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Joseph E. Brennan, Governor

DEPARTMENT OF CONSERVATION
Richard B. Anderson, Commissioner

BEDROCK GEOLOGIC MAP OF MAINE

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This map is dedicated to Joseph M. Trefethen, Maine State Geologist 1942 to 1956 and pioneer of Maine geology.

Funding for the preparation and publication of this map was provided by a grant from the U.S. Department of Energy (grant no. DE-FG02-81NE46640) and the Maine Geological Survey.

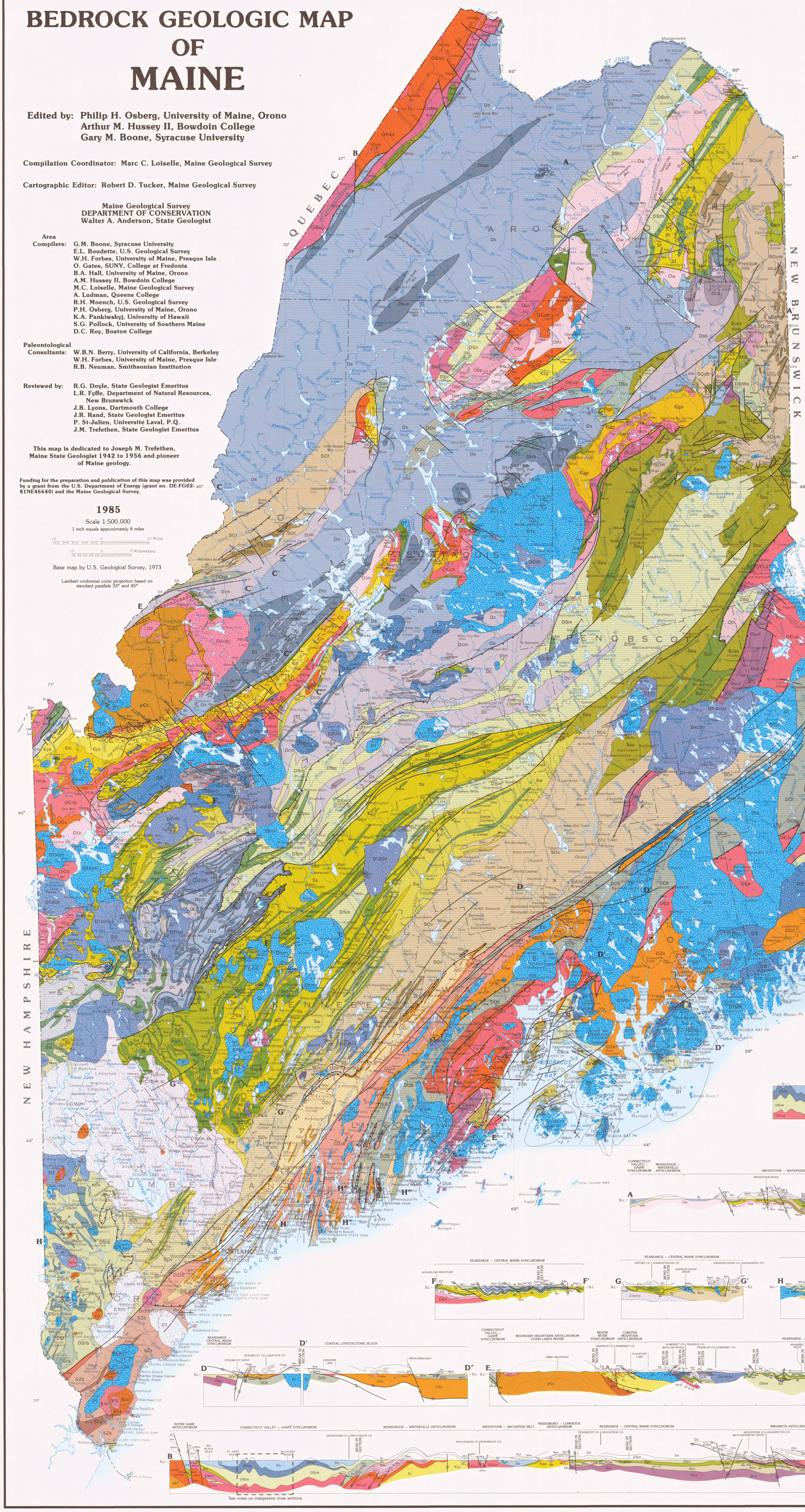
1985

Scale 1:500,000
1 inch equals approximately 8 miles

10 0 10 Miles
10 0 10 Kilometers

Base map by U.S. Geological Survey, 1973

Lambert conformal conic projection based on standard parallels 33° and 45°



INTRUSIVE ROCKS

Numbers following age refer to intrusive rock compositions given below.

- Mesozoic 1, Mesozoic 2-10 — Includes Triassic (Ŧ), Jurassic (J), and Cretaceous (K) rocks where indicated.
- Carboniferous 1
- Carboniferous 4-9
- Devonian 1
- Devonian 2-8
- Devonian 9
- Devonian 10
- Silurian 1
- Silurian 2-9b
- Silurian 9c
- Silurian-Precambrian Z 9c
- Ordovician 1
- Ordovician 2-9
- Cambrian 6
- Cambrian 9a,b
- Cambrian 9c

PROTOLITH

Protoliths for the formations are listed below; mineralogy and texture will vary with degree of metamorphism. The letter following the protolith can be used with the List of Formations to determine the protolith of a map unit.

- Pelite (A)
- Calcareous pelite (B)
- Sulfidic/carbonaceous pelite (C)
- Lithic sandstone (D)
- Feldspathic sandstone (E)
- Quartz sandstone (F)
- Sulfidic quartz sandstone (G)
- Lithic sandstone and conglomerate (H)
- Conglomerate (I)
- Calcareous lithic sandstone (J)
- Calcareous feldspathic sandstone (K)
- Calcareous quartz sandstone (L)
- Calcareous sandstone; interbedded sandstone and impure limestone (M)
- Limestone and/or dolostone (N)
- Argillaceous limestone and/or dolostone (O)
- Chert and iron formation (P)
- Interbedded pelite and sandstone (Q)
- Interbedded pelite and limestone and/or dolostone (R)
- Interbedded pelite, sandstone, and limestone and/or dolostone (S)
- Rhyolitic volcanic rocks (T)
- Andesitic volcanic rocks (U)
- Basaltic volcanic rocks (V)
- Mafic to felsic volcanic rocks (W)
- Undetermined volcanic rocks (X)
- Basement (Y)
- Mélange (Z)

INTRUSIVE ROCK COMPOSITIONS

Labels for intrusive rocks give the age, the primary mineralogical composition, and, for compositions other than diorite, gabbro, and ultramafic rocks, information on accessory mineralogy and texture where known. The number in the intrusive rock label refers to the list below and the modified Streckeisen diagram shown below.

1) granite
 1a) alkali feldspar granite
 1b) granite
2) granodiorite
3) tonalite
4) quartz syenite
 4a) alkali feldspar quartz syenite
 4b) quartz syenite
 4c) quartz monzonite
5) quartz monzodiorite
6) quartz diorite
7) syenite
 7a) alkali feldspar syenite
 7b) syenite
 7c) monzonite
8) monzodiorite
9) gabbro/diorite/ultramafic rocks
 9a) diorite
 9b) gabbro
 9c) ultramafic rocks
10) foid-bearing syenite

Accessory Mineralogy and Metasedimentary Inclusions

All assemblages include biotite; biotite only is present if no other mineral is indicated

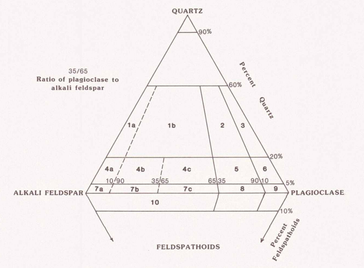
m = muscovite
h = hornblende
p = pyroxene plus hornblende
s = abundant (>50%) metasedimentary inclusions

Texture

x = porphyritic
y = granophyric
z = intrusive breccia

Examples:

D4c(h) Devonian hornblende-biotite quartz monzonite
D1b,2(m) Devonian muscovite-biotite granite and granodiorite
D2-6 Devonian granodiorite to quartz diorite
D1(m,s) Devonian muscovite-biotite granite with abundant metasedimentary inclusions



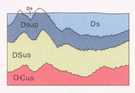
After Streckeisen, A.L., 1973, Classification and nomenclature recommended by the IUGS Subcommission on the Systematics of Igneous Rocks: Geotimes, v. 18, no. 10, p. 26-30.

EXPLANATION FOR MAP AND CROSS SECTIONS

- Stratigraphic or intrusive contact; queried where location is uncertain.
- Fault, interpreted as a high angle normal or reverse fault; queried where location is uncertain. Inferred motion on cross sections is based largely on separation of contacts and is indicated by arrows or T (Towards) and A (Away).
- Fault, interpreted as a thrust fault; barbs on upper plate. Inferred motion on cross sections is based largely on separation of contacts and is indicated by arrows.
- Fault, interpreted as a listric fault; hachures on upper plate. Inferred motion on cross sections is based largely on separation of contacts and is indicated by arrows.

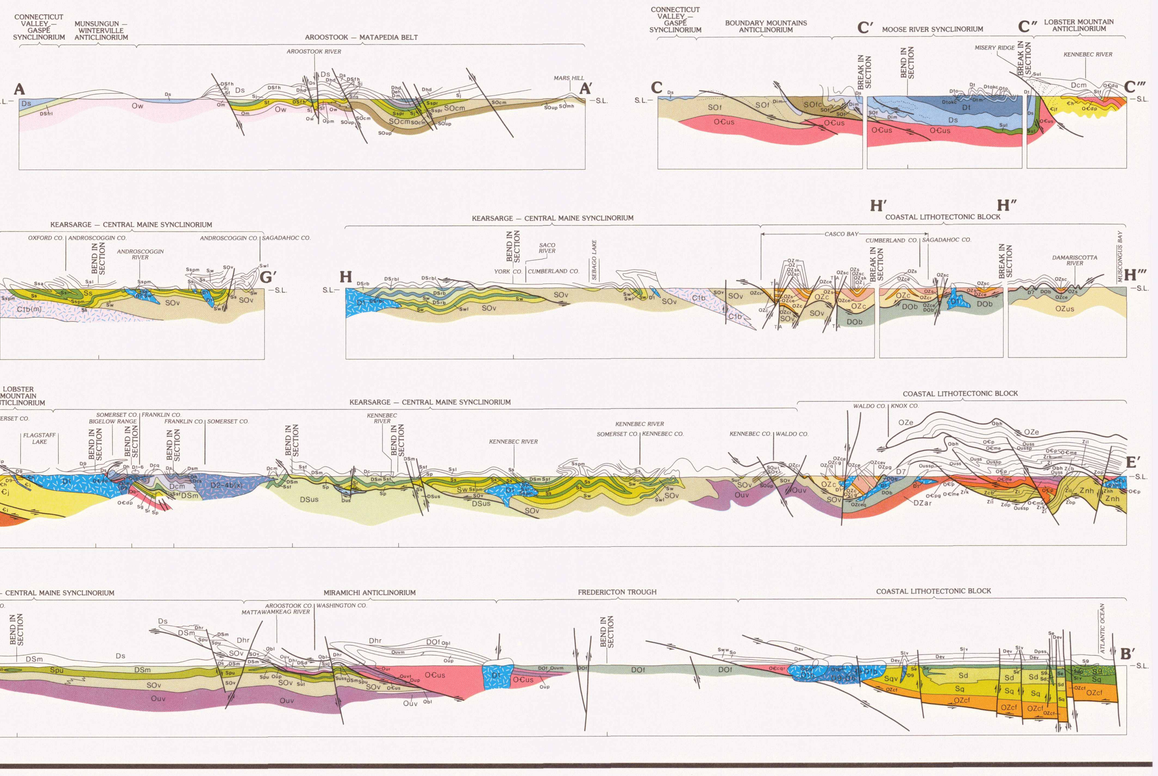
Notes on Interpretive Cross Sections

Scale of the cross sections does not allow showing small, isoclinal, upright folds present in many parts of Maine. A representative example of this small scale folding is shown at left for a portion of section B-B′.



On cross section G-G′, lenses of Silurian unnamed sulfidic pelite (Sur) have been omitted for clarity.

INTERPRETIVE CROSS SECTIONS



See notes on interpretive cross sections.