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THE ELEVEN OBSERVATIONS OF COMETS BETWEEN 678AD AND 1114AD RECORDED IN THE ANGLO SAXON CHRONICLE. E. G. Mardon, A. A. Mardon, J. Williams; Red Deer College, Red Deer, Canada; Texas A & M University, College Station, Texas, USA; Edmonton, Alberta, Canada, T4P-A5S.

This research paper is an examination of the eleven cometary references [679AD, 729AD, 892AD, 905AD, 975AD, 995AD, 1066AD, 1097AD, 1106AD, 1110AD & 1114AD] found in the various manuscripts of The Anglo Saxon Chronicle between 678 AD and 1114 AD on the Old English text and scientific observations. The manuscripts contain more than 35 celestial observations. This is an examination of astronomical phenomena and other climatic or natural events, that are described in The Anglo Saxon Chronicle, which is also referred to as The Old English Annals. The Anglo Saxon Chronicle is an Old English history of events begun under the direction of King Alfred the Great in the 9th Century and containing earlier material in adapted form. It was written from records kept at various English Monasteries. After the account of King Alfred's wars which started with the invading Danes, the Anglo Saxon Chronicle was officially kept up year by year until the last entry dated for 1154 AD. It survives in seven manuscripts. The Anglo Saxon Chronicle contains factual material with references often verifiable through other contemporary or near contemporary sources, like the Bayeux Tapestry containing a panel of the 'long-haired comet' [Refer to Illustration One], that appeared in 1066 AD, a few months prior to the invasion of England by William the Conqueror.

Background. The annalists who compiled the Anglo Saxon Chronicle were keen astronomical observers. A total of 35 eclipses of either the Sun, or the Moon; comets; falling stars; and brilliant Aurora Borealis, are noted as occurring on such and such a date in a certain year. The Anglo Saxon Chronicle uses the Roman method of calculating the date, i.e. the day of the month. At the time of the Venerable Bede (c.725 AD) the English custom was to begin the year on Christmas Day; eventually this was to fall into disuse in favour of September, due to the fact that the Byzantine Greeks at that time commenced their year on September 1st.

The question of provenance of the Anglo-Saxon Chronicle. Seven manuscripts of the 'Chronicle' are extant. Others were destroyed during civil strife in the late Medieval period or at the time of the English Reformation in the 16th. Century. For this research, the following four manuscripts were consulted:

i) 'The Parker Chronicle'[A], which is part of the Cambridge, Corpus Christi Manuscript collection. It is believed to have been written by a Winchester monk.

ii) 'The Abington Chronicles'[B] and [C]. The former concerns the period from 2 AD to 977 AD, while the latter is from 60 BC, corresponding nearly to Julius Caesar's attempted invasion of Britain (55 BC), to 1066 AD, the year of the Norman Conquest of England. Both of these manuscripts are in the Cotton Manuscript collection in the British Museum [London].

iii) 'The Worcester Chronicle'[D]. The entries cover the period from 2 AD to 1079 AD with the addition of an annal that brings the entries up to 1130 AD. It is also in the Cotton Manuscript collection of the British Museum.

iv) 'The Land Chronicle'[E]. It was written at the Peterborough monastery, and its entries cover the period from 2 AD 1153 AD. It is now in the Bodelian Library at Oxford. This manuscript was found to be the most readable for a non Anglo Saxon scholar. The Old

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English text can be understood if read very slowly with a completely open mind regards to the spelling of words and the use of gender endings.

The Anglo Saxon Chronicle is the name applied to a group of surviving manuscripts that serve as the chief source for English history during the Anglo Saxon age that came to an end with the Norman conquest in 1066 AD. The Anglo Saxon Chronicle is actually clearly divisible into several distinct units, which are never the less ordinarily treated by scholars as parts of the same overall series of annuals. Large Monasteries were in the habit of keeping calendars for the purpose of determining the date of Easter. In time, the important events of a centre year were noted by a scribe with personal comments. Generation after generation of monks or scribes wrote entries. Many of them are either a religious or political nature, such as the date of a bishop or king, the invasion of a Viking host; or a natural disaster, such as a famine or a crop failure. However, in the entries selected in this research project, astronomical events, such as eclipses of the sun, or of the moon, the appearance of comets or shooting stars, or the occurrence of a meteor shower are noted. Often the time of day and duration of the eclipse are added to the entries. Sometimes, the day of the week is mentioned or some other details such as the lighting of the candles so a meal could be eaten during an eclipse of the sun. Work on the earliest portion is derived from other Latin sources. The Anglo Saxon scribes translated them into old English by 892 AD. Monks at Winchester, possibly on the behest of King Alfred were adding entries. Legend states that King Alfred aided in the editing of the Anglo Saxon Chronicle. His well known personal interest in astronomy may have been one of the reasons that 40 entries deal with astronomical phenomena. It is worth noting that a total of twenty-five entries included in this study commence with the celestial reference. The scribe who appears to be doing this places emphasis on the unusual astronomical occurrence. The year numbers (always Roman numerals) are usually in the left-hand margin as disposed in the printed text.

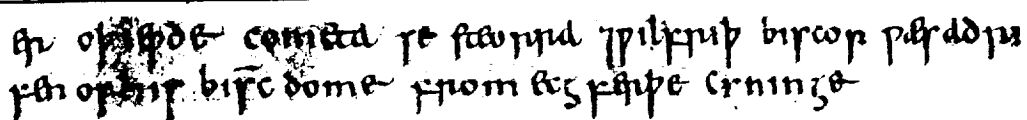
The Dating of Events: The scribes who wrote the entries recorded the events dependent upon the annalistic year. In Medieval times the year could begin on different dates.

1) The Anglo Saxon Chronicle commenced on September 24th according to the Caesarean Indictions

2) The Christian Church year commenced on Lady Day, March 25th.

Several astronomical entries(5), which do not have assigned dates have not been examined in this paper.

COMET REFERENCES:

First Cometary reference in The Anglo Saxon Chronicle 678 AD


"678 AD. HER ATEOWEDE COMETA AND SCAN III MON AS AELCE MORGEN SWILCE SUNNE BEAM."

"In this year appeared the star called comet, in August, and shone for three months each morning like a sunbeam."

ORIGINAL PAGE IS
OF POOR QUALITY

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[Note: The scribe writes in a matter of fact way. States the fact and the length of time the comet was in vision. He did not appear to be concerned at this unusual astronomical phenomena.]

[Not mentioned by Marsden in Catologue of Cometary Orbits.]

Second Cometary reference in The Anglo Saxon Chronicle 729 AD

ƿi cometa ƿefabryna hihte ƿiƿeðe ƿƿer ƿybrurht ƿonƿeðe

"HER ATEWODEN TWEGAN COMETAN."

"In this year appeared two comets."

[Not mentioned by Marsden in Catologue of Cometary Orbits.]

Third Cometary reference in The Anglo Saxon Chronicle 892 AD

ƿƿi ilcan geare ofer eastron ymbe dagas o aer aet eowde se
 steorro e mon on boc laeden haet cometa same men cwe a o englisc aetce
 healfe steorra. ford aem baer stent lang leoma of hwilum on aelce healfe : 7

"892 AD. I Y ILCAN GEARE OFER EASTRON YMBE GANG DAGAS O AER AET EOWDE SE STEORRO E MON ON BOC LAEDEN HAET COMETA, SAME MEN CWE A O ENGLISC AETCE HEALFE STEORRA. FORD AEM BAER STENT LANG LEOMA OF, HWILUMONANE HEALFE, HWILUM ON AELCE HEALFE."

"And the same year after Easter during Rogation-tide or earlier appeared the star which in Latin is called 'comet', likewise men say in English that a comet is a (flax) long-haired star, because long beams of light shine there forth, sometimes on one side, sometimes on every side."

[Not mentioned by Marsden in Catologue of Cometary Orbits.]

Fourth Cometary reference in The Anglo Saxon Chronicle 905 AD

"HER COMETA AET EOWD XIII KL NOUEBRIS."

"In this year the comet appeared thirteen days before the Kalends of November 1."

[This was the Roman way of dating, it is possible that this method of dating was used in a public record for the last time in The Anglo Saxon Chronicle]

[Also mentioned in Marsden's Catologue of Cometary Orbits, taken from Hasegawa 1979 Publication of the Astronomical Society Japan, 31, 257.]

Fifth Cometary reference in The Anglo Saxon Chronicle 975 AD

na on þam ilcan geare on heofeste aetƿeðe cometa
 ƿe ƿeoƿna . 7 þa so

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"975 AD. AND HER EANWARD EADGARES SUNU FEN TO RICE AND A SONA ONILCAN GEARE ON HERFESTE AETOWDE COMETA SE STEORRA AND COM EAFTRAN GEARE SWI E MYCEL HUNGOR."

"And in this year Edward, Edgar's son, succeeded to the Kingdom, and soon at harvest time of the same year appeared that star known as Comet. And the next year came great hunger (Famine)."

[Note: Our Saxon ancestors attempted to see cause and effect and believed that astronomical phenomena was a kind of fore shadowing of coming events. In my father's lifetime (1909) when Halley's Comet appeared, many predicted awful consequences. The Great War started 5 years later. E.G. M.]

[Not mentioned by Marsden in Catologue of Cometary Orbits.]

Sixth Cometary reference in The Anglo Saxon Chronicle 995 AD

Her on þittum geare aetowde
cometa se steorra . 7 rime afeb forðferde.

"995 AD. HER ON ISSUM GEARE AETOWDE COMETA SE STEORRA."

"In this year appeared the comet or star."

[Not mentioned by Marsden in Catologue of Cometary Orbits.]

Seventh Cometary reference in The Anglo Saxon Chronicle 1066 AD

* ant. 0.1110. 1001. On þittum gearum ^{aetowde cometa xiiii. d. mai} man halgode þa
mynstere at pestmynstere on alda mæsse dæg . 7 se cyng
eadrifod forðferde on trelfta mæsse æfen . 7 hine man
be byrigede on trelftan mæsse dæg . innan þære nipa .
halgode cyrcan on pestmynstere . 7 hapold eorl feng
wengla landes cyne rice . swa swa se cyng hit him ge ude .
7 eac men hine þær togecupon . 7 þær se bletrod to cyn

"1066 AD. AND A EASTRAN ON DAELIG XVI KALEND MAI. THA WEARTH GEOND ENGLA LAND SWYLC TACEN ON HEOFAENUM GE SEWEN SWYLC NAN MANN AER NE GESEH. SUME MENN CWAEDON THA HYT COMETA SE STEORRA WAERE, THONE SUME MENN HATATH THONE FEXEDON STEORRAN HE AET EOWDE AERESTON THONE AEFEN LETANIA MAIRA THA YS VIII KALEND SWA SCEAN EALLE THA VII NIHT."

"And Easter was on the fourteenth day before the Kalends of May. Then it happened that all through England such a sight in the heavens was seen as no man had seen before. Some men said that it was the star comet, that some men called the long haired star; it appeared on the eve of Letania Maior that is the eight day before the Kalend of Mai, and so shone for all seven nights"

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[Note: Many of the Chronicles, both native and foreign, regard the appearance of the comet as ominous of great events which took place in England this year.

Artifactual Record: "The Bayeux Tapestry", made within decades of the events of 1066, has a panel of its embroidery showing the comet crossing the sky.



Illustration One: Panel from "The Bayeux Tapestry" depicting King Harold consulting an Astrologer who explained the evil omen of Halley's Comet. [Pictured on the Bayeux Tapestry taken from Maclagan, Plate Number 34.]

Halley's Comet: The appearance of Halley's Comet would correspond to the following references in the Anglo Saxon Chronicles to cometary appearances 1066AD, Within the period that is covered by the Anglo Saxon Chronicle the calculated appearances of Halley's Comet would be in the years with perihelion dates of October 2, 684AD; May 20, 760AD, February 28, 837AD, July 18, 912AD, September 5, 989AD, March 20, 1066AD, April 18, 1145AD; and September 28, 1222AD.]

[Also mentioned in Marsden's Catologue of Cometary Orbits. The calculated perihelion date of Halley's Comet is March 20th, 1066.]

Eighth Cometary reference In The Anglo Saxon Chronicle 1097 AD

Da

uppon scē michael' mæssan ·iiii· ȝ octobri. ætȝpde an selcud
steorra on æfen scynende ȝsona to setle gangende

"DA UPPON SCE MICHAEL'S MAESSAN IIII N OCTOBR AETYWDE AN SELCUTH STEORRA ON AEFEN SCYNNENDE SONA TO SETLE GANNGAENDE. HE WAES GE SEWEN SUTH WEAST SE LEOMA DE HIM OFSTOD WAES SWITHE LANG GE DUHT SUTH EAST SCINENDE FOR NEAH EALLE DA WUCAN ON DAS WISAN AETYWDE. MANIGE MEN LETO DA HIT COMETA WEARE."

"Then after Michalmas fourth day before the Nomen of October there appeared a rare star shining in the evening, and soon sinking into its setting. It was seen in the southwest, and the beam of light which stood out from it seemed very long, shining in the south east, nearly all week it appeared in this way. Many men supposed it was a comet."

[Not mentioned by Marsden in Catologue of Cometary Orbits.]

Ninth Cometary reference In The Anglo Saxon Chronicle 1106 AD

On þære forman længsten pucan
on þon fiftes dæg on æfen ætȝpde an unȝepunelic steorra.
ȝlange fande þær ætȝ þes elce æfen ȝe sefen hpile scinende.

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"ON THAERE FORMAN LAENGTEN WUCAN ON THON FRIGE DAEG XIII K' MR' ON AEFEN AETYWDE AN UN GEWUNELIC STEORRA. AND LANGE STUNDE THAER AEFTE WAES AELCE AEFEN GESEWEN HWILE SCINENDE. SE STEORRA AETYWDE INNON THE SUTH WEST. HE WAES LITEL GETHUHT. AND DEORC. AC SE LEOMA THE HI FRA STOD WAES SWITHE BEORHT. AND SWILCE ORMAETE BEAM GETHUHT NOTH EAST SCINENDE. AND SUNE AEFEN GESAEWEN SWILCE SE BEAM ONGEAN WEARDES WITH THES STEORRAN WARD FYRCLINDE WAERE."

"In the first week of Lent, on Friday, the fourteenth day before the Kalends of March a strange star appeared in the evening and for a long time afterwards was seen shining for a while each evening. The star made its appearance in the south west, and seemed to be small and dark, but the light that shone from it was very bright and appeared like an enormous beam of light shining in opposite direction to the star. Some said that they had seen other unknown stars about this time, but we cannot speak about these without reservation, because we did not ourselves see them. On the eve of Cena Domini, Thursday before Easter two moons were seen in the sky before day, one in the east and one in the west and both at the full, and that day the moon was 14 days old. The light from the tail of a comet seemed to be streaming towards instead of from the nucleus."

[Not mentioned by Marsden in Catologue of Cometary Orbits.]

Tenth Cometary reference in The Anglo Saxon Chronicle 1110 AD

⁊ þa fæorþan ofer eall þa heofon fride beorhte scinende. ⁊
 riop pæfanaf purdon þære nihte þurh forste fride for nu-
 mene. Ðær æft̃ on unnes monde æt̃ fide an fæorþa noþan
 eastan. ⁊ his leoma stod to foran hi on þet sudwest.

"1110 AD TRE OW WAESTMAS WURDON THAERE NIHT THURH FORSTE SWIDE FOR NUMENE. THAER AETER ON JUNIES MONTH AETYWDE AN STEORRA NORTHAN EASTAN HIS LEOMA STOD TO FORAN HIM ON THET SUTHWEST THUS MANEGA NIHT WAES GE SAEWAN FURTHOR NIHTES SYTHTHAN HE UFOR ASTAH HE WAS GE SEWAN ON BAEC ON THE NORTH WEST GANENDE."

"Tree-fruits were that night largely taken by frost. Thereafter in the month of June appeared a star in the northeast. Thus it was seen for many nights. Further on in the night, when it rose higher, it was seen going back in the northwest."

[Not mentioned by Marsden in Catologue of Cometary Orbits.]

Eleventh Cometary reference in The Anglo Saxon Chronicle 1114 AD

⁊ þær æft̃ innan septemb̃ he for ofer
 se in to noymandis. Ðisef sæp̃ on æfterp̃id mai pæfge fep̃
 an selcud fæorþa mid langan leoman manege nihte scinende.

"1114 AD. THISES GEARES ON AEFTWARD MAI WAES GESEWEN AN SELCUTH STEORRA MID LANGAN LEOMAN MANEGE NIHT SCINENDE."

"This year towards the end of May was seen a star with a long beam of light shining for

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many nights."

[Not mentioned by Marsden in Catalogue of Cometary Orbits.]

List of references to Comets in two cited edition's of the
Anglo Saxon Chronicle:

	<u>Year</u>	<u>Page from 1865 ASC</u>	<u>Page from 1889 ASC</u>	<u>ASC Manuscript</u>
1)	678 AD	Page 53	Page 38	The Parker Ms.(A)
2)	729 AD	Page 60	Page 44	The Parker Ms.(A)
3)	892 AD		Page 82-83	The Parker Ms.(A)
4)	905 AD	Page 112	Page 93	The Worchester Ms.(D)
5)	975 AD		Page 121	The Laud Ms.(E)
6)	995 AD	Page 145	Page 129	The Laud Ms.(E)
7)	1066 AD	Page 194	Page 195	The Laud Ms.(E)
8)	1097 AD	Page 236	Page 233	The Laud Ms.(E)
9)	1106 AD		Page 240	The Laud Ms.(E)
10)	1110 AD	Page 246	Page 242	The Laud Ms.(E)
11)	1114 AD	Page 247	Page 244	The Laud Ms.(E)

List of references to Astronomical Events in the Anglo Saxon Chronicle:

538	Sun Eclipse	540	Sun Eclipse	664	Sun Eclipse	678	Comet
729	Two Comets	734	Moon-Red	744	Meteor	793	Dragon (Meteor?)
795	Moon Eclipsed	802	Moon Eclipsed	806	Moon Eclipsed	809	Eclipse
827	Moon Eclipsed	879	Sun Eclipsed	885	Sun Eclipsed	892	Comet
904	Moon Eclipsed	905	Comet	926	Aurora Borealis	975	Comet
995	Comet	1066	Comet	1095	Falling Stars	1097	Comet
1104	Sun Halo	1106	Comet	1107	Moon Waxing	1110	Comet
1114	Comet	1117	Moon red	1121	Moon Eclipse	1122	Aurora Borealis
1131	Aurora Borealis	1135	Sun Eclipse	1140	Sun Eclipse		
					Total Comets-	11	
					Total Solar Eclipses-	7	
					Total Lunar Eclipses-	6	
					Total Meteor Showers-	2(3?)	
					Total Aurora Borealis-	3	

With the aid of modern technology, we have made startling advances in the field of astronomy. But let us not forget the written reports of the ancients who recorded astronomical phenomena a thousand years ago. For example, the Anglo Saxon Chronicle, probably initiated c.891AD at the command of King Alfred the Great, is an annual commentary of significance events. Seven manuscripts survive. The monk authors recorded recommended episcopal appointments; deaths of kings, and bishops; natural disasters such as flood, crop failures, and wind storms; civil wars; and Viking invasions. The Anglo Saxon Chronicle is unique and is the most important prose work in Old English. No Western European people during these centuries possessed such a relatively complete and revealing record of their history. The unknown scribes were interested in recording astronomical occurrences including solar eclipses, lunar eclipses, aurora borealis, meteor showers and sighting of comets.

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Other Works:

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Marsden, Brian G. Catalogue of Cometary Orbits. Enslow Publishers, Hillside, New Jersey, 1983.

Comment by editor:

The authors of the above paper were unable to make revisions to their manuscript before publication. We feel the reader should be informed of a significant point raised by the referee:

"All of the cometary apparitions mentioned in this paper have been recorded by the Chinese, Japanese, Korean, or European observers. For example, Pingre's work in 1783-1784, Ho Peng Yok's 1962 work and Yeomans' 1991 book detail these observations."

Readers wishing to gain a broader insight into these historical observations may wish to consult those references.

Ho Peng Yoke. Vistas in Astronomy, 1962, vol.5, p. 127-225.

Pingre, A. G. Cometographia. Paris, 1783-1784.

Yeomans, D. K. Comets: A Chronological History... Wiley and Sons, 1991.

