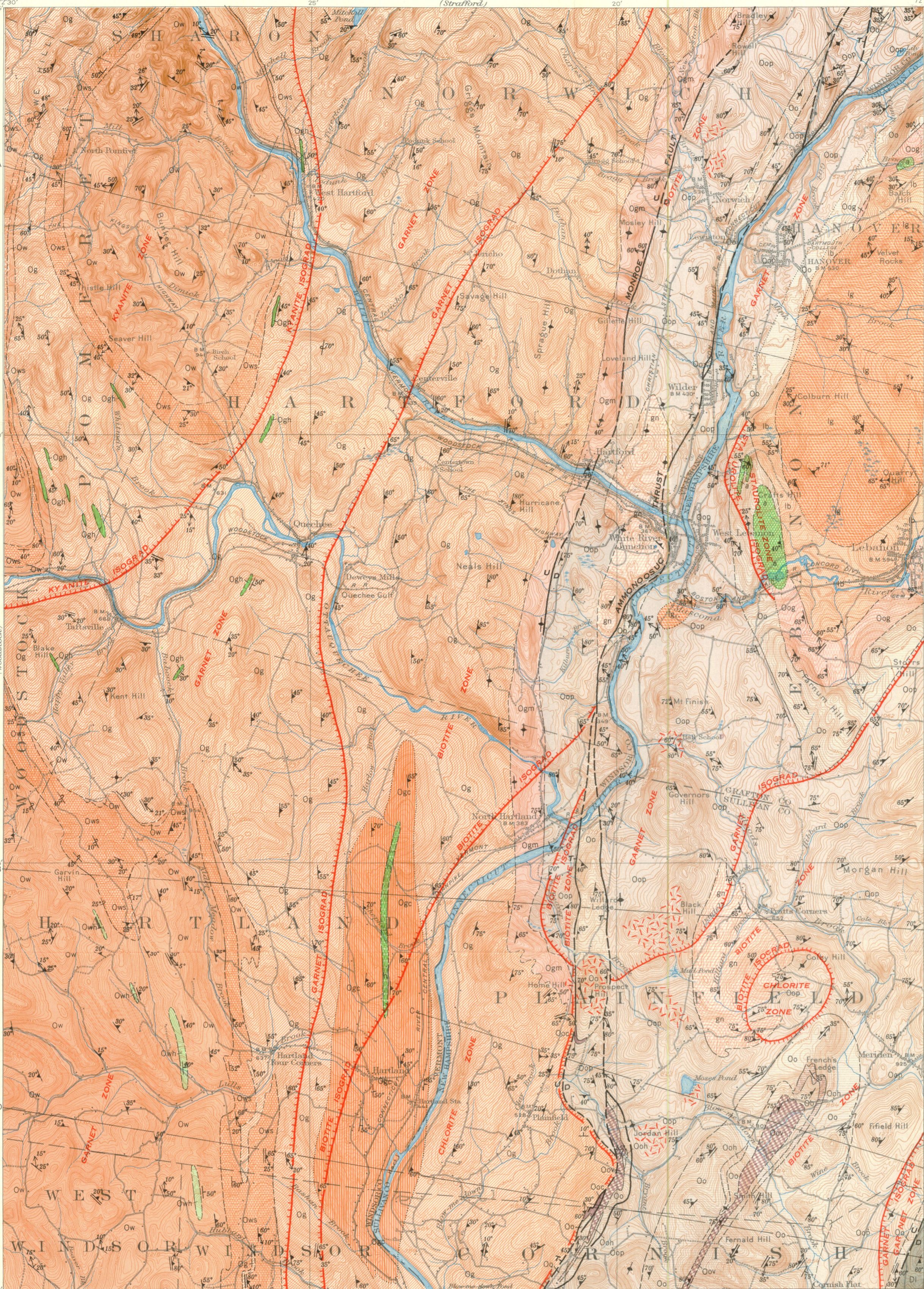


NEW HAMPSHIRE STATE PLANNING AND DEVELOPMENT COMMISSION

VERMONT-NEW HAMPSHIRE HANOVER QUADRANGLE



LEGEND

IGNEOUS AND METAMORPHIC ROCKS

- Lebanon granite** (lg) Lebanon granite, a medium- to coarse-grained pink, aluminous, somewhat granitic granite and quartzite, composed of microcline, quartz, oligoclase, biotite, epidote, and muscovite. In border areas, quartz diorite, composed of oligoclase, quartz, biotite, epidote, microcline, and muscovite.
- Amphibolite** (a) Intrusive amphibolite; dark-green well-laminated amphibolite composed of hornblende, andesine, and epidote.
- Littleton formation** (Di) Black to gray quartz-mica schist, mica-quartz schist, and micaceous quartzite; biotite porphyroblasts locally common.
- Metamorphosed diabase** (m) Numerous sills and dikes of medium-grained dark-green meta-diorite composed of sodic plagioclase, hornblende or chlorite, and epidote. Within the chlorite zone these intrusives are gneissitic; within the garnet zone they are amphibolites.
- Gneiss** (gn) At White River Junction a lit-par-lit gneiss injected into the Post Pond volcanic member of the Orfordville formation; banded gray gneiss composed of quartz, albite, and minor muscovite, chlorite, and epidote. Northwest of Plainfield a well-laminated gneiss composed of quartz, albite, chlorite, and epidote.
- Hornblende gneiss** (h) Coarse-grained intrusive hornblende gneiss composed of hornblende, oligoclase, and biotite. A 200-foot-thick tourmalinized sill injected into the Gle Mountain formation.
- Orfordville formation** (Oop, Ooc, Oo, Ooh, Oog) West of the Ammonoosuc thrust the Orfordville formation consists chiefly of chlorite schist of the Post Pond volcanic member, Oop, and of black phyllite, Oo. East of the Ammonoosuc thrust the Orfordville formation consists chiefly of hornblende schist, amphibolite, and feldspathic schist of the Post Pond volcanic member, Oop, and of gray to black mica schist and quartz-mica schist, Oo, in which garnet porphyroblasts are common. The Hardy Hill quartzite, Ooh, is a thin quartzite and quartz meta-conglomerate in the lower part of the formation. Small lenses of quartz-calcite schist and marble, Ooc, and of hornblende or chlorite schist, Oog, are locally present in the southeastern part of the map area. Orfordville schists peripheral to the Lebanon granite have been metamorphosed to feldspathic gneiss, Ogm.
- Gle Mountain formation** (Og) West of the garnet isograd the rocks are tan to gray quartz-mica schist and micaceous quartzite, generally containing garnet and mica porphyroblasts, Og. East of the garnet isograd the same rocks, Og, are finer-grained, and lack garnet. The east-most member of the formation, the Meetinghouse slate member, Ogm, is a black, thin-bedded phyllite and mica quartzite-quartz schist. Ogm is widespread in the north-central part of the map area. Locally, lenses of dark-green hornblende schist, Oog, of probable volcanic origin.
- Waits River formation** (Ows, Ow, Owh) Main part of the formation, Ows, consists of brown-weathering calcite-quartz schist, with lesser amounts of mica schist and mica-quartz schist containing garnet porphyroblasts. Slender Post amphibolite member, Owh, is chiefly a dark-green, garnetiferous, hornblende gneiss. Lenses of hornblende schist, Owh, are present locally.

NOTE: Albee and Ammonoosuc formations (Ordovician?) and Clough and Fitch formations (Silurian) are cut out by the Northey Hill thrust where the Orfordville and Littleton formations are in juxtaposition. The Meetinghouse slate is, in part, the probable equivalent of the lower portion of the Orfordville formation.

METAMORPHIC ZONES

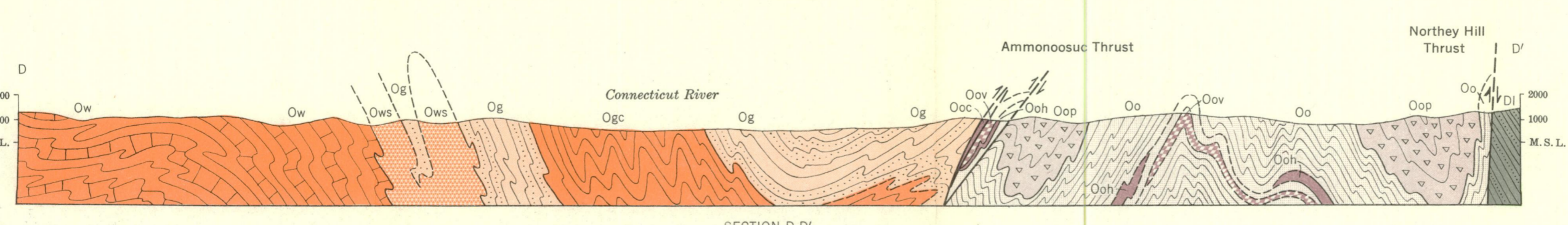
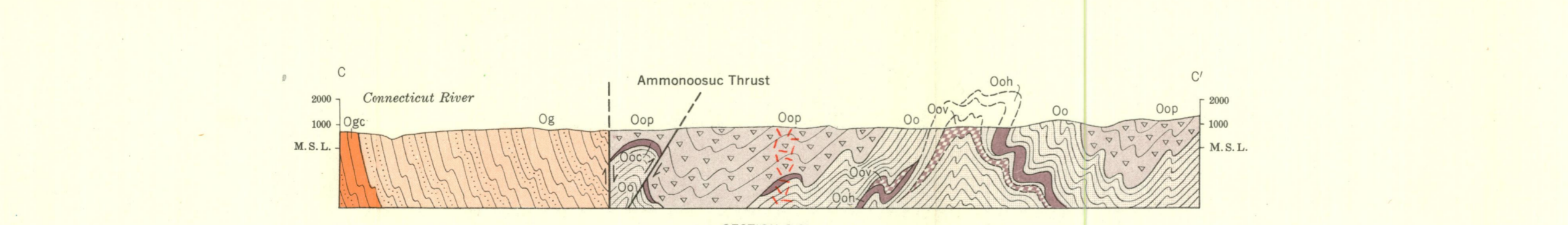
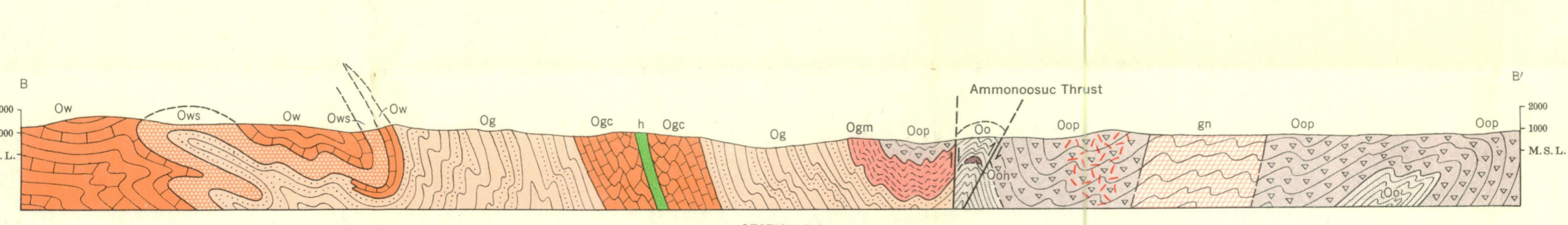
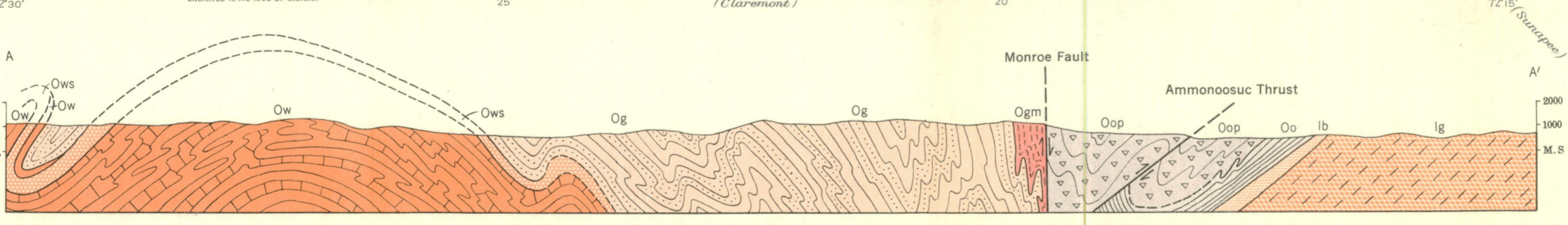
Metamorphic zones shown by isograds, hachured on the high-intensity side. Rocks east of the Ammonoosuc thrust in the southern portion of the area are in the biotite zone; those west of the thrust are in the chlorite zone.

CONTACTS

- Accurate formation contact
- Indefinite formation contact
- Cancelled or inferred contact

STRUCTURE SYMBOLS

- Strike and dip of bedding
- Strike and dip of overturned beds
- Strike and dip of foliation or schistosity
- Strike of vertical foliation or schistosity
- Horizontal foliation or schistosity
- Foliation or schistosity, with strike and plunge of lineation
- Strike and dip of axial plane of minor fold, with strike and plunge of fold axis
- Thrust fault; (T, upper plate)
- High-angle fault; (U, upthrown side; D, downthrown side)



GEOLOGIC MAP AND STRUCTURE SECTIONS OF THE HANOVER QUADRANGLE, VERMONT AND NEW HAMPSHIRE

Topographic base by U. S. Geological Survey, Surveyed in 1905 and 1906. Geology mapped 1947-49 by J. B. Lyons, assisted by H. C. Coulter, J. F. Murphy, and H. H. Woodard.

Scale 62500. Contour interval 20 feet. Datum to mean sea level.