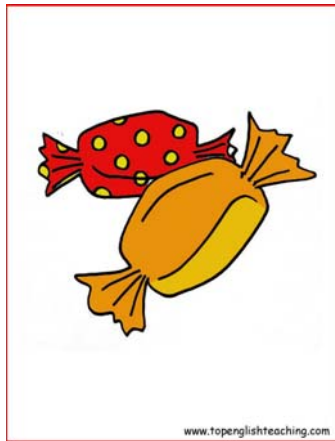
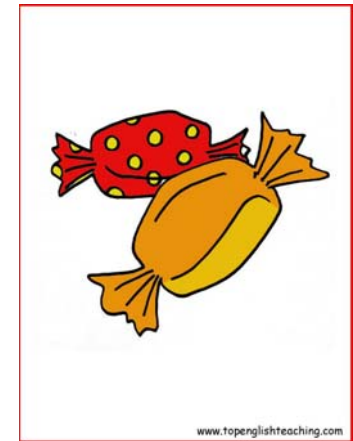




# Sweet Science



Sue Howarth  
Tettenhall College, UK



Alan Woolhead  
Bromsgrove School, UK

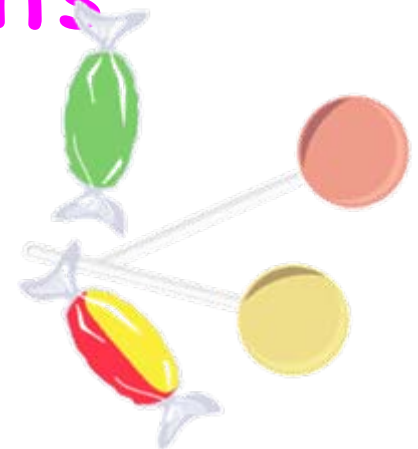
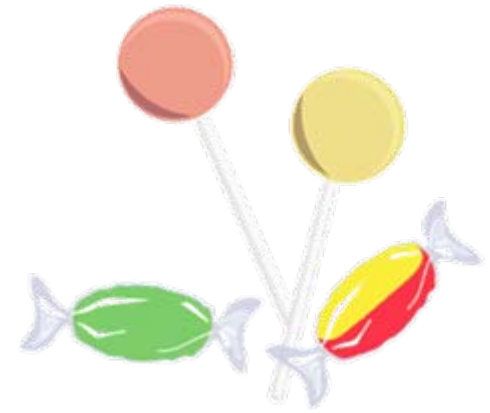
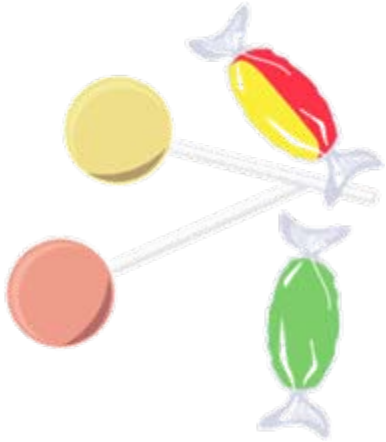
Some  
practical ideas

for teaching  
geology / earth science  
to 11-14 year old students

using sweets and biscuits

GIFT

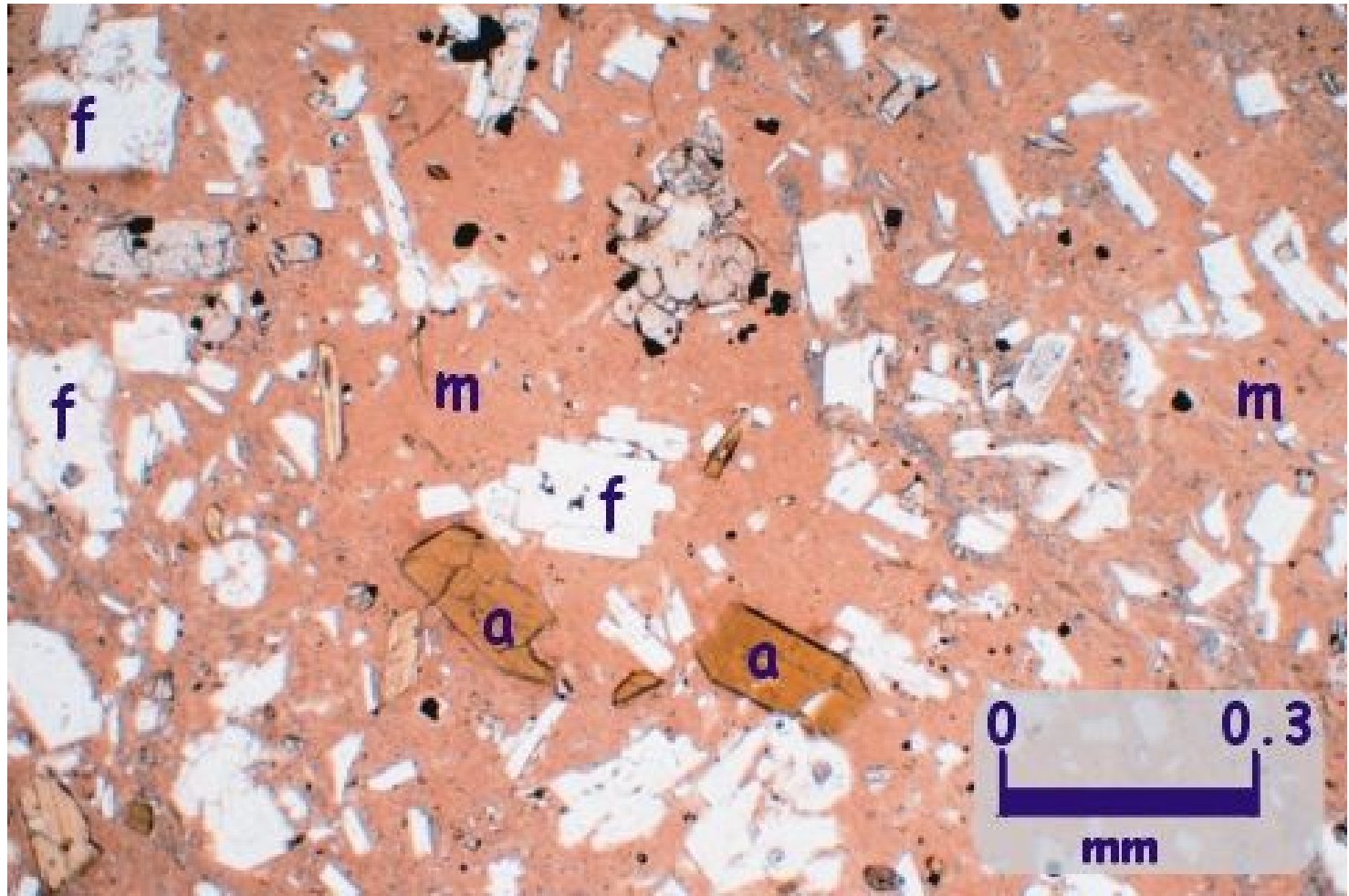
Vienna April 2007



# Crystal Size in Igneous Rocks

mineralminers.com





Garibaldi lava is composed of pinkish matrix (m) and microscopic crystals of the minerals feldspar (f) and amphibole (a).





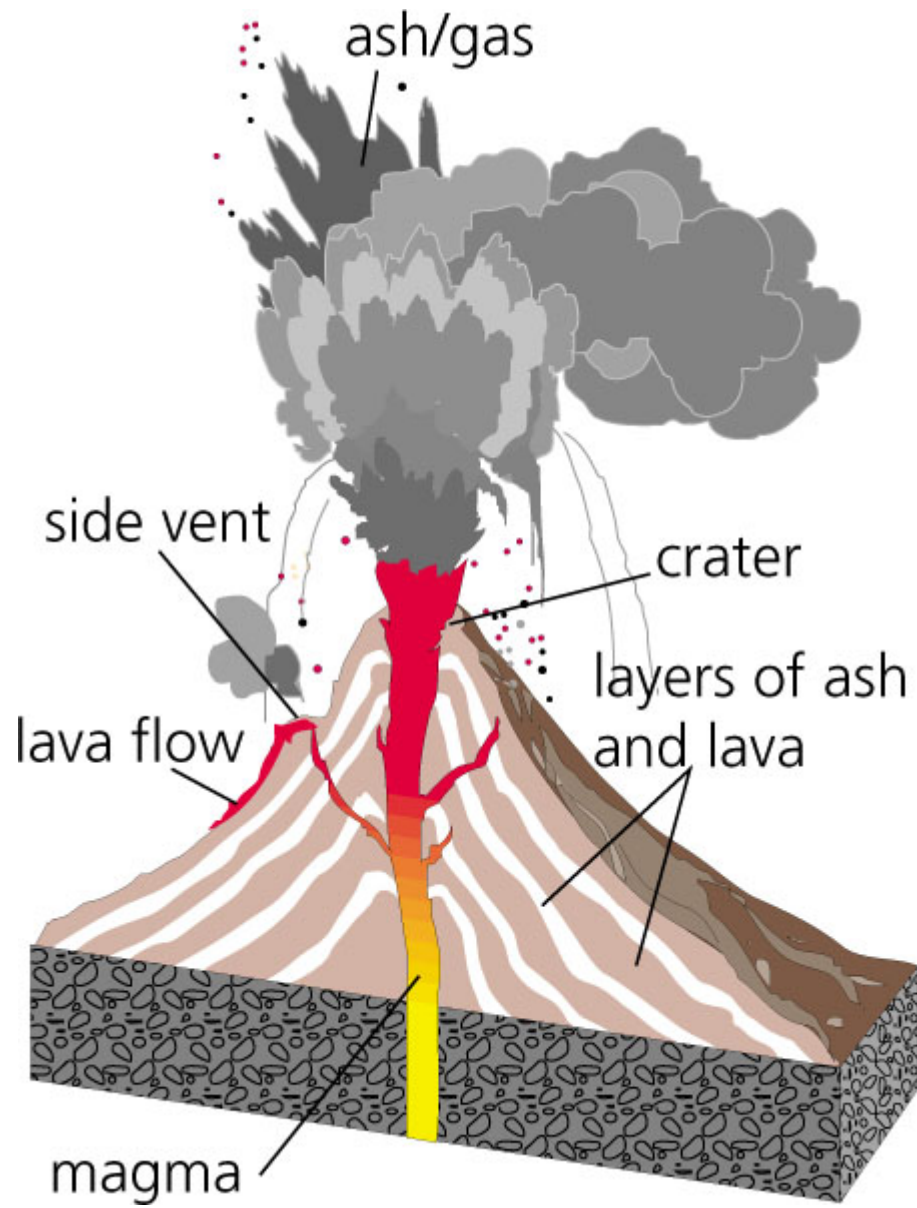






Mentos Mints  
and  
Diet Coca Cola :

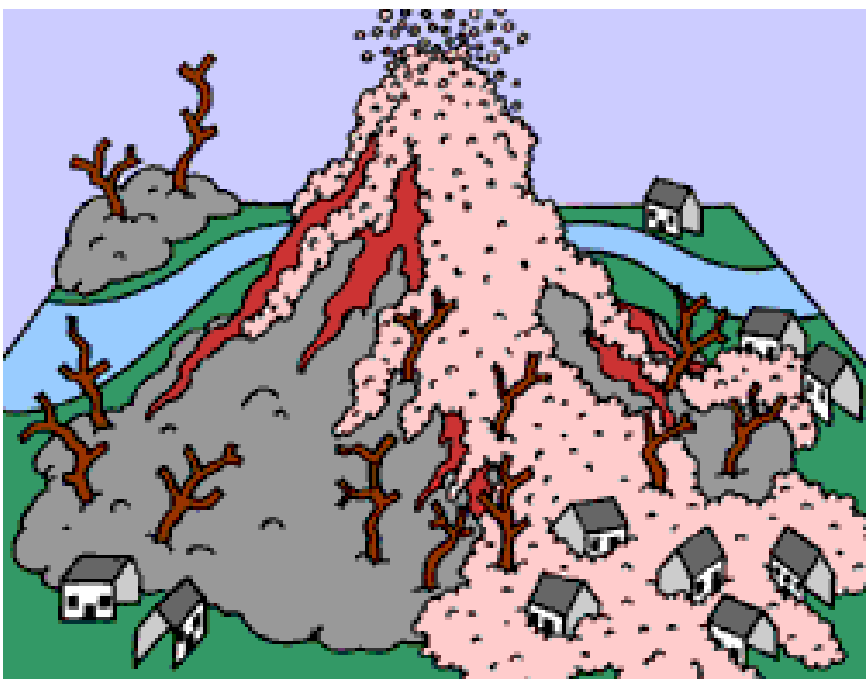
Model Volcano





<http://www.eepybird.com/exp214.html>

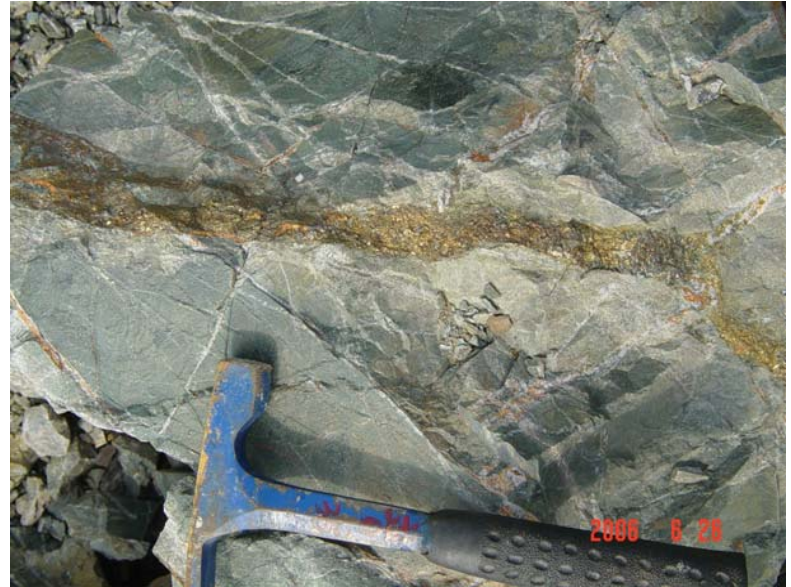
[http://www.globalgang.org.uk/images/volcano\\_4\\_tcm7-1240.gif](http://www.globalgang.org.uk/images/volcano_4_tcm7-1240.gif)



Garibaldi Biscuits  
and  
Chocolate Chip Biscuits:

Mining Ores





## Mineral Mining in South China



<http://snackspot.org.uk/images/burtonsMarylandPeanutToffee.jpg>

# Maryland

PEANUT TOFFEE  
CRUNCH

# Maryland

# Calliope

CHOC CHIP, OATMEAL  
& HONEY

40 PEBBLES PER  
MARYLAND DAT & HONEY  
MARYLAND PEANUT TOFF  
45 RS SLT PNUT  
BALANCE DUE

£1.40  
£0.65  
£0.85  
£0.31

2007







**Crawford's**<sup>®</sup>



BAKING FAMILY BISCUITS SINCE 1813

**GARIBALDI**

100g e

When bought in supermarkets in the UK, Garibaldi biscuits usually come in four strips of five biscuits each. They have a golden brown, glazed exterior appearance and a sweet pastry, but their defining characteristic is the generous layer of squashed fruit which gives rise to the colloquial names e.g. *squashed fly biscuits*, because the squashed fruit are said to resemble dead flies.

Garibaldis go particularly well with tea. One biscuit provides only 40 calories but the temptation to munch a full sheet (200 calories) is extraordinarily strong among aficionados of this inexpensive classic treat.

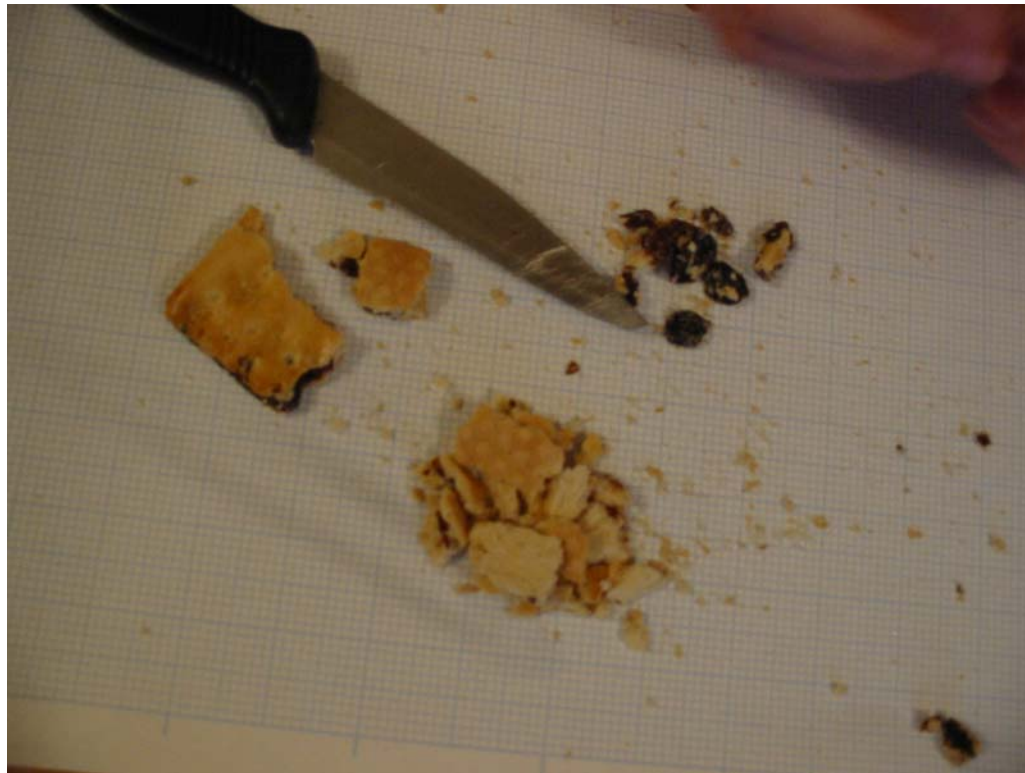


The Garibaldi biscuit was named after [Giuseppe Garibaldi](#), an Italian general and leader of the fight to unify Italy, who made a popular visit to England.



% chocolate chips / raisins = ore

% biscuit = waste ore





Toffee:  
making a fossil



# FOSSILS

## Y10



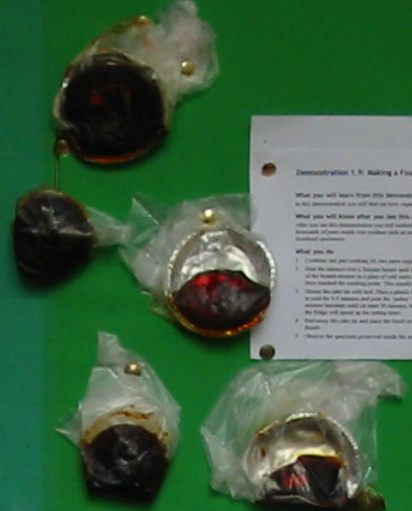
A fossil snake preserved in a dark matrix. The snake is shown in profile, with its head and body clearly visible. The fossil is a dark color, contrasting with the lighter matrix.

**What happens if there is no fossil?**  
 Fossils are preserved in a hard matrix. The fossil is a dark color, contrasting with the lighter matrix. The fossil is a dark color, contrasting with the lighter matrix. The fossil is a dark color, contrasting with the lighter matrix.

**What are fossils?**  
 Fossils are preserved remains or impressions of plants and animals that lived in the past. They are usually made of hard parts like bones, shells, or teeth.

**Problems**  
 - Not all organisms are preserved as fossils. Only hard parts are usually preserved.  
 - The most materials to survive fossilization are the hard parts: bones, shells, etc.  
 - In order for soft materials to survive, they need to be preserved in a hard matrix.

**How are they formed?**  
 1. **Death**: Animal dies and its body is buried in sediment.  
 2. **Decay**: Soft tissues decay, leaving hard parts.  
 3. **Preservation**: Hard parts are preserved in a hard matrix.  
 4. **Excavation**: Hard parts are dug up and preserved in a museum.



**Demonstration 1: Making a Fossil**

What you will learn from this demonstration:  
 How to make a fossil of a shell and how to make a fossil of a bone.

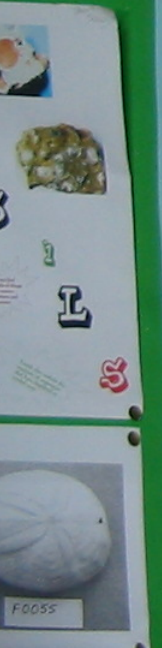
What you will know after you see this demonstration:  
 How to make a fossil of a shell and how to make a fossil of a bone.

What you will do:  
 1. Make a fossil of a shell.  
 2. Make a fossil of a bone.

**Fossils**

Fossils are the remains of plants and animals that lived in the past. They are usually made of hard parts like bones, shells, or teeth.

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## Fossils

**Stage 1**

When a shell is buried in sediment, it is surrounded by a hard matrix. The shell is a dark color, contrasting with the lighter matrix.

**Stage 2**

Over thousands of years, the sediment around the shell hardens. The shell is a dark color, contrasting with the lighter matrix.

**Stage 4**

Eventually the shell undergoes a series of changes. The shell is a dark color, contrasting with the lighter matrix.

**Stage 2**

Over thousands of years, the sediment around the shell hardens. The shell is a dark color, contrasting with the lighter matrix.

**Stage 5**

Eventually the shell undergoes a series of changes. The shell is a dark color, contrasting with the lighter matrix.

**Fossil**

Fossils are the remains of plants and animals that lived in the past. They are usually made of hard parts like bones, shells, or teeth.

**How are they formed?**  
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 3. **Preservation**: Hard parts are preserved in a hard matrix.  
 4. **Excavation**: Hard parts are dug up and preserved in a museum.



By Beth Smith



# FOSSILS

## Y10

Learn

### Problems

- Not all former life was preserved as fossils, the vast majority simply vanish without a trace.

- The most materials to survive fossilisation are the hard parts or resistant materials eg: bones, shells...

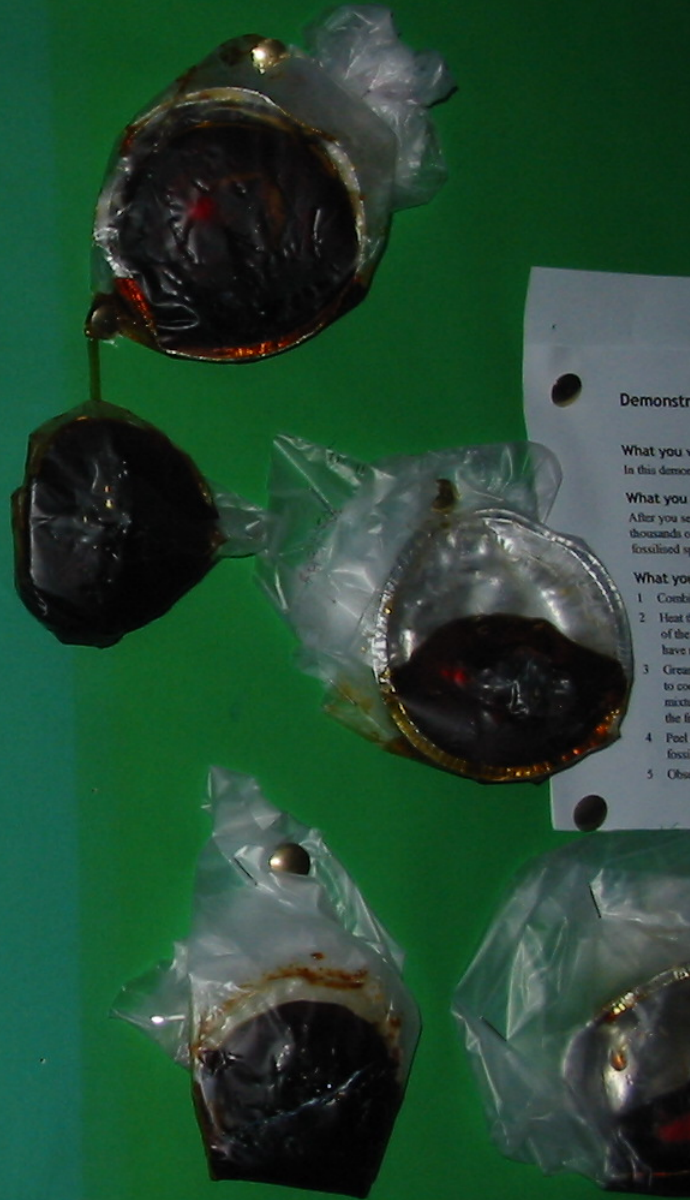
In order for softer materials to survive the conditions must be extremely favourable



Snakestone



Fossilisation



Demonstr

What you w

In this demon

What you

After you see

thousands of

fossilised sp

What you

1. Comb

2. Heat th

of the

have n

3. Cream

to cook

mixtur

the fr

4. Peel a

fossil

5. Obs



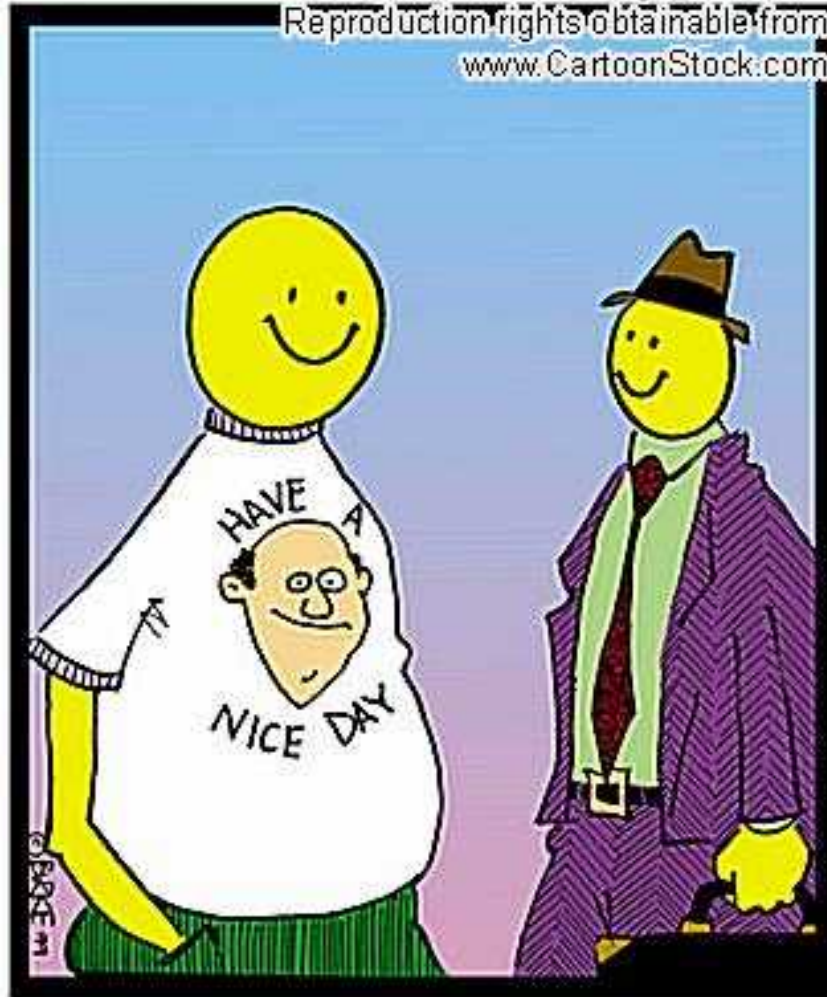
# That's All, Folks!

BEAR FACTS

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