

LEGEND

METAMORPHIC AND IGNEOUS ROCKS

Camptonite
(Medium- to fine-grained, dark-gray to black, composed of orthoclase, plagioclase, and biotite. Locally it is porphyritic or amphybolic.)

Granite
(Medium- to coarse-grained, gray granite to granodiorite, composed of oligoclase-andesine, potash feldspar, biotite, and muscovite.)

Bethlehem gneiss
(Medium- to coarse-grained, gray granite to granodiorite gneiss, composed of oligoclase-andesine, potash feldspar, biotite, and muscovite.)

Granite and quartz monzonite gneiss
(Fine- to medium-grained, pink granite to quartz monzonite gneiss, composed of oligoclase-andesine, potash feldspar, biotite, and muscovite.)

Clough formation
(Zones m and h. Quartz conglomerate, quartzite, and quartz-mica schist.)

Partridge formation
(Zone m: mica schist, mica-quartz schist, quartz-mica schist, and thin quartzite, each with porphyroblasts of biotite and garnet. Zone h: mica schist, mica-quartz schist, quartz-mica schist, quartzite, and sillimanite schist.)

Ammonoosuc volcanics
(Zones m and h: amphibolite and some biotite gneiss.)

Orfordville formation
(Zone l: slate and graphitic sericite schist (Ol) and interbedded volcanic rocks composed of chlorite schist (Ov), zone m: graphitic mica schist, mica schist, and paper-thin quartzite, each with porphyroblasts of biotite, garnet, and staurolite; interbedded Hardy Hill member quartzite and quartz conglomerate (Oq); interbedded volcanic rocks, amphibolite and some biotite gneiss (Ov).)

Waits River formation
(Zone m: mica-quartz schist, calcareous mica-quartz schist, each with porphyroblasts of biotite and garnet; also impure marble.)

METAMORPHIC ZONES

Shown below formation symbol thus: $\frac{Dl}{m}$

l - low-grade
m - middle-grade
h - high-grade

CONTACTS

Accurate

Approximate and diagrammatic due to poor exposures

Indefinite as sharp contact is lacking

The quartzite and quartz conglomerate Oq, Sc, and Di are discontinuous; the isolated outcrops are connected by the dash-dot line to indicate the inferred location of the horizon where the stratigraphic unit is absent.

SPECIAL SYMBOLS

(Strike and dip symbols represent only a small percentage of the true observations.)

Strike and dip of bedding, including inverted and normal beds.

Strike of vertical beds.

Strike and dip of overturned beds.

Horizontal bedding.

Strike and dip of foliation and schistosity.

Strike of vertical foliation and schistosity.

Horizontal schistosity.

Normal fault; U on upthrown side.

Thrust fault; I on upthrown side.

Silicified fault zone.

Mines, prospects, and quarries, mostly abandoned.

UNCONFORMITY

Orfordville formation
(Zone l: slate and graphitic sericite schist (Ol) and interbedded volcanic rocks composed of chlorite schist (Ov), zone m: graphitic mica schist, mica schist, and paper-thin quartzite, each with porphyroblasts of biotite, garnet, and staurolite; interbedded Hardy Hill member quartzite and quartz conglomerate (Oq); interbedded volcanic rocks, amphibolite and some biotite gneiss (Ov).)

Waits River formation
(Zone m: mica-quartz schist, calcareous mica-quartz schist, each with porphyroblasts of biotite and garnet; also impure marble.)

PRE-SILURIAN, PROBABLY ORDOVICIAN

Orfordville formation
(Zone l: slate and graphitic sericite schist (Ol) and interbedded volcanic rocks composed of chlorite schist (Ov), zone m: graphitic mica schist, mica schist, and paper-thin quartzite, each with porphyroblasts of biotite, garnet, and staurolite; interbedded Hardy Hill member quartzite and quartz conglomerate (Oq); interbedded volcanic rocks, amphibolite and some biotite gneiss (Ov).)

Waits River formation
(Zone m: mica-quartz schist, calcareous mica-quartz schist, each with porphyroblasts of biotite and garnet; also impure marble.)

MIDDLE ORDOVICIAN ?

Orfordville formation
(Zone l: slate and graphitic sericite schist (Ol) and interbedded volcanic rocks composed of chlorite schist (Ov), zone m: graphitic mica schist, mica schist, and paper-thin quartzite, each with porphyroblasts of biotite, garnet, and staurolite; interbedded Hardy Hill member quartzite and quartz conglomerate (Oq); interbedded volcanic rocks, amphibolite and some biotite gneiss (Ov).)

Waits River formation
(Zone m: mica-quartz schist, calcareous mica-quartz schist, each with porphyroblasts of biotite and garnet; also impure marble.)

LOWER DEVONIAN

Lower Devonian
(Zone m: mica schist, mica-quartz schist, quartz-mica schist, and thin quartzite, each with porphyroblasts of biotite and garnet. Zone h: mica schist, mica-quartz schist, quartz-mica schist, quartzite, and sillimanite schist.)

MIDDLE DEVONIAN ?

Orfordville formation
(Zone l: slate and graphitic sericite schist (Ol) and interbedded volcanic rocks composed of chlorite schist (Ov), zone m: graphitic mica schist, mica schist, and paper-thin quartzite, each with porphyroblasts of biotite, garnet, and staurolite; interbedded Hardy Hill member quartzite and quartz conglomerate (Oq); interbedded volcanic rocks, amphibolite and some biotite gneiss (Ov).)

Waits River formation
(Zone m: mica-quartz schist, calcareous mica-quartz schist, each with porphyroblasts of biotite and garnet; also impure marble.)

LATE DEVONIAN ?

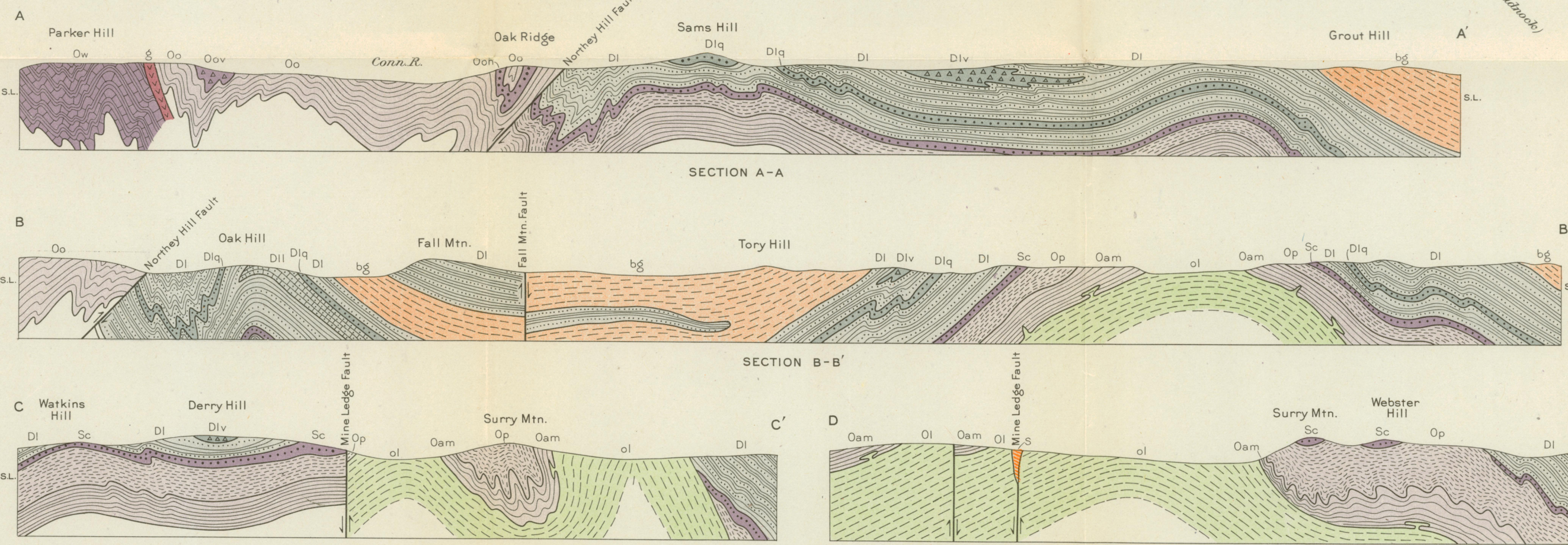
Orfordville formation
(Zone l: slate and graphitic sericite schist (Ol) and interbedded volcanic rocks composed of chlorite schist (Ov), zone m: graphitic mica schist, mica schist, and paper-thin quartzite, each with porphyroblasts of biotite, garnet, and staurolite; interbedded Hardy Hill member quartzite and quartz conglomerate (Oq); interbedded volcanic rocks, amphibolite and some biotite gneiss (Ov).)

Waits River formation
(Zone m: mica-quartz schist, calcareous mica-quartz schist, each with porphyroblasts of biotite and garnet; also impure marble.)

MISSISSIPPIAN ?

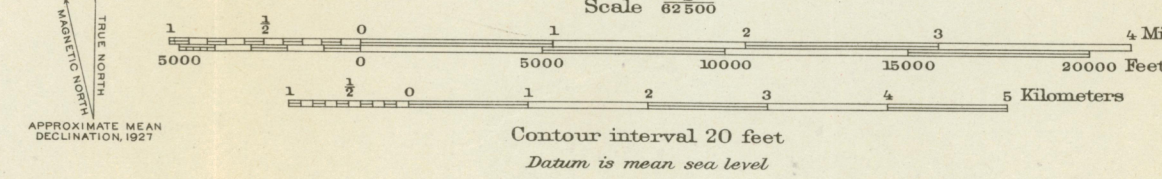
Orfordville formation
(Zone l: slate and graphitic sericite schist (Ol) and interbedded volcanic rocks composed of chlorite schist (Ov), zone m: graphitic mica schist, mica schist, and paper-thin quartzite, each with porphyroblasts of biotite, garnet, and staurolite; interbedded Hardy Hill member quartzite and quartz conglomerate (Oq); interbedded volcanic rocks, amphibolite and some biotite gneiss (Ov).)

Waits River formation
(Zone m: mica-quartz schist, calcareous mica-quartz schist, each with porphyroblasts of biotite and garnet; also impure marble.)



GEOLOGIC MAP AND STRUCTURE SECTIONS OF THE BELLOWS FALLS QUADRANGLE, NEW HAMPSHIRE

Topographic base by U. S. Geological Survey, surveyed in cooperation with the State of New Hampshire.



Geology by F. C. Kruger, assisted by J. H. Todd, G. C. Kennedy, J. H. Eric, G. E. Moore, and W. R. Thurston. Directed by Marland P. Billings. Geology surveyed 1937-1940, with the aid of grants from the Sayles Fund and Shaler Fund of Harvard University. Published 1945. Oriented pegmatite data from G. W. Stewart, U. S. Geological Survey.