

Current and Future Evolution of the AGI/NAGT Laboratory Manual in Physical Geology

Vince Cronin, Editor of the 11th Edition,
 Vince_LM_Editor@CroninProjects.org or Vince_Cronin@baylor.edu

The AGI/NAGT Laboratory Manual in Physical Geology has been developed by the geoscience education community for the benefit of our students. Through NAGT and AGI, the geoscience community determines the lab manual's evolution. As the current editor, I want and need your input about current and proposed future lab-book resources.

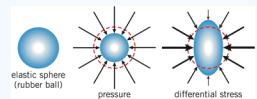


Figure 10.6 Effects of changing pressure or differential stress on an elastic ball. Increasing pressure makes the ball smaller without changing its shape, but increasing differential stress changes its shape.

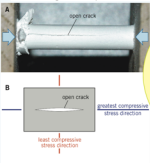


Figure 10.7 Experimental generation of an extension crack. A block of chalk is deformed in a vise as indicated by the arrows, and an extension crack develops in the chalk. The other block of chalk is deformed in a vise, and a crack opens the crack. B. Sketch of an extension crack that resulted in the crack. C. Sketch of a compressional crack that resulted in the crack.

The new edition was compiled using help and resources from the USGS, NASA, UNAVCO, IRIS, NAGT, AGI, GoogleEarth, OpenTopography, IUGS, and many individual geoscientists.

- Materials from previous editions that were coauthored by 36 geoscientists were used in the new edition.
- Revisions were informed by written reviews of the 10th edition by representatives of 47 AGI member societies.
- An editorial panel from NAGT and other individual reviewers helped in developing the new edition.

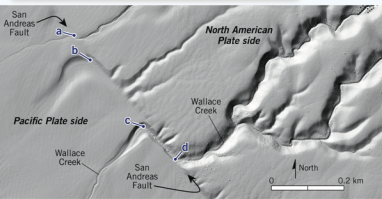
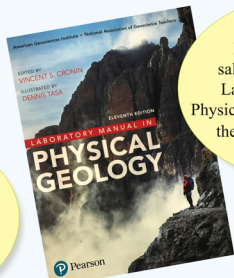


Figure A16.4.1

I want your input.

I would like to know how you use the lab manual. Which activities do you assign? Which do students have trouble with? Do you use the lab manual as the only course textbook, or do you assign another textbook as well? If you are teaching an introductory physical geology course and have chosen *not* to use the AGI/NAGT Lab Manual to date, why not?



Did You Know?
 Proceeds from the sale of the AGI/NAGT Laboratory Manual in Physical Geology help support the work of NAGT and AGI.

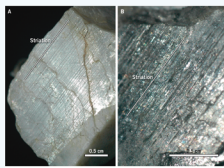


Figure 1.18. Photomicrographs showing: (A) a polydeformed feldspar (B) a high sodium-rich amphibole and (B) in a dark calcium-silicate perovskite matrix.

Did You Know?
 The new edition has ~188 new photographs, including 148 supplied by the editor.



Figure 2.8

All of the photos supplied by the editor will be available through the AGI Earth Science World Image Bank.



Figure 6.14. Calcite and dolomite. A. Calcite crystals give rise to a characteristic optical property called birefringence, and calcite crystals can transport in ground water. B. This dolomite crystals, which have optical textures that are distinctive because they are slightly curved.

Did You Know?
 New close-up photos of specimens with significant depth-of-field were taken using *focus stacking*, so every part of the resulting image is in focus.



From Figure 8.11

Did You Know?
 You can order a subset of chapters from the full AGI/NAGT Laboratory Manual for your course as a custom lab book.

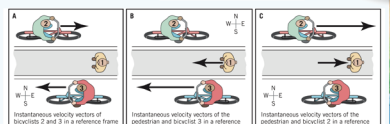


Figure 2.7. Visualizing reference frames. A person (1) standing on a median in a road and two bicyclists (B and C) with arrows representing instantaneous velocities.

Did You Know?
 The rock classification systems and terminology used in the AGI/NAGT Lab Manual follow current IUGS standards

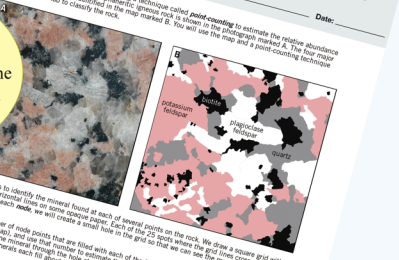
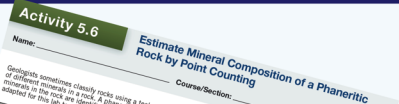


Figure AS.6.1. The *point-counting* technique is used to estimate the relative abundance of different minerals in a rock. A phaneritic igneous rock is shown in the photograph. At the top right corner of the rock, a 10-cm scale bar is shown. The grid is used to estimate the relative abundance of different minerals in the rock. At each node, we will create a small square grid with 5 x 5 squares. We will use the number of squares that are filled with each of the four major minerals (that is, with each of the four colors on the map), and use the number of squares that are filled with each of the four colors to estimate the relative abundance of each mineral. The total number of squares that are filled with each of the four colors will be the total number of squares that are filled with each of the four colors. The total number of squares that are filled with each of the four colors will be the total number of squares that are filled with each of the four colors. The total number of squares that are filled with each of the four colors will be the total number of squares that are filled with each of the four colors.

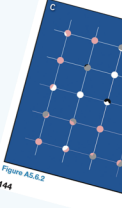


Figure AS.6.2

Did You Know?
 The new edition has 96 activities, with 12 new activities and classics from past editions – many with revisions.

Did You Know?
 The new edition of the AGI/NAGT Lab Manual has ~180 new or revised graphics by Dennis Tasa.

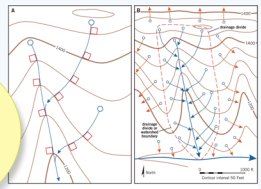


Figure 12.4. Definition of total, pressure, and elevation heads. The total head is the sum of the elevation head, pressure head, and velocity head. The velocity head can be neglected in most cases for groundwater because the velocities are so small.

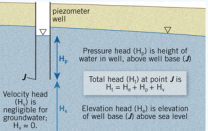


Figure 12.5. Piezometer well. The piezometer well is used to measure the pressure head of groundwater. The velocity head is negligible for groundwater.

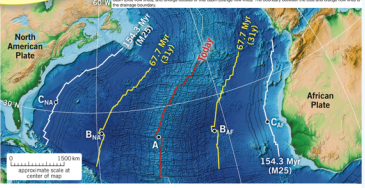


Figure 12.5. Flow map in an unconfined aquifer. Groundwater flow depicted in a vertical cross-section through an unconfined aquifer. The dashed black curves are surfaces of equal total head, and the blue curves with arrowheads are groundwater flow lines. A flow line at any given point is perpendicular to the surface of equal total head and is directed from higher to lower head. Flow lines point down under hills in the ground surface. Under the low spots (troughs and valleys), flow lines point up because water flows from high head to low head.

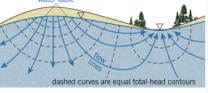


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Most importantly, what are *your* ideas for improving the lab manual for future students?

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