

GEOLOGY FASCINATING FACTS

Lions, reindeer, the woolly rhinoceros and sea-going crocodiles were once native to Kent. Their fossilised bones and the remains of other exotic creatures can still be found today.

Kentish Ragstone is one of the finest building stones in England and was once quarried in Maidstone. Not only was it used to build the Museum, but also the defensive walls of the Roman City of London sixteen hundred years ago.

The world's first articulated bird hip dinosaur was found in Queen's Road, Maidstone in 1834. This dinosaur, the Maidstone *Iguanodon*, is incorporated in the town's coat-of-arms.

The Earth is 4,500,000,000 years old, but modern humans only appeared in Northern Europe 20,000 years ago. The last dinosaurs died out over 60 million years before any human walked the Earth.

ILLUSTRATIONS

- 1 - Fossil crocodile, London Clay
- 2 - Fossil nautilus, London Clay
- 3 - Flesh reconstruction of Jurassic meat-eating dinosaur *Gasosaurus*
- 4 - Maidstone's Coat of Arms with Maidstone dinosaur on left
- 5 - Grinding tooth of Ice Age Mammoth



Sedimentary rocks are piled up in layers (strata) with the oldest at the bottom. The oldest rocks in Kent belong to the Cretaceous period (145-65 million years ago) named after the latin *creta* for chalk, but also include the Gault Clay, Greensands and various Wealden sandstones and mudstones. Cretaceous sediments accumulated in the sea except for the

Wealden sediments which formed in an ancient wetland.

In North Kent are found

some younger sedimentary strata of Tertiary age (65-50 million years old), notably the London Clay.



About 15 million years ago, the strata in Kent were bent and uplifted by earth movements. Subsequent erosion produced the shape of the present landscape with the harder rocks like sandstone and limestone forming the hills and softer rocks the vales. The landscape was softened by further erosion and accumulation of sediment during the last Ice Age (the Pleistocene: 1 million years - 10,000 years ago), when alternating freeze and thaw of the ground also

helped erosion. The crumbling cliffs and muddy estuaries of Kent show that geological processes are still active today.



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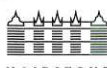
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Geology is the study of rocks, fossils and minerals found in the Earth (and on our nearest neighbours in space such as the Moon and planets). There are three main types of rocks on Earth, but only sedimentary rocks are found in Kent.

Sedimentary Rocks of Kent

These started as sediments such as sand and mud produced through natural erosion of the land by rivers, the sea etc. In time, the sand and mud hardened to form sandstone and mudstone, e.g. Kentish ragstone and Weald Clay. Other sediments were produced by the accumulation of plant and animal remains e.g. peat and lime mud which turned to coal and limestone as in the Kent Coalfield and Chalk of the North Downs.



MAIDSTONE
MUSEUM
& Art Gallery





Fossils

The remains of various creatures that lived and died in Kent over the last 145 million years were buried in

sediment and also turned to stone as fossils.

The hard or durable parts of organisms such as bones and shells make good fossils, but even plant leaves and insect wings have been found fossilised in Kent. The younger Cretaceous and Tertiary strata are rich in fossilised sea life. Some of the most fascinating fossils are the coiled shells of ammonites which are the extinct relatives of the living nautilus. The Wealden rocks are famous for their dinosaur bones and footprints. Ammonites and dinosaurs became extinct by the end of the Cretaceous period, but fossils similar to today's nautilus are found in the Tertiary. Thus, the study of fossils (palaeontology) overlaps with biology. Fossils tell us about the evolution of life on Earth. The reconstruction of ancient organisms and the different environments in which they lived stirs everyone's imagination.

Minerals

These are naturally occurring elements and compounds and like rocks, can be very important to the human economy, e.g. diamond, a hard crystalline form of the element carbon is used for cutting tough materials as well as in sparkling ornaments. Carbon is present in

fossilised tree resin (amber) as a natural plastic. As part of complex molecules including DNA, carbon is found in all living creatures including humans. Minerals thus demonstrate how significant geology is to us and the planet as a whole.

Kent is relatively poor in minerals, but the museum has a very comprehensive collection because local people have collected far and wide.



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Coal, which has been mined extensively in Kent, is buried under a layer of sunshine because it is made of extinct plants which flourished under a tropical sun 300 million years ago. As all living plants, they needed the sun's rays to grow through photosynthesis.

Chalk is made of the skeletal remains of tiny creatures which lived in a clear warm sea over Kent some 80 million years ago.

Amber is fossil resin and is popular in jewellery because of its light weight, warmth and golden colour. Insects trapped in amber are so well preserved that they may contain fragments of DNA, the molecule of life. However, it is most unlikely that scientists shall ever bring a fossil animal back to life.

The ground on which the museum stands was once a sandy sea floor and was previously covered by a pile of rocks over a kilometre (half a mile) high.

ILLUSTRATIONS

- 1 - Sectioned Jurassic Ammonite
- 2 - Fossil fern. Coal Measures
- 3 - Insect in amber
- 4 - Crystals of haematite and quartz (minerals)
- 5 - Crystals of celestine (mineral)