).

Lime Rock—Scolecite in calcite. (J. P. Beatty).  
 Pascoag—Epidote and tourmaline. (A. C. Hawkins).  
 Primrose (Premisy Hill)—Magnetite in arkose. (A. C. H.).  
 Richmond (Tunk Hill)—Actinolite in schist.  
 Snake Den—Chalcocite, epidote, fluorite (M. Bowe),<sup>7</sup> garnet and malachite.

A gold-mine prospect was worked in this locality where a diabasic dike cuts the granites and schists. Cyanide vats and sluice boxes are still visible. A local chemist is authority for the statement that the locality is reported to have shown a trace of platinum in the debris.

Tarkiln—Quartz and magnetite in pegmatite.

<sup>16</sup> A. C. Hawkins: Quartz crystals from Centredale, Rhode Island. *Am. Mineral.*, Vol. 3., No. 1, pp. 1 and 2.

<sup>17</sup> This is also an old gold mine locality.