Use of a Lab-Field Couplet to Link Rock Classification and Facies Interpretation

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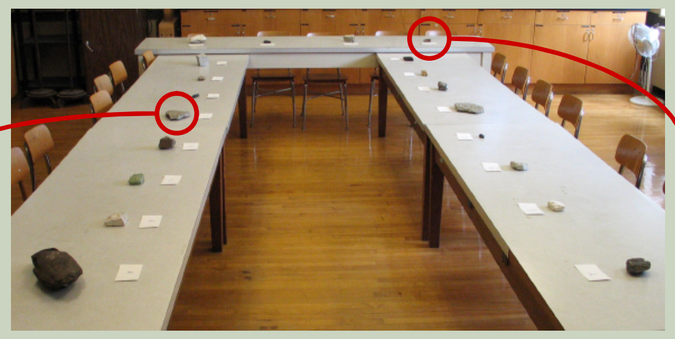
General Overview / Goals

- Students synthesize information on lithology, sedimentary structures, and fossil assemblages, while moving toward the larger picture of facies interpretation.
- Linkage of lab and field components doubly reinforces understanding of course concepts.
- Students work in small groups to develop interpretations with minimal instructor input.
- Instructor-led class discussion concludes each component.

Lab Component

- Students receive 20 hand samples and 20 rock names and/or descriptions.
- Students must match descriptions with the proper rocks and propose environments of formation for each sample.
- Included among the samples are rocks similar to those encountered in the field component.

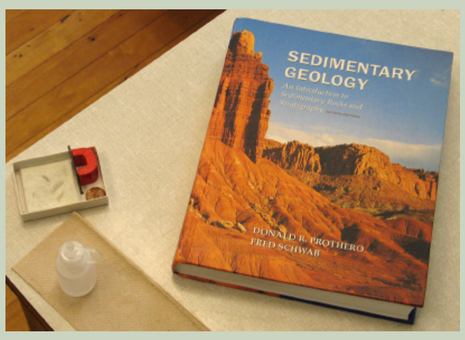
Biomicrite,
New Scotland Fm.



Chert

brachiopod

bryozoan



List of Descriptions

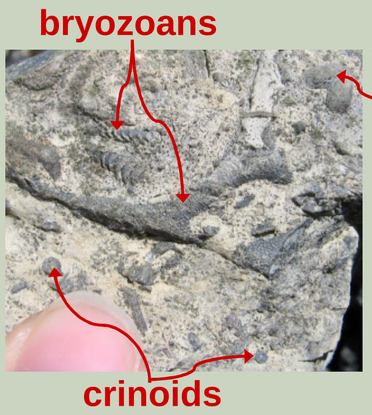
	Rock Name / Description	Notes / Interpretations	Sample
1	Chert, exhibiting conchoidal fracture	cryptoxline / amorphous silica; deep marine pelagic (siliceous ooze); nodules in shallow-H_2O carbonates	L
2	A single clast of the type you would find in an agglomerate		
3	Mosaic anhydrite with chickenwire structure		
4	Oosparite *or* Grainstone		
5	Lignite		
6	Gyprock (evaporitic gypsum)		
7	Peat		
8	Dolostone with horizontal lamination		
9	Biomicrite *or* Floatstone with bryozoans and articulate brachiopods	carbonate mud & invert. fossils; nearshore marine / continental shelf; (fossil sketches)	E
10	Glauconitic greensand		
11	Oomicrite *or* Wackestone		
12	Biolithite *or* Framestone with scleractinian corals		
13	Anthracite		
14	Biomicrite *or* Floatstone with bryozoans, crinoids, corals, and articulate brachiopods		
15	Limestone with birdseye texture		
16	Replacement chert composed of silicified ooids		

Field Component

- Students differentiate successive formations using lithology, sedimentary structures, and fossil assemblages.
- Students determine probable sedimentary environments for each formation.
- Students interpret the observed facies succession and reconstruct a portion of local geologic history.

Helderberg Gr. facies and depositional environments
(from Isachsen *et al*., 2000, *Geology of New York: A Simplified Account*, 2nd ed., New York State Museum Educational Leaflet 28)

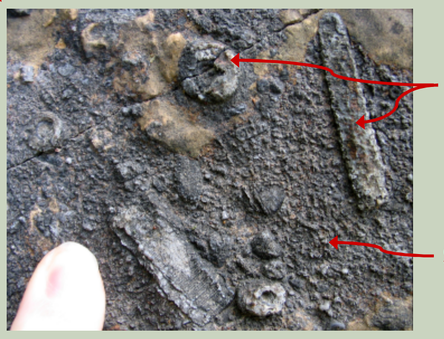
bryozoans



brachiopod

crinoids

chert nodules



coarse crinoid debris

sand-sized grains

mudcracks

Modifications

- The lab-field couplet can be easily adapted for local geology and teaching collections.
- Components may be presented in either order, although this will affect the amount of background information supplied to students during the field exercise.