

How eating dirt may be good medicine

Geophagia, or the eating of dirt, is an ancient habit, dating back to 1800BC or further. According to an account in the 30 November issue of *Nature*, there are records of it from Sumeria, Egypt and China, but it has received little attention from the anthropology researchers.

At least two millennia ago, markets in Greece were selling terra sigillata, which was clay moulded into coin shapes and claimed to possess medicinal properties.

One school of thought maintains that clay provides essential minerals to the diet. This belief has some basis, bearing in mind that

natural clays consist of silicon dioxide and aluminium oxide, together with calcium, iron and zinc and trace elements.

Research in the University of Toronto in the 1990s examined clays that people had eaten at the end of the century. They were consumed in China during famines, in North Carolina for general health and in Zimbabwe to control diarrhoea. The trace minerals derived from them offered a good supplement to a poor diet. However, clay may not only provide trace elements but may leach them from the digestive tract. Laboratory studies have shown that in the milieu nutrients

incubated with clays and simulated gastric juices may bind firmly to the lattice of a clay, removing iron, zinc and copper.

In Tanzania some women believed that eating dirt from their walls caused anaemia, while others that it overcame it.

There have been indications that zinc deficiency may induce geophagia. Lack of zinc leads to loss of taste and this makes dirt more acceptable. In turn this reinforces geophagia, which releases more zinc and continues the cycle. In reducing the possible intake of toxic substances in the environment, geophagia may play an important role.

Bats may follow an internal magnetic compass in their wanderings

Bats have long had a reputation for their marvellous sense of location. They have also been reputed for their blindness. Indeed, the 18th century poet, William Collins, was understating the case when he wrote, "Now air is hush'd, save where the weak-ey'd bat with short shrill shriek flits by on leathern wing". And the proverbial expression "bats in the belfry" suggests that these creatures may make limited excursions into the wider world.

We know that bats make use of echolocation at night, but only over a short range. What happens when they venture further afield?

Investigators in New Jersey, reporting in the 7 December issue of *Nature*, have discovered that the North American big brown bat (*Eptesicus fuscus*) alters its homing behaviour if subjected to an artificial magnetic field.



Big brown bat (*Eptesicus fuscus*)

Radio telemetry was used to track bats displaced 20km north of their home roost. A control group released 5km away headed towards home from this site. For a period from 45 minutes before sunset to 45 minutes

after, two groups were exposed to an artificially rotated magnetic field, one 90 degrees clockwise and the other similarly anticlockwise.

The headings of the first group were significantly altered in an easterly direction at 5km from the release site and of the other group in a westerly direction. This suggests that they may have been making use of a sunset-calibrated magnetic compass.

Some bats corrected their flight and headed home the same night despite initial deviation. Others remained lost for several days after the internal magnetic compass had been reset.

The only other mammals known to navigate by the earth's magnetic field are mole rats and Siberian hamsters. It is thought likely that all species of bats possess the magnetic sensing device.

Neanderthals in desperate fight for survival

New discoveries by a team from the National Museum for Natural Sciences, in Madrid, have suggested that the prevalent view of *Homo neanderthalis* as clumsy, stupid and lacking in culture may be doing this early species of mankind an injustice. Evidence shows that they were desperate to survive in the face of severe obstacles.

From the El Sidron cave in Asturias in northern Spain the team recovered remains of Neanderthals dating back 43,000 years. The teeth of eight individuals showed that they had probably endured severe starvation.

Cuts on some of the skeletons suggested the practice of cannibalism. However, it is not safe to conclude that Neanderthals killed each other for food because ecological circumstances may have forced individuals to eat flesh cut from their dead companions when

no other food was available. Alternatively, as happened with other primitives, cannibalism may have held some religious symbolism — such a situation was not uncommon among ancient hunter-gatherers.

Fossils from the El Sidron cave also give support to the idea that distinct Neanderthal populations co-existed. The cave is situated in an area of Spain that is cut off from the rest of the country by mountains but linked with northern Europe. There were morphological differences between these and skeletons from further south.

Since the discovery of the cave 1994 it has yielded some 1,300 Neanderthal fossils. General considerations are leading to the conclusion that the race was not so brutish as palaeoanthropologists were in the habit of thinking.

Seeing nature

"The tree which moves some to tears of joy is in the eyes of others only a green thing that stands in the way. Some see nature all ridicule and deformity . . . and some scarce see nature at all. But to the eyes of the man of imagination, nature is imagination itself." — William Blake, poet, engraver and painter (1757–1827).

And I quote . . .

Nature's inventions

"Human subtlety will never devise an invention more beautiful, more simple or more direct than does Nature, because in her inventions, nothing is lacking and nothing is superfluous." — Leonardo Da Vinci, painter, engineer, musician, and scientist (1452–1519).