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# FOSSILS ARE MONEY – AND MORE!

*Reg Bradshaw*

A news item in the press recently told how a certain Mrs Catherine White bought an amber ring at a fair for £10 and on close inspection saw inside the amber a perfectly preserved fly. "Under a light," she said, "its eye glows and you can even see its tiny beard and hunch back". A scientist to whom she showed her purchase identified the fly as being probably 40 million years old and one of only eight known members of its species. "This is a very rare fossil and in the scientific world it would be priceless". Perhaps a bit of an exaggeration but fossils are money these days and private collectors and even museums are prepared to pay vast sums for perfect specimens, especially if they are unique. A very early reptile found in rocks in West Lothian, Scotland fetched £205,000 recently and big dinosaurs may reach £1 million.

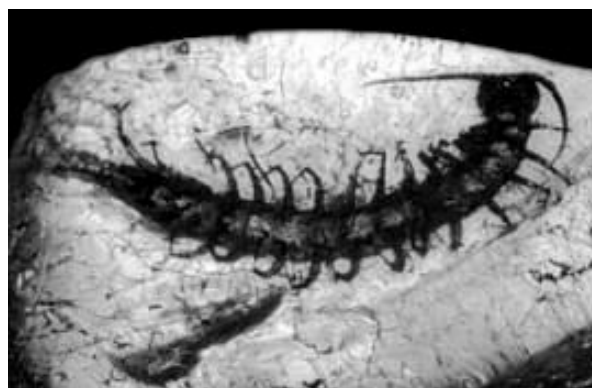
It is not surprising therefore that fossil collecting is becoming big business, with the result that many prime fossil sites are being vandalised by men with explosives and power tools. One famous fossil fish site in Northern Scotland suffered such a fate and the peaceful shore at Donniford Bay just to the East of Watchet often looks like a bomb site because of people looking for rather beautiful ammonites that occur there.

Amber has been prized at least since Aristotle's time (4th century B.C.) for the insects, small reptiles and feathers that it contained, but it was Pliny the Elder (killed by the eruption of Vesuvius in 79 A.D.) who first suggested that it was fossil resin and not, as some would have it, the congealed urine of the lynx. We now agree with Pliny - many types of tree exude resin, some give off as much as 60 litres per year, but only two modern types provide resin that could become amber. These two give copal, most of which is less than 1000 years old and much of it less than 100 but it could, in time, turn into amber. The exuded resin trickles down the trunk, traps the insects etc., hardens and falls to the floor where it may be moved by flowing water and eventually be incorporated into sediments which in turn become sedimentary rocks.

Amber can be found in rocks as old as the Carboniferous (310 million), some being known from the Northumberland coalfield, but the oldest

known with trapped insects is from the Lebanon (Cretaceous - 125 million). It occurs in many parts of the world - U.S.A., France, Burma, Borneo - but the big deposits are in the Eastern Baltic (40 million) and in Dominica/Mexico (30- 15 million) - with much of the early trade being in European amber. The material may be transparent to translucent to murky/opaque and the colour varies from yellow to gold to orange and, more rarely, to blue and green. Specimens containing insects number 3000 in the Natural History Museum in London and 5000 in the Smithsonian Institution in Washington - but a company dealing in amber in Koenigsberg (now Kaliningrad) is reputed to have had a collection of 100,000 pieces. Unfortunately this collection was dispersed and there is now no trace of it.

The delicate preservation of fine insect and plant tissue suggests that something in amber acts as an antibiotic and embalming agent which dehydrates the victims without causing much shrinkage or decomposition so that DNA has been recovered from some samples. Remarkable examples of preservation include; a butterfly with visible gradation of colour on the tiny wing-scales, spiders with victims in their jaws, a pair of crane-flies 'frozen' whilst mating, a mantis nymph being attacked by three ants, bees and flowers, a pseudo- scorpion hanging on to the legs of a fly, and nematodes (minute thread-like worms) emerging from the body of a midge. The scores of different species and genera range from termites to cockroaches, damselflies, spiders and many more. The scientific importance of amber is that it preserves for us a wide range of fauna which



*A centipede trapped in amber*

almost certainly would be lost to us. More and more insect families and plants are being found as investigations proceed and our knowledge of the fossil record is extended. They also give some indication of environmental conditions at the time of formation; the climate of the Baltic 40 million

years ago may have been similar to that in S.E. Asia today.

Amber is a thing of beauty and has been used as a cultural artifact for thousands of years. The oldest beads date from about 11,000 B.C., Stone Age amulets from 9,000 - 3000 B.C. and there was large-scale production from 3,000 B.C. onwards. The most famous piece of amber work was the Amber Room in the Ekaterininsky Palace in Saint Petersburg; it was a gift from the King of Prussia to Peter the Great. It consisted of twenty-two panels made up of a mosaic of 10,000 pieces of carved amber weighing some twelve tonnes. It was installed in 1711 (or 1755) but dismantled and hidden by the Nazis in 1942 and never recovered. A stockpile of amber was built up with a view to reconstruction but this was stolen, a fact which came to light when Danish customs officials seized 160 kilograms of the material after the Copenhagen market was flooded with amber. Needless to say that forgery of amber is very much a going concern.

*Reg Bradshaw is a retired lecturer from the University of Bristol and a long-standing friend of the Bath Geological Society. He wrote a series of 'Geological Jottings' for his local Wedmore Parish magazine. 'Fossils are money - and more!' is adapted from Geological Jottings No. 16*

## **ECOS** **(European Community of Stone)**

### **Monoliths, Frome**

*It is so disappointing that, despite considerable effort by many people, there is still no information board, or anything, to explain these extraordinary rocks.*

**Please have a look at them on**  
<http://ecosfrome.pbwiki.com>

## **.. AND FINALLY:**

- *Geologists wouldn't be able to get access to the mineral veins because there's a farm on top of the veins.*
- *The major tectonic event to which the subsidence of the North Sea Basin is related is related to the Andes.*
- *Before open cast mining you must clear the rock of foliation*
- *Milanchovich invented the 40,000 year tilt*
- *Unconformities can also form aqueducts*



## **ROCK WRONGS**

- *Basaltic magma is more explosive than granitic magma.*
- *Volcanic BALLS are a significant geological hazard.*
- *Andalusitic lava*
- *Volcanic deposits such as alluvium and peat are present*
- *The BLL limestone subducts under the shales*
- *Because hornfels contains a lot of schist and is quite fine grained so it must be near the marble*
- *It is too hot for partial melting to take place*
- *The apron REEF is in the middle of the limestone suggesting it is an intrusion*
- *The outcrop of SG on the hill is just like the cherry on the cake*
- *The rocks are near horizontal because it's got trees on it*
- *How does peat turn to anthracite? It changes from a liquid to a solid*