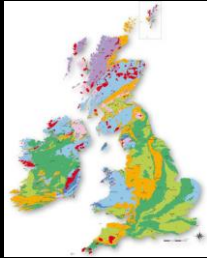


An Introduction To Geological Maps



Dr Liam Herringshaw: lgh865@hotmail.com

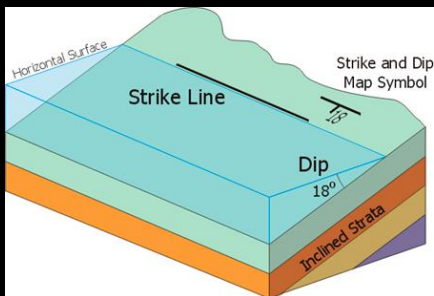
Week 3

Uniformly dipping strata
Exercises 1 & 2

A little mapping history
Miss Phillips' Conglomerate

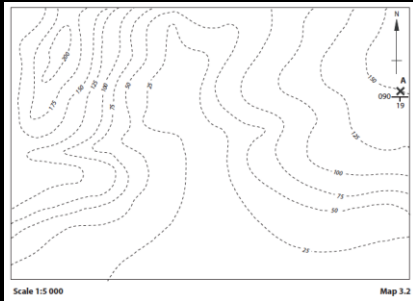
Folded strata
Exercise 3

Dip and Strike



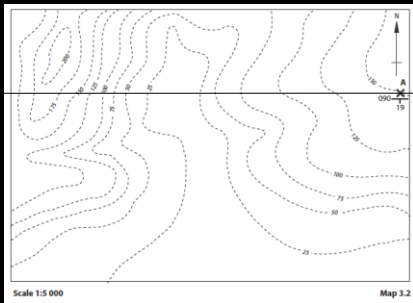
From: www.geocaching.com

Exercise 2



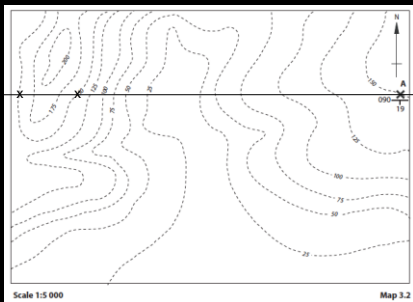
Stratum contours vs Topographic contours

Exercise 2



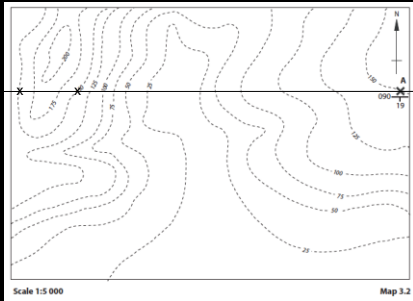
1a. Draw 150m stratum contour

Exercise 2



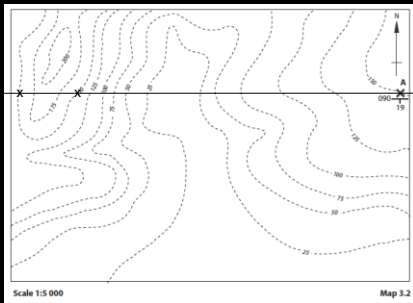
1b. Mark on 150m outcrops

Exercise 2



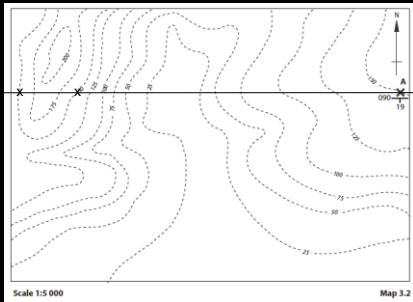
2. With Dip of 19° South, find 125m contour

Exercise 2



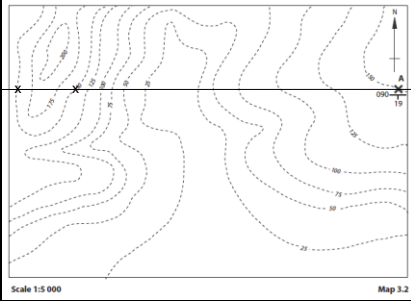
3a. Trigonometry: $\tan 19^\circ = 25\text{m} / x$

Exercise 2



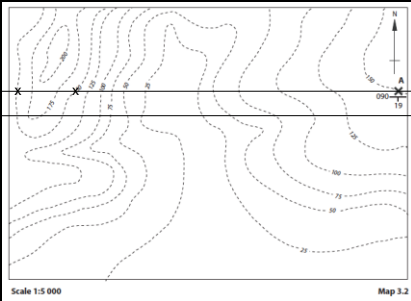
3b. Trigonometry: $x = 25 / \tan 19^\circ = 72.6\text{m}$

Exercise 2



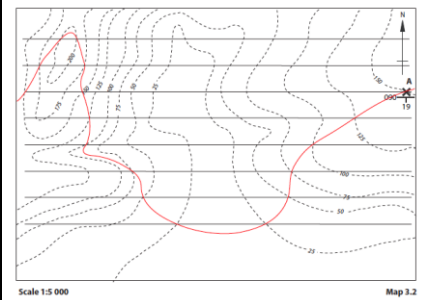
3c. At map scale (1:5000), 72.6m = 14.5mm

Exercise 2



4. Draw the stratum contours 14.5mm apart

Exercise 2



Should end up with this!

A little mapping history



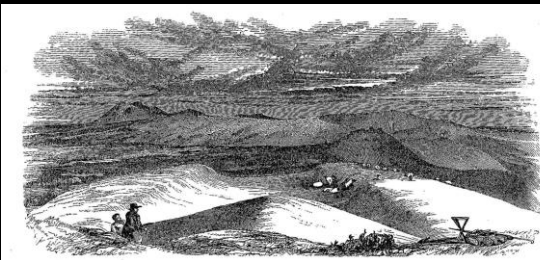
The Tale of Miss Phillips' Conglomerate

The protagonists



Murchison, Phillips, Phillips

The Malverns



Intruded or Buried?

Murchison's Malverns

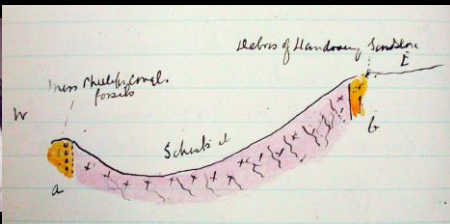


Joint Meeting with the Malvern, Cotteswold, and Woolhope Clubs.
MALVERN AND THE WORCESTERSHIRE BEACON.
Tuesday, 12th June, 1855.

The third meeting of the club for the season 1855 was held on Tuesday, 12th June, and was a joint meeting of the *Woolhope, Cotteswold, Malvern, and Worcestershire* clubs. At eleven o'clock they commenced the ascent of the *Worcestershire Beacon*, where, about noon, they were gradually joined by detachments from various districts, the company numbering altogether nearly 200. Having formed a circle round "the lion" of the day, Sir R. Murchison, the company assembled on the top of the *Beacon*, and the proceedings commenced with Sir Roderick's geological lecture. He said: The line of rocks on which they were standing was of an igneous or eruptive character, formed by fusion, and had passed through the other sediments by which they were surrounded. But at what period had they so risen? In the country around were

Igneous intrusion/extrusion

Miss Phillips' Malverns



Old intrusion, eroded and buried

Get your bus, Sir Roderick!



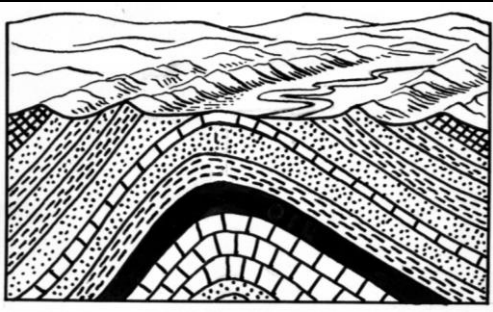
Miss Phillips was correct

Folded rocks



Mapping deformed strata

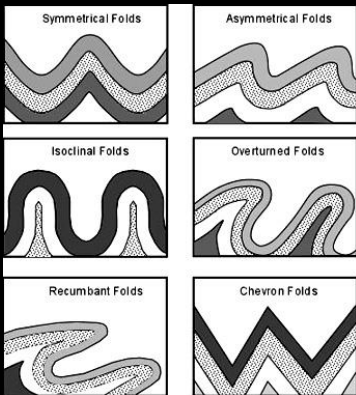
Folding: Antiforms & Synforms



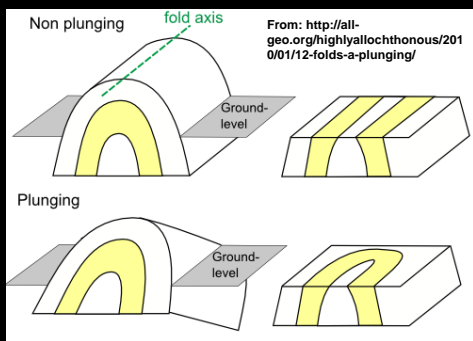
Strata deformed by tectonic forces

Types of fold

Think about crumpling a tablecloth!



Folding: Hinges & Plunges



Plunging folds, Australia



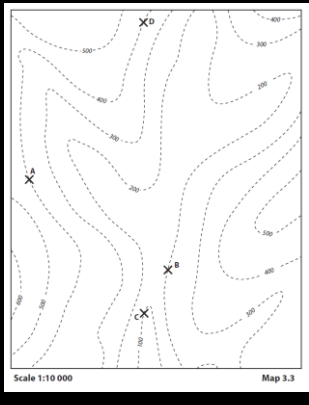
High-grade metamorphism



Cannot map this internal variability;
Have to map structure more broadly

Exercise 3

Calculating dip,
strike and thickness



Resources (www.fossilhub.org)

Miss Phillips the Trowelblazer:

<http://trowelblazers.com/anne-phillips/>

Un carte geologique de l'Europe

<http://imgur.com/EqGIAob>

BGS 3D Map of Assynt:

<http://www.bgs.ac.uk/research/ukgeology/assyntCulmination.html>
