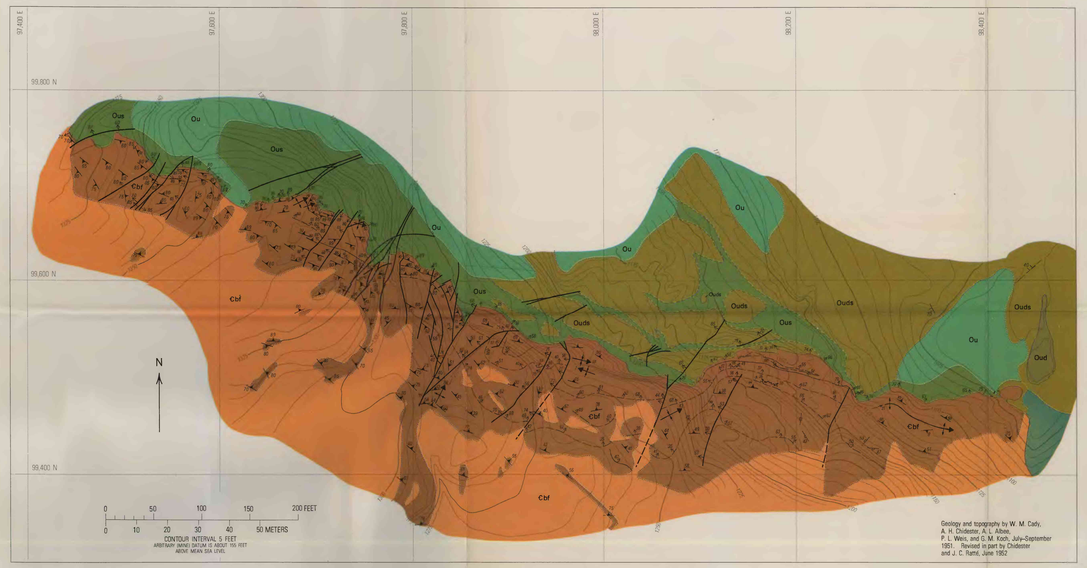
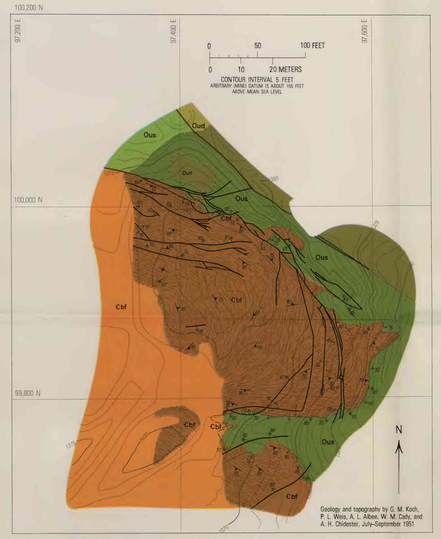
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

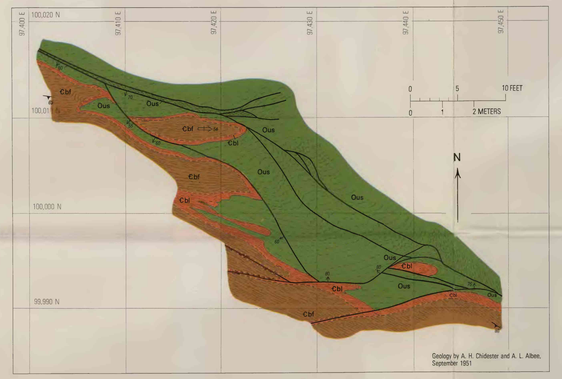
PROFESSIONAL PAPER 1016
PLATE 4



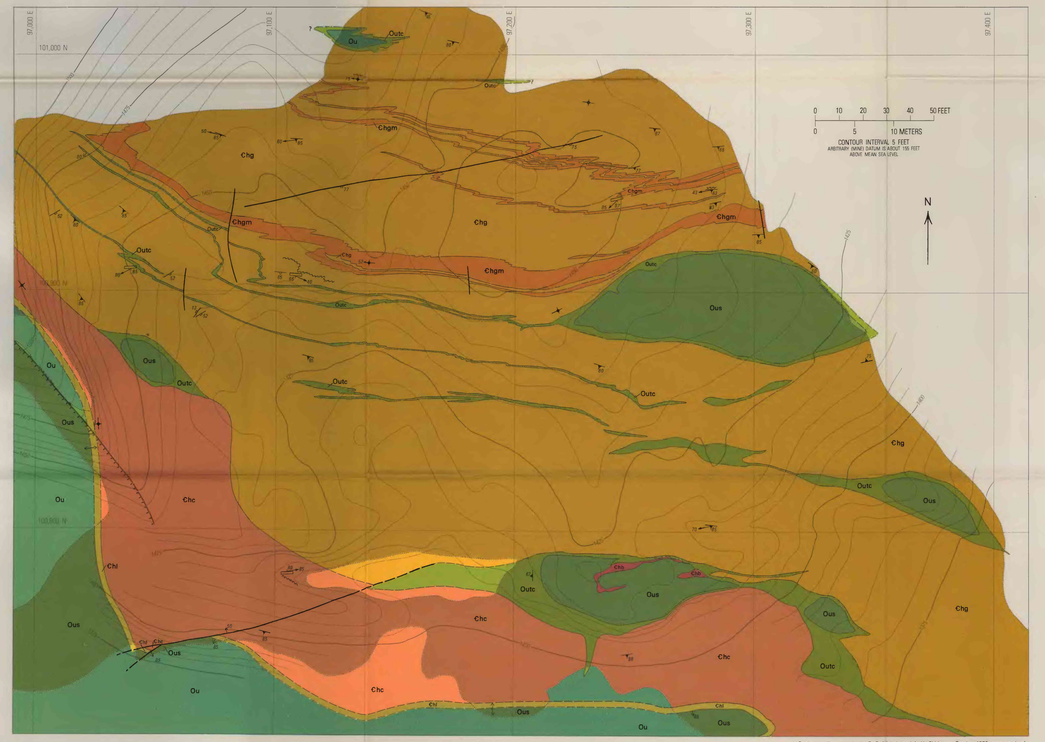
A. SOUTHEAST PART OF THE SOUTHWEST CONTACT



B. SOUTH-CENTRAL PART OF THE LOWELL QUARRY



C. CENTRAL PART OF THE SOUTHWEST CONTACT



D. CENTRAL PART OF THE NORTHEAST CONTACT

E. SOUTHWEST SIDE OF THE NORTHWEST PART OF THE LOWELL QUARRY

INTERIOR—GEOLOGICAL SURVEY, RESTON, VA.—1979—670288

CORRELATION OF MAP UNITS

Ou	Oud	Ouds	Ous	Outc		ORDOVICIAN
Cbl	Cbf	Cbfc	Cbc		Lower Cambrian	CAMBRIAN
Chl	Chb	Chc	Chg	Chgm		CAMBRIAN(?)

DESCRIPTION OF MAP UNITS

ULTRAMAFIC IGNEOUS ROCKS AND DERIVATIVES[1] (ORDOVICIAN)[2]

Ou ULTRAMAFIC ROCKS, UNDIFFERENTIATED—Chiefly: dunite (Oud) composed essentially of olivine but generally considerably serpentinized; massive serpentinite (Ouds), which intergrades with dunite, composed chiefly of bladed serpentine (antigorite and (or) lizardite) and small variable proportions of chrysotile; and schistose serpentinite (Ous)

Oud DUNITE—Composed essentially of olivine, but all of unit has been partially serpentinized; grades into massive serpentinite (Ouds)

Ouds MASSIVE SERPENTINITE—Composed chiefly of bladed serpentine (antigorite and (or) lizardite); chrysotile sparse to moderately abundant in matrix, locally prominent as cross-fiber veins. Relict grains of olivine persist but range widely in abundance. The rock retains the textural appearance of dunite

Ous SCHISTOSE SERPENTINITE—Matrix composed chiefly or entirely of bladed serpentine (antigorite and (or) lizardite); chrysotile confined almost entirely to shear surfaces; little or no relict olivine. In plate 4 *C* lines give generalized pattern of schistosity, including zones of intersecting schistosities bounded by shear surfaces

Outc TALC-CARBONATE ROCK AND STEATITE—Talc-carbonate rock is composed typically of about 40 percent magnesite and 60 percent talc, and it is intergradational with steatite, composed essentially of talc. Steatite commonly has a thin selvage of tremolite; where appreciably less than 0.3 m thick, a steatite body commonly consists chiefly or entirely of tremolite and minor chlorite

BELVIDERE MOUNTAIN FORMATION[1] (LOWER CAMBRIAN)

Cbl RODINGITE (LIME-SILICATE)—Alteration zone of diopside-vesuvianite-epidote-garnet rock adjacent to the ultramafic pluton. In plate 4 *C* lines give generalized pattern of bedding

Cbf FINE AMPHIBOLITE—Greenish-gray to medium-bluish-gray, distinctly bedded. Individual crystals of hornblende rarely discernible to the naked eye. In plate 4 *B* and *C* lines show generalized pattern of bedding

Cbfc GRAPHITIC FINE AMPHIBOLITE

Cbc COARSE AMPHIBOLITE—Dark-greenish-gray or greenish-black, distinctly bedded. Crystals of hornblende are commonly 5–10 mm long and range to as much as 25 mm

HAZENS NOTCH FORMATION (CAMBRIAN (?))

Chl RODINGITE (LIME-SILICATE)—Alteration zone of diopside-vesuvianite-epidote-garnet rock

Chb BLACKWALL CHLORITE ROCK

Chc GRAPHITIC QUARTZ-MUSCOVITE-CHLORITE-ALBITE SCHIST

Chg GREENISH-GRAY QUARTZ-ALBITE-MUSCOVITE-CHLORITE GNEISS

Chgm MAFIC INTERBEDS RICH IN CHLORITE AND EPIDOTE

Contact—Solid where exposed, dashed where inferred. Arrow shows direction and amount of dip (vertical, inclined)

Indefinite or gradational contact

Limit of exposure—Within quarry; also serves as boundary between undifferentiated ultramafic rocks (Ou) (ultramafic rocks masked by quarry rubble) and the several varieties of ultramafic rock

Fault or shear zone—Solid where exposed, dashed where readily inferred. Barbed arrow shows direction and amount of dip (vertical, inclined); diamond-headed arrow shows bearing and plunge of slickensides

Anticline—Showing trace of axial plane and plunge of axis

Syncline—Showing trace of axial plane and plunge of axis

Strike and dip of axial plane of minor fold

Strike of vertical axial plane of minor fold and plunge of axis

PLANAR FEATURES

Strike and dip of schistosity parallel to bedding

Inclined

Vertical

Strike and dip of schistosity divergent from bedding, in nonbedded rock, or where relations are indeterminate

Strike and dip of slip cleavage

LINEAR FEATURES

Generally combined with one of the above planar symbols for features in bedded rocks

Bearing and plunge of minor fold axis or lineations

Pattern, in plan, of folded or crinkled bedding

Strike and dip of joints

Inclined

Vertical

Trace of joint—Showing dip

Trace of mappable horizon in amphibolite—Arrow shows direction and amount of dip

Trace of layering in ultramafic rock—Double ticks show direction and amount of dip

Top of quarry wall

[1]Darker color where exposed, lighter color where covered.

[2]The Ordovician age designation refers to the age of emplacement of the intrusive ultramafic rocks, not to the age of the parent igneous rocks or the metamorphic derivatives (see new subheading discussions under "Tectonic and petrogenic synthesis").

GEOLOGIC MAPS SHOWING CONTACT RELATIONS AND STRUCTURAL FEATURES OF THE LOWELL QUARRY ULTRAMAFIC BODY, LOWELL, ORLEANS COUNTY, VERMONT