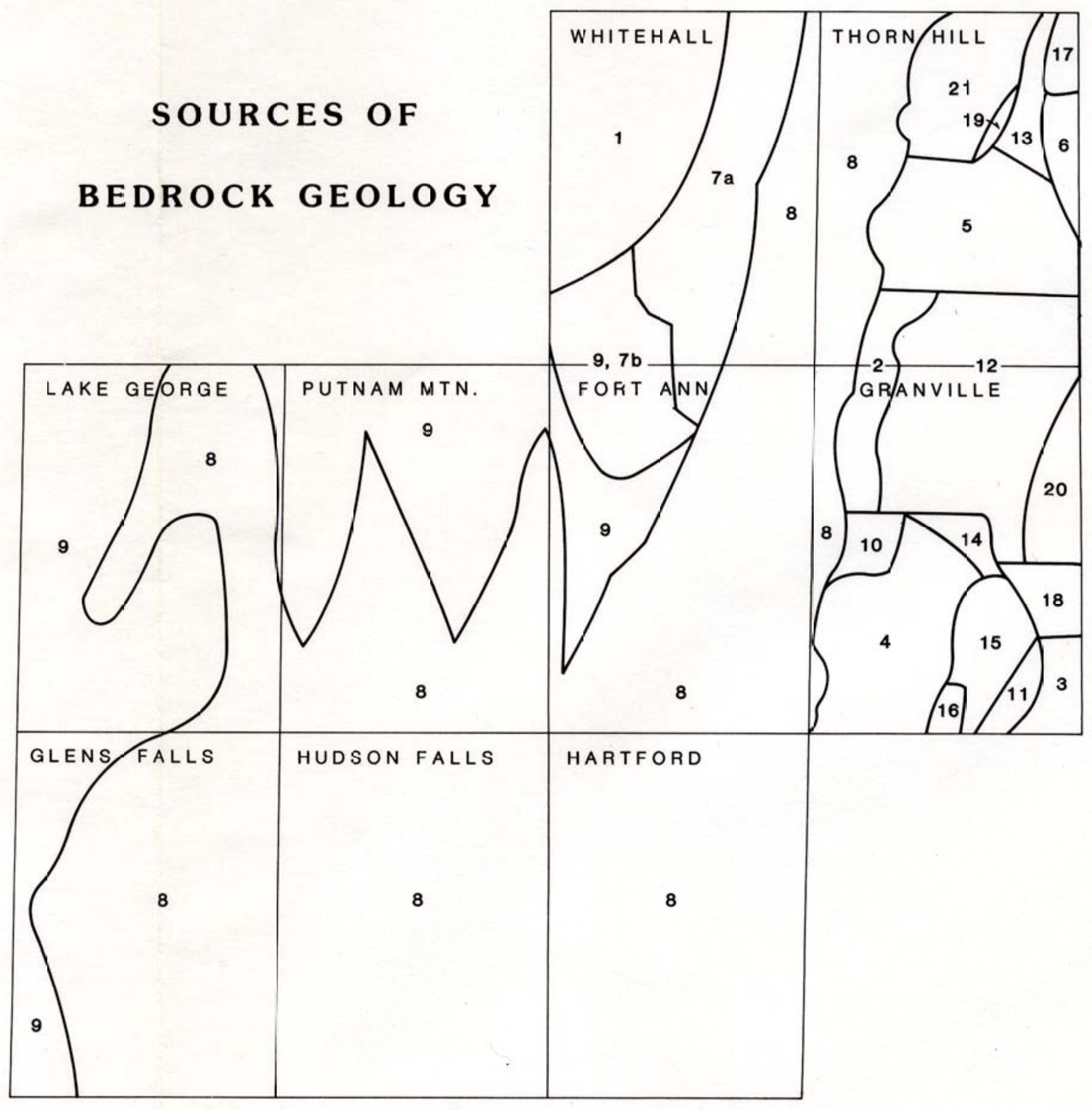
THE NEW YORK STATE EDUCATION DEPARTMENT



MAP NO.	SOURCE*
1	Berry, R.H. (1960).
2	Bosworth, W.
3	Bosworth, W.; Kidd, W.S.F., reconnaissance observations.
4	Bosworth, W., and members of the 1981 Colgate University Field Camp; Nachowitz, D.; Kidd, W.S.F.; reconnaissance observations.
5	Bosworth, W., and members of the 1982 Colgate University Field Camp; Shrady, C.
6	Cravens, S.; Kidd, W.S.F., reconnaissance observations.
7a	Fakundiny, R.; Isachsen, C.A.; and Whitney, P.R., reconnaissance mapping and photogeology.
7b	Fakundiny, R.; Isachsen, C.A.; and Whitney, P.R., photogeology.
8	Fisher, D.W., this publication (1985).
9	Hills, F.A. (1965).
10	Fillipone, J.; Kidd, W.S.F., reconnaissance observations.
11	Isachsen, C.A.; Kidd, W.S.F., reconnaissance observations.
12	Jacobi (Delano), L.L. (1977); Kidd, W.S.F., reconnaissance observations.
13	Rowley (1983); Kidd, W.S.F., reconnaissance observations.
14	Kidd, W.S.F., reconnaissance observations.
15	Kidd, W.S.F., and members of the 1974 SUNY Albany Field Camp.
16	Nachowitz, D.; Rowley, D.B.; Kidd, W.S.F., and members of the 1974 SUNY Albany Field Camp.
17	Kusky, T.; Rowley, D.B. (1983); Kidd, W.S.F.; Pindell, J. reconnaissance observations.
18	Lassonde, M.; Kidd, W.S.F., reconnaissance observations.
19	Rowley, D.B. (1983); Kidd, W.S.F., reconnaissance observations.
20	Rowley, D.B., (1980).
21	Xia, Z.; Rowley, D.B. (1983); Kidd, W.S.F., reconnaissance observations.

*Date indicates publication or thesis, listed in References. Otherwise, mapping is unpublished.

ALLOCHTHONOUS STRATA (TACONIC SEQUENCE)

(thicknesses not given owing to intense deformation and repetition)

ORDOVICIAN & CAMBRIAN

Fair to good foundation for heavy structures; rock is usually rippable but locally may require explosives; slope stabililty fair to good depending upon cleavage direction in slates and presence of more resistant quartzites or limestones; drilling rate moderate; machine tunneling rate moderate to fast.

Generally yields low-water supplies although locally extensive jointing and cleavage may hold sufficient water supplies for local needs; water is soft but locally may contain high iron and hydrogen sulfide.

Used for fill and locally as source of slate for roofing and patio blocks. The Middle Granville Slate and the slates within the Nassau Formation (collectively termed Mettawee) provide green, purple, and mottled green-purple slates; the Hatch Hill (including West Castleton) and Brown's Pond (= Schodack of Ruedemann) Formations and the Mt. Merino provide black or brown varieties; the Poultney provides green-gray to black varieties; and the Indian River provides the highly prized red or maroon slate. The waste piles of slate have a potential for use as a lightweight aggregate.

O€ts **Taconic Sequence.** Undifferentiated shales, argillites, slates with minor orthoquartzites, sandstones, graywackes, carbonate conglomerates, and bedded and nodular cherts.

O€ts

MIDDLE ORDOVICIAN (CHAMPLAINIAN SERIES ?)

NORMANSKILL GROUP

Oag **Austin Glen Formation** [Ruedemann, 1942]

Opw **Pawlet Formation** [Shumaker, 1967; Zen, 1961]. Thin to thick-bedded bluish-grey, brown weathering greywacke interbedded with silty grey slate. Sole markings (turbidite) on undersides of greywacke beds. Rare graptolites in shales and in greywackes. Austin Glen Fm. is the preferred term for rocks in the belt of Snake Hill Shale/Forbes Hill Melange adjoining the west side of the Taconic Allochthon; Pawlet Fm. is preferred in this area for rocks in stratigraphic conformity with older units of the Taconic Allochthon.

Omm **Mount Merino Formation** [Ruedemann, 1942]. Dark grey to black slate and mudstone with interbedded dark green to black chert beds; in places nodular.

Oir **Indian River Formation** [Keith, 1932]. Maroon, red and light green slate with rare red and light green chert beds, nodular in places.

Oag
Opw
Omm
Oir

LOWER ORDOVICIAN (CANADIAN SERIES) ? AND MIDDLE ORDOVICIAN (WHITEROCKIAN SERIES)

Opo **Poultney Formation** [Keith, 1932]. Grey to light green slate with darker green argillite. Distinctive, thinly interbedded silty quartzites, rarely dolomitic, throughout. Thin ribbon limestones (micrites, arenites, less commonly pebble conglomerates) interbedded in places, particularly near the base. Rare graptolites in slates and trilobite fragments in limestones.

Opo

LOWER TO UPPER CAMBRIAN (TACONIAN AND CROIXIAN SERIES) AND LOWER ORDOVICIAN (CANADIAN SERIES)

€Ohh
€Ohhl **Hatch Hill Formation** [Theokritoff, 1959, 1964]. Black to dark grey silty ferruginous slate with medium to thick-bedded dolomitic sandstones and quartzites; local limestones, including micrites, arenites, and mostly pebbly limestone conglomerates, are found at the base (containing a *Paedumias* trilobite fauna), and at the top, where they locally form a mappable member(€ohhl). This member has been (in part) previously included in the Poultney Formation in this and other areas but lithically belongs with the Hatch Hill in this area. The rooted graptolite *Dictyonema* has been found near the top of the formation (Theokritoff, 1964) with conodonts indicating a middle *Saukia* Zone (Late Cambrian). Conodonts higher in the formation are lowermost Ordovician (*Symphysurina* Zone) (Landing, 1976). This unit includes in the lower part some of the rocks previously mapped as West Castleton Formation, now known to be equivalent to the Hatch Hill Formation in its type section.

€Ohh
€Ohhl

LOWER CAMBRIAN (TACONIAN SERIES)

€ms **Middle Granville Slate Formation** (new-defined here) [Kidd, Delano and Rowley, *in* Fisher 1985]. Green and purple slates grading at the top to grey; tan-weathering. Interbedded nodular and ribbon micritic limestones (and rare limestone breccias) commonly occur in the lower part, and contain diagnostic trilobites (*Elliptocephala asaphoides* fauna).

€bp **Browns Pond Formation** [Rowley, Kidd and Delano, 1979]. Grey to black slates containing, in order from top to lower part, coarse limestone breccia, bedded calcarenites (rare), grey-black quartz sand-bearing wacke (*Black Patch Grit Member*), and coarse, thick-bedded orthoquartzite (*Mudd Pond Member*). *Elliptocephala asaphoides* fauna in limestones, which are ubiquitous in the upper part of the unit.

€ms
€bp

CAMBRIAN (?)

€n
€nt
€nb **Nassau Formation** [Ruedemann, in Cushing and Ruedemann, 1914]. Olive-green micaceous subgreywacke, quartzite and silty slate (*Bomoseen Member*); overlain by silty micaceous olive-green slate (*Truthville Member*). Both pass laterally into undifferentiated green and purple silty slates, with less abundant green quartzites. Bomoseen and Truthville members not everywhere distinguished. No diagnostic fossils known; very rare *Oldhamia* fossils have been found in strata thought to be equivalent in Rensselaer County to the south.

€n,€nt
€nb

SYMBOLS

Outcrop or area of closely spaced outcrops in Paleozoic autochthonous terrane. In Paleozoic allochthonous terrane (Taconic), outcrop not shown; small outcrops common in most places except where Quaternary cover (Qs) is shown. In Proterozoic terrane outcrop not shown by this symbol, but symbol for strike and dip of foliation denotes principal outcrops.

Rock-unit contact: solid where confidantly mapped; dashed where inferred; dotted where Qs is in contact with bedrock.

Normal Fault: solid where confidantly located; dashed where inferred; dotted where projected beneath Qs cover. Hachures on relatively down-dropped side.

Reverse (thrust) Fault (in Paleozoic carbonate terrane): solid where confidantly mapped; dashed where inferred; dotted where projected beneath Qs cover. Rectangles on relatively overriding slice.

Reverse (thrust) Fault (in Proterozoic and Paleozoic allochthonous terranes): solid where confidantly mapped; dashed where inferred; dotted where projected beneath Qs cover. Spurs on relatively overriding slice

Gravity Slide Fault: solid where confidantly mapped; dashed where inferred; dotted where projected beneath Qs cover. Circles on relatively overriding slide.

Strike-slip (tear) Fault: solid where confidantly mapped; dashed where inferred; dotted where projected beneath Qs cover. Arrows show relative movement.

Fault or Lineament: type of displacement, if any, is uncertain.

20 Strike and dip (in degrees) of bedding in Paleozoic rocks. If no strike or dip figure appears on outcrop, dip is less than 3° or too variable.

33 55 Strike and dip (in degrees) of bedding in Taconic Allochthon: way up known, upright or overturned, respectively.

Crenulated and disturbed bedding or cleavage in Paleozoic carbonate terrane.

67 Strike and dip (in degrees) of slaty cleavage in rocks of Taconic Allochthon.

9 Plunge of minor fold hinge (in degrees) in Taconic Allochthon.

37 Strike and dip (in degrees) of foliation in Proterozoic rocks.

Syncline
Anticline — Axial surface traces of inclined folds in Taconic Allochthon: arrows point in direction of dip of axial surface. Dashed where location inferred and beneath Quaternary cover (Qs).

Fossil locality (shelly fauna) in carbonate strata.

Fossil locality (graptolite fauna) in Snake Hill Shale.

Fossil locality (probably shelly fauna) in Taconic Allochton
Fossil locality (probably graptolite fauna) in Taconic Allochthon — from Dale (1899) — location may be somewhat in error due to small scale of original map.

Active quarry
Inactive quarry — not shown in Taconic Allochthon — see Dale (1899) for details.

120 ls. Well having useful bedrock information. Numeral denotes depth to bedrock. Abbreviation denotes type of bedrock encountered (ss — sandstone, sh — shale, ls — limestone, ds — dolostone).

8 Locality recommended for class study. Numeral refers to locality description in text (p. 43-54).

NOTE

The Proterozoic portion of the legend has been extracted from F. Alan Hill's (1965) doctoral thesis on portions of the Glens Falls and Fort Ann 15-minute quadrangles and Richard H. Berry's (1960) doctoral thesis on portions of the Putnam and Whitehall 7 1/2-minute quadrangles. Bedrock geology along the Adirondack Northway (I-87) and the Prospect Mountain Veteran's Memorial Highway was mapped by Yngvar W. Isachsen, Philip R. Whitney and Richard W. Wiener* of the N.Y. State Geological Survey; these exposures were unavailable to Alan Hills at the time of his mapping. Isachsen, Whitney, and Robert H. Fakunding also mapped the Proterozoic terrane east of South Bay.

The Proterozoic metamorphosed sequence has been constructed in collaboration with Richard W. Wiener. My education in southeastern Adirondack Precambrian geology and the differing philosophies of mapping metamorphic sequences have been immeasurably enhanced by his dedicated enthusiam to make this geologic map as useful and as up-to-day as possible. My colleague, Yngvar W. Isachsen, has exercised ''Jobian'' patience with my frequent interruptions and numerous (and sometimes pointed) questions. The benefit of his lengthy experience with Adirondack rocks has, with the willing aid of Wiener and Whitney, brought some sense of order out of a plethora of disconnected and often conflicting data. The sequence is generalized. Certain units may be locally absent and others present which may be out-of-sequence. It is assumed that the oldest rock unit is charnockitic gneiss in the core of the isoclinal anticline 0.6 km east of Putnam Mountain. Such a sequence also is suggested by correlation with Carl McConnell's, Brian Turner's and Matt S. Walton's unpublished mapping (N.Y. State Geological Survey open file maps) in adjacent quadrangles to the north, with James McLelland's published and unpublished mapping in the Adirondacks to the west, and with the stratigraphic sequence in the northwest Adirondacks (Wiener and others, 1983). Especial recognition should be given to Harold L. Alling's pioneer work (1918, 1927) for it was he who demonstrated that a stratigraphic sequence existed in the southeastern Adirondacks and that it maintained continuity. Because diagnostic top-and-bottom criteria are unrecognized in this area it is conceivable that the preferred sequential arrangement may be inverted. However, tentative correlation with stratigraphy of the northwest Adirondacks (Oswegatchie Group) suggests that the stratigraphic sequence (Lake George Group) used in this paper is right-side-up.

Bedrock geology of the Granville and Thorn Hill quadrangles occupied by rocks of the Taconic Allochthon was compiled by William S. F. Kidd of the State University of New York at Albany. His compilation is a revision and addition to the geologic maps of Zen (1961) and Theokritoff (1964), differing, in particular, with their stratigraphy and that of Platt (1960), Shumaker and Thompson (1967), and Potter (1972). Kidd's compilation is a composite of the M.S. theses of Jacobi (1977) and Rowley (1980), the Ph.D. thesis of Rowley (1983), mapping and observations from the 1974 to 1982 field mapping courses taught by Kidd at the State University of New York at Albany, similar data from the 1981-1982 field camp run by William Bosworth of Colgate University, and from miscellaneous unpublished mapping and observations by Kidd, Bosworth, and graduate and undergraduate students under Kidd's supervision. The sources used in compiling the Taconic part of the map are shown below.