



Geology and the dark side

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ARTICLE INFO

Article history:

Received 15 April 2010

Received in revised form 30 July 2010

Accepted 10 August 2010

Available online 15 September 2010

Keywords:

Folklore

Footprints

Echinoderms

Nummulites

Brachiopods

Sharks' teeth

ABSTRACT

The diabolical and supernatural folklore traditions of geology are examined systematically for the first time. The following have all been suggested explanations for fossil remains: Devil's footprints, bones, toenails, fingers, thumbs, buttons, money and ninepins; Hobgoblin's claws; Fairy's fingers, heads, faces, hearts, beads, causeways, saltcellars, bottles, weights, money and loaves; elf arrows; witches' beads and tongues. Twinned staurolite crystals have been called Fairy crosses.

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"The Dark Side of the Force is the pathway to many abilities some consider to be... Unnatural.": Senator Palpatine to Anakin Skywalker in Star Wars Episode III: Revenge of the Sith (2005)
"There may no doubt supernaturall effects wrought by gems, and stones ... of which ... [they are] onely instrumental causes. Such effects as these are wrought either by the power of God, or of the devil". (Nicols, 1652:33)

1. Introduction

Rational explanations to account for the origins of "formed stones" vexed natural philosophers from classical times until the careful observations and extrapolations of Neils Stensen (Steno: 1638–1686) and Agostino Scilla (1629–1700) laid the foundation for the currently held views of fossilisation of once living creatures in mid-seventeenth century Italy. The eminent historian of Geology, Frank Dawson Adams (1859–1942) observed that, during the Middle Ages and Renaissance, "some regarded them [formed stones] as the works of an occult power or influence at work in nature, perhaps a Spirit or 'Virtu Divina' which intended to convey a hidden meaning or lesson" (Adams, 1938:250). Certainly, Shakespeare famously wrote in "As You Like it" (Act 2 scene 1), "And this our life, exempt from public haunt, Finds tongues in trees, books in the running brooks, Sermons in stones, and good in every thing."

In one instance, a geological specimen was even purported to contain a living spirit dwelling inside. "Aetites" or "Eagle Stone" is the name given to limonite or siderite concretionary nodules or geodes possessing a loose stone inside. According to Pliny (Book 36, Cap. 29), it was searched out by eagles who carried them to their nest in order to ensure successful reproduction. The Eagle Stone has a long pedigree of medicinal use from classical times to the mid-eighteenth century (Bromehead, 1947). In this context, the small internal stone which causes a rattling noise when the aetites is shaken, supposedly indicates geological fecundity. Gaius Julius Solinus, a Latin grammarian and compiler is believed to have flourished in the third century AD. He interprets the rattling sound produced by agitating the stone in a completely different way to that of contemporary accepted wisdom:

"The Aetite is both yellow and round of proportion, containing another stone within it, which maketh a noyse when it is styrred, albeit that the cunningest Jewellers say, it is not the little stone within it that maketh that tingling, but a spirite." (Golding, 1587 quoted in Forbes, 1966:66).

The idea of a hidden spiritual, occult dimension to geological features is reflected in colloquial place names associated with particular landforms (e.g. Devil's Punch Bowl in Surrey, and the Devil's Postpile in the USA; Vitaliano, 1973). It is also embedded in local names for various minerals, fossils and lithologies, particularly in north west Europe. The published records of such names are generally quite sparse, but their widespread and common usage implies a long oral pedigree behind them. The occult side of

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Geology has never, so far as we are aware, been systematically surveyed, so this is the first in a proposed series of papers in which we intend to investigate the “dark side” of Geology.

Semitic, Islamic and Christian traditions, all of which have had a bearing on European folklore beliefs, recognise the Devil, Satan, as a fallen angel who is the embodiment of evil. Late mediaeval and early renaissance literature is replete with representations of this spiritual being (e.g. [Aldrovandi, 1696:364](#); [Fig. 1](#)). Bent on thwarting the purposes of God by vying for the souls of mankind, Earth became the theatre for this supernatural struggle, and the lives of men and women his points of focus. The proclamation of the gospel message and the expansion of the European church was matched by an increasing awareness of the forces of evil. All manner of natural calamity and personal misfortune could be interpreted against the backdrop of this spiritual conflict; it was as if the work of the Devil and his cohorts (demons) could be seen in everyday adversity with the climate, health, politics, personal relationships and so on. In addition to the scriptures, the natural world could be interpreted in the light of this background philosophy; a folklore tradition rapidly began to feed into the belief system. The environment might hold clues as to the workings of the supernatural realm. In addition, since God had furnished creation with all that man might need, living and inanimate objects alike might contain ‘virtues’ which would be useful in playing out this drama. All that was needed was for the ‘quintessence’ – that hidden (occult), intrinsic quality – of the item to be appreciated. In this way, herbs, animals, and geological materials could be utilised either in the amelioration of man’s lot, or in such a way as to hasten harm.

Thus, the relationship between geological materials and the ‘dark side’ can be considered in terms of three strands:

1. Evidence of the presence and activity of the forces of evil on earth.
2. Potential means of causing harm as agencies of witchcraft, magic and divination.
3. Potential means of protection against such activities.

We intend to discuss the uses of geological materials for divination and protection against the malevolent forces of witchcraft and the like elsewhere. The purpose of this current paper is to consider the folklore associations between supernatural beings, witches and geological materials, primarily as expressed through the vernacular terminology applied to fossils, as well as to some crystals and rocks. Mythical monsters are not included in this treatment, having already been the subject of some masterful scholarship by [Mayor \(2000, 2005\)](#). The supernatural entities considered here are almost exclusively derived from European folklore traditions and include demons, fairies, elves, pixies, and hobgoblins. The relationships between kobolds and geology have been examined elsewhere ([Davidson and Duffin, in press](#)). Each member of the foregoing list is associated with visiting some kind of harm to mankind. Increasingly romanticised treatment, especially by William Shakespeare and later poets, has considerably sanitised and diluted the original mediaeval and earlier lore to the point, in some cases, where these beings are currently considered to be at least benign, or in some cases even benevolent. It is the latter stages of this transition that are embodied, for example, in the application of fairy lore to some fossils.

2. Geological folklore

2.1. *The Devil in the rocks*

When God asked Satan what he had been doing, the reply came that he had been “roaming through the earth and going back and forth in it” ([Job 2:2, NIV](#)). If the Devil makes the earth his precinct, might there not be direct evidence of his presence in the record of the rocks? Local folklore suggests that there was.

The footprints of the Devil have been cited at several localities. The Roccamonfina volcano, situated between Rome and the Campi Flegrei, is represented by a Pleistocene caldera some 5.5 km in diameter, and belongs to the alkali-potassic Roman Magmatic Province ([De Rita and Giordano, 1996](#); [Avanzini et al., 2008](#)). A steeply inclined zeolite-rich pyroclastic flow surface, dated to around 385–325 kya, is known for its mammalian trackways, including those of fully bipedal hominids. These fossilised human footprints are known locally as “Devil’s trails” ([Mietto et al., 2003:133](#)). Indeed, the locality itself is called ‘Ciampate del Diavolo’. The reason for the name is that the Devil, equally used to the pathways of hell, is suggested as being the only creature able to walk on hot volcanic material without sustaining harm. Rather significantly, the trackway leads downslope, away from volcanic vent.

A second footprint site containing tracks ascribed to the Devil is Bałtów on the north east flank of the Holy Cross Mountains in south east Poland. Here, tridactyl dinosaur prints from the Late Jurassic Bałtów Coral Limestones (Oxfordian) have been ascribed to the small theropod ichnogenus *Wildeichnus* ([Gierliński et al., 2009](#)), and an allosaurid. Local legend recounts that the Devil entered into a bet with an angel about jumping over the Kamienna River Valley. The Devil cleared the valley in a single leap, but landed with such force that his bird-like left foot impressed itself in the rock on the valley bank. Whilst most European legends of the Devil reconstruct him with a cloven hoof ([Defoe, 1777:215ff.](#)), the nineteenth century Polish poet Adam Mickiewicz (1798–1855) presents him somewhat differently. According to Polish folklore, the sixteenth century Kraków nobleman and sorcerer, Pan Twardowski, sold his



Fig. 1. *Cacodaemonis* (“noisy demon”) from [Aldrovandi \(1696:364\)](#).

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