

# THE GEOLOGY OF PANSHANGER PARK (2)

**Chalk** was extracted from Panshanger and used with gravel for surfacing paths on the estate around 1880, in front of you is an old chalk pit dating from that time, but the story of chalk goes back much further than that.

It formed between about 100 and 80 million years ago when dinosaurs roamed the Earth, though not here because the land was covered by a warm clear sea when world temperatures and sea level were very high this is known as 'The Cretaceous Greenhouse'.

Chalk (geologically a very fine limestone) is found in England, from the Wiltshire Downs to the White cliffs of Dover, to the Yorkshire coast, and in other countries including Russia, the American Midwest and Australia. By the end of the Cretaceous it was up to 400 metres thick. In this area now it extends down about 175 metres to the older rocks beneath.

Chalk also contains larger fossils, some made of flint but the chalk here is not as fossil rich as deeper down

Some fossils from the chalk |—| = 1 cm



*Spondylus* (bivalve molluscs) *Inoceramus*



*Micraster* (a sea urchin)



An ammonite



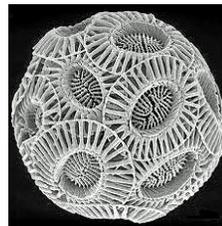
A sponge



A belemnite (similar to cuttlefish)

In some places chalk rock is hard enough to build with, but here it is soft and easily powdered. However there is more to the powder than meets the eye, most grains are fossils of minute algae called coccolithophores which formed shells of individual plates of calcium carbonate called coccoliths, arranged around them in a coccosphere. They lived in the surface waters and shed coccoliths as they renewed them during life, and when they died the coccospheres sank and most separated.

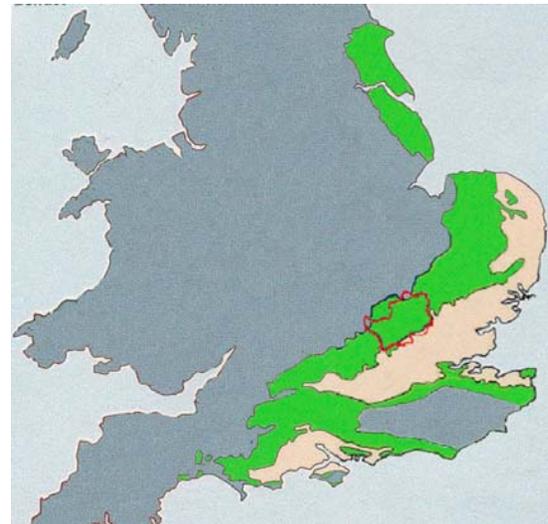
## Scanning electron micrograph of a coccosphere



The diameter is about 0.016 of a millimetre (a row of about 1000 coccoliths would fit on a pin head)

Pick up a piece of chalk and imagine how many coccoliths you are holding, and how many are left on your fingers when you put the chalk down.

You can also find plenty of flint which formed chemically in the chalk from dissolved silica



younger rocks    **Simplified geological map showing where chalk outcrops at or near the surface in southern Britain.**  
 chalk  
 older rocks

Much of the chalk has been eroded exposing older rocks. In parts of SE England it is buried beneath younger rocks. In most of Hertfordshire (outlined in red) the chalk is covered by gravels and clays.

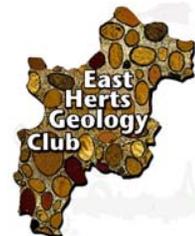


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