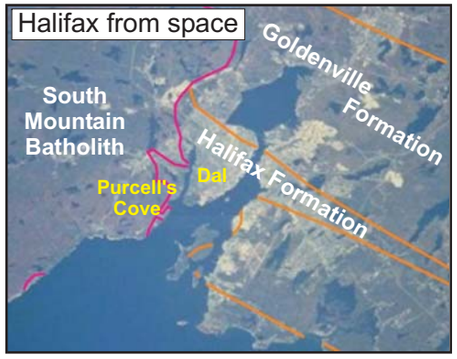
a. Life Sciences Centre: Harbour approaches viewed from Milligan Room (8th floor, Earth Sciences)



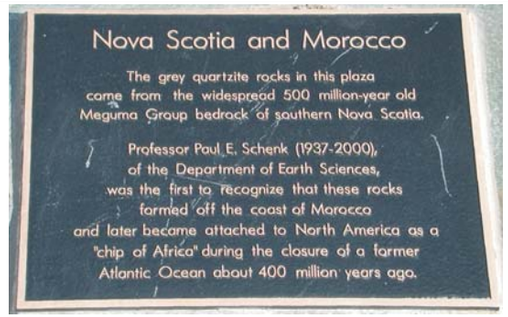
Many buildings on the Studley campus *(front)*, and the stone walls that surround it *(below left)*, are made of **black slate** of the Halifax Formation, a Cambrian-Ordovician deep-water turbidite succession.

These slates also form the bedrock underlying the campus *(details other side)* and most of the Halifax Peninsula. Some of the stone came from the old Dalhousie (Bluestone) quarry at Purcell's Cove, and some probably also came from the CN railway cut, which was under construction at the same time as some of the older buildings on campus. Many buildings also contain **quartzite** blocks from the Cambrian Goldenville Formation, which underlies the Halifax Formation. Light brown Carboniferous **sandstone** quarried at Wallace, Nova Scotia, was used for columns and other decorative stonework *(front)*.

Granite blocks used for steps, gateposts, and paving stones came from a second quarry in the hills behind Purcell's Cove. The quarry lies within the Devonian South Mountain Batholith, which intruded the Halifax and Goldenville Formations about 380 million years ago. Heat from the granite caused contact metamorphism of the surrounding rocks *(details other side)*; much of the "slate" on campus is actually cordierite-andalsuite **hornfels** *(left)*.

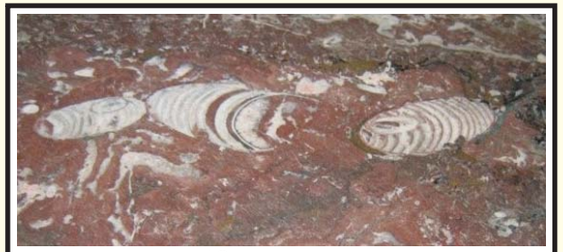
b. Marion McCain Building:
The facing stone contains beautiful examples of cross-bedded sandstone. However, geologists can't help noticing that many blocks were installed upside down.

c. Henry Hicks Administration Building:
Granite paving stones in front of this building *(also featured on front)* display magma mingling structures, formed by incomplete mixing of two granitic magmas.*(Best viewed on wet days.)*

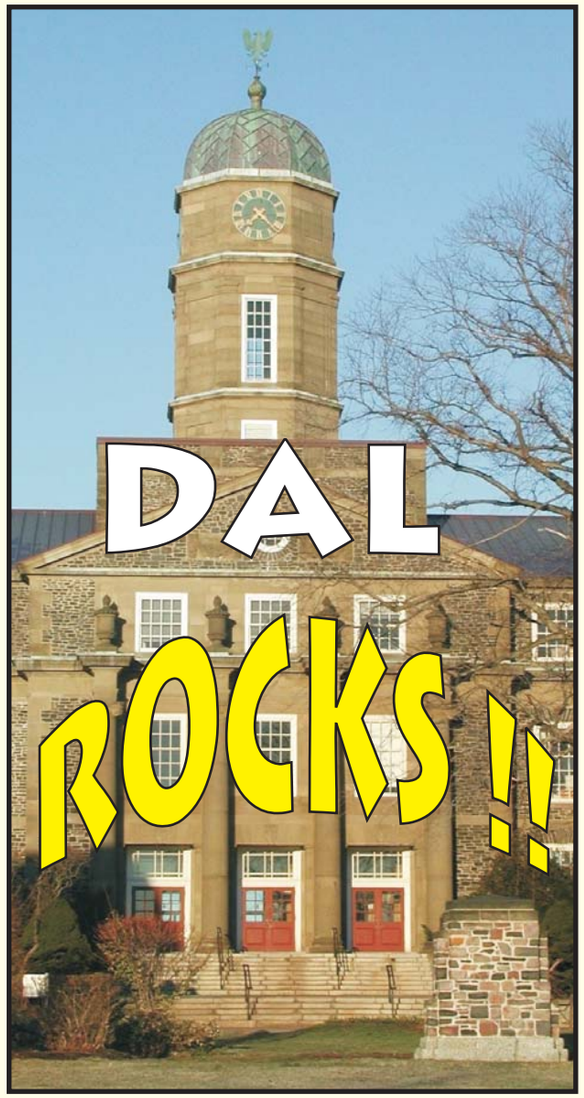


d. Nova Scotia - Morocco connection:
Located in front of the Killam Library, this plaque describes the possible Paleozoic link between Nova Scotia and NW Africa, first proposed by Dr. Paul Schenk, former Professor of Earth Sciences.

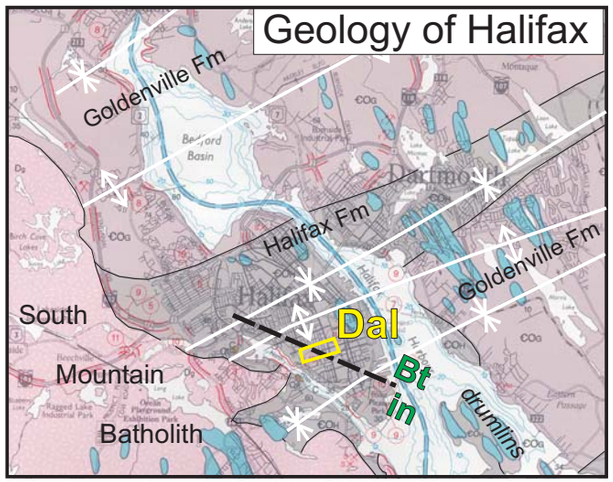
e. Dunn Building:
Oncolites and stylolites add texture to the polished marble in the foyer and stairwells.



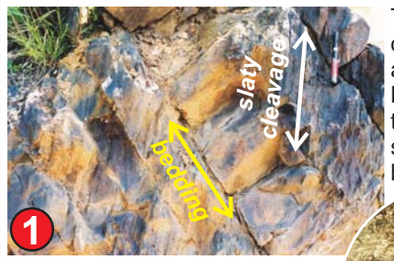
f. Tupper Building:
The main foyer is floored by Italian marble containing spectacular fossil ammonites *(top)* and geopetal structures *(left)*. The walls feature Roman tufa.
The plaza steps and planters include local granite and blue-grey anorthosite from Labrador.



a guide to the bedrock geology and building stone of the Dalhousie Campus

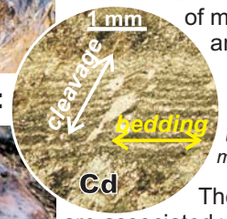


Halifax is underlain by the Cambrian-Ordovician Meguma Group, which includes the Goldenville Formation *(sandstone,slate)* and overlying Halifax Formation *(slate, siltstone)*. During the Devonian Acadian Orogeny, these rocks were folded and intruded by the 380 Ma South Mountain Batholith. Pleistocene glaciation was largely responsible for the formation of Halifax Harbour, Citadel Hill, and many other prominent city landmarks.



The Dalhousie campus lies on the south-dipping limb of an upright anticline *(see map)*. Bedding dips moderately to the south *(left)*. Most other sedimentary structures have been obscured by the effects of metamorphism and weathering.

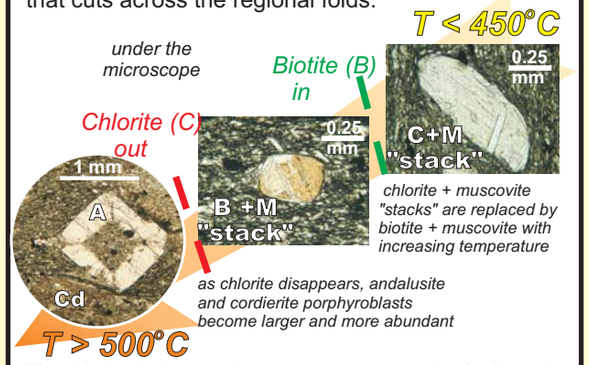
Bedding and Cleavage:



under the microscope

The upright folds are associated with a steeply dipping slaty cleavage. The cleavage has been variably annealed by the contact metamorphism, and is better preserved at the east end of the campus than the west.

Contact Metamorphism: Intrusion of the nearby South Mountain Batholith *(visible at the Dingle on the other side of the NW Arm)* produced a contact aureole that cuts across the regional folds.

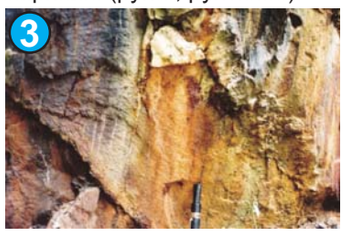


chlorite + muscovite "stacks" are replaced by biotite + muscovite with increasing temperature

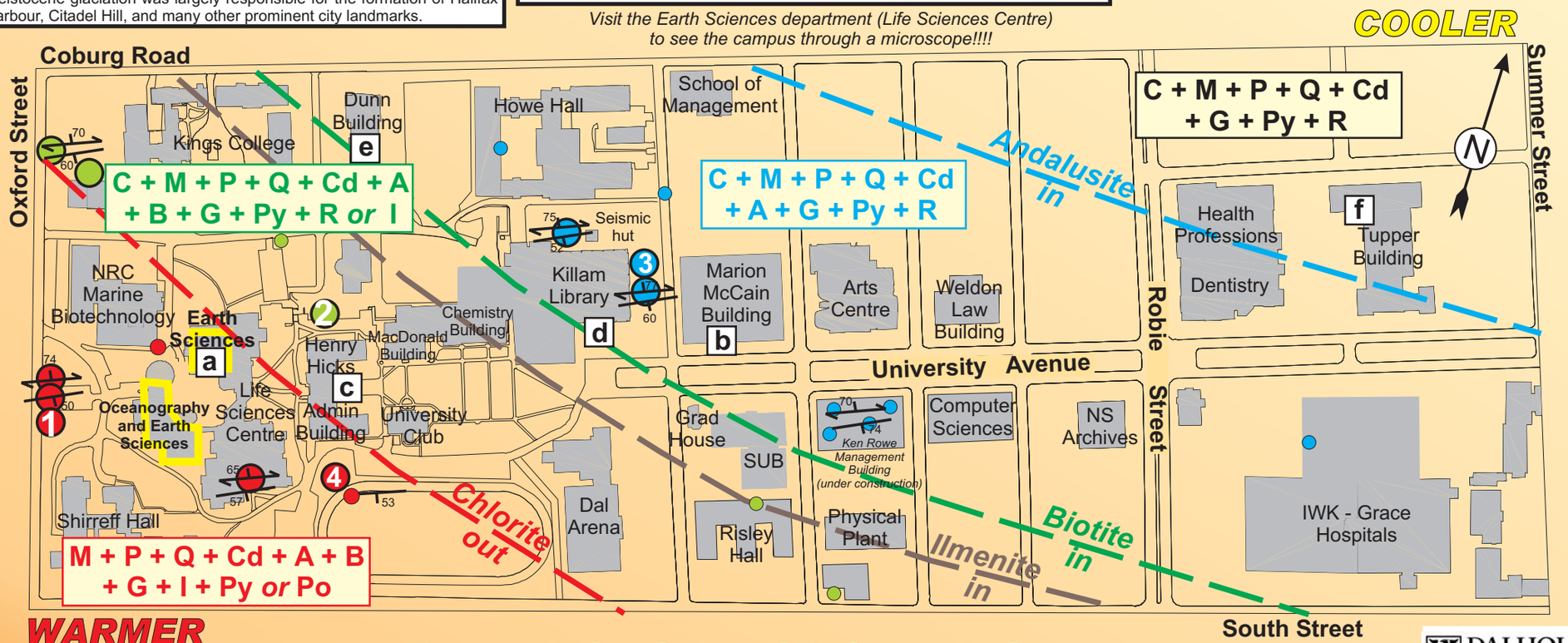
as chlorite disappears, andalusite and cordierite porphyroblasts become larger and more abundant

The biotite-in isograd *(see map below)* on the Dalhousie campus is defined by the nucleation of biotite in pre-existing chlorite-muscovite stacks. Andalusite and cordierite porphyroblasts are present across campus.

Weathering: Rusty stains (3) and pitted surfaces (4) result from oxidation and dissolution of iron sulphides (pyrite, pyrrhotite).



Visit the Earth Sciences department (Life Sciences Centre) to see the campus through a microscope!!!!



Minerals Present:

- Chlorite **(C)**
- Muscovite **(M)**
- Plagioclase **(P)**
- Quartz **(Q)**
- Cordierite **(Cd)**
- Andalusite **(A)**
- Biotite **(B)**
- Graphite **(G)**
- Pyrite **(Py)**
- Pyrrhotite **(Po)**
- Rutile **(R)**
- Ilmenite **(I)**

bedrock (outcrop)
bedrock (buried)
colour indicates minerals present

bedding
slaty cleavage
building stone features *(details on other side)*

Bedrock Geology of Dalhousie Campus

DALHOUSIE UNIVERSITY *Inspiring Minds*
Department of Earth Sciences
Prepared by R.A. Jamieson and students