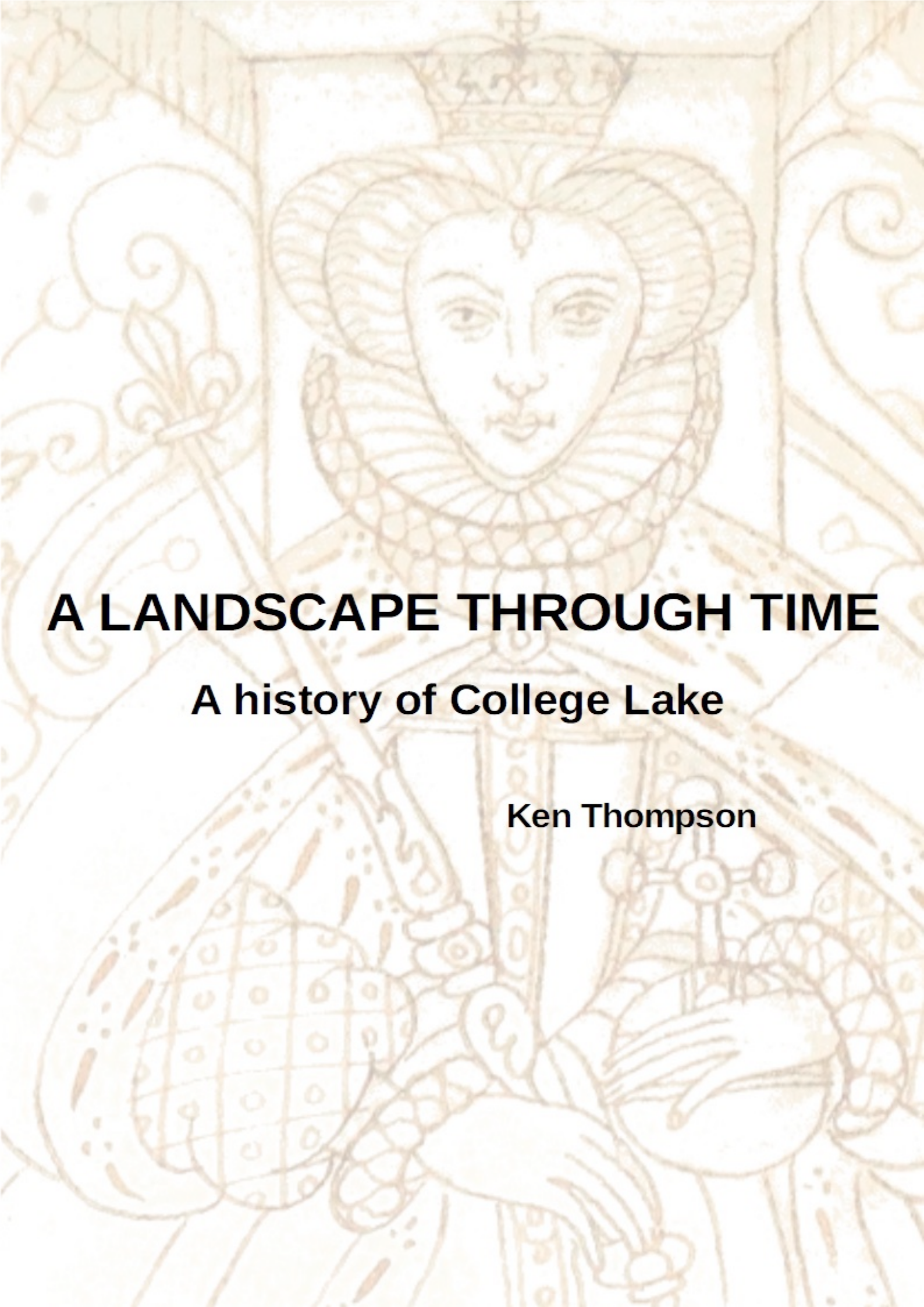


A LANDSCAPE THROUGH TIME

A history of College Lake

Ken Thompson

Contents

Front cover image courtesy of Trinity College Cambridge.

Edition 2, September 2022.

Chapter 1. INTRODUCTION

College Lake is now a BBOWT nature reserve and environmental education centre in Bulbourne near Tring. To many the reserve is a large hole in the ground, a beautiful place to walk, a haven for wildlife; but look around at the landscape and you will see more than a large hole. Every bump and dip might have a story to tell. With a keen eye and the aid of a few historical maps an interesting past is revealed.

Many things about College Lake intrigued me, a map with old field names, a hedge line between two plots in the Arable Project fields, the Marsworth barn in the Chiltern Open Air Museum, and the name College Lake, why College? I hope this history by a very amateur historian answers these questions and more.

This story would not have been possible without John Clutterbuck, a fellow volunteer at College Lake. It was he that visited Trinity College Library, the Bucks County museum, and the Bucks Study Centre and gathered the many historical documents on which this book is based. His own talk, some of which I have used, on the 'pre-history of College Lake' set the place within the broader history of England while I focus on more local aspects.

My thanks also to Jonathon Smith assistant curator at Trinity College Cambridge Library, Sandra Costello the Marsworth archivist, Sue Bovington whose ancestors lived here, Rodney Sims our local geologist, Pitstone Heritage Centre, and the Chiltern Open Air Museum where this mysterious barn now resides.

College Lake Today (Source: GE)

College Lake Today

College Lake was previously the third of the three quarries associated with Pitstone Cement works.

The aerial photo above shows the location of the three quarries, the cement works and the villages of Marsworth and Pitstone. The Grand Union canal runs to the west of College Lake and the West Coast Mainline railway to the east. To the north separating the reserve from Marsworth village is the Lower Icknield Way and to the south its Upper counterpart.

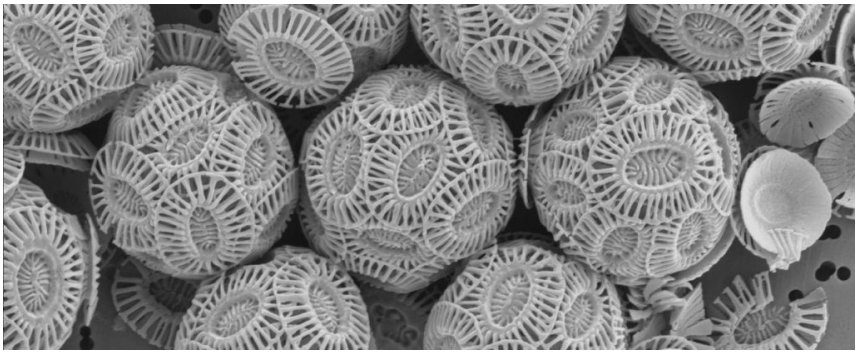
The quarry is situated above the spring line on a band of chalk marl between the heavy clays of Aylesbury Vale and the thin chalky soils of the Chilterns scarp. Over the ridge are the flinty clay soils of the Chilterns dip slope.

Being associated with the Pitstone cement works and often referred to as Pitstone Quarry 3 one might expect that College Lake is in the parish of Pitstone. In fact it is in the parish of Marsworth and its associated manor so it is to here that we must look for its history.

Chapter 2. A TROPICAL SEA

If you were standing in the College Lake Visitor Centre 100 million years ago you would be at the same latitude as the Mediterranean Sea in a world that was hotter and in the geological time period called the Cretaceous.

Partial melting of the polar ice-caps had raised the sea level. In the warm tropical sea around you life was feeding on the hoards of plankton.



Coccolithophores under an Electron Microscope (Source: SA)

Plankton are microscopic animals (zooplankton) and plants (phytoplankton). This latter group contain members of the coccolithophore family (plants with scales made of calcite). When they die or are eaten, the hard remains drop to the bottom of the sea to form an ooze later to become chalk rock. At one time in the Cretaceous period, the phytoplankton dominated the scene giving rise to the grey chalk. When the balance between animal and plant changed towards animals, the white chalk is formed.

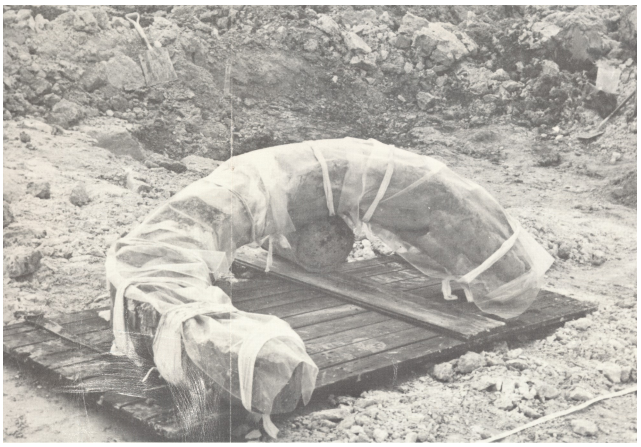
Moving forward to the present time you have moved 10 degrees north, an increase in the polar ice has lowered the sea level. The chalk below you is made up of rock erosion products (clay) and the remains of the two planktons. Grey chalk has more clay and mostly phytoplankton particularly coccolithophores. White chalk has less clay and fewer phytoplankton, but a good quantity of coccolithophores.

Cement production needs a proportion of clay particles; in the case of College Lake from the grey chalk which is below the white chalk. Without this requirement College Lake would not be as it is today.

Chapter 3. A TEMPERATE GRASSLAND

The quarrying work at College Lake in the 1980's revealed many important geological features particularly from the Pleistocene period approximately 12 thousand years ago. So important are these finds that the eastern side of College Lake is a 'Site of Special Scientific Interest' for its Geology.

There have been several palaeontological studies at College Lake; many of the small pits around the site are the remains of these studies. One of the studies revealed a previously unknown Ice Age inter-glacial period and possibly the second earliest occurrence of mammoth in the UK, the first being associated with Red Lady in Wales.



Mammoth's Tusk. Replica now in the Visitor Centre (GA)

Dr Barbara Silva in 'An archaeological resource assessment of the Lower and Middle Palaeolithic in Buckinghamshire' provides more detail:

"*Arguably, one of the most important Pleistocene sites in Buckinghamshire was uncovered at Pitstone Quarry, Marsworth. River channel deposits contained a rich palaeoecological assemblage including pollen, molluscs, beetles, ostracods and over 11,000 faunal remains. The samples from the channels, originally small chalk land streams, are thought to date from two separate interglacial episodes, MIS 7 and MIS 5e, and thereby establish the occurrence of a previously unrecognised interglacial between the established Hoxnian (MIS 11) and Ipswichian (MIS 5e) episodes.*

The lower channel finds included mammoth, horse, brown bear, wolf, lion, and northern vole. The presence of woolly mammoth is particularly important, as these remains may represent the earliest occurrence of this species in the UK.

The upper channel contained the remains of hippopotamus (Hippopotamus amphibius), rhinoceros and giant deer and suggests a temperate woodland environment." [BS1]

It is possible to see some ice age features, now somewhat indistinct, around the quarry banks.

Ice Wedge - As water freezes it expands and over time a wedge of ice can grow down into the ground layers. Once melted, a void is left and fills with the coloured matter from the surface..

An Ice Wedge may be seen if you look at the cliff just below ground level when leaving the Octagon Hide.

Ice Wedge (Source: GA)

Cryoturbation - the swirling patterns which are formed when the freeze-thaw conditions of a tundra environment churn up the sediment layers.

The freezing and thawing contorts the sediment giving it an appearance like a ‘marble cake’.

Cryoturbations can be seen along the east bank just below ground level.

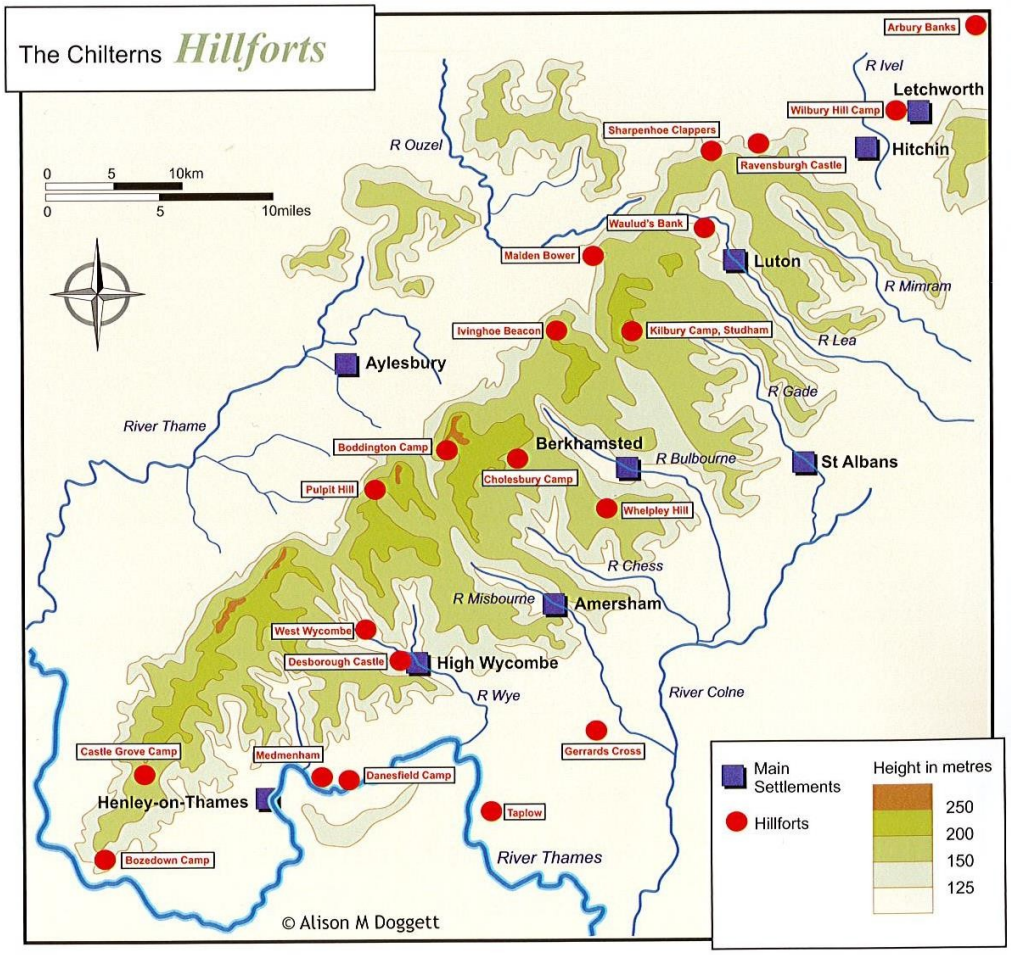
Cryoturbations (Source: GA)

Chapter 4. A ROMAN FARMSTEAD

By the Iron Age (600 BC) the majority of the lowland woodland of Britain had been cleared for farming. With only crude ploughs being available arable farming was concentrated on the chalk marl belt at the foot of the Chilterns; the flinty soil of the dip slope and heavy clays of the Aylesbury Vale being used for pasture.

Iron Age Ploughing (Source: BAS)

The Icknield Way was a major thoroughfare between Dorset and East Anglia. Unlike today's roads the Way was probably an informal linear network of 'green-ways' probably on the drier chalk marl belt below the scarp face of the Chilterns, alternative higher and lower paths being used depending on the season. The area



Chiltern Hillforts (Source: BAS)

saw much activity; in addition to the Icknield Way there were hillfort settlements, the nearest being Ivinghoe Beacon, also a large iron smelting area at Cow Roast in the valley of the River Bulbourne.

The villages of Marsworth and Pitstone did not exist; the population lived in farmsteads or small hamlets connected by green lanes. Each farmstead had its own small enclosed fields, not the larger communal fields of the later three field system. The dwelling would probably be the typical Iron Age roundhouse or in Roman times the squarer Roman building with stone foundations. The Roman conquest added main roads and villas to the landscape but the general landscape did not change between Iron Age, Roman and early Saxon times.

Reconstruction of an Iron Age Roundhouse (Source: COAM)

On farms barley, spelt and emmer wheat appear to have predominated. Cattle or oxen were the most common animals kept, followed by sheep and goats, pigs, horses and domestic fowl. Cattle were used as draught animals throughout. Vegetables were grown, but not potatoes which arrived in the 16th century.

The Archaeological Evidence

Archaeological Sites (Source: GE)

Turning to the specifics of College Lake. Thanks to quarrying, canal building, and railway cuttings the archaeological evidence in the area is extensive. The figure above is a map of archaeological sites recorded by Bucks. and Herts. archaeologists.

- Saxon Burial in Quarry 1 [CAS 1521]
  2 Saxon skeletons, one with a shield boss and part of a sword, discovered in 1900.

- Late Saxon Pagan Cemetery in Quarry 2 [CAS 1274]
  Cemetery with 8 graves and 6 skeletons, knife and spearhead

- Early Iron Age Settlement in Quarry 2 [CAS 1745]
  Storage pits, clay oven and post holes

- Late Iron Age/Roman Settlement in Quarry 2 [CAS 4010]
  Belgic/Roman Well and ditches forming an enclosure (see below)

- Roman Farmstead in Quarry 3 [CAS 1520]
  Foundations of a Roman building well and ovens (see below).

- Roman British Burials at Folly Bridge [HHER 1525]
  Sixteen human skeletons and several cinerary urns in a perfect state were found when Tring Cutting was constructed.

- Roman Occupation Debris at Folly Bridge [HHER 6060]
  An immense quantity of Roman pottery and oyster shells was found beside the ancient highway when the railway cutting was constructed across the line of the Upper Icknield Way. The greater portion of the pottery was broken, and was evidently in that condition when deposited there.

- Late Iron Age Sword and Gold Torc at Bulbourne [HHER 4561]
  An iron sword and a gold object were found during the construction of the Grand Union Canal along the banks of the Boulborne Water.

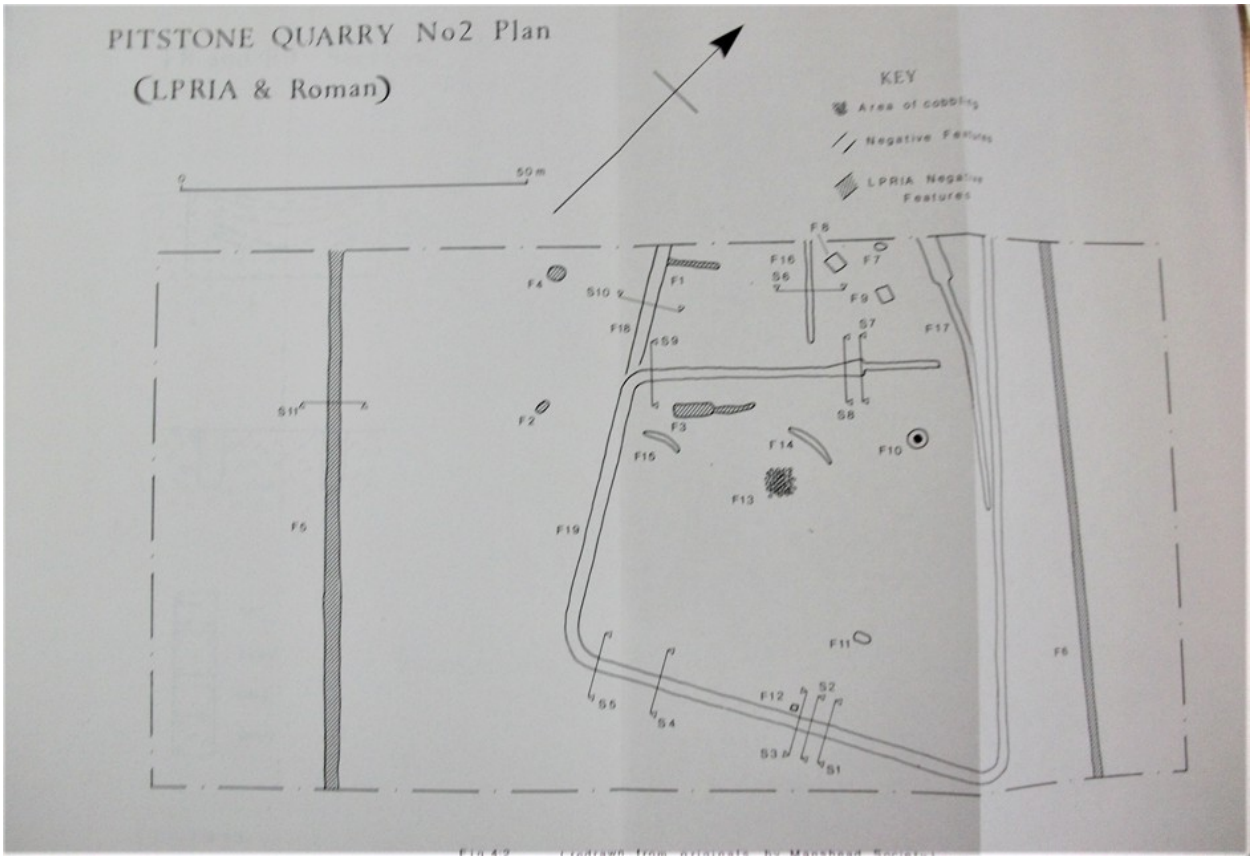
More detailed study of two contrasting settlement sites gives us more insight into life at College Lake in the Iron Age and Roman times.

Late Iron Age/Roman Settlement in Quarry 2

An Iron Age settlement which was most probably in continuous occupation into Roman times. A larger Iron Age enclosure with evidence of habitation and some industrial use was replaced by a smaller Roman enclosure.

David Dungworth re-assessed the records of the original excavation. The text below is abstracted from the reference.

"*In 1969 topsoil was removed from land to the south east of the Upper Icknield Way in order to expand Quarry No 2 to the south. This revealed two ditched enclosures: one immediately pre-Roman; the other Roman. The removal of the topsoil left only subsoil features, with the exception of a cobbled area. These were excavated by two local amateur groups (PLHS and Manshead Society).*"[DD1]

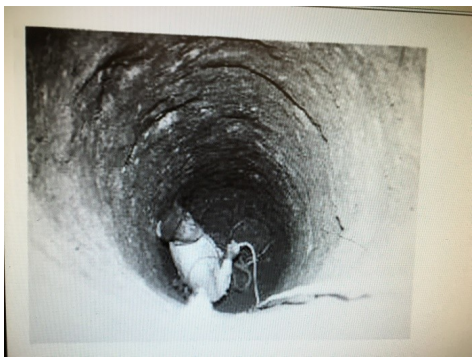


Iron Age/Roman settlement in Quarry 2 (Source: DD)

His diagram above shows Late pre-Roman Iron Age (LPRIA) features hatched and Roman features unhatched.

Ditches F5 and F6, 1.5m deep and 6.5m wide, form two sides of a LPRIA enclosure approximately 100 metres wide. The LPRIA features F1 to F6 contained LPRIA pottery, iron slag, a bronze ring, a pierced dog's canine, brooches, iron slag, charcoal, ox bones, a quern fragment, and fragments of baked clay.

The smaller enclosure approx. 50 metres square was surrounded by a ditch F19. This yielded a large number of finds; 319 fragments of pottery (including samian and mortaria) but dominated by coarse grey wares, a few animal bones, oyster shells, fragments of baked clay with marks left by wattle, 2 iron nails, 1 small fragment of glass, 2 small pieces of opus signinum and a bronze pin.

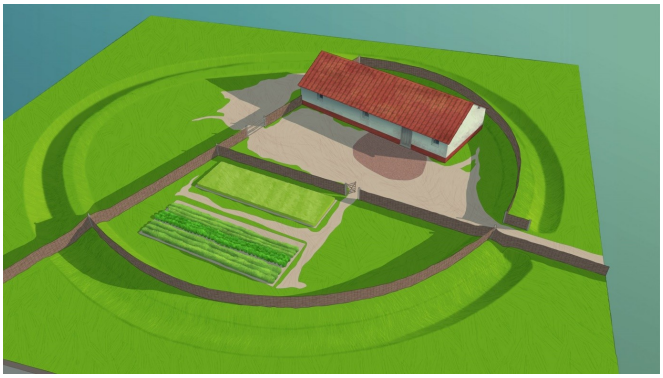

PLHS excavating the well (Source: PLHS)

The uppermost part of the well F10 contained human and horse skeletons ‘thrown in together’; this assemblage can be seen in the Pitstone Heritage Park. The remainder of the fill contained a large quantity of pottery including Black Burnished ware and unidentified pink/orange coarse wares, tile, brick and bone including ox, horse, pig, chicken and more human, iron fittings for a bucket and, in the lowermost layer, a sesturtius of Trajan (98 AD– 117 AD).

Bones from the well in Pitstone Heritage Park (Source: PLHS)

Roman Farmstead in Quarry 3

Remains of a flint walled square farmstead revealing good quality pottery and jewellery was found in a location just to the south of the Octagon Hide while removing topsoil prior to quarrying. Surrounded by a few small fields it may have looked like this artist’s impression.



Artists impression of a Roman Farmstead, the first College Farm? (Source: DCC)

The list above refers to two ancillary sites at Folly Bridge found when digging the Tring cutting. Is it possible that this rubbish tip and cemetery is associated with this Roman Farmstead at College Lake.

The details of the excavation below are abstracted from the reference card and from a log book [LB] of the archaeologist who oversaw the excavation of the site.

“*Foundations of a Roman building, well, and ovens in an area enclosed by ditches, were revealed by stripping of topsoil preparatory to quarrying. The well was 6.83 metres deep contained animal bones, mostly ox and sheep and pottery from C2 to C4 AD. Finds included a silver spoon, an almost complete mortarium and two Samian pots.*”

Chalk quarrying exposed a rectangular building of earth floors with flint bales to walls, also boundary ditch and well. Masses of pottery including good quality ware.

Silver spoon – three small cuts on handle

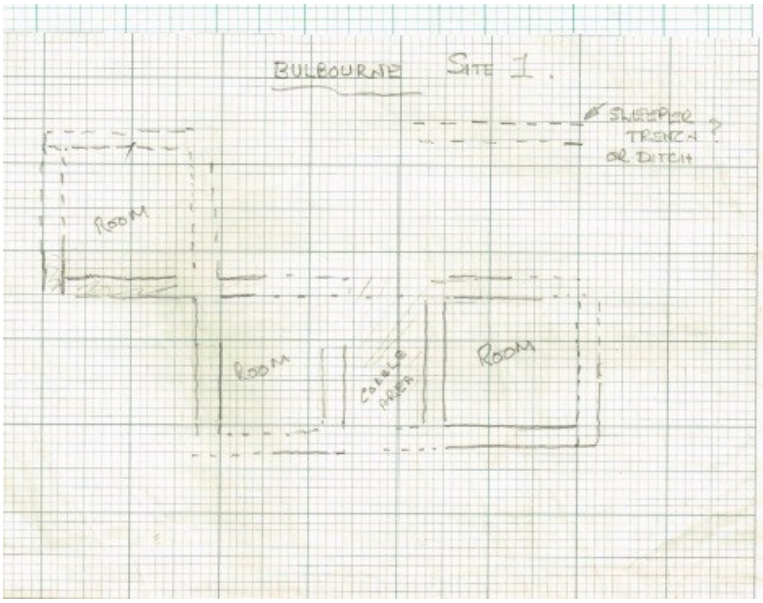
Bronze bracelet – open ended

Coins - Magnentius (350 - 353 AD) and Constantine (320 – 324 AD)

Coin - Small late Roman pierced, probably Saxon

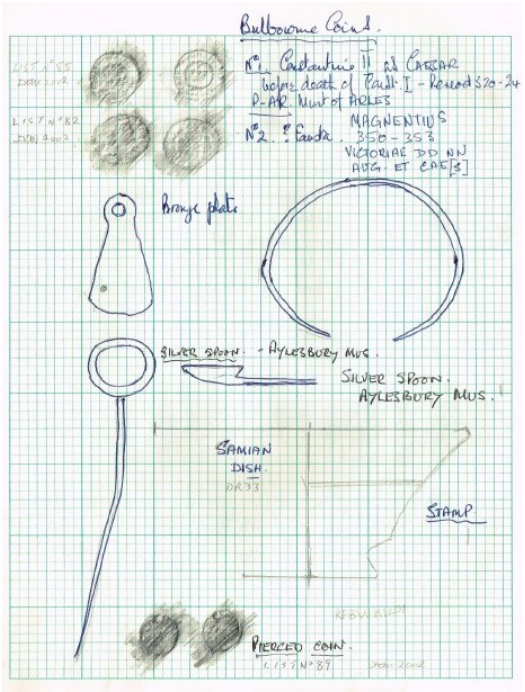
Bronze Plate

Foundations of a stone built building – flint and Tottenhoe stone with painted tesserae.”



Floor Plan from Logbook (Source: LB/BCM)

Assuming the scale is 1 foot to the inch the rooms would be typically 15 foot square



Notes on Finds from Logbook (Source: LB/BCM)

Pot in Bucks County Museum (BCM/JC)

Bracelet in Bucks County Museum (BCM/JC)

Chapter 5. AN OPEN FIELD

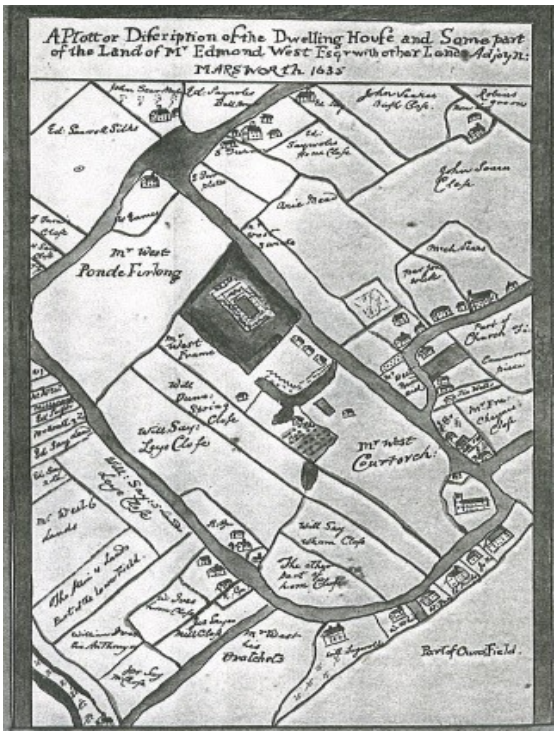
We have seen how in Roman Times College Lake was a Roman farmstead in an area of isolated farmsteads and small hamlets. In Saxon times, until the Norman conquest some 600 years later, this landscape probably remained unchanged, except perhaps the Roman buildings were replaced by Saxon huts.

Saxon Huts (Source: Wikipedia)

The Norman Conquest - from Hastings to Berkhamsted (JC)

William the conqueror's Norman Army defeated the Anglo Saxons under King Harold at the Battle of Hastings. John Clutterbuck has researched what happened next.

After Hastings, William took his army to Dover to obtain reinforcements and fresh supplies. He sent a party of knights to try to cross the Thames at Southwark, but they were unsuccessful. He then took his army westwards and crossed the river at Wallingford. It is stated that Duke William took one part of the Norman Army along the Chiltern Hills following the Icknield Way and turned towards London somewhere in the area of Marsworth and Tring. He received the submission of Anglo Saxon nobles at Berkhamsted. At least part of William's army is likely to have foraged in the College Lake/Marsworth area.

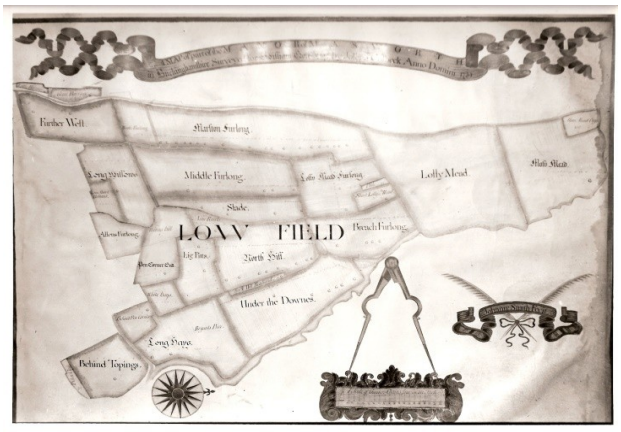


Map of Marsworth village 1635 (Source: SC)

Sometime between the Norman conquest and the Parliamentary Enclosures of the19th Century farming changed to the open three field system centred on the village of Marsworth.

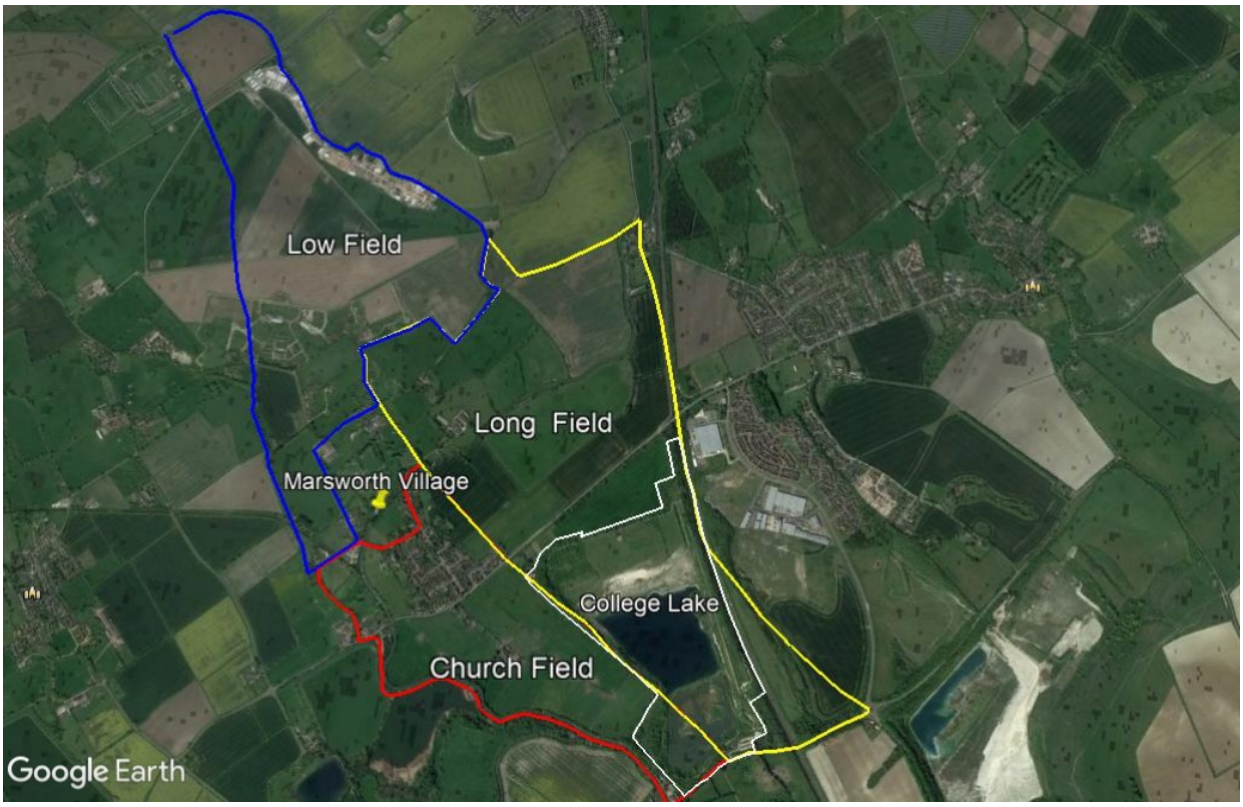
Historians believe the three field system was common in rich agricultural areas, including Marsworth, in the 12th Century. However the first written evidence for such fields in Marsworth is a map of the village commissioned by Edmund West in 1635. Church Field which is one of the three open fields (see below) is mentioned to the south of the village.

Church and Long Field 1734 (Source: SC)



Low Field 1734 (Source: SC)

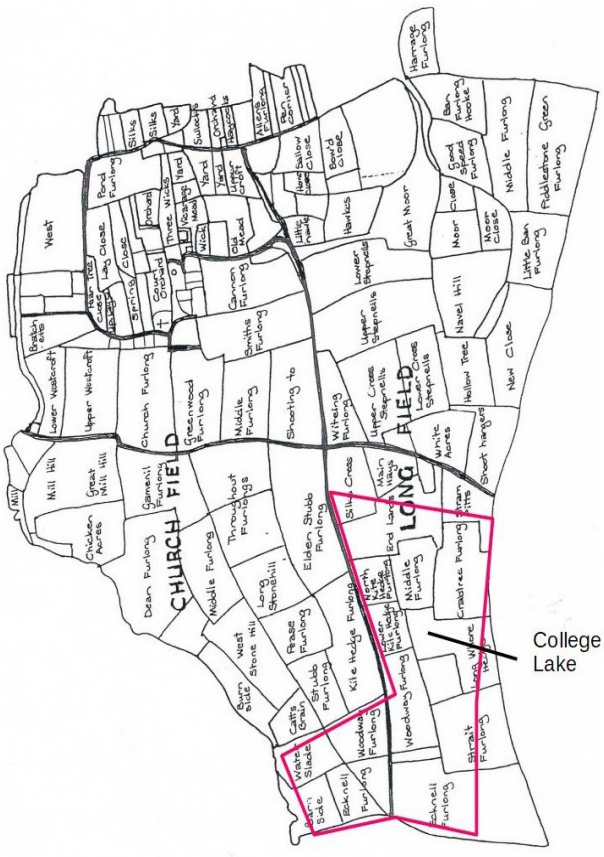
Two further maps of 1734 shown above give a complete picture of the three field system. Rotating and overlaying the maps on a modern aerial photo shows that what is now College Lake was the southerly part of Long Field.



Three Field System 1734 (Source: GE)

A map below, redrawn and rotated from the one above, shows how an open field was divided into Furlongs.

In the three field system each peasant had one of more portions, called Furlongs, of each large field. The Furlong was approximately that which could be ploughed in a day.



Church and Long Fields showing Furlongs (Source SC)

A three crop rotation was employed, winter wheat or rye which depleted the fertility, a legume crop such as peas, lentils or beans which fixed nitrogen, and a fallow year in which the weeds and grass were eaten by stock whose manure fertilised the ground. Because there were no hedges the sheep had to be folded using wooden hurdles during the night. The three field system lasted 700 years until the Parliamentary Enclosures of 1811.

In the map the Lower Icknield Way is the dark road cutting from West to East with College Lake to the south of it. A second substantial trackway running North to South between Long Field and Church Field is the bridleway running along the western boundary of College Lake, the southern part of which was diverted for quarrying.

Chapter 6. OUR LORDS AND MASTERS

The Roman empire disintegrated over the first few centuries AD to be replaced by the Anglo Saxons. The scattered Romano British hamlets and farmsteads coalesced into nuclear settlements based on Marsworth and Pitstone. Why these two places formed the nuclei is unclear but it could be the presence of springs in these places and Marsworth being on a brow overlooking the Thames valley. The Anglo Saxons had a hierarchical government based on Earls, Thegns, and Churls and in the 10th Century we have the first written mention of the Lord of the Manor of Marsworth (probably a Thegn).

> "*Aelfgyfu, when she died, gave Marsworth to Edgar, who with Alftruda gave it to St. Etheldreda of Ely*" [VCH1]

In the Domesday Book of 1086 the manor was assessed at 20 hides (2.42 square kilometres). This is about half the size of the later open three field system and of today's parish of Marsworth, so College Lake may not at this time have been within the manor and was incorporated at a later date.

At some point the manor was split and as a result part of it (part of the future Church Field, see next section) was given to the Savoy Hospital and hence to St Thomas's hospital, giving the name to Hospital Farm (now Manor Farm) to the North West of College Lake. Another part (the future Long Field) together with the church went via an Advowson to Caldwell Priory, Bedfordshire.

Before the building of the first church Christians would congregate in informal 'field churches'. The lord of the manor probably built the first church before the 12th century and used an advowson to control who was the parson and to direct agricultural tithes to his control. An advowson was required because English law said that tithes could not be paid to Lords of the Manor but to the parish/church. Wikipedia explains in more detail:

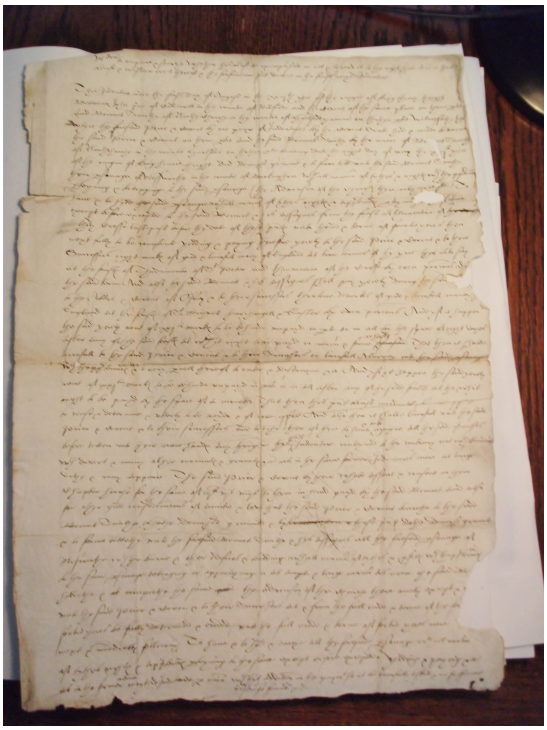
> "*The creation of an advowson was a secondary development arising from the process of creating parishes across England in the 11th and 12th centuries, with their associated parish churches. A major impetus to this development was the legal exaction of agricultural tithes specific to the support of churches and their clergy; landowners needed to establish parish churches on their lands in order to retain tithe income within their estates, and to this purpose sought to raise former field churches to parish church status. This was generally performed by a lord of a manor by rebuilding a church within the boundary of his manor and then transferring proprietary rights of certain individual named fields, mills, or messuages (i.e. houses on the manor which earned rents) to establish a glebe*."[WIKI]

The advowson of Marsworth Church (and hence the tithes of the agricultural tenants) appears to have been granted by Thurstan Basset, the then Lord of the Manor, to Caldwell Priory, Bedfordshire. A portion was subsequently granted to Oseney Abbey, Oxford in 1174. The abbeys then leased the land back to the Lord of the Manor as seen in the lease of 1531 below, stored in the library of Trinity College Cambridge.

This lease in outline summarised by Trinity College:

" *John prior of Calderwell co. Bedford and the Convent to Bennet Smithe of North Church co. Hertford geoman. Copy lease of the parsonage of Mesworthe with barn, tithes etc. for 40 years after the expiration of a term of 40 years already granted him by their lease of 8 May in 22nd year of Henry VIII, paying yearly to the lessors 8 marks and to the Abbot and Convent of Osney 13 marks, with power to distrain for arrears after 8 days, and for voidance of the lease after a month.* "[TCC1]

A mark was worth 13/4d so the annual rent was approximately £14 (about £7000 today).



Lease of parsonage and tithes of Marsworth, 1531 (Source: TCC/JC)

The Dissolution Of The Monasteries

Henry VIII's dissolution of the monasteries between 1536 and 1541 affected both Caldwell and Oseney. Their lands, including Marsworth were confiscated and held by the Crown. One cause of this was Henry's desire to divorce Catherine of Aragon in order to marry Anne Boleyn, but an equally important reason was that Henry required funds to fight his wars, build his palaces, and finance his pet projects one of which was Trinity College Cambridge. So after the dissolution Henry gave the tithes of the confiscated Caldwell/Oseney land to his newly founded college.

Money problems continued after Henry's death through the reign of Edward VI, Mary Tudor, and Elizabeth I with each monarch selling some of the confiscated lands. So in 1601 Elizabeth I sold the Caldwell/Oseney lands to the college. Trinity College library has the sale document which had been folded, probably for 400 years. They have kindly restored it for us.

From the College's summary of the document:

"*The Queen to the Master etc. of Trinity College, Cambridge. Letters patent giving them for 5l. paid in the Exchequer, all messuages, lands, tithes etc. in Marsworth or elsewhere within the county of Hertford parcel of the rectory of Marsworth late belonging to the dissolved monastery of Caldwell co. Bedford.*"[TCC2]

Letters Patent, 1601 (Source: TCC)

Chapter 7. THE COMING OF THE CANAL

Before the construction of the Grand Junction canal in 1799 the River Bulbourne flowed from Bulbourne Head near the Bulbourne canal bridge to meet the River Gade at Two Waters near Hemel Hempstead. The canal followed the route of the river entailing the creation of the Tring Cutting, the straight part of the canal from the Bulbourne canal bridge to Cow Roast. Dug by hand the cutting was 1.5 miles long and 30 feet deep, a considerable feat of engineering for the time. The canal then appears to follow the route of the river which is shown on early maps around the west of Marsworth.

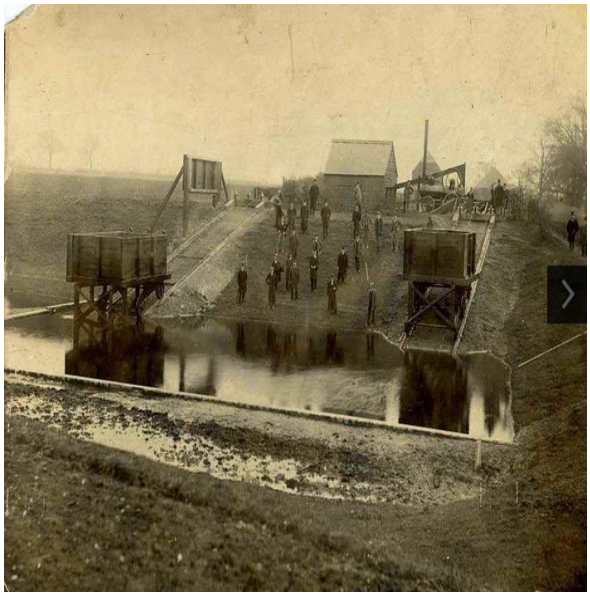
Inclined Plane and Bulbourne Water (GE)

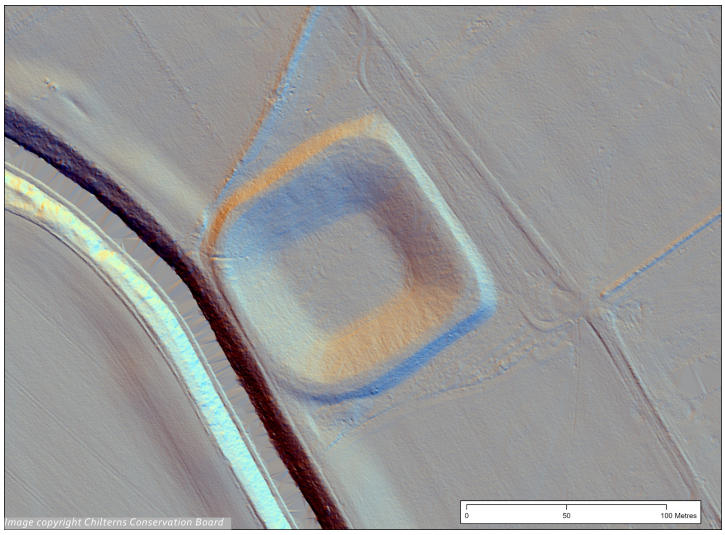
A remnant of Bulbourne Head – Bulbourne Water can be seen on satellite images in the poultry farm opposite College Lake.

The construction of the canal by the navvies probably caused considerable trouble for the farmers of Marsworth but once construction was finished, including the canal works at Bulbourne, it brought considerable employment. It may have also altered the fortunes of the farmers, barges took grain and hay to London and returned with soot and horse dung to manure the fields.

The Bulborne works hosted the construction of a prototype of an inclined plane before a full scale one was built to assist the flow of traffic through the Foxton Locks, Leicestershire. The site of this prototype can be seen on satellite images in the grounds of the poultry farm.

The Inclined Plane worked by floating barges into caissons on wheels which were then hauled up an incline by a balanced caisson coming down.


Prototype Inclined Plane just south of Bulbourne Canal Bridge

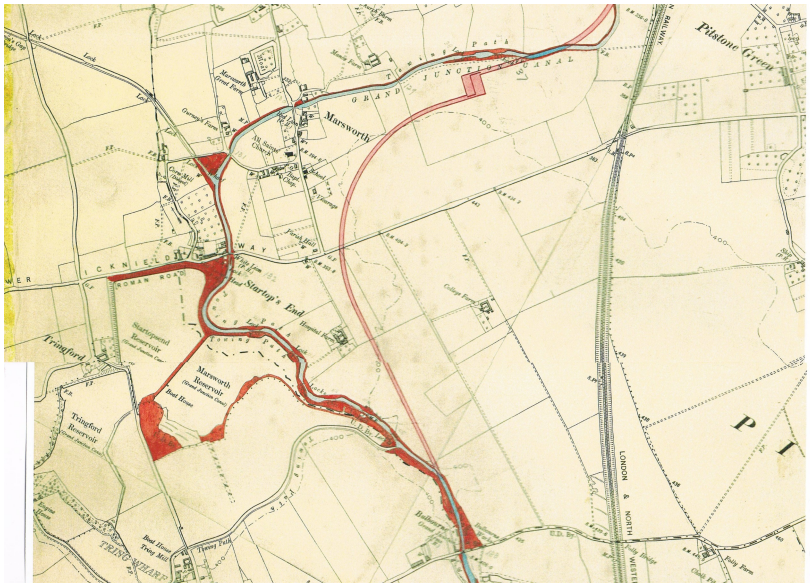


LiDAR derived image of the Inclined Plane. Image copyright Chilterns Conservation Board."

The Chiltern Conservation Board's Hillforts in the Chilterns Landscape project has provided this false colour LiDAR image of the Inclined Plane.

LiDAR (light detection and ranging) can remove trees and undergrowth to reveal an image of the height of the underlying terrain.

An interesting map from 1908 might show an inclined plane on what appears to be plans for a canal bypass running through Hospital Farm (now Manor Farm) to the west of College Lake.



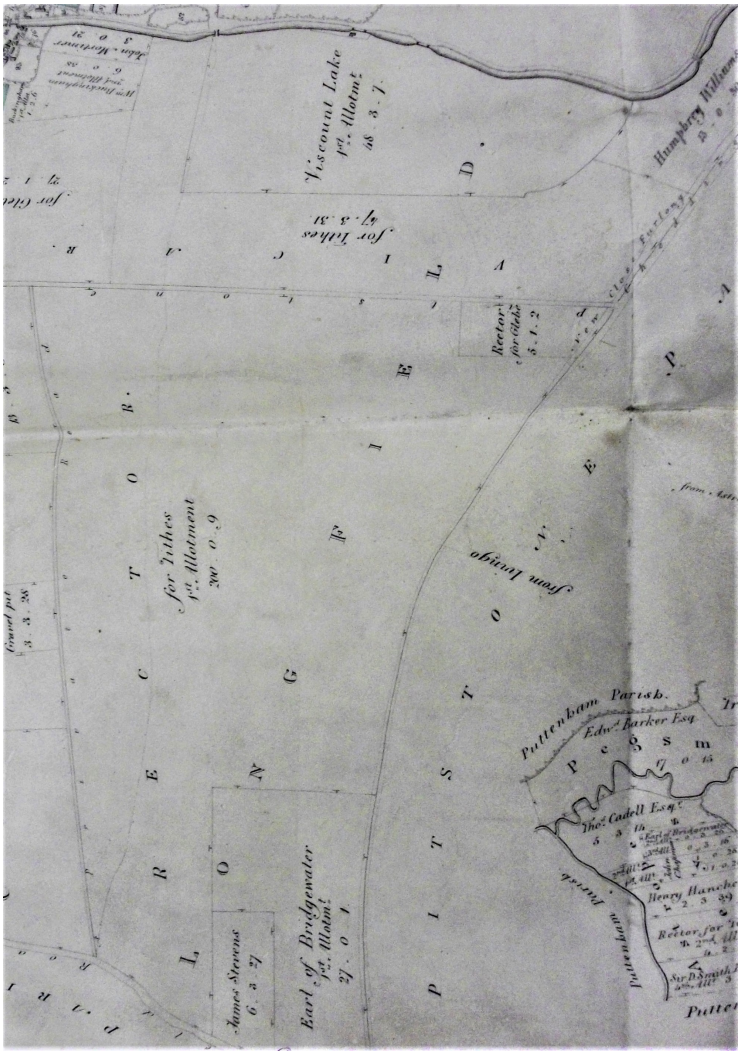
Was this a plan for a Grand Union Bypass? (Source: SC)

Chapter 8. A VICTORIAN FARMSTEAD

The Marsworth Parliamentary Enclosure Act of 1811 forcefully changed the nature of farming. The rights of the villagers to farm the three fields and to use common land were swept away. The three large fields were divided into smaller fields enclosed by hedges; the villagers became waged labourers without any rights to the land.

The opportunity was taken by the landowners to tidy up ownership by swapping small tracts of land. The resulting ownership of Long Field and its surroundings are shown in the map below. The eastern side of Long Field is not the railway, which did not then exist, but is the boundary with Pitstone parish which follows the new road through the cement works to the Folly Farm roundabout.

- Long Field south of the Lower Icknield Way and a small part of it to the North (250 Acres) are 'For Tithes' this being the land owned by Trinity College
- Small acreages are 'For Glebe', this being land owned by the vicarage.
- Other notable landowners are Viscount Lake, Earl of Bridgewater, John Stevens, John Greening and John Gregory.
- The north part of Church field is allotted to St. Thomas's Hospital, whereas the southerly quarter appears to be owned by Trinity College.
- A private road separates Church Field and Long Field and on this road is a three acre public gravel pit. The gravel pit can still be seen from the footpath as an indention in a field in Manor Farm.



Enclosure Act Allotments 1811 (Source: SC)


The Parish Gravel Pit Today (Source: KT)

Enclosure was good for wildlife as it introduced hedges. It improved the productivity of farming and as a result many farm labourers were made redundant. Fortunately for Marsworth the Grand Junction canal had just been constructed providing alternative employment.

Enclosed Fields (Source: TH)

It was also the period when straw plaiting was at its height and a farm workers wages could be exceeded by his wife and children's income as straw plaiters. The census of 1851 shows that from a total population of 439, there were 84 agricultural labourers in Marsworth village and 124 straw plaiters. Plaiting was the principal occupation of the women and children of the village who worked to supply plaited straw to hat manufacturers in Luton.

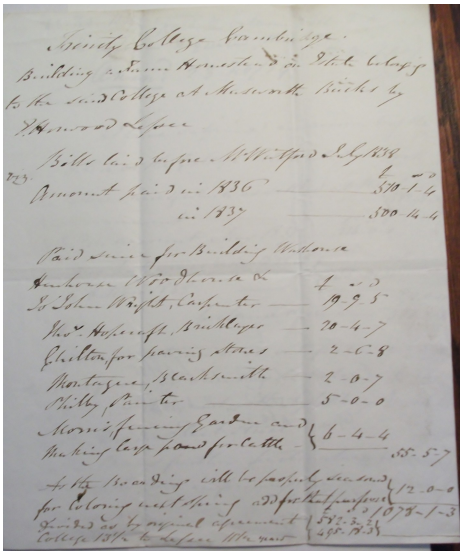
> *'The farmers complain of it as doing mischief',* declares Arthur Young in his General View of the Agriculture of Hertfordshire (1804). *'for it makes the poor saucy and no servants can be procured or any field work done where this manufacture establishes itself.'* But he adds that *'good earnings are a most happy circumstance, which I wish to see universal',* again emphasising that *'straw plaiting is of very great use to the poor and has had considerable effect in keeping down rates, which must be far more burthensome without it.'* [SP1]

College Farm

Between 1811 and 1834 the Trinity College land had three tenants, Chappin, Horner and Greenwood. Following the sale of some of the land to the railway company (see next section) the College was advised by the local land agent to have a single tenant on the remaining land and to build a farmhouse, possibly with some of the proceeds of the sale.

> *"There are no buildings of any kind on this property and it seems a pity there should not be. I think the condition of the land not so good as it would have been in case it had been in the hands of one responsible farmer."*[COAM/TCC3]

The farmstead was built in 1837, Trinity College have a schedule of the cost which shows the final cost was £1078 1s 3d



Schedule of cost for College Farm 1837 (Source: TCC/JC)

A survey of 1842 by a Mr Watford for Trinity College to assess the rent to be charged to Mr Chappin, then the only tenant, gives a good description of the homestead

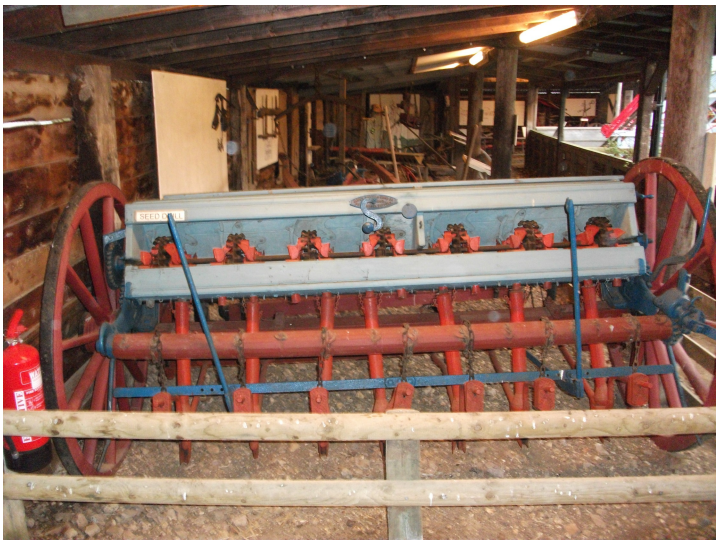
> "*The new homestead consists of a best parlour, kitchen and scullery, together with an excellent cellar excavated in the chalk. There are two good sized bedrooms capable of holding two beds each and two attics above them of the same size in the roof. There are too a good Brewhouse and Woodhouse attached.*
>
> *The farming buildings consist of a bullock shed, stable for 6 horses, a cart hovel, two excellent*

barns and a chaff house, cow house and pig sties, so that the buildings altogether form a very warm and commodious homestead quite big enough for this sized occupation."[TCC4/ COAM]

The valuer goes on to value the rent for the land at 30/- per acre but only 15/- for the spoil banks left by the railway, a total of £281/2/5d. Against the income he identifies outgoings of £13/4/8d for land tax, £16 stipend for the vicar, and repair of the chancel at £10. He discusses whether or not the previous tenants should have left having removed the grain and the dung and how to stop Mr. Chappin doing the same. At the re-assessment of the rent in 1849 E.Horwood writes to Trinity College requesting a reduction in rent "to *enable the cultivator to struggle with the difficulties to be apprehended from the change in the Corn Laws and withdrawal of all protection against foreign corn."*[TCC5]

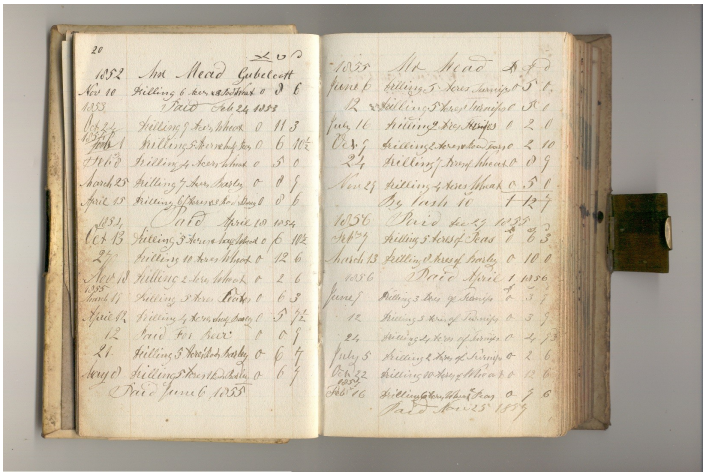
Chappins

The first occupant of the farmstead was George Chappin. He was followed around 1870 by Thomas Chappin. Through the censuses of the time we can see the progression of Thomas. In 1851 he was described as an agricultural labourer, by 1861 a drillman. His great great grand daughter has an account book from his time as a drillman, each page shows the work he did for each farmer in the area.



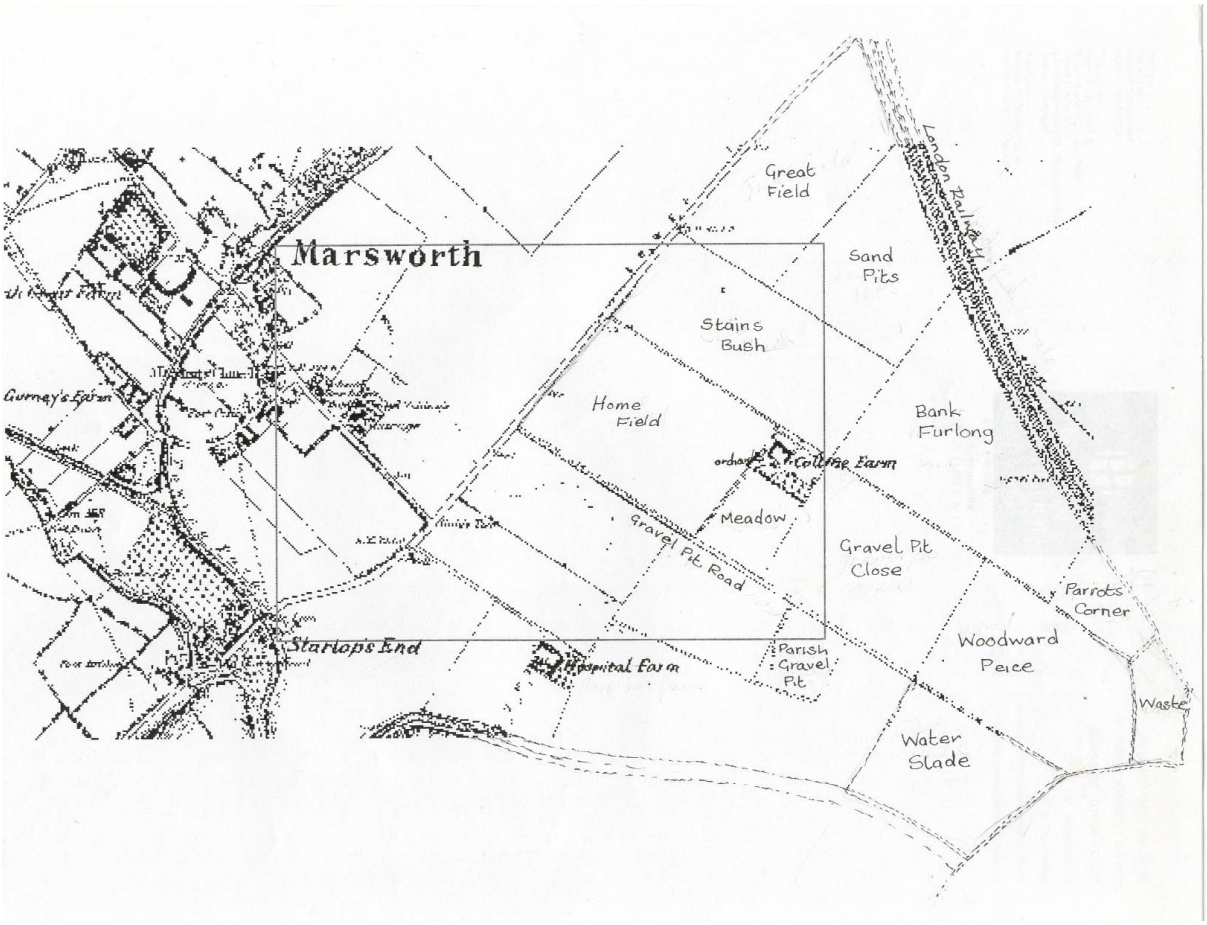
Seed Drill (Source KT)

A drillman appears to be the equivalent of a modern agricultural contractor owning expensive machinery and moving it around the farms in the district that did not want the capital outlay, or had the expertise, for seed sowing. The seed drill in the College Lake Farming and Wildlife exhibition shows why this may be so. It is a large expensive machine requiring a draught horse and 2 or 3 men to operate it.



Chappin Diary (Source: SB)

The diary shows how his business increased between 1851 and 1857, in 1861 he and his three children were lodging with his wife's parents. By the 1871 census, at the age of 57, he was the farmer of College Lake. The farm of 200 acres was predominantly arable with 47 sheep, 4 cows, 7 pigs, 90 chickens and a shepherd dog. It employed 9 men, 3 boys, and 8 horses.



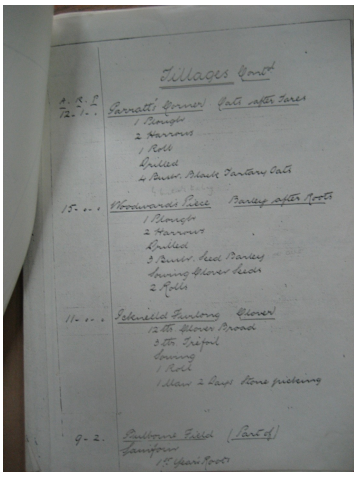
College Farm around 1870's (Source: SB)

The map above shows College Farm around this time. The names of some of the fields may be familiar to volunteers as Graham Atkins used old maps as his guide to the reserve's fields.

On Thomas's death in 1884 his son Job Chappin leased the farm until at least 1901. His great granddaughter Sue Bovington has a most interesting inventory of the farm in 1886 listing the contents of the house and also every field with its tillage for that year.

Job married Mary Millins in 1894 at the age of 49, Mary was 28. Sue tells us:

"*The photo below was taken in their work clothes outside the farm. Mary Matilda was pregnant with their second child and was not expected to survive the birth; so a sad and impromptu photo. However she did survive though the baby didn't. The second photo shows Mary Matilda, with her daughters Ruby and Grace just before they left the farm. Mary Matilda did the crochet lace for their clothes.*"[SB1]



Inventory 1886 (Source: COAM/KT)

Job Chappin aged 18 (Source: SB)

Job and Mary Matilda preggers (Source: SB)

The Chappin Girls (Source: SB)

Reeve

George Henry Reeve was the farmer in 1911. His tenancy probably ended when the farm was sold to the Tunnel Cement Company in 1937. George and his wife Mary Ann had 12 children between 1895 and 1916. In 1911, according to the census 12 people were sleeping in College Farm's 4 bedrooms.

Sally Rich, George's grandaughter tells us:

> *"Grandma Reeve was tiny, under 5 feet tall, and I remember her as being thin and frail, but obviously sturdy to have had so many children. That 12 people were sleeping in College Farm in 4 bedrooms, might explain why Dad always said that they slept with the windows open and that one day he woke up with snow all over the bedsheets! It was a hard life, but Dad lived to the age of 80 as did Grandpa George Reeve." [SR]*

George Reeve and a son at College Lake (Source: SR)

George Henry Reeve and family (Source: SR)

Hodgkiss

When College Farm was purchased by Tunnel Cement in 1937 the farm was placed under new tenancy pending chalk extraction. The new farmer was Henry Hodgkiss and the tenancy remained with him and his son Harvey until 1998.

Mary Strode, Harvey's sister, supplied a lively account of life on the farm:

College Farm (SB)

The Farmhouse (SB)

"My mother Mrs Rhoda Hodgkiss was the farmer's wife at College Farm from around 1940 to 1980. It gave me a shiver seeing the old house photograph; it was a horrible place and I felt pleased when it was demolished. I was born in 1952 and lived there as a girl.

More exciting was the two-seater outside privy and well in the orchard where my mother had to pump up water into the house tanks. She always said the water was so hard that her hands bled doing the laundry. The kitchen was a lean-to affair populated by slugs.

The new house was built in 1953 and after that the old house was gutted and used for storage of hay bales."[SB2]

Chapter 9. THE COMING OF THE RAILWAY

The initial plan for the London to Birmingham railroad was a route through the Misbourne Valley (not far from the planned route of HS2); this encountered insurmountable opposition from the Drake family of Shardeloes Manor, Amersham. The next plan was that it should travel along the Great Gaddesdon valley to Dagnall but such was the opposition by the Bridgewater estate to the Parliamentary Bill that a route along the Bulbourne valley through Berkhamsted was chosen instead. This was also resisted by landowners, primarily Lady Bridgewater, however once generous terms for the purchase of land was agreed the Bill went through parliament.

Trinity College sold land on the eastern side of College Farm and, to tidy up the boundaries bought some from the Bridgewater estate. Part of this land was leased to a tenant farmer called Peter Parrot and it is likely that the field on the map above called Parrot's Corner is named after him. The Bridgewater estate received £80 per acre for its land against £70 per acre which was considered to be a reasonable price for agricultural land at that time; other agricultural land along the route was sold for up to £130 per. acre.

The Bulbourne route necessitated the construction of a cutting through the highest part of the Chilterns, including the eastern edge of College Farm. The cutting was a stupendous feat of engineering for its time. It was 2.5 miles long and had an average depth of 40 feet with a maximum of 57 feet at Folly Bridge. 1.5 million cubic yards of chalk was removed. Much of this formed and embankment six miles long and 30 feet high to the north of the cutting. The remainder forms the sloping fields at the east of College Lake and west of Pitstone Fen.

The Monthly Review from 1838 provides a contemporary account on the construction of the cutting:

Construction of Tring Cutting, 1837 (Source: GM)

"*It was by no means a common sight however to witness the progress of the work on this part of the line where there is not less than two miles of cutting in the chalk so deep that mechanical means of a novel character have been resorted to for the raising of the soil to the surface These means consist in the employment of horses to drag the workmen and their wheelbarrows of chalk up an inclined plane at an angle of not less than forty five degrees the operation from the bottom to the surface a space of sixty to seventy feet occupying but a few seconds of time the workman and vehicle being assisted in their still more rapid descent by the backing of the horses and keeping the cable which passes over a windlass tolerably tight. From the new bridge over the direct road from Tring to Ivinghoe the view of this cutting spreading east and west and lost in distance almost amounts to the sublime. We recommend a pause of a few minutes on the spot to all who can admire and appreciate the results of labour by man in congregated numbers. We imagine that at the period of our visit there were*

upwards of one thousand men employed on the two miles of cutting to which we now direct attention."[MR1]

Construction took nearly three years. The navvies were a mixture of itinerant workers and local men, the latter pleased to have a job after enclosure and the corn laws had reduced opportunities for agricultural work. The inhabitants of Marsworth and College Farm must have been very concerned but it appears that most trouble was between the navvies themselves as they engaged in their favourite pastimes of drinking, pugilistic encounters, and dog fighting.

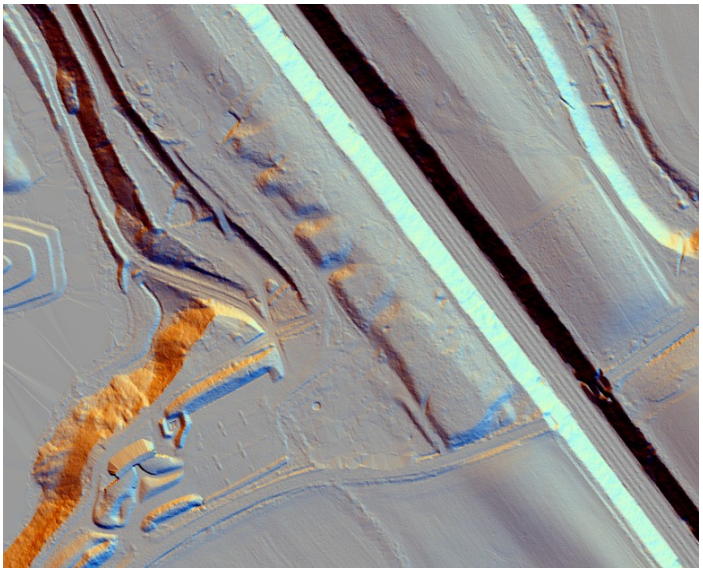
The Old Kiln

The historical evidence surrounding the piece of land which is now partly Education Woods, described as 'waste' on the 1870's map above, marks it apart from the remainder of College Lake. The bungalow that preceded the modern house was called the Old Kiln which indicates its possible previous use. This is backed up by Ordnance Survey map of 1924 that identifies a kiln at the site. A recorder of this archaeological site thought its use was the production of bricks for the construction of the railway.

However its origins as a kiln may go back much further. When the railway cutting was built an immense quantity of Roman pottery and oyster shells was found. 'The greater portion of the pottery was broken, and was evidently in that condition when deposited there'. Was this pottery just the rubbish dump of the Roman Farmstead some 400 metres away or was it the result of Roman ceramics production?

It is possible that the very pitted contour of Education Woods is due to clay pits. It is perhaps surprising to find clay in a chalk pit, however this is the topsoil covering the chalk probably deposited by rivers or streams. This is not the only example of outcrops; Gravel Pit Close and Sand Pits field in the 1870's map above indicate others.

Addendum: A LiDAR image provided by the Chiltern's Conservation Board sheds further light on this area. The image shows a flat topped area with no signs of clay pits. The valleys between the flat top areas are where mature Beech trees are growing. The most likely explanation is waste from the railway cutting that was tipped avoiding the trees.



LiDAR image of Education Woods. Copyright Chiltern's Conservation Board

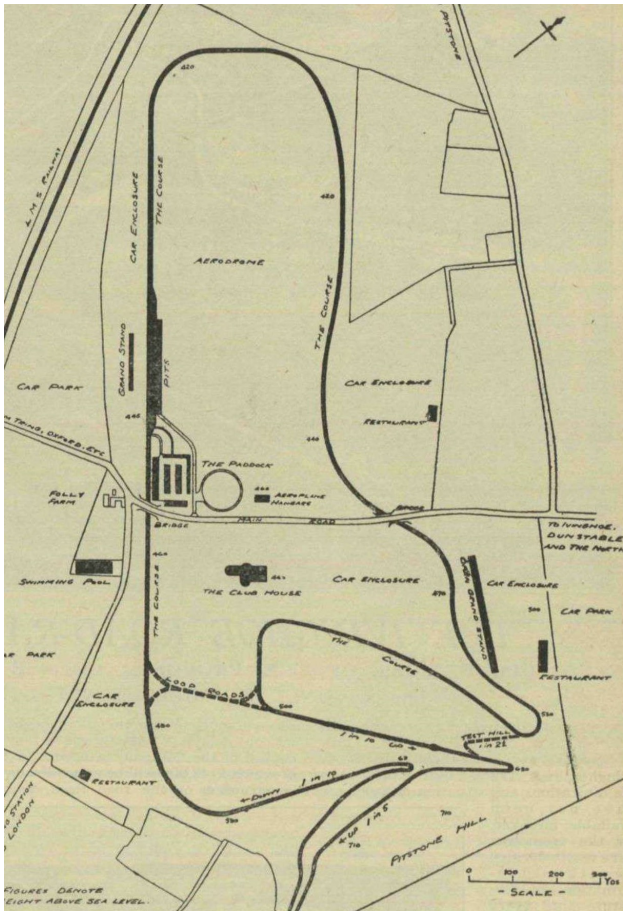
Chapter 10. A CHALK QUARRY

In 1933 the Motor Sport Magazine reported proposals for a motor racing circuit on the land of the cement works, quarry 1, and quarry 2. The large northerly loop is on the site of the cement works and the southerly loops on quarry 2 with a hill climb up Pitstone Hill.

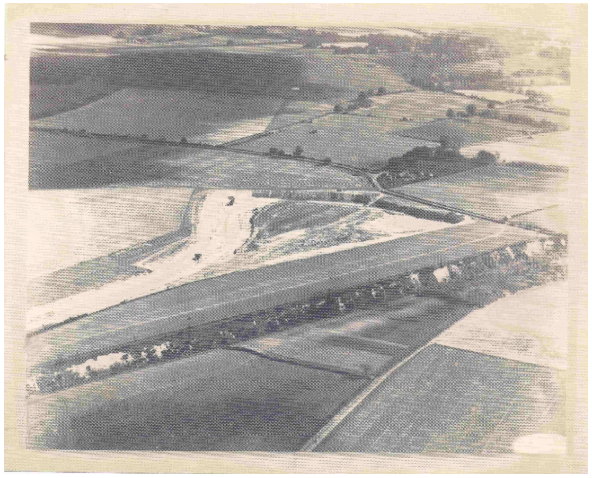
A date of August 13th was even reserved for the first race even though nothing had been constructed. Had the British Racing Drivers Club proceeded with their plans the cement works and hence College Lake would not have existed.

Instead, in 1937 the Tunnel Cement Company built the Pitstone Cement works on land purchased from the Pendley Estate.

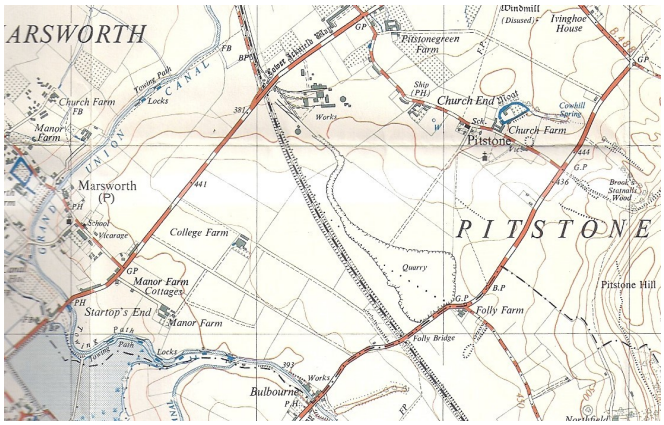
Quarry 1 was worked from 1937. By 1962 it had been returned to agriculture; that is all but its western edge, now Pitstone Fen, which was used as a flue dust dump. This, and the stream running through it made it a very rare example of an alkaline fen. Graham Atkins appreciated this and in 1981 persuaded the cement company to retain it as a nature reserve.



Map of the circuit 1933 (Source: MSM)



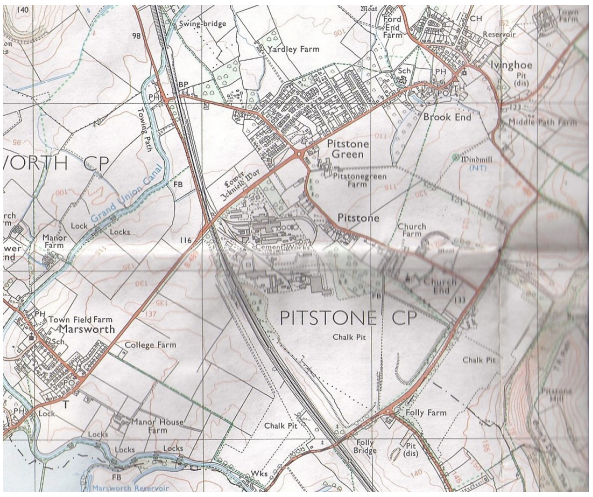
Quarry 1 in Operation



1951 OS map showing quarry 1 and early cement works (Source: OS)

Quarry 2 opened in 1953. Although the cement works are now closed it is still a small scale working quarry, and a destination for illicit bathers. The quarry was at the centre of a planning battle

between the closure of the cement works in 1990 and 2000 when attempts were made to obtain planning permission for using it as a rubbish tip.



OS Map 1981 (Source: OS)

The 1981 OS map shows the change from 1951. Quarry 1 is closed, quarry 2 in operation and quarry 3 just started. The positioning of the conveyor belt shows quarrying in Marsworth Scrubs, now a topsoil store.

Also striking is the reduction in orchards around Pitstone, shown as dotted areas on the 1951 map, and the expansion of Marsworth Village.


Quarry 2 and 3 in 1976, seen from Marsworth

Quarry 3 was purchased from Trinity College Cambridge in 1937. Quarrying started in 1967 at the south end near the visitor centre and proceeded north. Harvey Hodgkiss the tenant farmer slowly saw his farm disappearing and in 1980 the old College Farm farmhouse was demolished to be replaced by the new College Farm farmhouse on the Lower Icknield Way. The barn of the old farmhouse was saved and donated to the Chiltern Open Air Museum as the Marsworth Barn.


Marsworth Barn just before removal (Source: COAM/KRT)


In the Chiltern Open Air Museum (Source: KRT)

In the first phase of quarrying topsoil was removed and stored at what is now Marsworth Scrubs. Use of this land necessitated the diversion of the once straight track from the Upper to Lower Icknield Ways, which is why the public bridleway narrows to the south and does a dog-leg. The topsoil store can be seen by looking along the west bank of College Lake, the bank changes from chalk cliff to marl and back to chalk.

A massive bucket wheel excavator moved across the quarry 24 hours a day feeding chalk onto an east/west conveyor. The chalk dropped onto a south/north conveyor and then across the railway and into the cement works. As the bucket wheel machine moved north the east/west conveyor had to be dismantled and, using bulldozers, pushed north. Parts of the conveyor can be seen on the Earth Trail, the electrical supply building is now the bat hibernaculum.

Bucket Wheel Excavator spot the humans

Excavator in Operation

The original plan was that quarrying should finish at the north boundary track but unexpectedly, in 1991, Castle Cement announced the closure of the cement works. Fuel prices were high and the cost of drying wet chalk much exceeded the cost of grinding limestone. Apart from Kensworth all the quarries along the Chilterns have closed for this reason.

There followed 10 years of uncertainty while Castle Cement arranged disposal of the works and the three quarries, the primary delay being the failed plan to use quarry 2 as a rubbish tip. Finally in 2000 the entire estate was sold to a house builder; they awarded BBOWT a long lease to College Lake and Pitstone Fen, the site was cleared of machinery and the north end landscaped into the wood, fields and meadows you see today.

Chapter 11. A NATURE RESERVE

College Lake would not be as it is today without Graham Atkins. Graham, a trained ecologist, worked as a lorry driver at Castle Cement. Graham spotted the potential of Quarry 3 as a nature reserve, one that was large enough and not so environmentally sensitive that it could host a large number of visitors and form a centre for Environmental Education; an ideal place to introduce people to wildlife.

A wheat field

Planning agreements made in 1937 required that, after quarrying, the topsoil be returned and the quarry bottom returned to agriculture. So until the late 1980's the south end of the quarry was a field of wheat. Graham's first mini reserve was small strip of land by the west dyke, now submerged.

Wheat field looking towards Marsworth Scrubs (Source: GA)

Marsh, Dyke, Meadow, Woodland

1988/9 saw the cement company propose a scheme to pump water from Quarry 2 via Quarry 3 to the canal. This required that College Lake be used as a filter bed in order to removed silt from the water. The filter scheme allowed Graham to re-landscape the wheat field to dykes, marsh, woodland and hay meadow. Fortunately the pumping scheme was cancelled because the British Rail objected to water and electricity bridging the railway, but the re-landscaping remained.

Newly created mash and dykes (Source: GA)

Planning Breakthrough

In 1984, at a time of milk lakes and butter mountains, associated with the EU Common Agricultural Policy, Graham convinced the planners and the company that creating a nature reserve was better than expensively restoring the nature reserve to low grade agricultural land. As quarrying proceeded from south to north the landscape of a nature reserve would be created by the company's heavy machinery, volunteers would add the reserve infrastructure. The

Opening Ceremony in the newly constructed Barn

expectation was that Phase 2 would create a deep lake, a feature which allowed the cement company to quarry the grey chalk below the white chalk. Phase 3 would be at a higher level and repeat the marsh, meadow, woodland and dykes at the North of the reserve. The reserve was formally opened in 1987 by Gordon Benningfield and that year won an 'European Year of the Environment, new Life from old Quarries' award. The newly constructed Information Centre is now the Outlook Inn; the Arable Weed Project was born.

Graham Atkins and Gordon Benningfield

Information Centre (Source: GA)

Islands on Cliffs

As quarrying proceeded to the north the Company's heavy machinery landscaped the bare chalk into islands with gently sloping banks on top of cliffs, ready for the water to rise when the three large pumps which kept the quarry dry were turned off. Volunteers spread many tons of gravel onto the islands ready for birds to nest.

Islands on cliffs, looking south (Source: GA)

Cement Works Closure

The unexpected announcement in 1990 that the cement works was to close had a major effect on College Lake. For 10 years there was uncertainty about the future of College Lake as a nature reserve but a loyal team of volunteers continued development, building hides, creating the Farming and Wildlife exhibition, running the Friends of College Lake, and holding several massive open days to raise funds and awareness of the reserve.

If you are going to build islands in a dry quarry on top of cliffs you need to know the eventual water level when the pumps are turned off. In 1984 when planning the nature reserve Castle Cement employed expert hydrologists who got their estimate wrong. As a result between 1990 and 2005 Graham and the volunteers watched as the carefully constructed islands, marsh and dykes disappeared under the rising water.

Flooded Marsh, 2003 (Source: GA)

It was not until 2006 that the new bund, and the East and West Islands were created after a new hydrologist's survey had re-estimated the eventual water level. The islands were purposely made spiral so whatever the estimate this time there would be some muddy margins.

Re-landscaping 2006 (Source: GA)

College Lake is Saved

In 2000, after the enquiry into the Quarry 2 tip had rejected the plans, it became clear that College Lake and Pitstone Fen would be saved, even better College Lake was to be extended to include the north end of the quarry up to the boundary road. The new College Farm and the field to the north of the Tump between the boundary road and the Lower Icknield Way were to be sold.

The newly acquired area was landscaped to create two islands, the Paddies, at the level of the second hydrologists estimate. A wood, hay meadow, rough grazing, and a farming and wildlife demonstration area were planted on the un-quarried land. Finally in 2006 BBOWT was granted a long term lease of College Lake and Pitstone Fen by a house building company which now owned all three quarries and the cement works.

With long term security BBOWT were able to attract grants from the Landfill Communities Fund and the Heritage Lottery Fund to build a Visitor Centre, Education Barn and associated toilets to enable the reserve to reach achieve Graham's aims – introducing people to wildlife, disabled access, and education.

PHOTO ACKNOWLEDGEMENTS

BAS - Bucks Archaeological Society

BCM - Bucks County Museum

COAM - Chiltern Open Air Museum

DCC - Devon County Council (website)

DD - David Dungworth

GA - Graham Atkins

GE - Google Earth

GM - Gerald Massey (website)

JC - John Clutterbuck

KT - Ken Thompson

MSM - Motor Sport Magazine (website)

OS - Ordnance Survey

PLHS - Pitstone Local History Society

SA - Science Alert (website)

SB - Sue Bovington

SC - Sandra Costello

SC - Sally Rich

TCC - Trinity College Cambridge

TH – Trees and Hedges (website)

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DD1 - Dungworth D, Pitstone: An Archaeological Parish Survey Pp54-69

HHER - Hertfordshire Historic Environment Record (website)

LB - log book probably by L.Matthews of the Manshead Archaeological Society

MR1 - The Monthly Review from May to August inclusive 1838. VOL.II

SB1 - Email from Sue Bovington

SB2 – Email from Sue Bovington

SR - Email from Sally Rich

SP1 - The History of Straw Plait in Hertfordshire, http://www.hertfordshire-genealogy.co.uk/

VCH1 - A History of the County of Buckingham: Volume 3.

TCC1 – Trinity College Cambridge, 14 Marsworth 1

TCC2 - Trinity College Cambridge, 14 Marsworth 4

TCC3 - Trinity College Cambridge, 14 Marsworth 28

TCC4 - Trinity College Cambridge, 14 Marsworth 28

TCC5 - Trinity College Cambridge, 14 Marsworth 37

WIKI – Wikipedia