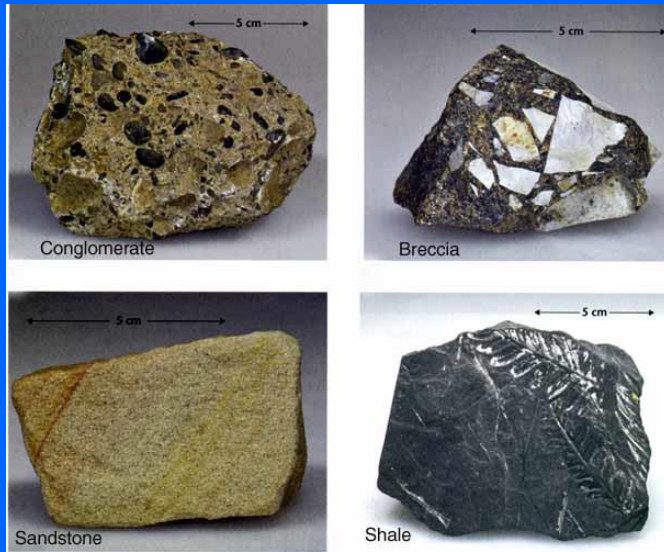


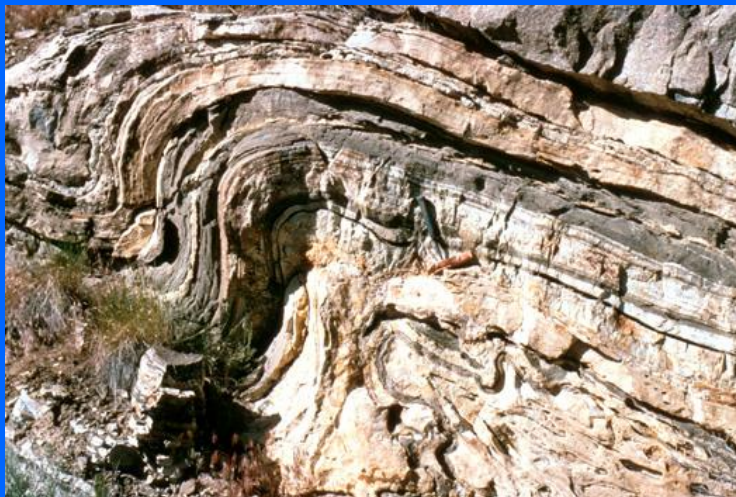
# Unit 2 Revision



Rocks and Minerals



Earth Structure and Tectonics



Rock Deformation



Time and Change (Fossils)

# Exam layout

Candidate Name	Centre Number	Candidate Number
		0



AS  
GEOLOGY  
COMPONENT 2  
Foundation Geology  
1 hours 30 minutes



For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	14	
2.	14	
3.	14	
4.	17	
5.	14	
6.	17	
<b>Total</b>	<b>90</b>	

## ADDITIONAL MATERIALS

In addition to this examination paper you will need a calculator.

## INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen. Do not use correction fluid.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer all questions.

Write your answers in the spaces provided in this booklet.

## INFORMATION FOR CANDIDATES

The number of marks is given in brackets alongside each question or part-question. The assessment of the quality of extended response (QER) will take place in questions 5 and 6.

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	14	
2.	14	
3.	14	
4.	17	
5.	14	
6.	17	
<b>Total</b>	<b>90</b>	

# Six Data Response Questions - 1<sup>1</sup>/<sub>2</sub> hours (15 minutes per question)

Breakdown of topics:

Topic 1 - KI1: Elements and Minerals

Topic 2 - KI1: The Rock Cycle (including Sedimentary rocks)

Topic 2 - KI2: Igneous and Metamorphic rocks

Topic 2 - KI3: Rock Deformation (folds, faults)

Topic 3 - KI1: Time and Change

Topic 3 - KI2: Dating of rocks and fossils

Topic 4 - KI1: Earth Structure

Topic 4 - KI2: Plate tectonics

# Don't forget the mineral data sheet

Name	Cleavage/Fracture	Hardness	Density (gcm <sup>-3</sup> )	Streak	Lustre	Colour	Other diagnostic properties
Quartz	RF *none/conchoidal	7	2.65	scratches streak plate	vitreous	colourless, milky but variable	hexagonal prisms terminated by pyramids
Orthoclase Feldspar	RF *2 good, 90	*6	2.6	scratches streak plate	vitreous	flesh, pink, white	*simple twin
Plagioclase Feldspar	RF *2 good, 90	*6	2.7	scratches streak plate	vitreous	creamy-white, grey, colourless	*repeated multiple twin
Muscovite Mica	RF *1 perfect (basal)	*2.5	2.7-3.1	white	pearly	colourless or pale yellow, green or brown	*flaky
Biotite Mica	RF *1 perfect (basal)	*2.5-3	2.7-3.1	white	pearly	brown/black	*flaky
Hornblende	RF *2 good, 60/120	*5-6	3.0-3.5	scratches streak plate	vitreous	black, dark green	prismatic crystals
Augite	RF *2 good, 90	*5-6	3.2-3.5	scratches streak plate	vitreous	greenish black	prismatic crystals
Olivine	RF none/conchoidal	*6-7	3.2-4.3	scratches streak plate	vitreous	*olive green	
Chiastolite/ Andalusite	poor 1/ uneven fracture	7.5	3.1-3.3	scratches streak plate	vitreous	pearly grey/pink	needle crystals with square x-sections, black centre
Garnet	none	*6.5-7.5	3.5-4.3	scratches streak plate	vitreous	red/brown	*12 sided crystals - each face rhomb shaped
Calcite	RF *3 good, not at 90, perfect rhombs	*3	2.71	white	vitreous	colourless, white, tints	*effervesces with 0.5M HCl, rhombic shape
Fluorite	*4 good, parallel to octahedron	*4	3.0-3.2	white	vitreous	colourless purple/green/yellow	fluoresces in uv light, cubic or octahedral crystals
Halite	3 good, 90 cubic	*2.5	2.2	white	vitreous	colourless, white, often stained	*salty taste cubic crystals, often stained
Gypsum	1 good (basal)	*1.5-2	2.3	white	silky, pearly	colourless, white, often stained	fibrous or twinned crystals
Barites	2 good, 90	*3-3.5	*4.5	white	vitreous, resinous	white, pink	bladed crystals
Chalcopyrite	poor/conchoidal	4	4.2	*black	metallic	bronze yellow	*tarnished to peacock colours
Pyrite	none/conchoidal	*6	5.0	*greenish black	metallic	brass yellow	crystals often striated cubes
Galena	*3 good, 90 cubic	*2.5	*7.5	*lead grey	metallic	lead grey	cubic crystals
Haematite	poor/subconchoidal	*5.5-6.5	4.9-5.3	*cherry red	metallic-dull	red/black skin/steel grey	kidney shaped masses, fibrous

\* - Useful property for diagnosis

RF - Common rock-forming mineral

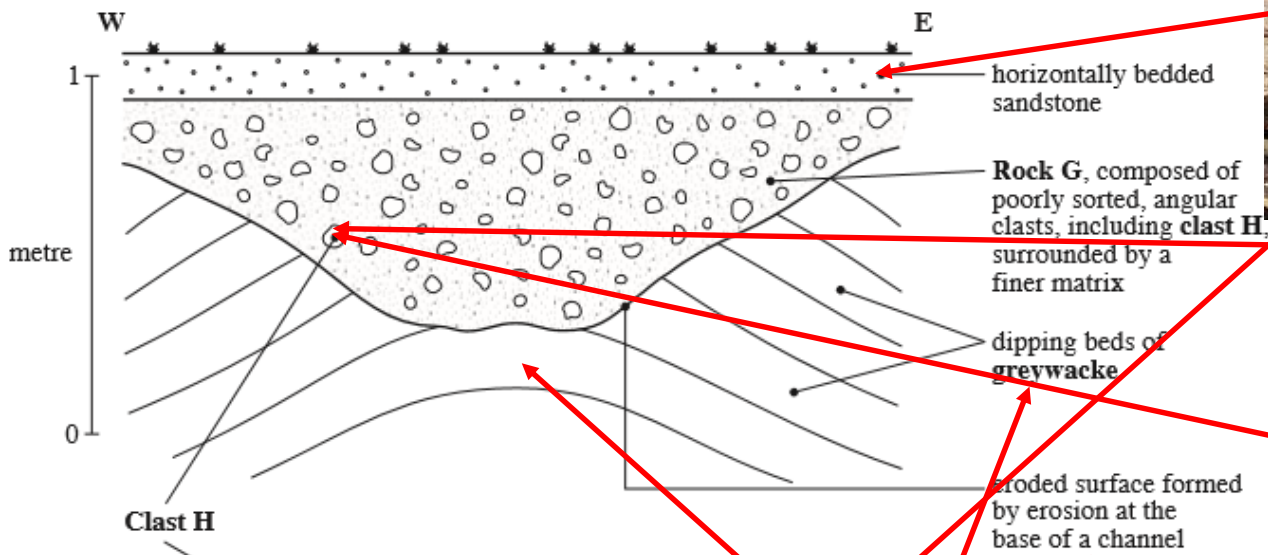
This table should not be memorised.

Marks in the examinations will be awarded for description of the outcomes of tests on minerals and, on some occasions, identification from test results.

# Geology is about Interpretation

- All questions will be based around maps, cross-sections, graphs, diagrams or photographs.
- You will need to **read** and **interpret** the information you are given.
- In the questions you will be asked to describe, compare, explain, interpret, sketch, link or evaluate pieces of information in order to answer the questions.
- The questions will build up and get more difficult towards the end of a section. Maximise your marks on the earlier, easier questions.

3. Figure 3a shows a field-sketch of a cliff section. Figure 3b shows the detail of **Clast H** taken from Rock G.

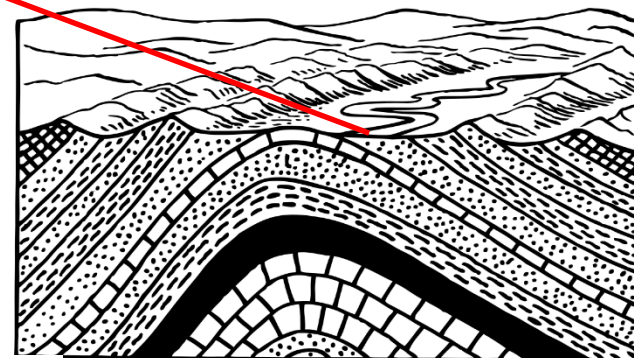
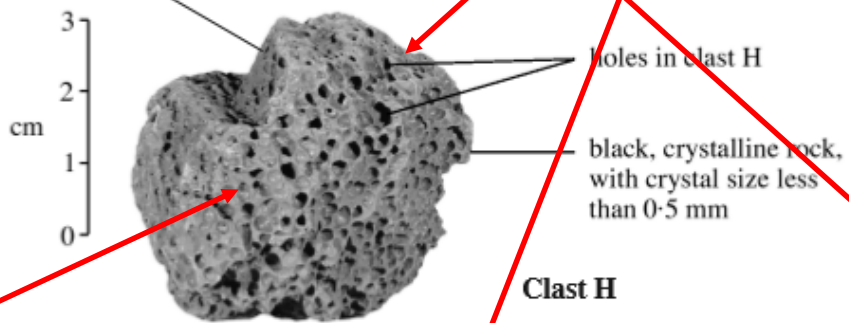


### The law of included fragments

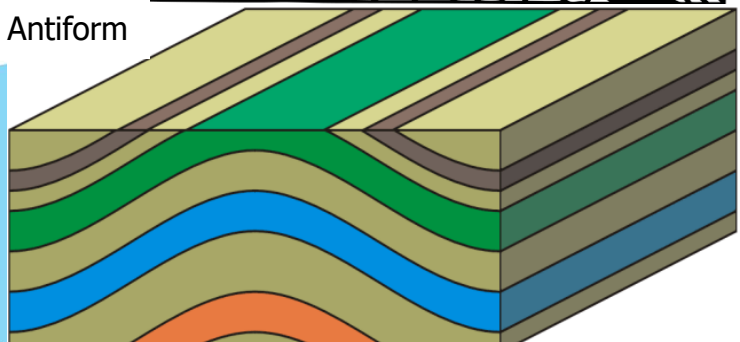
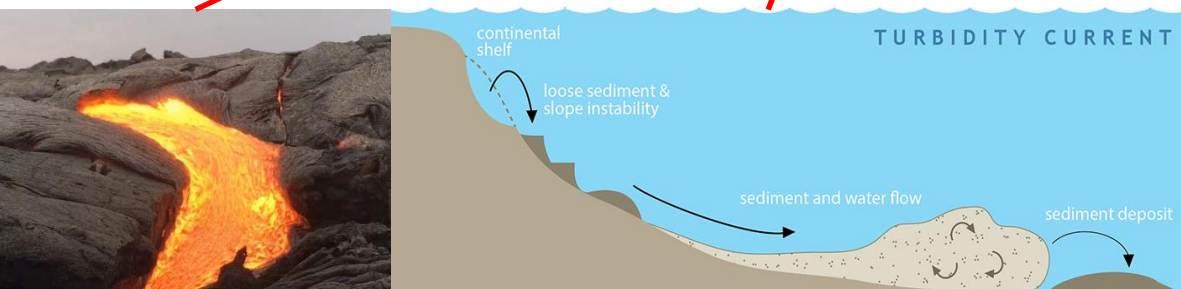
The fragments that make up a rock are older than the entire sample.



Figure 3a

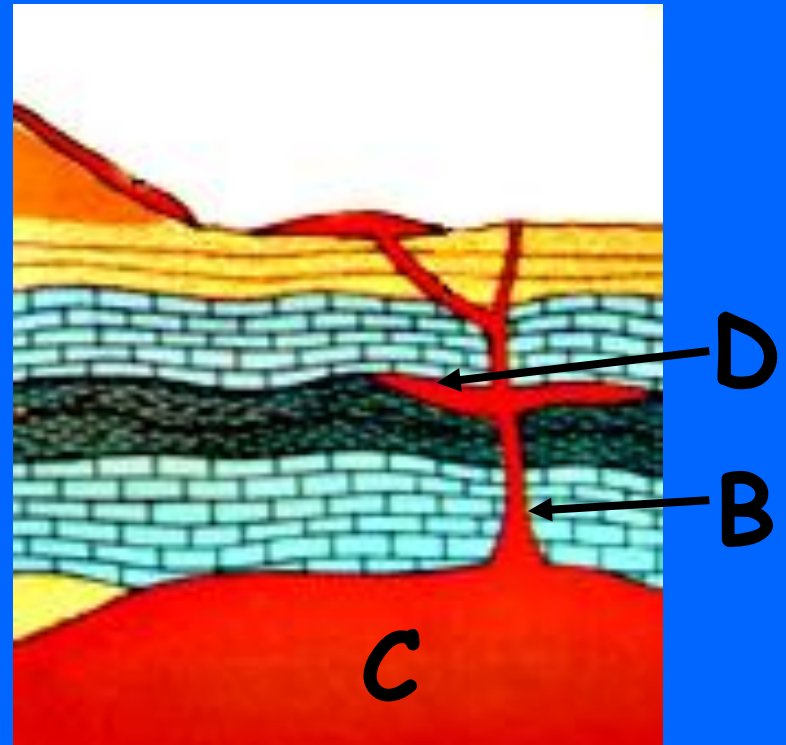


Antiform



1) Is rock type A, sedimentary, igneous or metamorphic?

2) Name rock A

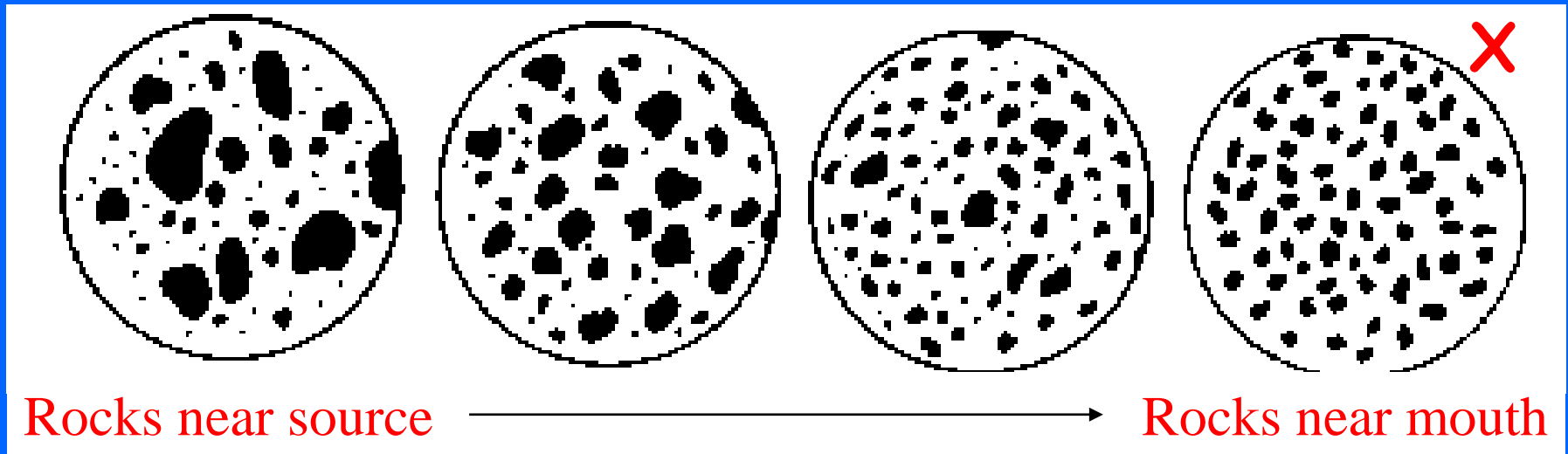


3) What is intrusion B, called?

4) Is the intrusion younger or older than the surrounding rocks?

5) Which would contain the larger crystals B, C or D?

6) What process has formed these loose, angular piles of rock?



7) Describe the changes in load size down a river

8) The last picture (x) is well sorted, what does this mean?



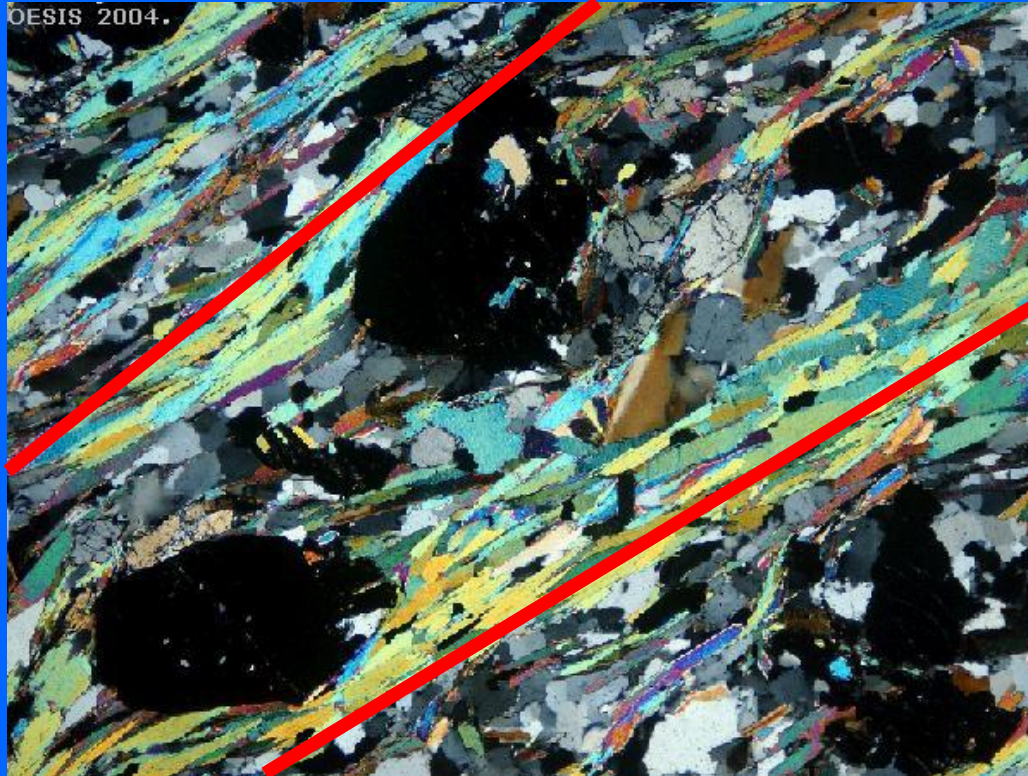
9) Describe the colour and lustre of these minerals.



10) Name three other properties of these minerals that you could test.

11) Name this mineral: It often forms the largest crystals (phenocrysts) in granite. It can be pink or white in colour.

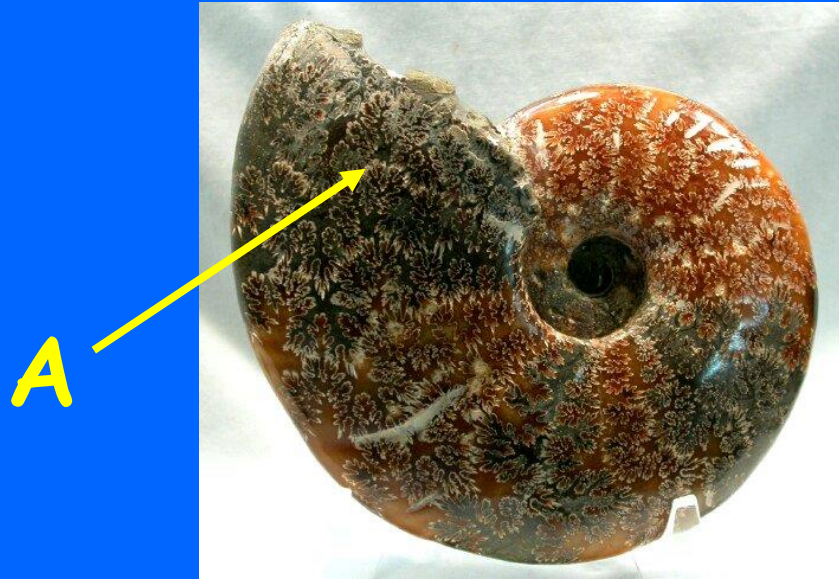
12) The crystals in the photomicrograph of a rock below have been lined up, why?



13) To which rock group does this rock belong?

14) Give a name for this rock

15) To which fossil group does this creature belong? (careful)



16) What are the features labelled A called?

17) Explain how this creature probably lived

18) Why is this creature useful for dating rocks?

19) Compare the sorting of the two rocks below



20) Name an environment where each rock might form

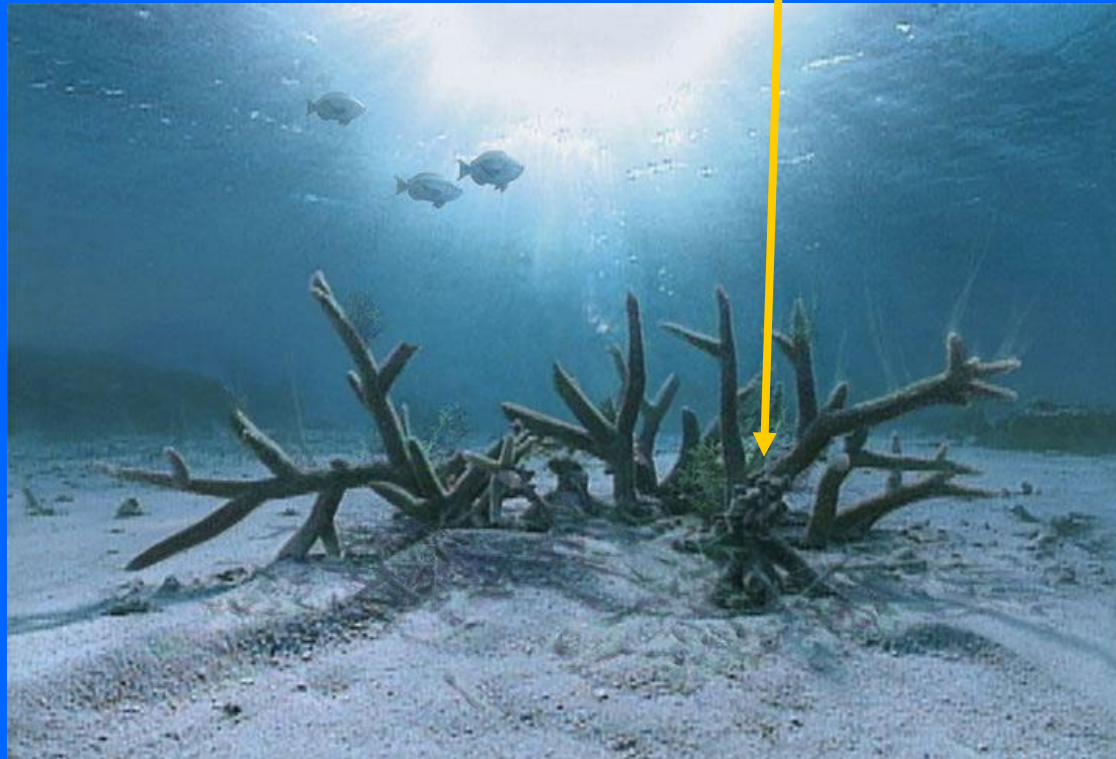
21) What type of igneous feature is this?



22) Where and why have these shapes formed?

23) Which minerals and features will this rock often contain?

24) What type of creature is this?

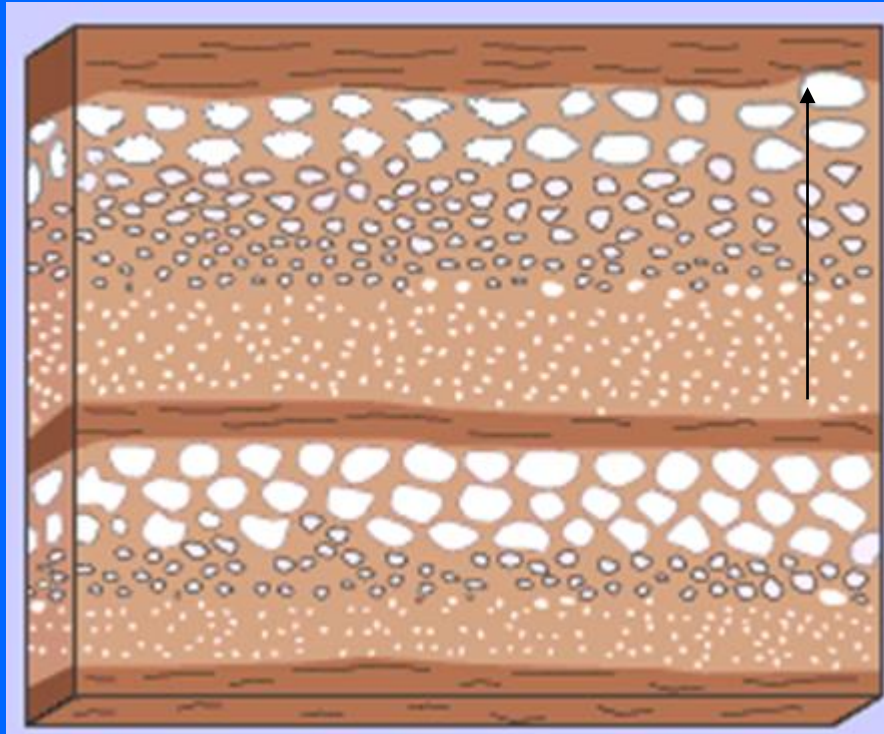


25) What is the name of the rock forming here?

26) What is the rock being made from?

27) What is the preservation potential in this environment?

28) What is the sedimentary structure shown below?



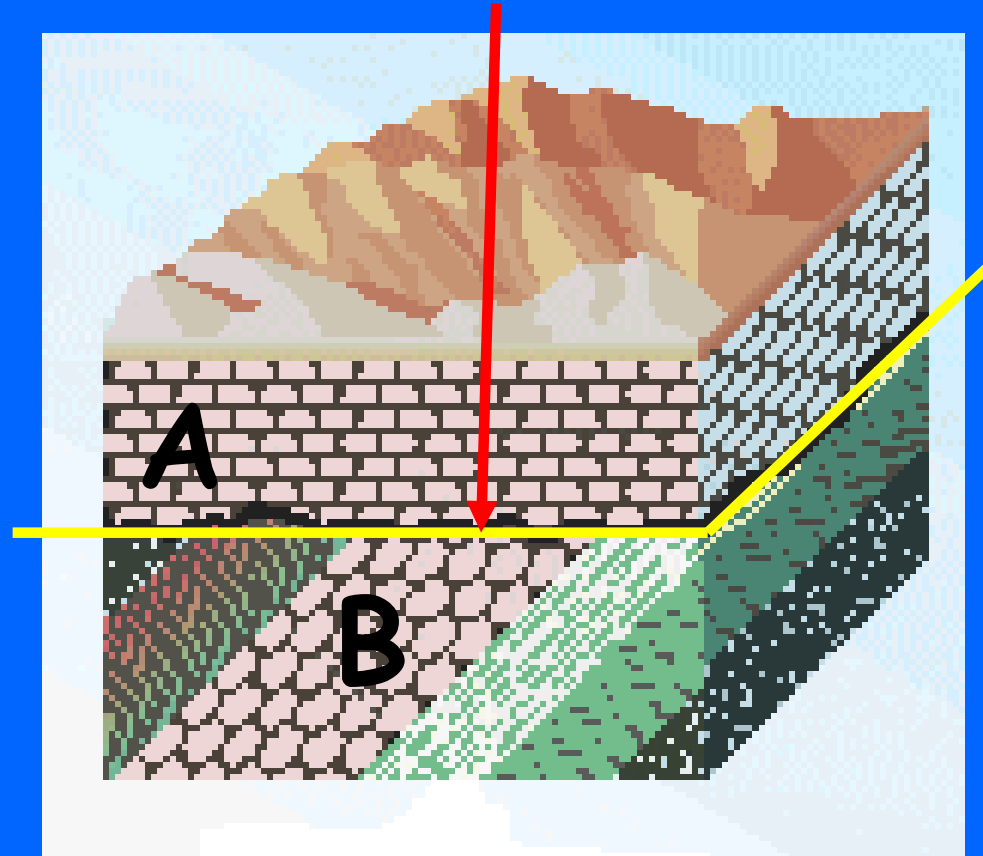
Coarse particles

Fine particles

29) Are these rocks the correct way up?

30) Explain the conditions in which this feature commonly forms?

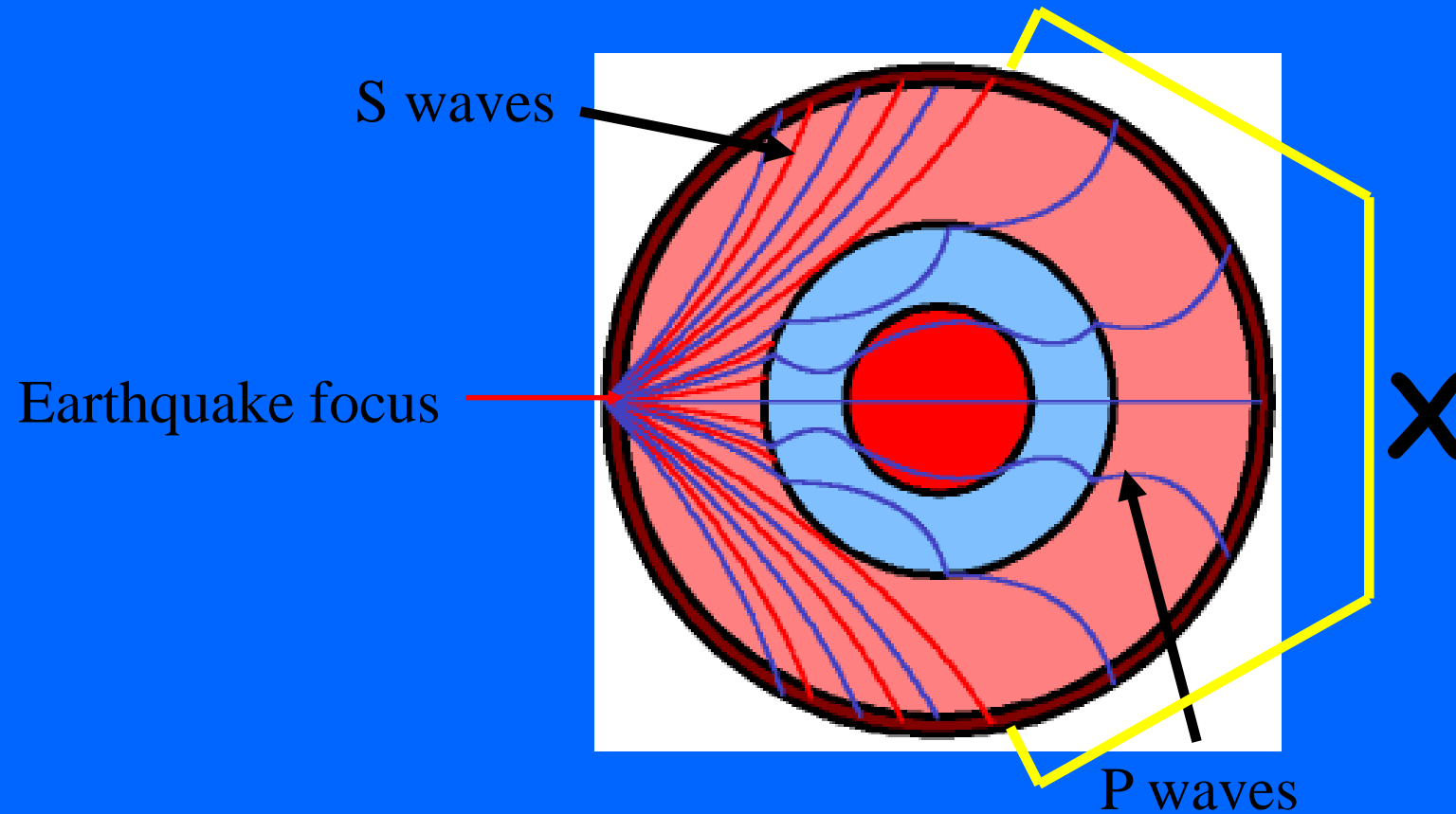
31) What is this type of feature known as, where the rocks don't match?



32) How has this feature formed?



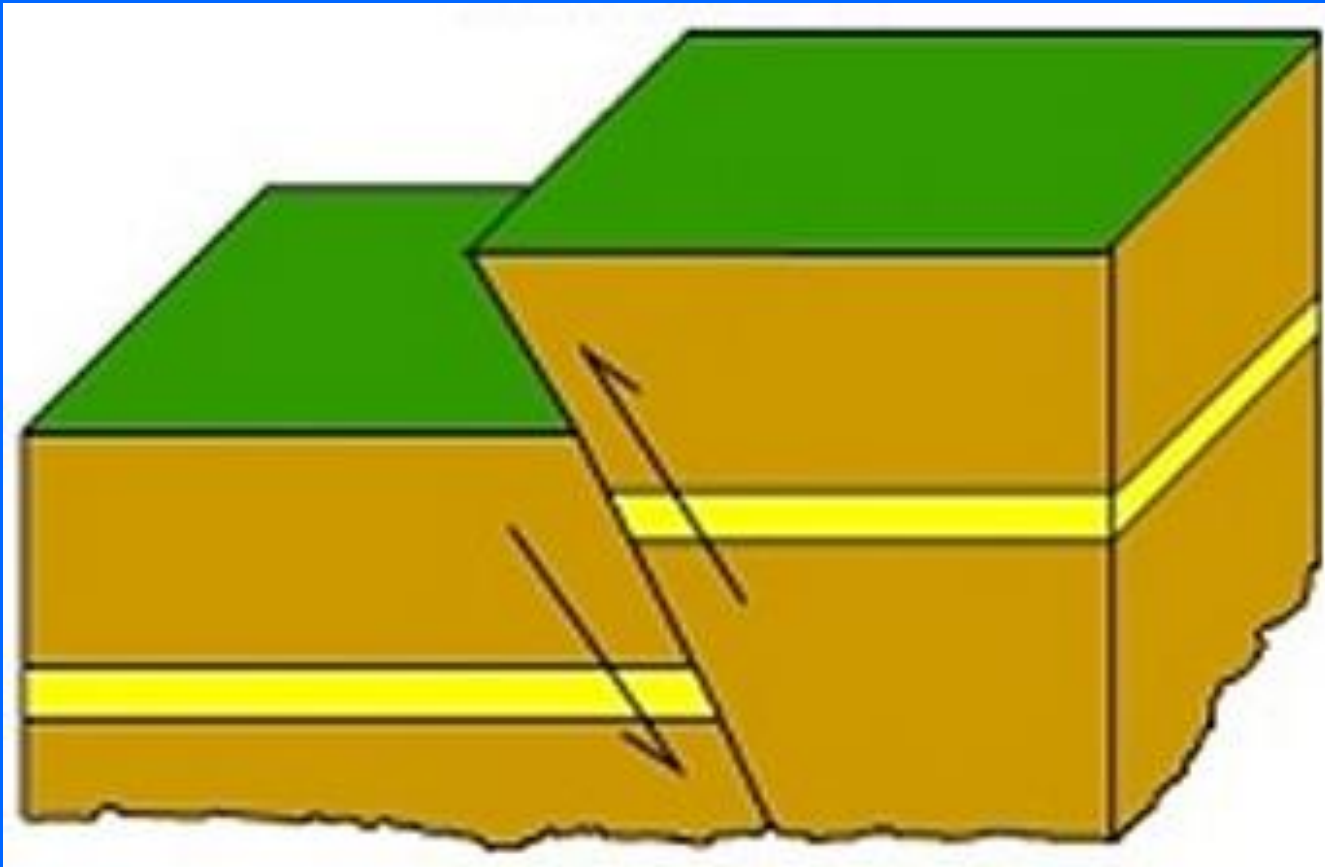
33) What happens to the speed of earthquake waves with depth inside the Earth?



34) Why have no S waves reached area X?

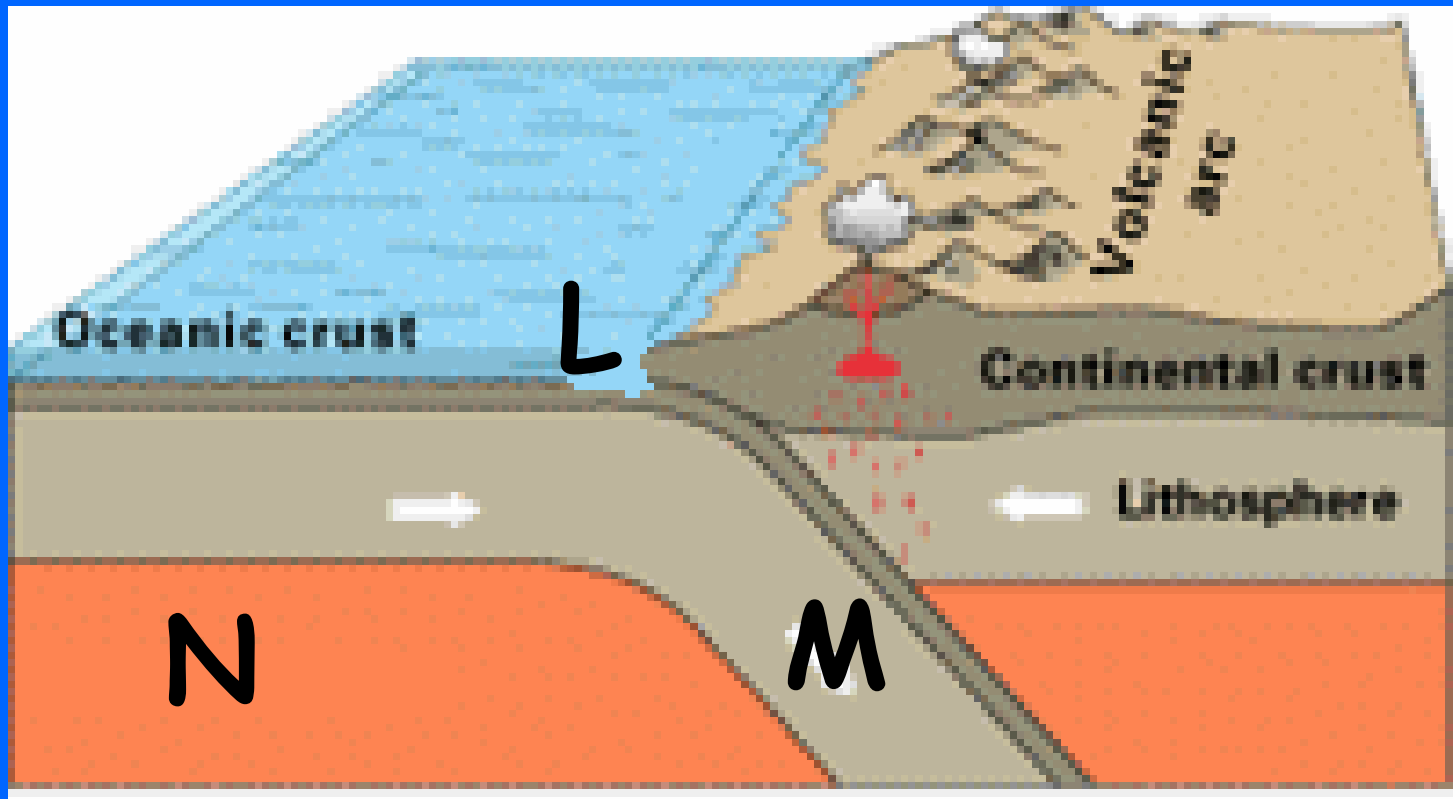
35) What is this zone known as?

36) What type of fault is this?



37) What type of stresses have formed this fault?

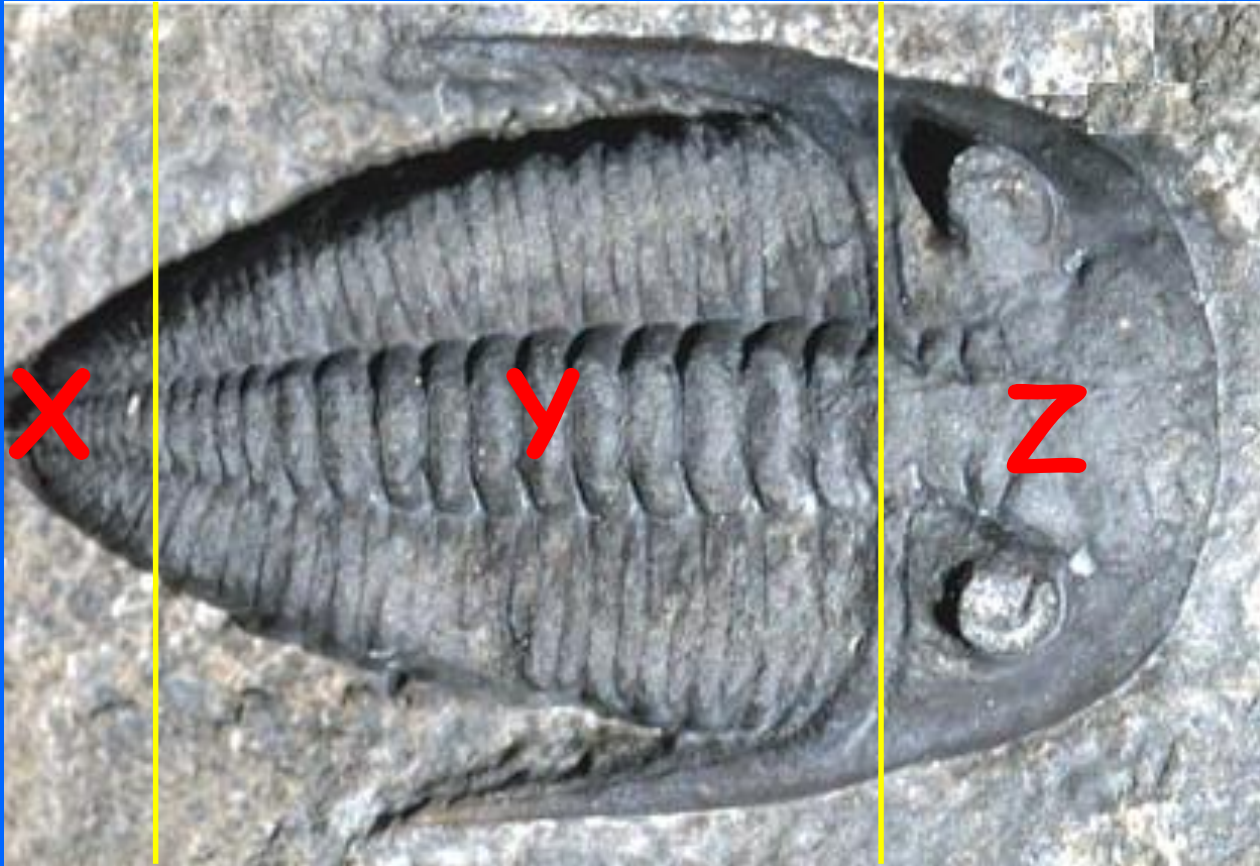
38) Name the features labelled L, M and N.



39) What type of plate boundary is this?

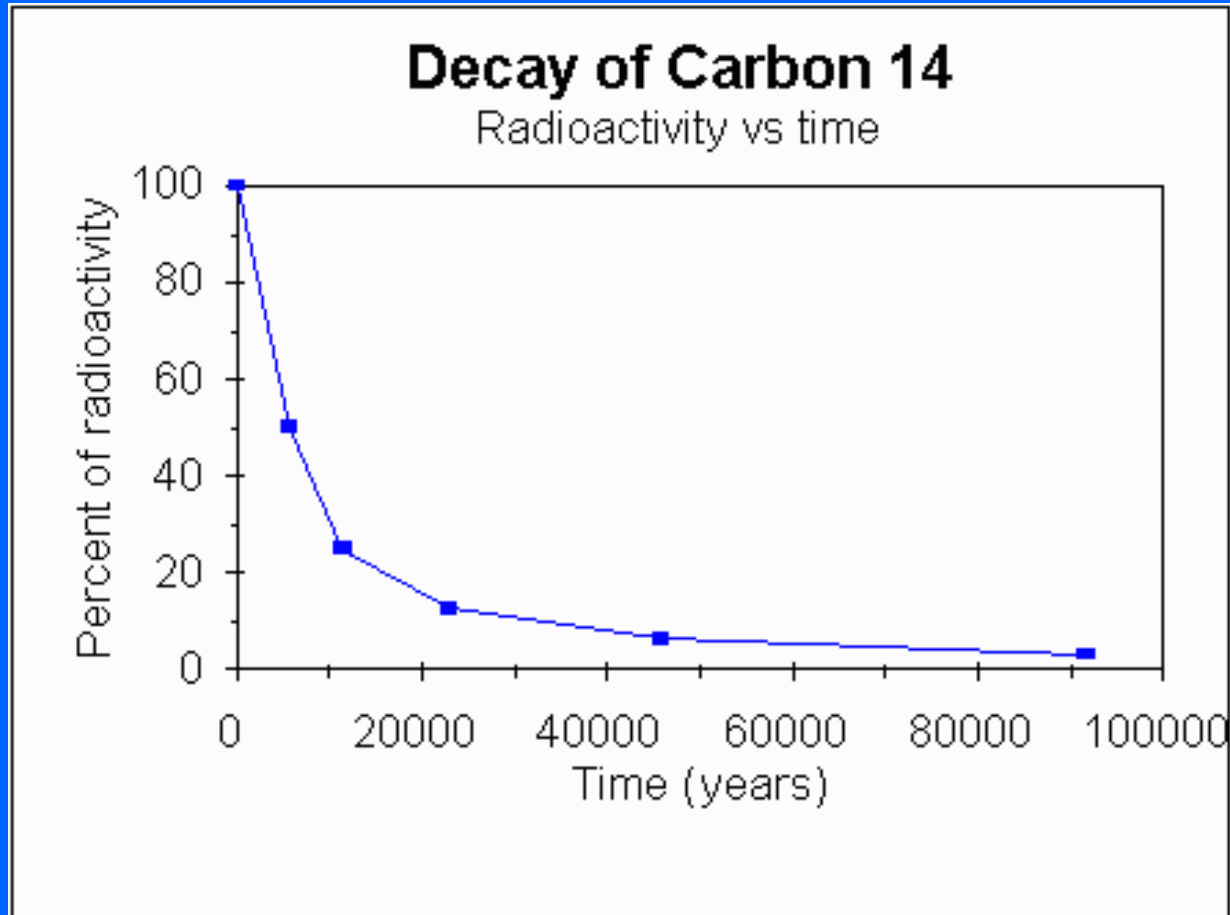
40) Name a place on the Earth with this type of boundary?

41) To which fossil group does this creature belong and label X, Y and Z?



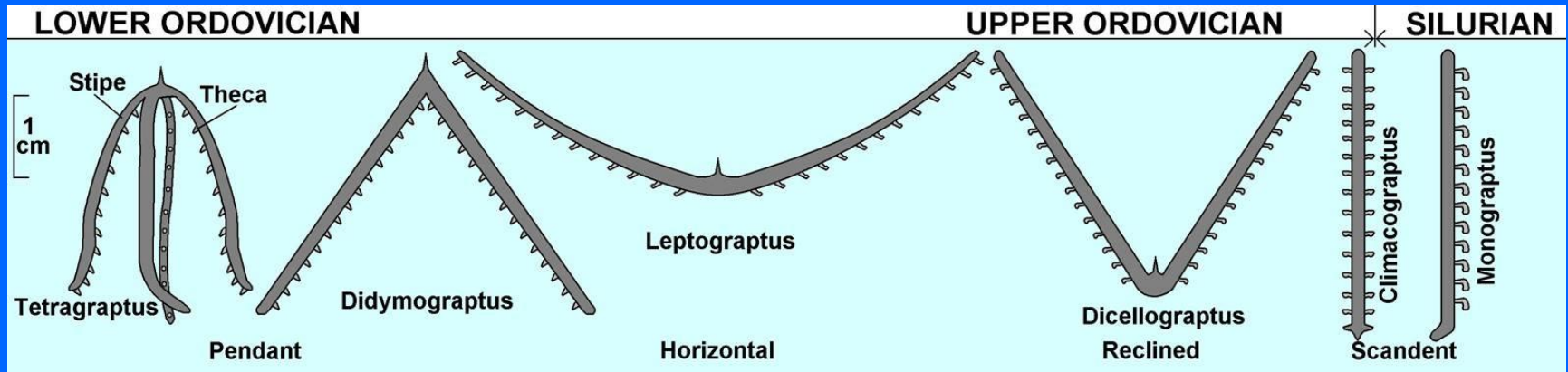
42) Describe its possible way of life.

43) How does the information below help us to gain an absolute date for the formation of a rock?



44) Which rock group is this mainly used for?

45) Which fossil group is shown below?



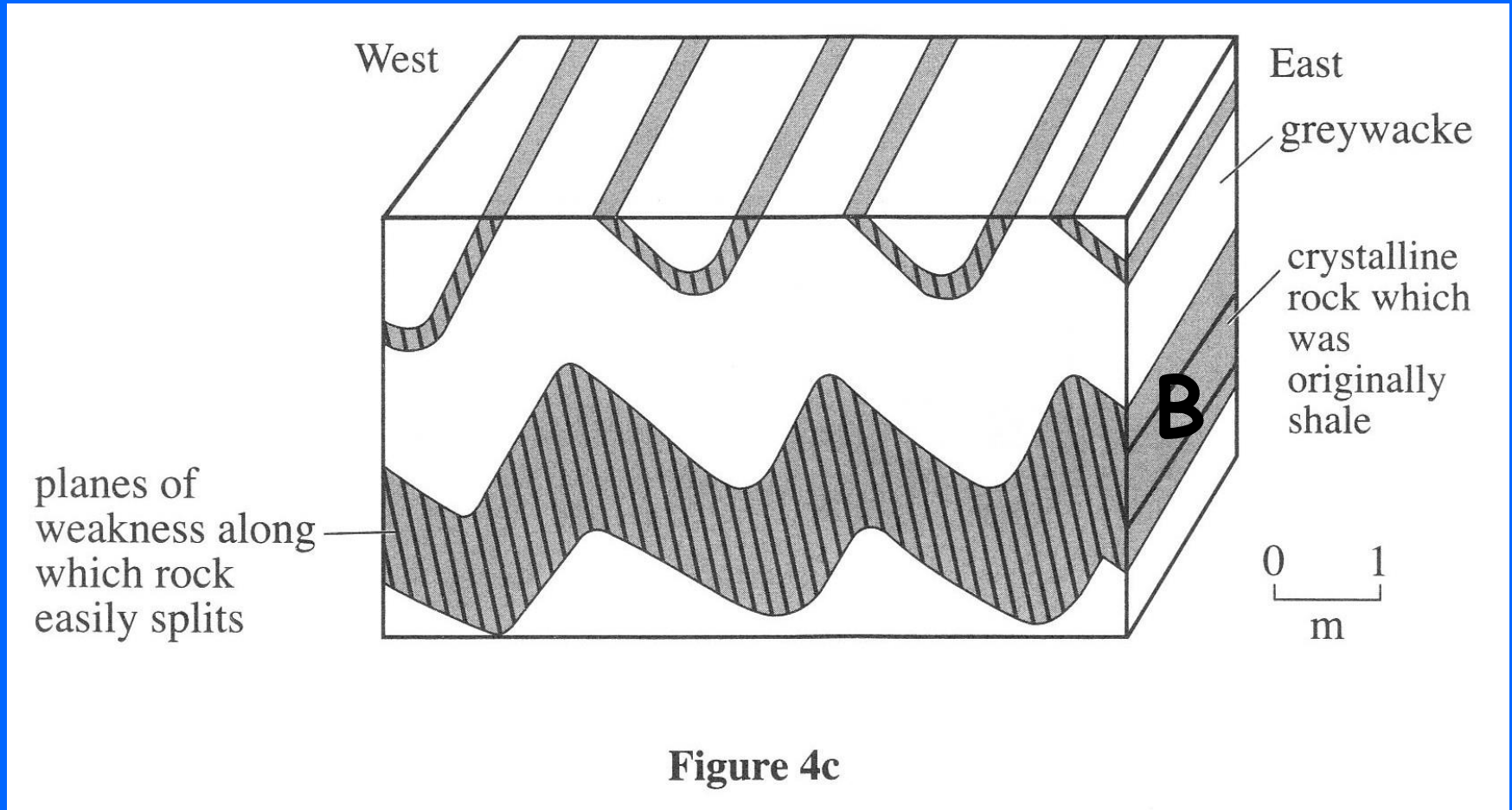
46) What are the arms and cups called?

47) Name two differences between these fossils?



48) Name the two groups A and B

49) Name the crystalline rock labelled B?



50) What is the evidence that these rocks have been metamorphosed or put under pressure?