
AMMONITES, LEGENDS, AND POLITICS

THE SNAKESTONES OF HILDA OF WHITBY

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Abstract

According to legend, the 7th century abbess and princess Hilda of Whitby had the power to turn snakes into stone. This was said to be supported by the abundant occurrence of 'snakestones', actually ammonites which resemble coiled snakes, in the cliffs below Whitby monastery, where Hilda was abbess. Removing snakes recalls the feat of Saint Patrick, who was said to have expelled the snakes from Ireland. Since in 664 Whitby was the location of a synod that discussed the conflict between Irish and Roman traditions of Christian practice, the fact that this legend is attached in particular to Hilda has probably a political as well as a folk-scientific background. The legend thus appears to have originated by the coincidence of unrelated facts and events rather than by a single cause. This is probably a typical rather than an exceptional case for the evolution of legends, which should raise doubts that in general monocausal accounts can fully explain the origin of narratives.

Keywords: Saint Hilda of Whitby, legends, ammonites, snakestones

1. Introduction

In 664 CE a meeting in the monastery of Streonshal on the Northumbrian coast debated and decided the question of whether the recently Christianized Anglo-Saxons in Northern England were to follow Irish or Roman custom with respect to setting the date of Easter as well as other issues of Christian religious practice. Now known as the 'Synod of Whitby' after the later name of the abbey and settlement, the meeting was presided over by king Oswy of Northumbria (c.612–670) and hosted by abbess Hilda (614–680) who was related to both Oswy and his wife Eanflæd. Many legends surround the person of Hilda; the one that is the subject of this paper is that, among other miracles, she had the power to turn snakes into stone. The purported evidence for this are the abundant ammonites found in the Jurassic cliffs below the abbey, which do indeed bear some resemblance to tightly coiled snakes. Here I investigate the curious mix of belief, politics, and science that underlies this legend, and argue that its

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complexity should cause us to be sceptical of simplistic explanations for the origin of legends and mythic stories in general.

2. A note about names

For the period in question the spelling of proper names, both of persons and places, varies widely among different sources. Our main character is known by her Latinized name as Hilda, or Hild in Old English, distinguished from other bearers of the same name as Hilda of Whitby. Since she is regarded as a saint in the Catholic, Orthodox and Anglican Church, she is also often referred to as Saint Hilda or Saint Hild, or sometimes Lady Hilda. The king of Northumbria at the Synod is known as Oswiu or Oswig, but most often as Oswy, which is the spelling I use here. The spelling of proper names that are peripheral to this investigation usually follow those in the sources cited.

The name of the original 7th century abbey is usually given as Streonshalh, or some variation thereof. In the *Historia Ecclesiastica gentis Anglorum* [1] by the Venerable Bede (672–735), written around 731, the name is spelled Streanæshalch. Here I use the shortest variant, Streonshal. The meaning of the name is not clear [2]. The name Whitby is of Danish origin and dates to the arrival of Danes in the 9th century. Strictly speaking, the appellation Hilda of Whitby for the person, and Synod of Whitby for the proceedings in 664, is therefore anachronistic. Nonetheless, where no confusion is possible the monastery is usually referred to as Whitby even for the pre-Danish era, as it is throughout references [3, 4] and also in this paper. In later Latin chronicles town and monastery are referred to as Witebia. This has led some writers to postulate an earlier Roman settlement by that name. But Witebia is so obviously a Latinization of the later Danish name by Medieval chroniclers that whatever settlement might have existed before the foundation of Streonshal was presumably called by a different name which is now lost.

3. Historical background

At the time of Hilda's tenure at Whitby the Anglo-Saxons had settled and established kingdoms over about half the island of Britain. They were originally pagans when they first arrived, in contrast to the indigenous Britons, who had been Christians since the time of Roman rule, and the Irish, whose conversion in the 5th century was credited to the Briton Saint Patrick [4]. Christianization of the Anglo-Saxons in the 6th and 7th century proceeded from two directions. To the North and West was the Irish kingdom Dalriada, which comprised what is today Western Scotland and the Northern part of Ireland. Its most famous religious centres were the island monasteries of Iona (founded c.563) in the West and Lindisfarne (founded 635) in the East, and it is mostly from there that Christianity spread to the Anglian kingdoms along the North Sea coast [4].

A second Christianization campaign started from the South and East in 597 with the arrival from Rome of a group of missionaries led by Augustine, later known as Augustine of Canterbury [4]. Even today, more than 14 centuries later, we can still see vestiges of these events in the two most prominent seats of the Church of England: Canterbury in the South and York in the North. The two groups, Irish monastics on one side, Roman missionaries on the other, had different customs and practices. The most important was that they had different ways of calculating the date of Easter, so that in some years the highest feast of the Church was celebrated on different days according to either Irish or Roman calculation. The style of tonsure, the way in which priests and monks shaved a part of their heads, also differed, and so did some other monastic customs.

The two waves of Christianization collided, figuratively speaking, in the Anglian kingdom of Northumbria. This region, formed by merging the older kingdoms of Bernicia and Deira, got its name because it was situated to the North of the Humber estuary, from where it extended to the Firth of Forth; in modern geographic terms from the region around Hull in the South to Edinburgh in the North. The visible manifestation of this collision of traditions was the synod of Whitby in 664, when the most prominent representatives of Irish and Roman Christian traditions followed the invitation of king Oswy to convince him which side he should choose. We cannot be sure how much Oswy cared about monastic customs like the style of tonsure, but the date of Easter was an issue of political importance. It was not acceptable that some in his kingdom would celebrate Easter while others were still keeping the lent penance and fast, especially since Oswy and his wife came from different traditions, and thus the discord might reach his own family.

The meeting at Whitby seems to have been acrimonious, to put it mildly. Bede, while his account of the speeches nearly 70 years after the fact is surely not verbatim, gives us a flavour of the “my saint is more powerful than your saint” type of argumentation [1]. As we shall see, this particular style of the debate may well have an important bearing on the story of Hilda’s snakestones. In the end, Oswy decided for Rome. Bede would like us to believe that the Roman side had the sounder arguments. Political decisions though are hardly ever made on the strength of saintly prominence, and it is more likely that Oswy saw the Roman faction gaining more power among his neighbors, as well as dominating continental Europe, which led him to choose their side for political expediency as much as for the prominence of Saint Peter to whom the Roman faction traced their authority. Oswy himself as well as his brother Oswald, who had preceded Oswy as king, had much closer ties to Iona and Lindisfarne than to the Roman missionaries; both had been baptized by Irish monks and had invited them to preach Christianity in Northumbria [4, p. 64]. This, too, argues that Oswy’s decision at Whitby followed realpolitik rather than inclination. An additional factor may have been the persisting ‘lure of Rome’ even after the end of the Roman Empire proper, which made local kings “look to [Rome]... for ways to express their power” [4, p. 125].

Although the Irish church had a lasting influence on Christianity in Britain even after 664, the Synod of Whitby marked not merely a change in custom, but in Barbara Yorke's words a "cultural realignment" among the Anglo-Saxon kingdoms and their neighbours [4, p. 277]. Over the following century a number of hagiographies appeared about the major saints representing both traditions present at the synod. These included Columba of Iona (521–597) and Cuthbert of Lindisfarne (c.634–687) for the Irish, Wilfrid of Ripon (c.633–c.709) and Pope Gregory I. (c.540–604) for the Roman side [4, p. 12]. The latter, known as Gregory the Great, was pope from 590 onward [5], and it was he who in 596 had sent Augustine of Canterbury and his missionaries to England, where they arrived the following year. Since outside of Northumbria written lives of saints are rare in this period, this proliferation of hagiographies is almost certainly an attempt to vindicate the respective traditions in the light of the debates at Whitby [4, p. 14] — on the Irish side to show that they were no heretics and just as saintly as the Romans, on the Roman side to show that their victory at Whitby had been justified.

The hagiographies followed continental exemplars on how to "establish unimpeachable saintly credentials" [4, p. 18] for their chosen subject, and careful attention to the kinds of miracles associated with the saint's life was a primary factor. Not all of these books about saints have survived; about some of them we only know because they are mentioned in other works. Given that this historical period was still characterized by a "complex intermingling of oral and written tradition" typical of a society "best designated as semi-literate" [4, p. 10] we should also expect that some saint stories were passed on mostly or entirely as oral traditions rather than in written form. All of these factors are important when we consider the potential antiquity of Hilda's snakestone legend. The section about assessing the legend deals with these issues in more detail.

4. History of Streonshal and Whitby Abbey

Streonshal monastery (Whitby) was founded by Hilda in 657 with a formal donation by her kinsman king Oswy of Northumbria. Whitby is located on the Yorkshire coast at the estuary of the river Esk. The estuary is flanked on both sides by high cliffs, and the monastery sat on the Southern of these. The coastal region is backed farther inland by the East Yorkshire Moors. Since the estuary forms a small natural harbour and a convenient, sheltered place for a fishing village, it is likely that some kind of settlement existed there before the monastic foundation. Also the monastery presumably had access from the sea, so that there would have been a harbour at the foot of the cliffs. How close the place of the 7th century monastery was to that of the 13th century ruin that stands there now (Figure 1) is not known. Recent excavations have provided some information about the original monastery, but the picture is as yet incomplete. Given the current erosion rate of ~10 cm/year [2, p. 4], some 120 to 150 m of headland have been lost since the time of Hilda's foundation, and some of its remnants have probably fallen into the sea.



Figure 1. Ruins of the 13th century abbey church at Whitby. The locality of Hilda's 7th century abbey is not exactly known, but was probably in the same location or nearby (photograph by the author).

In contemporary documents monastic institutions of that time are referred to as *monasteria* in Latin or *mynsters* in Old English, without distinguishing between male and female houses. Since they were significantly different from the monasteries and convents of the later Middle Ages, historians often prefer the term minster to describe them [4, p. 156]. The term could refer to anything from a private household with established devotional rules to houses of such large size that chronicles sometimes report, perhaps with some exaggeration, the death of several hundreds of monastics when one of these institutions was sacked [1, vol. II, chapt. 2]. Monastic rules also varied considerably from place to place, although in some cases there were clusters of institutions founded on the same pattern [3, p. 24; 4, p. 157]. Uniformity according to the Rule of Saint Benedict only began in the 10th century. Before the 9th century many monasteries were so-called double houses, in which both male and female monastics lived. Usually double houses were led by a woman, although there were some exceptions [3, p. 167].

The foundation of Whitby followed Oswy's victory in the battle of the Winwaed (a river of uncertain location) in 655, after which he dedicated his infant daughter Ælfflæd, then about one year old, to the Church. This practice of so-called oblates, children designated for monastic life, was widespread at the time. Oswy appears to have specifically chosen Hilda as monastic mentor for his daughter, and Ælfflæd later followed Hilda as abbess of Whitby and was also venerated as a saint after her death.

Whitby was founded as a double house, probably in 657 [2, p. 6], and was clearly intended from its beginning to be a model institution and centre of learning. Although no original manuscripts produced at Whitby survive, at least one of the hagiographies composed in the wake of the synod of 664 is known to have been written there, and tools for manuscript making have been excavated [3, p. 178]. It is further evidence of Whitby's importance that only seven years after its foundation the king convened there a meeting of the most prominent representatives of Roman and Irish tradition. Even allowing for the possibility that the full significance of the Synod of Whitby has become obvious only in retrospect, the proclamation of a royal decree as a result of it is by itself a mark of its importance in the eyes of contemporaries.

After Hilda's death in 680 Whitby continued to be an important cultural and educational centre under the leadership of Oswy's widow Eanflæd and their daughter Ælflæd. Whitby is not unique in being treated almost as 'property' of the royal family. Monasteries founded by royalty often served "as guardians of the [founding] family's memory" [3, p. 84] and provided a place where female members of the royal family could attain the kind of status that males mostly achieved by winning battles.

With the sack of Lindisfarne in 793 and the ensuing Danish invasion times became more precarious, until the monastery was destroyed and apparently abandoned in 867 or thereabout [2, p. 22]. Danes settled at the Esk estuary, below the cliffs on which the monastery had stood, in a village they named Whitby, the 'white place'. In Norman times Benedictine monks returned to Whitby, and in 1078 a priory was founded at or near the site of the previous monastery of Streonshal. The Gothic priory church, whose ruins still stand (Figure 1), dates from the 13th century. The monastic history of Streonshal/Whitby finally came to an end under Henry VIII who suppressed the priory in 1543. However, in a bizarre footnote on counterfactual biology, Whitby was visited by that most famous of vampires, Dracula, in Bram Stoker's novel of that name.

5. Hilda of Whitby and Anglo-Saxon saint cults

Hilda's biography has been recorded by Bede, and little is known about her beyond the short section in the Ecclesiastical History [1, vol. IV, chapt. 23-24]. Any narrative about the details of her life has to be filled in by indirect evidence and imagination [6]. Hilda was born in 614 into a family related to Edwin (c.586-632), ruler over the Anglian kingdoms Bernicia and Deira, which were later joined into the kingdom of Northumbria. After the murder of her father she was raised at the court of her great-uncle Edwin. King Edwin, who came from a pagan family, seems to have dithered for a rather long time over becoming Christian. Following a victory in battle he finally had himself and his whole household baptized in 627 by Paulinus of York, a bishop who had arrived in England in 601 with a second party of missionaries sent by Pope Gregory I. Among the household members baptized on this occasion was 13-year old Hilda.

Nothing is known about her for another 20 years, other than Bede's report that she "spent [them] living most nobly in the secular habit" [1, vol. IV, chapt. 23], which modern historians mostly interpret to mean that she was having a very good time [J. Wormald, *St. Hilda's College Oxford*, 16 November 2005 <<http://www.st-hildas.ox.ac.uk/index.php/history/sthilda.html>>, visited 2011.09.29]. The reference to habit in the sense of clothing is a metaphor for lifestyle and tells us that secular and monastic life was importantly distinguished by how people dressed. No mention is made of marriage during the 33 years before Hilda became a monastic, although usually women who entered monasteries that late in life were either widowed or separated from spouses by mutual consent.

In 647 she seems to have expressed an interest in joining a convent in Chelles near Paris. However Aidan (d.651), the founder of the monastic centre at Lindisfarne, persuaded her to remain in England, where she at first initiated a small monastic community on the river Wear. By then she obviously had a high reputation for her spiritual character as well as her administrative ability, since within a year she was called as abbess to the distinguished monastery at Hartlepool. When king Oswy decided to dedicate his infant daughter Ælfflæd to the Church, he charged his kinswoman Hilda specifically with Ælfflæd's care and education. At the same time he called Hilda to become the founding abbess of Whitby, one of the twelve monasteries he had vowed to establish for his victory in battle. In this way both Hartlepool and Whitby became governed by the same rule that sought to emulate early Christians with respect to joint worship and communal property, features not necessarily found in all monastic communities of that time [3, p. 156].

Although baptized by Paulinus, a representative of Rome, Hilda had closer ties to the Irish rather than the Roman tradition. Thus at the Synod of Whitby Hilda as well as Oswy initially favoured the Irish side. After Oswy nonetheless decided for Rome, Hilda gained a reputation for smoothing the transition and persuading other monastic institutions to accept the decision of the synod.

Hilda continued to serve as abbess, in spite of several years of illness, until her death in 680. She was buried within the monastery enclosure, and her sainthood cult appears to have begun soon after her death. This was nothing unusual at a time when monastic institutions sought stability and reputation based on the saintliness of their founders. Veneration went with the usual miracle stories as well as tangible connections with the saintly person. In this regard, however, customs in the British Isles seem to have developed their own style. Whereas on the continent, and especially in the Mediterranean region, corporeal or 'primary' relics seem to have been the focus of saint cults, this was generally not the case in Britain, especially among the Celtic Christians [4, p. 188]. For one thing, burial within monastery grounds made grave sites inaccessible to the public. But even when centuries later some saints were exhumed to prevent desecration by the Viking invaders, their bodies were kept

intact in a coffin, as in the case of the famous 200-year journey of Saint Cuthbert's corpse from Inner Farne island to Durham.

Aside from the occasional lock of hair, British peoples were mostly content with 'secondary' relics, such as clothes, bells, and other items previously in the possession of a venerated saint. Books in particular played such an important role that the Irish church developed its unique style of book reliquaries, called *cumdach* [<http://www.libraryireland.com/IrishPictures/I-8.php>, visited 2011.12.30]. This raises the possibility, discussed below, that the 'snakes turned to stone' of Hilda also played some role in her veneration, although we have no record of it.

Hilda clearly must have been a remarkable woman, and her veneration represents far more than the usual desire of each monastery for having its own saint. Her role at the synod of Whitby alone testifies to her importance even without the word of Bede, which is usually considered historically reliable. Nonetheless, the status of women declined from the Early to the High Middle Ages, and her veneration seems to have been mostly confined to a regional cult until the 19th century. Today however there are a number of schools and other institutions named for her in Britain, the US, and Australia, most notably St. Hilda College at the University of Oxford.

6. The ammonites

As Figure 2 shows, the legend about Hilda turning snakes into stone and the associated ammonites play a significant role in her commemoration. To us today ammonites are very common fossils which have most likely been known since prehistoric times. The vague resemblance to a ram's horn (Figure 3) caused them to be called, following Pliny the Elder, *Ammonis cornu*, horn of Ammon, i.e., the Egyptian god Amun-Re. Consequently these fossils became known as Ammonshorn in German and by analogous names in many other languages. English is an exception in that the name snakestone became more common than Ammon's horn in folk use because of some ammonites' resemblance to a coiled snake [7]. To avoid confusion it should be pointed out that the scientific terms serpentine and serpentinite, which also translates as snakestone, have nothing to do with fossils, but are accepted technical terms in mineral science.

The ammonites from the Jurassic cliffs on the Northumbrian East coast around Whitby come from a geological formation that was historically known as the Blue Lias. In modern geological terms [*Global Boundary Stratotype Section and Point (GSSP)*, downloaded 2011.09.18 from the *International Commission on Stratigraphy* <<http://www.stratigraphy.org>>] it represents the Pliensbachian and Toarcian stages of the Lower Jurassic, covering an age range of approximately 190 to 176 Myr BP (million years before present). The diversity and distribution of ammonites reached a peak in the period of Earth history represented by these rocks. In fact, Robin Hood's Bay, about 7 km along the coast SE of Whitby, is the location of the internationally defined reference point for the lower boundary of the Pliensbachian. Since the boundary definition is

based in part on the appearance or disappearance of certain ammonite genera, the international recognition of this site demonstrates the excellent preservation of fossils along this part of the Yorkshire coast.

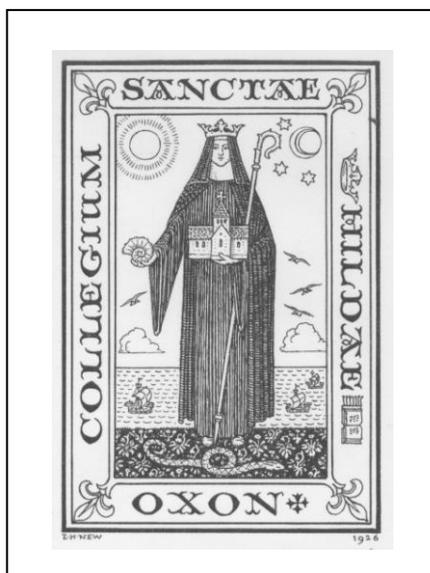


Figure 2. Book plate designed in 1926 for St. Hilda's College, Oxford, by Edmund New. Hilda is shown as foundress (monastery building) and abbess (crozier), holding an ammonite and standing atop a snake (photograph courtesy of St. Hilda's College).



Figure 3. (a) Two ammonites (*Dactylioceras commune*) from the Whitby locality: whole specimen (left) and a polished slice (right). Diameter of the larger ammonite 7 cm (photograph by the author). (b) Ammonite (*Hildoceras* sp.) with carved snake head, known as 'snakestone'. Diameter 14 cm (photograph courtesy of The Natural History Museum, London).

The English naturalist James Sowerby (1757-1822) included ammonites in his monumental *Mineral Conchology of Great Britain* (volume 2, published 1818). During this study he acquired a specimen from Whitby which had an artificially carved snake head attached to it [Illustration: <http://imgbase-scd-ulp.u-strasbg.fr/displayimage.php?album=598&pos=13>, accompanying text: *ibid.*/pos=15]. Sowerby had heard of the legend of ‘snakestones’ and included the embellished specimen in the illustrations of his book as a curiosity. Sowerby’s head-bearing specimen is *Dactylioceras* (known by him as *Ammonites*) *commune* and is now in the collection of the British Museum of Natural History.

A much more detailed scientific classification of ammonites was undertaken by Alpheus Hyatt (1838-1902). In the 1860s Hyatt conducted a thorough study of all ammonite samples in the Museum of Comparative Zoology at Harvard [8]. He and his mentor, the famous Swiss-born geologist Louis Agassiz (1807-1873), defined a total of 25 new genera and verified a couple of others that had previously been suggested by other scientists. Until then all ammonites had been lumped together as *Ammonites*; for example, the species *Dactylioceras commune* shown in Figure 3a had earlier been described as *Ammonites communis*. Today Hyatt is mostly known as one of the last holdouts for a Lamarckian explanation of evolution, but his groundbreaking work on the Harvard ammonite collection has become the foundation of ammonite taxonomy.

The names of all but one of the ammonite genera newly defined by Hyatt [8] are derived from Greek words, explained in 23 footnotes; for example, *Coroniceras* from crown, or *Asteroceras* from star. But he made a single exception in the case of *Hildoceras*, whose footnote reads tersely “After St. Hilda” [8, p. 99]. Unfortunately, Hyatt does not say what inspired him to depart in this one case from his firmly observed custom to derive all names from Greek. He may have been inspired by the fact that one of the two *Hildoceras* species he defined had earlier been named *Ammonites Hildensis* in a work on the geology of Yorkshire. This work has been impossible for me to locate, but there is perhaps another explanation for Hyatt’s unconventional nomenclature of this genus. As Sowerby found out, it had long been a practice to carve artificial ‘snake heads’ on the end of ammonites, especially the ones found at Whitby. In Hyatt’s day the London museum, then known as the British Museum of Natural History, had acquired another head-bearing specimen (Figure 3b) of a different genus of ammonite, specifically the genus that Hyatt named *Hildoceras*. Hyatt obviously knew the legend of Hilda’s snakestones, and if he was aware of a specimen with a gratuitously bestowed head on the otherwise natural fossil, this could well have induced him to depart for one particular case from his Classical nomenclature. However in the absence of documentary evidence that he had seen the head-bearing *Hildoceras* this must remain speculation.

7. Evolution of the legend

The ammonites of Whitby entered legend as Hilda's petrified snakes. A brief note about the legend was published in 1905 [9] with a picture of ammonites equipped with carved snakeheads. The specimens pictured are different from the one in Sowerby's illustration and Figure 3, but their provenance is not mentioned. Seven years later a much more detailed survey of snakestones and thunderstones was published by Walter Skeat [7], including the legend about Hilda. He notes that the term 'snakestone' was applied, in addition to ammonites, to a range of other objects, which were variously considered secretions of snakes or artifacts created by them rather than remnants of the snakes themselves [7, 10]. The special role of snakes and snakestones is undoubtedly due to the healing and rejuvenating powers ascribed to snakes going back to Antiquity [10]. As noted above, these folkloric names, which have now fallen in disuse, should not be confused with scientifically approved geological terms formed from the root *serpent-*.

Skeat traced the history of the legend attributing the Whitby 'snakestones' to Hilda [7]. The oldest reference he could find dates to the 16th century, in the *Britannia* of William Camden (1551–1623). Camden attributes the belief that Hilda's prayers caused the petrification of snakes to *credulitas*, which is usually translated as superstition rather than credulity in English editions (the Latin original is given in footnote 21 of [7]). The wording suggests that Camden is recounting a folk legend that is much older than his report. Skeat also mentions a second instance of the same legend which seems to be reported by Camden as well, although the reference is not entirely clear. This legend concerns one Saint Keyna, a 5th century virgin and hermit, and is associated with another ammonite-rich rock formation near Keynsham in Somersetshire. The link between Keyna and Keynsham is apparently due to the coincidental similarity of names [7]; the historical Keyna probably lived in Cornwall (B. Yorke, pers. comm.). Keyna belonged to a Briton family, and the displacement of Britons by the Anglo-Saxons as well as her much less significant legacy compared to Hilda has all but obscured her role in the story of snake petrifications.

More than any other aspect of the Celtic renaissance of the late 18th and 19th century it was Walter Scott's 1808 poem *Marmion* which popularized the legend of Hilda turning snakes into stones. It may also have been the time when carving heads on ammonites became popular, although Skeat mentions a somewhat cryptic reference to a *lapis serpentis* by Camden, *cuius caput in circumferentia prominuit* [7, p. 55] which would fit an ammonite like the one shown in Figure 3b. Whether these earlier specimens were similar to the ones depicted by Sowerby [Illustration: <http://imgbase-scd-ulp.u-strasbg.fr/displayimage.php?album=598&pos=13>, accompanying text: *ibid.*/pos=15] and Lovett [9] is rather uncertain.

Although Sowerby illustrated a head-bearing example as a curiosity, he was clearly not much interested in the details of the legend that prompted its manufacture. He ascribed the legend at Whitby to Saint Cuthbert rather than

Hilda, and about Keynsham he wrote that the snakes were "...changed into stone by some devotee for the benefit of his [sic!] brethren," not aware that Saint Keyna was a woman. The beheading of snakes by Cuthbert and petrification by Hilda are occasionally treated as separate legends, but this is implausible. Sowerby just transposed the Hilda legend to Cuthbert. This may have been a variant current at the time before Scott's poem gained wider popularity and thereby restored Hilda to her rightful place in snake petrification.

8. Assessment of the legend and artefacts

When the diverse facts summarized in the preceding sections are considered together, some issues of interest emerge. The first of these concerns the obvious similarity of the Hilda legend with the expulsion of snakes from Ireland by Saint Patrick. This legend may originally have been a metaphorical allusion to the supposedly snake-tattooed druids who were supplanted by Christianity. In light of the fact, however, that there really are no snakes in Ireland it was inevitable that the allusion was soon taken literally, and it is thought that Saint Patrick's story was already current in the Early Middle Ages. In England, where snakes do exist, a different serpentine fate was required, and the ammonites supplied it. Since Hilda was so closely associated with Whitby, it is not surprising that the legend became attached to her. Even if we discount some hagiographic exaggeration, Hilda was a powerful and influential personality. It would not be too surprising if her devotees came to regard her as the 'Anglo-Saxon Saint Patrick' who could work similar kinds of miracles.

A single instance with a Celtic connection might be a coincidence, but the case is strengthened by the parallel snakestone legend about Saint Keyna. Not everywhere ammonites occur do we find the name of a wizard or miracle-worker responsible for their presence. Snake petrification is confined to Hilda and Keyna, who both have Celtic connections [10]. And as for Sowerby's variant Saint Cuthbert was of course likewise a defender of the Celtic customs at Whitby. Sowerby's mistake notwithstanding it is also interesting that the British snake legends are associated with female saints. Perhaps in the background is the prophesy of the defeat of the Edenic serpent: "I will put enmity between you and the woman..." (Genesis 3.15). Whether this association played a conscious role in the origin of the legend is uncertain, but the fact that both saints associated with turning snakes into stone are women is suggestive.

If there was a deliberate connection between the snakestone legend and Hilda's role in the tensions between Irish and Roman traditions, the legend is likely very old. A second possibility, that it was an invention of the Celtic renaissance of the 1800s when a number of spurious Celtic 'traditions' were invented, can be ruled out because Camden knew of the legend in the 16th century and referred to it as something already traditional then.

How much older the legend is than Camden's record is not known. His version dates from almost a millennium after Hilda's lifetime, yet there are a number of reasons why the legend could have arisen soon after Hilda's death but not recorded until much later. Unfortunately there seem to be no Medieval references known. Nonetheless it is not entirely implausible that the legend is contemporary with the Northumbrian hagiographies mentioned above that were composed in the aftermath of the Synod of Whitby [4, p. 12]. It would certainly fit with the intention to prove the saintliness of the major figures at the Synod of Whitby.

Bede does not mention the legend; it may postdate the writing of the *Historia Ecclesiastica*, but it is also possible that this was a kind of miracle not to his taste. Most of his miracle reports are more conventional, like healings and visions. In the canon of miracles ascribed to saints in official hagiography a story of petrifying snakes would probably be cause for embarrassment. Turning snakes into stone sounds more like the kind of folk story popular outside the circle of erudite monastics trained in Theology. On the other hand, we can easily imagine its popularity as a tale told among the inhabitants of the Yorkshire moors and pastureland, and such stories can live as oral traditions, in some cases for a very long time.

The interest in objects regarded as potentially miraculous tokens of a saint's powers may very well have elevated ammonites, already objects of curiosity, to the status of something like relics associated with Hilda. About this, too, more educated churchmen might well have been ambivalent. At Hilda's time it was still remembered that pagans had used fossils together with teeth, shells, and unusual stones as magic amulets [4, p. 250]. However, curiosity about ammonites surely continued in Christian times and may very well have contributed to the persistence of the snakestone legend in folklore.

If the legend is, as I suspect, contemporary with the Northumbrian hagiographies mentioned above that were composed in the aftermath of the Synod of Whitby, there must also be reasons why we have no earlier record of it. Much that was written at the time perished during the subsequent upheavals known as the Viking age, and it is possible that existing records about Hilda have not survived, but there are other reasons as well.

It has already been mentioned that later in the Medieval period the status of women seems to have declined, perhaps connected with the 'Romanization' following the Synod of Whitby among other reasons. Although Hilda was never entirely forgotten, in the later Middle Ages there does not appear to be much motivation to recount the life and accomplishments of an outstanding abbess in any detail. On the other hand, it seems plausible to me that a legend such as the snake removal was kept alive by oral tradition in places where a special memory of Hilda did exist, such as Whitby itself. The lingering effects of the low status of women are illustrated by Sowerby, who ascribes the legend to Saint Cuthbert and blithely assumes that the subject of the Somerset variant, Saint Keyna, is male.

What interested Sowerby, however, was the existence of ammonite specimens with carved snake heads. Although Lovett refers to them as ‘forged’ [9], it is difficult to imagine circumstances when the carved heads were intended deliberately to deceive. If there was ever a time when ammonites were used as amulets, either in the pagan period or as Hilda’s secondary relics, it is not out of the question that they were embellished in some way. Even if there were snake-head carvers in the Middle Ages, however, we should not assume that their primary aim was forgery. This would be to take our modern practice of strictly separating what is natural from human artefacts as norm and project it back on a time that had a very different approach. Natural objects were creations of God, and humans could collaborate in the creative process if they had the right intention.

But there is in any case no evidence that snake-headed ammonites, such as the ones pictured by Sowerby or shown in Figure 3b, were produced earlier than around 1800, except for Camden’s somewhat obscure allusion mentioned above. The specimens produced in the 19th and perhaps late 18th century clearly have nothing to do with amulets or relics. They were gimmicks for tourists visiting Whitby, who brought them home not to show evidence of snake petrification, but as souvenirs and perhaps to poke fun at the imagined *credulitas* of locals. As for the latter, some 300 years after Camden no believers who took the legend literally could any longer be found among the locals [9].

Although much about the connection between historical circumstances and the evolution of the legend is only hypothetical, additional pieces to the puzzle may still exist. First, there may be Medieval artwork older than Camden’s written record associating Hilda with ammonites. This would of course strengthen the case for the antiquity of the legend. Second, if ammonites were indeed at one time some kind of ‘folk relics’ in the tradition of secondary relics popular in Celtic-influenced Christianity, there might be evidence for this in excavations of sites associated with ordinary people.

9. Conclusion: implications for understanding legendary narratives

Although many details about the legend of Hilda and her snakestones will probably remain unknown, the purpose of this study has a more general aim than the origin of one particular legend. The main conclusion concerns the situation of narratives in their social context and their implication for understanding beliefs about both science and religious faith. Stories such as this inform us about much more than merely the credulities of the storytellers. They originated for a reason, or perhaps for multiple interconnected reasons, and the circumstances of their transmission, preservation, and historical evolution likewise have causes, though these may be different from the ones that originally gave rise to the story. All of these aspects are illustrated by Hilda’s legend.

The complex interrelations between 7th century Church politics, ammonites, and the Hilda legend warn us to be careful about overly simplistic explanations for the existence and the content of persistent folk stories. When we

come across a legend like Hilda's snakestones, we are likely to ask what the origin of this particular legend was and why it has become so popular. In framing the question in this way, we are already making a tacit assumption that it is possible to construct a causal chain from some kind of observation or event to the intentional invention of a story for a particular purpose. Such a linear causal chain is of course oftentimes appropriate in science, in particular physical science, but it becomes misleading here.

Legends do not have the kind of linear history typical of events studied in science. Very likely the story of Hilda and the snakes would not have arisen if she and Oswy had not decided to build a monastery on what happened to be a fossil-rich Jurassic cliff. On the other hand, there would have been little reason for the legend to attach itself specifically to Hilda, if she had not played such a prominent role in the losing battle to retain the religious customs associated with Saint Patrick. How difficult it is to keep multiple aspects in view can be deduced from the fact that a 1983 reference [10] seems to be the first one, after nearly a century of scholarly studies, to draw attention to the Celtic connection of both snake petrifying saints.

Stories that are about 'that is why...', in our case 'that is why there are ammonites in Whitby', are sometimes called etiological narratives. This may be a useful label for a particular genre of stories, but it can often be misleading when it is implied that the purpose of the story has been identified as giving an explanation for some phenomenon [11]. No doubt without ammonites there would be no Hilda legend, but the story is not about explaining the occurrence of ammonites. They occur in many other places besides Whitby and the Keyna site in Somerset. And both the location of the Synod and the ammonites might not have involved Hilda, if hers had not been the kind of character that made it plausible that snakes would promptly curl up and turn to stone on her powerful word.

In order for a story to be told and retold, even in the absence of written records, there must be some other kind of token, some 'handle' as we would say today, and the ammonites provided it. For this purpose it is in fact irrelevant whether the story was taken literally. Of course, miraculous events are recounted in all hagiographies throughout the Middle Ages, although it is not always easy to separate symbolism from alleged facticity. But the main point is not facticity, but keeping the memory of a saint alive by something symbolizing her. And long after the legend was no longer merely orally transmitted, but became a matter of written record, Hyatt with his naming of *Hildoceras* unwittingly placed himself in the line a storytellers who did just that.

The scholars who study mythic stories, legends, and the like are mostly well aware that such narratives are often a serendipitous combination of pre-existing folk beliefs, social circumstances, political agenda, and sheer coincidence. This is unfamiliar territory for most scientists who prefer explanations involving linear causal chains, which is why the mostly straightforward but engaging story of Hilda and her snakestones can be instructive as well as entertaining.

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