

Caer Effrawg

Britain's Lost City

of

Wroxeter



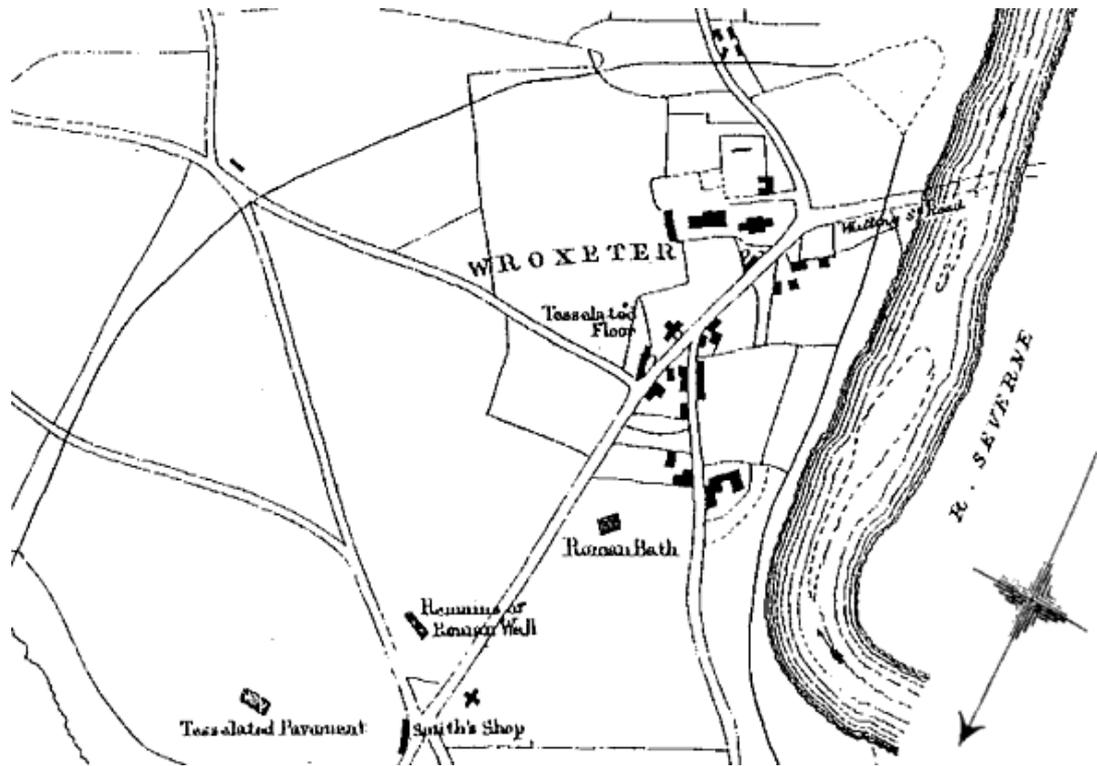
Caer Effrawg in Welsh, a name that is generally translated as 'York' but really means 'Castle of the Hebrews'!



Wroxeter

Location Map of Britain's Lost City





Wroxeter

Wrongly referred to as a Roman city, was in fact called called Caer Effrawg in Welsh, a name that is generally translated as 'York' but really means 'Castle of the Hebrews'!



Caer Effrawg

The Lost City of Wroxeter

(A Quote From The Holy Kingdom By Allan Wilson and Barram Blackett)



ON ONE OF OUR JOURNEYS ALAN AND I TRAVELLED AGAIN TO THE MIDLANDS OF ENGLAND, this time to visit the Romano-British city of Wroxeter. The ruins of this city, once linked to London by the old Watling Street, are in Shropshire on the borders between Wales and England. Long abandoned, the city was only rediscovered when a mosaic was found there in the eighteenth century. Since then it has been the subject of several excavations revealing impressive ruins. It is now generally recognized that during Roman times it was the fourth largest city in Britain, larger than Bath, Caerleon or Gloucester. Even this estimate may have to be revised upwards, for recent work involving aerial photography and ground-penetrating radar has revealed that at one time Wroxeter spread far out into the surrounding fields, so whilst it was probably always smaller than London, it may at one time have been larger than York and Colchester too. That such a large city should have disappeared without trace is one of the great mysteries of history. Even more so is the fact that it doesn't seem to be mentioned anywhere in Roman records.

Arriving at Wroxeter, we got out of the car and made our way onto the site. Most of the city, particularly its residential quarters, is still unexcavated, but even so there was enough on view to get an impression of what it must have been like. The most striking feature was a large section of red-brick wall, part of the complex associated with an exercise hall and public baths. These had evidently been elaborate affairs with under-floor heating, steam baths, saunas and plunge pools. The gym itself had been an enormous hall - as big as a cathedral - with colonnades and porticoes supporting its roof. One could easily imagine soldiers practising their martial arts within its cavernous interior, though it could as well have been used by citizens for the ancient equivalent of aerobics. Either way, it was curious that this temple of the body was the best preserved part of the city and it gave a perhaps unbalanced idea that whoever had built the city was fitness mad.

Alan had a different perspective on all this, as he explained to me the significance of the ruins. The importance of this city,' he began, 'has been greatly underestimated, even by our Romano-centric academia, but this is perhaps changing now that in the last year or two it has been realized just how extensive the ruins of this city really are. Perhaps others will come to share our belief that for much of the period in question it was not just an urban sprawl but a royal capital.'

The history of Wroxeter seems to have begun with the establishment of a temporary fortress for the fourteenth Roman legion at some time around AD 58. This time-frame corresponds with the chronology of events that saw the Romans, under Suetonius, carrying out operations in north Wales. It was he who led a force across the Mona Straits into Anglesey, where they massacred the inhabitants and cut down groves of oak trees, sacred to the Druids.

It is presumed that he used Wroxeter as some sort of base camp during these operations. However, this fortress can't have been in use very long, for in AD 60 Suetonius had to deal with the Boudicca rebellion in the London area, the fourteenth legion being withdrawn from north Wales for this campaign and never returning. Although historians assume that the fortress was subsequently re-used by the twentieth legion prior to Agricola's removal of it to Scotland c. AD 80, there is no evidence for this and, said Alan, such a scenario flies in the face of events as written in the Welsh records.

The evidence of archaeology shows that Wroxeter grew in wealth and prestige through ensuing centuries. The heated Roman baths and gymnasium must be amongst the most elaborate of such structures not just in Britain but in all of Europe. Recent surveys with ground-penetrating radar have also revealed the outlines of a large building believed to have been a church, proving that the city was Christian from an early date. This evidence convinces Alan and Baram that Wroxeter was actually the royal capital of Britain in Roman times.

They also believe that it was the city called Caer Effrawg in Welsh, a name that is generally translated as 'York' but really means 'Castle of the Hebrews'; and that Wroxeter is therefore the original 'York'. This might seem ludicrous at first, but there is evidence to support it. In the histories we are told that two Emperors died at a place called York: first of all Septimius Severus in 211 and then Constantius, the father of Constantine, in 306. Since, as Alan put it, 'They didn't have refrigerated transport to take their bodies back to Rome, even if that is what they would have wanted,' we would therefore expect that they would have had tombs or at least cenotaphs in Britain. These are not to be found at present-day York, or anywhere else in the east of England for that matter. However, there are two Constantine mounds in Wales, just to the west of Shrewsbury, one of which may be that of Constantius. Just to the southeast of Wroxeter is the village of Eaton Constantine, where there are the remains of large marching camps.

A stone with the inscription 'severini Flu severi' is documented by Samuel Lewis in his 1883 Topical Dictionary of Wales as being at Abernant in south Wales. According to local legends this Severini was a Roman general who died in battle near there. It is difficult to see how this could be anyone other than Septimius Severus, whose father was called Marcus Didius Salvius Julianus Severus. Nobody has been able to account for these monuments or why they should be where they are. That both are much nearer to Wroxeter than York adds weight to the idea that this city was the original York and that it, not the present-day York, which anyway was called Eboracum by the Romans, was the real capital of the kings of Britain.

This makes sense, for unlike York, which is on the eastern periphery of England, Wroxeter was near the centre of the island, midway between the garrison towns of Chester and Caerleon. From here forces could be sent to repel Irish invasions from the west and Scottish invasions from the north. Watling Street meant that the kings also had a direct link to London and the south-east, should trouble arise from that direction. The religious centre of Glastennen, near to old Loytcoyt or Letocetum, was also just a few miles down the road. The large number of tumuli at nearby Oldbury, where Alan and Baram found the gravestone of Arthur I, son of Magnus Maximus, indicate that this was an area where many British nobles chose to be buried.

All this would be uncontested had Wroxeter, like York, survived to become an important city in the Middle Ages. Unfortunately, a combination of human and natural catastrophes that affected Britain in the fifth and sixth centuries led to its being abandoned. Whereas other places, perhaps equally badly affected, were rebuilt by the Saxons, Vikings, Normans or whoever, this

city disappeared from view as completely as if it had been in the jungles of Central America. In time it was completely forgotten and all references to it were assumed to be about York.

This is what we think,' said Alan. 'You look around and make up your own mind.' We walked around in silence for an hour or so, admiring the cemented bricks which had survived for nearly two millennia and taking pictures of the gymnasium and other obvious structures, before making our way back to the car via the tourist bureau where we had come in. At the office I purchased a small guidebook which I later studied in depth. This provided a great deal of useful information concerning both what had been found on the site and its dates, interpreted with a strongly Roman slant. However, reading the archaeology in the context of British history as presented by Nennius, Tysilio, Geoffrey of Monmouth, Percy Enderbee and other sources, a completely different picture of the city's significance emerged.

By AD 70 Britain, part of it controlled by its native kings, who were Christian, though ostensibly under Roman rule, was as yet very far from being a Roman province. Indeed the conquest was never as complete or as deep as most modern historians would have us believe. Even though Caradoc and his family were taken off to Rome, war raged on in the west and north of Britain for another generation. In AD 70 the Roman general Agricola with his twentieth legion was stationed in Deva (Chester). He returned to Rome three years later to be made a consul and take on the governorship of Aquitaine. Then in AD 79 he returned to Britain, this time fighting wars in Scotland. He is credited with defeating the Caledonians but more importantly he seems to have succeeded in persuading the British to build cities after the Roman manner. One such was Wroxeter, which, as we have seen, grew in the second and third centuries to become possibly the second largest city in Britain.

The pamphlet agreed that the fortress had been used as a military depot of some sort from about AD 58 to 90. After that, or so the archaeological evidence implied, it 'was handed over to the civil authorities'. The fortress was then demolished and a brand new city, on the Roman model, built in its place. As we have seen, British traditional histories state that subsequent to the death of his brother Guiderius, Gweirydd (Arviragus) became the leader of Lloegrian resistance to Roman occupation. London and the south-east having been lost, he was most likely to have been active in this part of England on the borders of Wales, in alliance with the Khyrnry of south Wales. Following the first rebellion of the Iceni in AD 47 and the capture of Caradoc in AD 51, he seems to have made some sort of peace treaty with the Romans, involving a marriage between himself and a daughter of Claudius.

When the Iceni revolted again under Boudicca in AD 60, he seems to once more have gone to war with the Romans. Finally, following her death, he again found a *modus vivendi* with the Romans, probably based on trade agreements, thus freeing Agricola to take his twentieth legion into Scotland to fight a common enemy, the Caledonian Piets. Part of this agreement seems to have been the building of Wroxeter in suitably advanced style for a capital city and in accordance with Agricola's policy, which was to persuade the Britons, especially their leaders, to adopt Roman ways.

I found supporting evidence for a linguistic connection between Arviragus and Wroxeter. Wroxeter is a shortened form of Wrox-chester or Wroc-castra, 'the fortress of Wroc'. However, in Roman times it was called not this but Viroconium Cornoviorum. The second part of the name derives from that of the local tribe, the Cornovii, but academic opinion is divided concerning the origins of the word Viroconium. In the course of a long article contained in a book entitled *The Place Names of Britain*, the authors, Rivet and Smith, put forward a case for believing it was derived from someone's proper name. It could be—we have in Viroconium' a personal name plus suffix. The place-name Viroconium might therefore more properly be Viriconium to be analysed in British terms as Uirico- with suffixes, -on-io- as in CANONIUM, etc.; a meaning 'town of 'Uirico-' is likely, and is one of the possibilities admitted by Jackson in his study of the name in *Britannia*, I (1970), 81. The name presumably applied originally to

the hill-fort on the Wrekin, and was transferred to the Roman fortress and town which grew from it.

If this is the case, the likelihood is that the city was named after Gweirydd, for the probable pronunciation of his name would have been 'Wiridd'. A place called Uiri-conium and pronounced 'Wiri-conium', losing the Welsh 'dd' sound, is not out of the question: It could also be, of course, that the name Viroconium is derived from the name Arviragus. Either way, the scenario that emerges is of a British king making peace with the Romans and then employing Roman builders to turn his hill-fort stronghold into a regional capital. This would agree with the story told in the Brut Tysilio about the founding of a city on the River Severn following the marriage of Arviragus to Genuissa, the daughter of Claudius: 'Claudius also built a city on the Severn, which from his name was called Claudii castra on the boundary between Wales and England.' 3

The story is enlarged upon by Geoffrey of Monmouth in his History, where he identifies the city with Gloucester:

At the end of that winter the messengers returned with Claudius' daughter and handed her over to her father. The girl's name was Genuissa. Her beauty was such that everyone who saw her was filled with admiration. Once she had been united to him in lawful marriage, she inflamed the king with such burning passion that he preferred her company to anything else in the world. As a result of this Arviragus made up his mind to give some special mark of distinction to the place where he had married her. He suggested to Claudius that the two of them should found there a city which should perpetuate in times to come so happy a marriage. Claudius agreed and ordered a town to be built which should be called Kaerlou or Gloucester. 4

Now as we have seen, according to Welsh records Gloucester was founded in the third century by Gloyw Gwalltir or Gloyw wlad lydan ('Claudius of the Extensive Country'), who is probably to be identified with the Emperor Claudius II c. 260. Geoffrey is therefore wrong in believing that Claudius I, who died in AD 54, could have had anything to do with the foundation of Gloucester. On the other hand, Viroconium is on both the River Severn and the borders of England and Wales; furthermore it is in what was then a highly strategic location, as it overlooks a ford on the River Severn at the point where it meets with Watling Street - the route that would have been taken by Ostorius Scapula when he invaded north Wales in AD 48.

The neighbouring British hill fort would have been important at the time. It is therefore tempting to think that it was at Wroxeter, not Gloucester, that Arviragus entertained his new wife and invited Claudius, in her honour, to build him a new city in the Roman manner. The archaeological evidence supports the suggestion that Claudius I was responsible for the building of the first Roman fort at Wroxeter, quite possibly during the period of peace that all the annals say ensued upon the marriage of his daughter to Arviragus in AD 52. It was Claudius himself who brought the fourteenth legion to Britain and it was this force that was subsequently stationed at Wroxeter until AD 60 and the revolt of Boudicca. Later on other kings and Emperors, notably Hadrian, added to the grandeur of Wroxeter, steadily enlarging the city throughout the second and third centuries. Further, since the church is believed to be one of the oldest in Britain, it is not impossible that it dates from the time of Arviragus and may even have been founded by St Ilid himself.

On looking deeper into the matter I discovered that Alan's suggestion that the medievals confused York with Wroxeter or Viroconium Cornoviorum was also not at all unlikely. There is no doubting that York too was an important city, serving as a port of supply for northern Britain. However, its modern name of York is derived not from the Roman Eboracum but from the Viking name for it: Yarvik. It is very easy to see how medieval monks could confuse written historical references to a city called Viroconium or Uiroconium (possibly shortened to Uiroco and pronounced 'Yuroco') with the city they knew as York, particularly as all traces of ancient

Wroxeter had disappeared by that time and there was no evidence then of how large a city Wroxeter once was.

THE COMING OF THE DRAGON

There is still, however, the perplexing question of how it was that Wroxeter experienced such a devastating collapse. What was it that caused this thriving metropolis, which by rights should have grown by now to be a Birmingham or Manchester, to be abandoned? This too was a subject to which Alan and Baram had given much thought and on our way back down the M5 Alan explained their theories and how these tied up with what is written in the histories.

‘Around the period of the mid sixth century, arguably the most awesome event in the whole of British recorded and remembered history took place. As far as can be gleaned and calculated from the many surviving records, it was a tremendous catastrophe which befell the British nation. Although this is detailed in a number of authentic records, conventional history books written either for schools or for the public at large never mention a single word about it. It is as though in a few centuries’ time the Jews were to forget all about the Holocaust or the Irish the potato famine.

‘Unmentioned and un-remarked by modern archaeologists there are, beneath the sea at Cardiff, the remains of the great stone port of the Welsh monarchs. This seems to have been submerged around this time. Likewise, on the other side of the Channel and in the Scilly Isles, areas sank beneath the waves, giving rise to stories about the lost land of Lyonesse. It would also seem that the sinking or inundation of Heligoland, an area of submerged land that has been explored by divers off the coast of Denmark, was a result of this same catastrophe. Both here and around the Scillies there are submerged walls as evidence that fields at one time stretched out under what is now sea. Mainland Britain was also affected, areas of Cardigan Bay and the Conway Estuary sinking beneath the waves.

‘Of course the people witnessing these events didn’t use modern scientific language to describe what was clearly a natural disaster. It was viewed, at least by the monks who wrote about it, as God’s punishment of Britain for the sins of its people. The agent of this punishment was a comet, pictured as an awesome dragon. Strange as it may seem, what probably happened is that Britain was hit by a scatter of meteorites.

Detailed analysis of the histories reveals that prior to this event a giant comet was seen in the skies, which approached close to our planet Earth. Whether it was this comet that showered Britain with debris as it passed by or another is not quite clear. What is recorded is that Britain was hit by something and most of the island was devastated by the enormous blast of this collision. Vast tracts were laid into total ruin. Nearly all the animals died, domesticated and wild, as did the birds, fish and reptiles. Even plants would not grow. Mud slithered everywhere, and clouds of gas enveloped the land with a poisonous mist. Winter descended suddenly and stayed for years, so that absolutely nothing could live in the wide sweep of stricken areas. It was like the aftermath of a nuclear assault.

‘All across Britain walls were shaken to their very foundations and roofs slithered down in a rush of debris. Cities, towns, country villas and farms - the legacy of pre-Saxon Britain - tottered into ruin. The city of Wroxeter fell into ruin, never again to be inhabited or rebuilt. Survivors stumbled around the ruins of their homes under darkened skies full of poisonous clouds, droplets from which brought death to those who were unfortunate enough to be soaked by them. In one disastrous moment, a great and powerful state had been brought to its knees by what was interpreted as an act of God. Thus it was that the wasteland sung about by medieval troubadours and written of by Arthurian poets came into being. All this is detailed in sixth-century records.

It was to restore the kingdom, to find a cure for the sick land, that the Knights of the Round Table were sent in search of the Holy Grail. Only this most important relic, it was felt, had the power to effect such a cure and it was believed that its loss was what had so angered God that he had sent this terrible punishment. As the tale was told and retold, the reason for the quest was gradually forgotten, with the result that in the later romances of the Middle Ages there is only passing reference to the wasteland, and still less to what caused it. Yet that, on one level, is what the Grail story is all about - the search for an antidote.'

What Alan said about the destruction of Arthur's kingdom, though extraordinary, was not entirely unexpected. I had spent many years studying and reading about the Grail legend and was well aware that it had cosmic dimensions. For one thing the Grail itself is, as we have seen, at times referred to as a lapis excilis, believed to be a corruption of lapis ex caelis - 'stone from heaven'. The connection between this name and the idea of a falling meteorite was one I had considered before, but I had not connected the name with a comet or considered the consequences of a celestial body of any great size striking Britain. As I was still more than slightly sceptical about the scale of such a disaster, I decided to research the matter for myself and to check Alan's references. They seemed to bear out what he was saying. Gildas, for instance, had written that the island of Britain was set on fire from end to end, a level of destruction that could not be attributed to marauding Saxons alone.

The dragon-like quality of a comet that appeared around this time is something that needs closer scrutiny. In his Brut, Tysilio claims that the dragon-comet was first seen just prior to the reign of Arthur II's father, Utherpendragon, auguring both his own elevation and the birth of his hero son:

At that time a star of amazing size appeared. It had one beam, and on the head of the beam was a ball of fire resembling a dragon; and from the jaws of the dragon two beams ascended, the one towards the extremity of France, and the other towards Ireland, subdividing itself into seven small beams.

Uthyr and all around him, alarmed by such an appearance, enquired of the learned men what it might portend. Merddyn bursting into tears, exclaimed, 'Sons of Britain, ye have suffered an irrecoverable loss, ye are widowed of Emrys the Great. 5 But still ye have a king. Haste thou therefore, Uthyr, and engage the enemy, for the whole island shall be thine. For it is thou, Uthyr, who art signified by this star with the head of a dragon. By the beam pointing over France is denoted a son of thine, who shall be great in wealth, and extensive in sway, and by that directed towards Ireland, a daughter, whose sons and grandsons shall successively govern the whole. 6

It was a terrifying apparition, for comets are generally to be interpreted as negative auguries; however, in Tysilio's account this is neutralized by identifying the negative or baleful influence of the comet with the death of Emrys. A more optimistic spin is then put on events by equating Uther (Meurig) himself with the comet and his daughter Anna and son Arthur with its twin tails. To reinforce these positive links between himself and what is clearly seen as a death-star, Uther has two dragon talismans made for himself:

Uthyr recollecting the words of Merddyn, when the ceremony [his coronation after the death of Emrys] was over, commanded two dragons of gold, and exquisite workmanship, to be made, in form similar to that which he had seen on the head of the comet's beam of light. One of these he deposited in the principal church at Winchester, the other he made his standard to be carried before his army. From this circumstance he was thenceforward called Uthyr Pendragon 7 [Uther of the Dragon's Head]. 8

The connection between the king and the dragon-star carries on to the next generation, for later, before the Battle of Baedan, Arthur II himself wears a helmet in the form of a fiery dragon:

Arthur then put on a breast plate, worthy of a king; a gilt helmet, on which were the image of a fiery dragon, and another device called Prydwenn, 9 in which was the carved image of the Virgin, which Arthur usually wore when going to a perilous engagement. He also put on his sword, called Caledwylch, 10 as it was the best in Britain and had been made at Afallach. He also took in his hand a spear called Ron-cymmyniad [the spear of command].¹¹

We have here a description of objects: sword, shield, helmet and armour, each with its own talismanic power. Arthur, like his father Utherpendragon, is portrayed as invoking the power of the dragon or comet as his birthright. As it is Arthur II, not Utherpendragon who wears a dragon-helmet, it seems more logical that it was during his reign that the dragon-star made its appearance. As he was middle-aged when his father died, it probably augured the start of Arthur's reign. Yet all the romances are agreed that the golden age of Arthur ended in strange circumstances: his kingdom was brought to an end not by the Saxons, whom he had defeated, but by the supernatural events surrounding the appearance of the Grail and the wasting of his land with perpetual winter. Could there be anything behind these stories?

Many of the old histories, the cornerstones of our research, mention a terrible plague that swept through Britain round about the time of the later Saxon invasions. In the Brut Tysilio, and consequently Geoffrey's History, this plague is projected several generations forward to the time of a Cadwallader ¹², who seems to have died around the year 689. What is described is something which even by medieval standards is clearly perceived as having been a very abnormal event, certainly much worse than the Black Death:

During these disturbances, a pestilence and a famine, sent from God as a punishment for their sins, fell upon the Britons so grievously that food was not to be had, saving what the chace [sic] could afford; and the living were, through hunger, unable to bury the dead. Such as were able to go to other countries did so, exclaiming, 'O Lord! thou hast given us to be a prey to wolves.' Cadwallader had a fleet prepared for him, and set sail for Bretagne, exclaiming in like manner, 'Woe to us sinners! by the multitude of our sins have we provoked our God: when we had a time to return to Him, we returned not, therefore doth He disperse us abroad; whom not the Roman power, nor any, save Himself, could thus disperse.'

With such lamentations, Cadwallader approached the dwelling of Alan,¹³ by whom he was welcomed thither most kindly. In Britain there were left, by the pestilence and famine, those only who retired into the forests, and lived by hunting, and mostly in the recesses of Wales. This calamity continued for eleven years.

When it ceased, those of the Saxons who had escaped it, sent information to Germany, that the island was destitute of inhabitants, and advised them to come and take a cheap possession of it. That people therefore collected an immense number of men and women, who landed in the north, and settled in the kingdom from Norway ¹⁴ to Cornwall; there remaining no Britons to oppose them. ¹⁵

Graphic as is this description of the Cadwallader's woes, there is little evidence or likelihood that a plague on this scale actually befell the Britons at the period he is describing: around the end of the seventh century. The Anglo-Saxon Chronicle records the sun as having been darkened and a pestilence raging in Britain during 664 but this was for only one year. This may be what prompted Tysilio to choose a date around this time for the legendary plague, but it is hardly on the scale he describes. It also conflicts with all accounts concerning the Saxon takeover of England, which was all but complete by this time. However, project things back a century and a very different picture emerges. There is only one entry in The Anglo-Saxon Chronicle between 556 and 565. This entry, for 560, simply says that Ceawlin inherited the West-Saxon kingdom and Aelle the Northumbrian. Whatever else happened in this period is a complete blank as far as the later Saxon historiographers were concerned, which is curious considering that this is precisely the time that the comet was supposed to have struck.

What seems to have happened is a misidentification of who the 'Cadwallader' was at the time of the comet. It is more than likely that the 'Battle Sovereign' in question is really Arthur II, and that the Alan referred to was a king called Alan Fyrgam who ruled in Brittany during Arthur II's reign. Alan had fought alongside Arthur II at the Battle of Baedan and later acted as the latter's host when he and surviving Britons crossed the Channel to escape the 'Yellow Pestilence'.

The identification of Arthur II as the Cadwallader during whose reign occurred the terrible scourge of the Yellow Pestilence is to be found in 'The Life of St Teilo', as contained in the Llandaff Charters. Teilo was Bishop of Llandaff Cathedral after Dyfrig (Dubricius), who crowned the young Arthur. He therefore ministered during the later part of Arthur II's reign, c. 550-65. That he witnessed the pestilence confirms that it happened in the time of Arthur II, not a 'Battle Sovereign' or Cadwallader of the seventh century.

St. Teilo received the pastoral care of Llandaff, to which he had been consecrated, with all the adjacent diocese, that had belonged to his predecessor Dubricius; in which however he could not long remain, on account of the pestilence which nearly destroyed the whole nation. It was called the Yellow Pestilence, because it occasioned all persons who were seized by it, to be yellow and without blood, and it appeared to men a column of a watery cloud, having one end trailing along the ground, and the other above, proceeding in the air, and passing through the whole country like a shower going through the bottom of valleys. Whatever living creatures it touched with its pestiferous blast, either immediately died, or sickened to death. If anyone endeavoured to apply a remedy to the sick person, not only had the medicines no effect, but the dreadful disorder brought the physician, together with the sick person, to death. For it seized Maelgwn, King of North Wales [actually it was probably Maelgwn of Llandaff] and destroyed his country; and so greatly did the aforesaid destruction rage throughout the nation, that it caused the country to be nearly deserted. 16

Virtually the same words to describe the Yellow Pestilence are used in the Life of St Oudoceus, contained in the Llandaff Charters. St Oudoceus was a nephew of St Teilo and another of the great ornaments of the Welsh church. He returned to Wales with Teilo and later, in turn, became Bishop of Llandaff. The date of their return must have been after 562 when the plague had ceased. The idea of a watery cloud with one end trailing along the ground sounds remarkably like the sort of mushroom cloud one might see after a nuclear explosion. To these descriptions may be added a number of others that seem to be talking about some great catastrophe with effects not too dissimilar to what we would today expect as the result of a nuclear strike. That the victims of this plague were 'yellow and without blood' implies they suffered from a condition where so many of their red blood cells were destroyed in such a short time that their liver and spleen couldn't deal with the resultant bilirubin. This could have been the result of an infectious disease; but could it also have been something else, perhaps even a radiation sickness brought on by the fall-out from a comet? This is what I now wanted to find out.

THE STAR OF DEATH

Until very recently it was fashionable to believe that the planet on which we live, once a boiling cauldron of molten rock, has long since settled down into peaceful middle age; that, give or take the occasional earthquake, or volcanic eruption, our planet leads an untroubled life. Today, as I write this, comet Hale-Bopp, the brightest this century, is lighting up the night skies.

It is millions of miles from us and there is no possibility of a collision with it, yet in space terms it is a very near miss. Two years ago the planet Jupiter was not so lucky when the fragmented comet Schumacher-Levy slammed into it. The impacts, though not directly visible from earth as they took place on Jupiter's far side, caused noticeable changes to its system of atmospheric rings. We can only imagine the enormous explosions and firestorms that must have caused such visible changes to the giant planet. The question on every astronomer's lips since then has been: could the same thing happen to planet Earth? The discomfiting answer is a resounding yes; the

question being not is it possible, but when will it happen? As the consequences of such a 'strike' would be devastating, possibly leading to the extinction of the human race, there has been a refocusing of attention, at least by some astronomers, away from the obscure metaphysics of the 'Big Bang' theories of the universe to matters closer to home in our own solar system.

The remarkable renaissance of catastrophism (the theory that changes in the earth's crust have occurred in sudden and violent events) as a branch of astrophysics is something of which few people are aware. This is not surprising, as it has really only developed as a recognized discipline over the course of the last ten years or so. Agreeably, given our interest in Britain, it is the British school, headed by Dr Victor Clube of the Oxford University Astrophysics Department, that is at the forefront of research into these matters. Alan and Baram had quoted Dr Clube as an expert on the subject of cometary impacts with the Earth, and in particular on the event which they said took place in Britain during the sixth century. As there is little written about this,¹⁷ other than one or two papers, I decided to ask Dr Clube if we could meet and discuss the whole subject in person. Thus it was that I found myself in the Department of Astrophysics at Oxford University with the man who is probably the world's foremost authority on the influence of comets on world history.

It very quickly became clear that behind Dr Clube's affable exterior lay a mind of great originality. Using the tools of physics he and his colleagues had examined the orbits of a large number of fragments from what was once a spectacular comet, which had, they believed, interacted with the Earth on more than one occasion, causing widespread damage. Could this, I wondered, have been the comet signifying the birth of Arthur? Was it this which caused the strange yellow plague?

These were questions I put to him as we sat together in his little office. 'Well,' he said, taking over the lead in our conversation, which till then had consisted mainly of the usual pleasantries, 'before we can talk sensibly about the Dark Ages, we need to set out the framework of what this is all about.' There is now little doubt, he continued, that it was a cosmic event that wiped out the dinosaurs. It has been suggested that a bolide of only about ten kilometres in diameter was responsible for their demise. If a rock this size, smaller than the Isle of Wight, struck the Earth it would have caused an explosion immeasurably greater than that of the nuclear bomb dropped at Hiroshima and raised a dust cloud that would have blanketed the sun for several years. Under these conditions most vegetation would have died and the cold-blooded dinosaurs would have been wiped out. When the clouds eventually thinned out, the coast would have been clear for furry mammals to inherit the earth.

'This, with some modifications, is the current view on how the Cretaceous Age came to an end and the Tertiary began. The discovery of a stratigraphic layer containing abnormally high amounts of the extraterrestrial metal iridium corresponding to this event confirms that in essence this is what happened. Whilst we can take some comfort that events on this scale are rare - taking place on average once every fifty to one hundred million years as far as we can tell - we shouldn't be too complacent, as lesser impacts happen with much greater frequency.

'Modern scientific catastrophism is a space-age phenomenon. Until the late 1960's it was generally believed that there was little risk of the Earth being struck by anything larger than a meteorite. It was also believed that the visible craters on the moon were all formed long ago when the solar system was still young. The possibility that the Earth and moon are still, even today, liable to be struck occasionally by larger objects in the range of 100-1,000 metres in diameter was dismissed as unlikely in the extreme. Catastrophism was deeply out of fashion whilst its opposite, uniformitarianism (the theory that geological processes are always due to continuously and uniformly operating forces), held the field. As a result of the Apollo and other missions to the moon, this view has had to be radically altered. We now know that craters formed as a result of impact are being created on the moon all the time. Some of these, such as the Giordano Bruno crater, which has been shown to be the result of an event witnessed by one

Gervase of Canterbury in 1178, are relatively large. The Giordano Bruno crater resulted from the impact of a bolide a few kilometres in diameter. Though this is much smaller than the body that caused the dinosaur extinctions, it would still have involved a release of energy equivalent that of a 100,000 megaton H- bomb, or about ten times the combined nuclear arsenal of the world. Had it struck the Earth and not the moon, then it would have caused a worldwide catastrophe - a cosmic winter. Viewing the event in this way we realize that we on Earth had a very lucky escape. Mercifully, such events are not that frequent, but the lunar landscape shows that smaller events than this, involving bolides between 100 and 1,000 metres, happen on Earth on average about once a century.

Dr Clube explained that to understand such events it is necessary to know a little bit about current theories concerning the origins of comets and what happens to them once they enter the inner solar system. New comets are being discovered all the time, though usually they are barely visible to the naked eye. The recent Hale-Bopp, which gave such a spectacular show at the start of 1997, is an example of a previously unknown comet. The current model - and there is good evidence for this - indicates that outside the orbits of the outermost planets there is a region called the 'Oort cloud'. In this region, which is still part of the solar system even though it extends to almost half the distance between the sun and our nearest stellar companion, comets are born. How comets are made is still a mystery.

There are probably many thousands of them out there, each one capable of causing a dinosaur extinction should they collide with the Earth. These bodies follow more or less stable orbits around the sun but occasionally one is deflected out of the Oort cloud and moves into an elliptical orbit that swings through the inner solar system. Mostly such comets are harmless visitors from outer space, but once in a while one moves into an orbit that crosses that of the Earth. It is then that we have the potential for collisions.

When people think of cometary collisions they generally imagine a single, large impact, but such events rarely, if ever, happen. New comets are largely made up of dust, ice and other volatile chemicals. Generally speaking, as a result of the gravitational pull of the sun or collisions with objects such as asteroids, they fragment into smaller pieces. Each time a comet approaches the sun, some of its ice melts, giving rise to one or more cometary tails. These are composed of water vapour, dust, charged ions and other volatile molecules blown away from the comet by the solar wind. 10 For this reason the tail or tails generally point away from the sun.

However, sometimes, when a comet is exactly in the plane of the ecliptic (the sun's path), illuminated dust can give the impression of a silvery 'sword' projecting from the cometary head towards the sun. Dust particles spread throughout the orbit of the comet and these 'vapour trails' will produce showers of meteors or shooting stars should the Earth pass through such a dust cloud. Larger particles, say the size of peas, give rise to fireballs as they burn up in the upper atmosphere. These are spectacular events when they happen, rather like firework rockets exploding. Young comets - those which have not passed close to the sun very often - are generally much more luminous than older ones which have visited the inner solar system many times and thereby had their supply of ice and other volatiles burnt off. Some comets melt away entirely, whilst others have rocky cores like asteroids. As these comets get older so they break up into a swarm of rocks, boulders and other debris, becoming virtually invisible in the process.

Dr Clube and his colleagues have been examining such a 'swarm', which seems to be the remnants of a giant, earth-crossing comet that they think made its first appearance in the inner solar system around 30,000 years ago. The dust trail from this comet gives rise to the Taurid-Arietid meteor shower that occurs twice every year, around the end of June and November. Though this is no cause for alarm, larger remnants of this comet are life-threatening. Two of these fragments are comet Encke, which may be the core of the original proto-comet, and a body called Hephaistos. Though they now have different orbits from one another. Dr Clube and his

colleagues have been able to show that these two bodies, as well as an asteroid called Oljato and several other objects of a few kilometres in diameter, were once constituent parts of the same parent comet. An encounter with one of these larger chunks of the original comet would be quite catastrophic but is fortunately unlikely. However, these larger chunks are accompanied by many smaller objects of perhaps only 100 metres or so in diameter. Encounters with these are relatively frequent and can be quite dramatic.

In 1908 a spectacular event took place at Tunguska in Siberia. As it came crashing down to earth, a large boulder, which Dr Clube thinks was a fragment about 100 metres in diameter of the former comet, exploded in the air eight kilometres above ground. The explosion and its accompanying fireball was the equivalent of a forty- to fifty-megaton bomb. The sky was lit up as far away as northern Europe and for nine days people were able to play cricket, read the papers and take photographs at midnight. At the site of the explosion, fortunately in an almost uninhabited area of forest, there was complete devastation, trees being flattened for a distance of forty miles.

It is hits from boulders of this size that pose the greater danger to mankind, not the risk of a once-in-a-hundred-million-year chance of a strike by a large comet such as that which caused the dinosaurs to become extinct. On average we can expect one Tunguska-type event per century. This doesn't sound a lot but masks the fact that at certain times the risk is much greater than at others. The orbital period of the Taurid-Arietid swarm is stable at approximately three years, its elliptical path stretching out beyond Mars. Though the orbit of the swarm passes through that of the Earth, it does not always intersect with our orbit. This is difficult to explain in non-technical terms, but suffice it to say that there are periods lasting a century or so when the orbit of the Earth intersects that of the swarm. This does not mean that there will necessarily be a collision but it makes it possible, should the Earth and the swarm be at a point where their orbits meet. On average we would expect there to be a higher risk of collision with fragments of this comet for one hundred out of every six hundred years.

Recently Dr Clube's team have been able to analyse data concerning comets as observed by Chinese astronomers over the past two millennia. This shows peaks of activity roughly every five to six hundred years on average, confirming that their model is substantially correct. Now it just so happens that during the fifth and sixth centuries, at the start of the Dark Ages, there was such a peak of activity. Thus the idea that Britain was hit by one or more fireballs at this time, as a result of the Earth passing through the Taurid-Arietid swarm, is by no means far-fetched. In fact, the historical evidence is compelling. Gildas's assertion that the island of Britain was on fire from end to end may well have been the case, even though the scars of such a conflagration are hardly visible. If you go to Siberia today and visit the scene of the Tunguska strike there is little to show for it.

The forest has long since grown back so that, although at ground level old trunks of trees can be seen facing the direction of the blast, nothing can be seen from the air. This event happened as recently as 1908. Clearly, then, any obvious traces of a conflagration in Britain dating to the sixth century will have long since disappeared. More work needs to be done on this but Dr Clube and his colleagues believe there is evidence that the British forests were much more extensive prior to this event than after and in many places they have simply not grown back. There was also a precipitous collapse in the population of Britain at this time, making it easy for the Saxons to move in afterwards and repopulate England. That shock waves and firestorms virtually destroyed the country also explains why there are so few above ground-level Roman ruins in Britain compared with the rest of the former Empire.

Dr Clube's statement that during the Tunguska strike for nine days people had been able to read newspapers and take photographs at midnight was intriguing, for later Alan was to inform me that Welsh records state that the sky was lit up to a similar extent when the comet struck Britain

in the sixth century. As later historians couldn't believe that such a thing was possible, they tended to dismiss these records as myths.

Intrigued by the idea of a trailing cloud bringing death in its wake, I asked Dr Clube if there was any possibility that a bolide of the type he was considering could have deposited large amounts of chlorine, mustard gas or some other poisonous gas that is heavier than air. This he was unable to confirm, pointing out that really we know very little about the chemistry of comets other than what can be seen in the tail. As any complex molecules that might exist in the core would be broken down by the effects of solar radiation, it is difficult to say what might be hidden in a comet's heart.

Dr Clube also said that there is further evidence from dendro-chronology that a fairly major impact occurred in the sixth century. In the normal course of events dust from both the bolide itself and the firestorm it causes when striking the Earth rises up into the atmosphere. In major events such as this, the dust blots out light from the sun, causing a sudden 'cosmic winter'. This is reflected in the growth pattern of trees, which effectively stop growing until the dust clears. The dendro-chronological evidence confirms that since the time of Christ there has been only one episode of this sort and that occurred between 535 and 542.

The dust would first have spread out in a band around the latitude where the strike occurred and then gradually spread out further south, where the effects would have been progressively weaker. The great famine and plague described by Gildas and in other historical records could have been caused partly by the conflagration but also by the mutation of viruses and other bugs that took in material from the comet. The wasteland would have been just that: a devastated landscape that for some years was under the icy grip of a cosmic winter that would not end, because virtually all sunlight was shut off by dust: without the light and heat of the sun, the land could not warm up, crops would not grow and this led to widespread starvation of both man and animals.

The people of Britain, those who survived, would have had little choice but to migrate to friendlier climes. But the whole of northern Europe would also have been affected. This could have been a motivating factor in propelling barbarian migrations from Scandinavia and Northern Europe. Certainly after the event, when the dust had lifted and things began to return to normal, Britain would have been relatively empty of people and therefore easy prey for Saxon migrants. This is what the records seem to be telling us: not that a few pirates in their keels were able to overthrow what till then had been a very prosperous and powerful state, but that the ancient Britons were reeling from a Tunguska-type - or even much larger - event. They were unable to repel the Saxons because they were so weakened by the disease and famine brought on by this natural catastrophe. It is little wonder, remarked Dr Clube, that Gildas and others preached that this was a punishment sent by God for their sins. What else could they believe when their state was destroyed by what we would still describe today as an act of God?

I left Oxford with much on my mind. Though Dr Clube hadn't been able to confirm the exact nature of the Yellow Pestilence, he did not say it was an impossibility and he had provided us with a plausible scientific theory for what really happened in Britain, showing that from a scientific point of view the evidence of Gildas and other records was credible.

In his book *The Cosmic Winter*, which he co-authored with Bill Napier, he postulates what would happen if a fairly small bolide, travelling at 60,000 miles per hour, should explode over Louvain in Belgium. The authors explain that it would vaporize before hitting the ground, reaching temperatures of 100,000°C and creating, for an instant, a pressure of some ten thousand tons per square inch. The force of the explosion would be equal to that of some 200 megatons of TNT - enough to wipe out Belgium and cause a major emergency in neighbouring countries. Could such an event, far, far more powerful than the bombs that destroyed Hiroshima and Nagasaki, be enough to trigger nuclear reactions in its core? It is noteworthy that one of the

principal constituents of comets is water. Perhaps in the enormous temperatures and pressures at the heart of a fireball impact some of the hydrogen contained in the water is converted to tritium - that is, extra-heavy hydrogen. This is an extremely dangerous substance, which, if ingested in any large quantity, would cause radiation sickness and leukaemia. It is also highly radioactive with a half-life of only thirty-one years. After thirty-one years only half the amount of radioactive water generated by the explosion would be left in the biosphere and in any case this would have been steadily diluted by mixing with ordinary water. In a few years there would be nothing to show for it.

Without further evidence we can only speculate as to whether the fireball that we believe to have hit Britain in the sixth Century had a radioactive effect. Because so many people died and the survivors were by definition those who lived well away from the epicentre of the explosion, records of what really happened are scanty. What is clear is that whatever happened effectively destroyed the civilization of the Britons.

The Welsh who survived the catastrophe were unable to prevent the Saxons from taking over the prime lands of England. For while King Arthur took refuge in Brittany from the effects of the comet, his nephew Mordred, in an unholy alliance with the Saxons, attempted to usurp the kingdom. In time the story of the wasteland became no more than the background to the adventures surrounding the quest for the Holy Grail. The defeat and death of Mordred along with most of King Arthur's surviving knights in the Battle of Camlann is the Götterdämmerung of the Arthurian cycle. Its final chapter includes the strange story of King Arthur's burial - not at Avalon but in south Wales. Alan was now to show me his grave.

Notes

1. In Latin V and V are the same letter.
2. A. L. F. Rivet and C. Smith, *The Place Names of Roman Britain*, pp. 505-6, Batsford.
3. *Brut Tysylio*, p. 86.
4. Geoffrey of Monmouth, *The History of the Kings of Britain*, p. 121.
5. There is some confusion here with names, for, as we have seen earlier, Tysylio is rather mixed up concerning identities. He imagines Em-Rhys (Ambrosius) and Uther to have been brothers. In fact Merddin himself is the real Em-Rhys Wledig and the 'Uther' in question would have been his grandson, Meurig, the father of Athrwys or Arthur II. These reservations apart, which stem from Tysylio's lack of access to all the genealogies, we can see that he is making an important statement about a comet.
6. *Brut Tysylio*, pp. 131-2.
7. In fact Tysylio seems to be wrong in this. According to Alan, 'Utherpendragon' was a title that meant 'Wonderful Head of the Dragons', meaning commander-in-chief or field-marshal.
8. *Brut Tysylio*, pp. 131-2.
9. Presumably his shield or breastplate.
10. This seems to be the original name for Excalibur, which Geoffrey calls Calibum. According to the translator, Caledvwlch means 'the Hard Cleft' - a good name for a sword.
11. *Brut Tysylio*, pp. 131-2.

12. Cadwallader is a title rather than a name, meaning 'Battle Sovereign'.

13. King of Brittany.

14. Probably a province of Scotland settled by Scandinavians.

15. Brut Tysylio, pp. 187-8.

16. Llandaff Charters, p. 75.

17. The book *The Cosmic Winter* by Dr Clube and his associate Bill Napier (Oxford University Press, 1990) mainly concerns earlier events at the time of ancient Egypt and Sumeria. Since its publication in 1990, their work has extended to encompass the Arthurian period.

18. The mechanism by which this happens is rather too complicated to explain here.

19. The sun itself emits a steady stream of charged particles, which blow out into space as a highly attenuated 'wind' that buffets everything in its path. On Earth the solar wind causes compression of the magnetosphere on its sun ward side, as well as the Northern Lights.



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