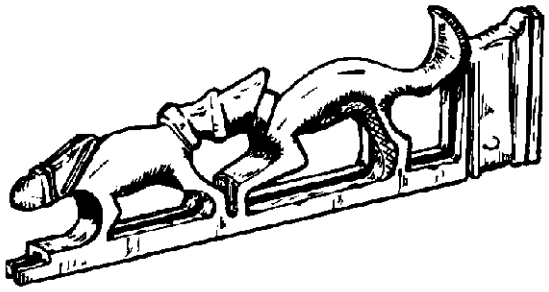
Ampthill & District Archaeological



& Local History Society

An Archaeological Evaluation of a collapsed culvert in the gardens of Wrest Park Silsoe Bedfordshire.
March 1997

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Abstract

An archaeological evaluation was carried out in the orchard of Wrest Park Silsoe following a small hole appearing in the lawn near the "Atlas pond" (TL092353). The action revealed a previously unsuspected early 18th Century culvert, and the site of a bridge which predated the culvert.

1. Introduction.

1.1 The Ampthill and District Archaeological and Local History Society carried out the evaluation in the orchard of Wrest Park in the Autumn of 1996 and Spring of 1997, with the consent of the Silsoe Research Institute and agreement of the Bedfordshire Archaeological Service.

1.2 In 1996 a small hole appeared in the surface of the old orchard at Wrest Park which caused considerable concern because tractors with gang mowers and the visiting public regularly passed over the spot. Initial inspection revealed a large culvert and it was considered important that its extent and safety be assessed as a matter of urgency.

1.3 The site is within the garden at Wrest, which originally surrounded a moated mediaeval house demolished in 1840 following the building of the current house in 1834-39. The garden is of considerable importance as it was laid out in the popular continental style at the end of the 17th. Century and was not swept away by the English landscaping schools of Brown and Repton as was the case with many other gardens. Some changes were made to suit the current fashions but the basic design remains and the changes that were made were well documented.

2. Method

2.1 A preliminary excavation was made in 1996 following the collapse of the culvert. It was decided that further work was necessary and should be carried out during the winter period when visitors were not allowed in the park. The section was made safe and left until March 1997; the work had to be completed by March 17th. 1997.

2.2 An opportunity afforded by the very dry autumn of 1996 was taken to look for grass scorching and a photograph showing the apparent line of the culvert was obtained (fig.9).

2.3 All the work was carried out by hand with small trenches dug at positions determined by grass scorch marks and hand probing.

2.4 No attempt was made to excavate down to bedrock as it was considered essential that the culvert should not be undermined. The internal height of the arch could be accurately obtained with a thin probe, which easily penetrated the soft mortar, and a section was obtained from the collapsed end. The internal height was found to be constant throughout.

3 Initial Survey

3.1 With the aid of the photograph taken during the dry period it was relatively easy to plot the alignment of the culvert. It appeared to run straight except for a slight change in direction for approximately three metres before resuming its original direction towards an ancient yew hedge. The depth of probing suggested different heights in the area of the direction change. Probing on the east side of the hedge was very confusing, possibly due to hedge roots. Further probing on the west side of the hedge indicated nothing.

3.2 It was decided that trial excavations should be made to investigate the reason for the apparent change of direction and at selected points to ascertain the size and length of the culvert.

4 Excavation.

4.1 Excavation along the straight length of crop mark showed a well-built culvert, made of hand made hard orange bricks, bonded with a sand mortar mix. It had been built in a trench and sealed at the bottom with gault clay.

4.2a Excavation near the apparent change of direction revealed that the culvert (1) joined with another culvert (2) that had a different alignment and was at a lower level, its upper surface being approximately 200 mm below that of culvert (1). Culvert (2) was of similar construction to but predated culvert (1). A third culvert (3) joined with culvert (2) and continued on the original alignment of culvert (1) with a similar fall of approximately 1:20. (fig.1).

4.2b Culvert (2) had no fall and had the remains of an up-stand at each end. The bricks although similar in material and size to culvert (1) were of slightly different colour and were not from the same firing.

4.2c The join between the culvert (1) and (2) was adequate to hold water but was obviously not built as an entity. The levels at the top did not exactly coincide and the overall quality was not to the standard one would expect. The joints were packed round with gault clay and rubble. (fig.4).

4.2d Similar observations were made between the culverts (2) and (3) as between (1) and (2). The bricks of culvert (3) were of the same appearance as culvert (1).

4.3 Excavation at the northern end of the alignment revealed that the culvert had been deliberately destroyed, this was presumably at the time the Atlas Pond was constructed c.1840. The modern turf line just covered the top of the culvert. Bricks had been thrown inside, possibly to block it off. A 125-mm (5-inch) clay pipe drain ran from the collapsed end in a northeast direction towards the eastern ha-ha. An iron grill had been placed across the end of this clay pipe. It was possible to obtain a section of culvert (1) at this point. (figs 2,3 &5).

4.4 On the last day of excavation a trial trench was attempted at the point where the culvert approached the yew hedge. A combination of too little time and hedge roots, which we respected, did not allow a thorough investigation. A wall appeared to be running in a northerly direction. The part of the culvert that was exposed had a crack running across it, and bricks were laid at right angles to the general run. (fig.6).
The infill round the culvert was also different. Mixed in were several shards of C17th pottery and brick rubble of different quality and size. Fragments of window glass and window glazing lead were in evidence also one piece of soft limestone clunch and several post medieval tile fragments.

All the excavations were back filled and re-turfed, it having been decided that, apart from the northern end, the culverts were still of sufficient strength to sustain the likely loads carried during grass mowing etc. The collapsed northern end of the culvert was back filled and covered by a sunken steel plate.

5 Location and heights of excavated features.

All bearings, distances and heights were taken from a reference point on a line between the centre of the fountain and the statue of Atlas at a distance of 12.34 metres from the centre of the west face of the statue base.

POINT	BEARING	DISTANCE	HEIGHT RDG	HEIGHT ASL	LOCATION
	Degree	Metres	Mm	Metres	
Atlas	180	12.34	Nr		Base of west face.
a	252	20.02	2130	52.75	Top of land drain
b	252	20.02	1495	53.39	Top of culvert.
c	288	32.77	Nr		Bend in crop mark
d	294.8	36.37	1650	53.23	East of wall one. (Culvert (1)).
e	295	36.37	1705	53.18	On wall one.
f	295.2	36.37	1850	53.03	West of wall one. (Culvert (2)).
g	299.5	38.25	1800	53.08	East of wall two. (Culvert (2)).
h	299.5	38.25	1685	53.20	West of wall two. (Culvert (3)).
i	302	39.72	1725	53.16	Top of culvert (3).

j	306.5	43.21	1990	52.89	Top of culvert (3).
k	309	45.42	1790	53.09	Top of culvert. (3)
l	348	142.93	250	54.63	Centre of NS drive.
m	285.8	67.44	820	54.06	Centre of terrace.
n	180		2900	51.98	Bottom of stream in ha-ha.
Fountain	0				Centre line.

6 Artefacts

6.1 All trenches. The culverts were made from orange/reddish hand made bricks of a hard nature with no frog or keying features. Probably made on Estate (BRO:L31/291). 101.6 X 63.55 X 216 mm. Broken bricks and mortar were found in ditch back-fill.

6.2. Incomplete trial trench 4.4.

6.2a. Included in the back-fill were some brick fragments of a better quality, soft red clay, no frog or keying features. Probably made on Estate. 110 X 63.55 X ? mm.

6.2b. Some 13mm thick post medieval roof tile fragments, red, well fired some with sand mortar adhering to them.

6.2c. Several circa 17 th century type pottery shards with thick white glaze, one red paste shard with a salt glaze and one stoneware fragment. No diagnostic shapes were found.

6.2d. Small shards of fine window glass and two fragments of window glazing lead.

6.2e. One lump of limestone clunch approximately 100 X 80 mm with some signs of working, not diagnostic, suitable material for window tracery.

6.3 Northern end. 4.3.

6.3a Iron grill (fig.3).

6.3b Clay land-drain pipes 125 mm diameter X 305 mm long. These were left in position.

Interpretation

Careful study of the culverts (1), (2) & (3) indicates that culvert (2) was probably in position before (1) and (3) were built, No (2) had no discernible fall. This together with the length 3557mm (11.6 feet) and the up-stands at each end suggest that the culvert was in fact the arch of a small bridge. Culverts (1) and (3) were probably built in an existing ditch, which the bridge spanned. Further credence to this is given by the garden plans of Lawrence 1719 and Roque 1735 and 1737. The Lawrence plan shows what appears to be an open ditch draining a lake complex just to the North of where the Atlas pond, 1840, is today. This ditch which was in a similar alignment to the culvert system is not in evidence in either of the plans by Roque in 1735-7 although the lake complex was still there. This would date the main culvert (1) &(2) to between 1719 and 1737.

Correlation with the historical record.

Water was a major feature on the estate. The early records show there to have been a mill fed from a millpond. The old house was surrounded by a moat, possibly a double moat, and there were a number of fish ponds referred to as "best, middle and little." All these features were to be combined into formal lakes in the late 1600's and early 1700's when major works were done in the gardens. The main sources of water for the lake systems were a stream leading from Silsoe village entering at the north-west, a substantial fresh water spring at the west of the old house and probably a substantial spring in the area of the Atlas Pond. Both springs are now dry and the present running water in the eastern ha-ha originates from a spring to the north-east of the estate. A tributary to the River Ivel, running along the south side of the site receives the water passing through the gardens and by means of a weir is capable of maintaining the height of only the lowest lake in the present system. (Ref. *Development of the Waterways at Wrest Park, Silsoe*. M.J.B.Turner 1991. Bedfordshire and Luton Archives and Records Service.)

The likelihood of a substantial spring having been in the area of the Atlas Pond is given credence by the fact that the lakes shown in the Kip/Knyff engravings of 1705 and the lakes shown in the Lawrence, 1719, and Roque plans 1735, 1737 all share a common area. Recent construction work on the site has exposed evidence of large amounts of ground water that overlay the site. So, given that a substantial spring existed in the area of the present Atlas Pond, any lake in that area would need a substantial drain for the removal of surplus water to the lower level lake called the Old Millpond (now the north end of Broadwater).

Our theory is therefore that the diagonal lake shown on the Kip/Knyff engraving, 1705, would have had an overflow drain to the Old Millpond. When the diagonal lake was filled in, the eastern terrace built, and the new "U" shaped lake formed, then a substantial drain or ditch would still be needed to take away surplus water to the Old Millpond. The open ditch is shown on the Lawrence Map and we presume was converted into a culvert by 1735. This we believe to be the origin of the excavated culverts but without further work it is difficult to say where the culvert goes under the eastern terrace or whether it links up with any storm drains from the Old House complex. fig. 12. Kip/Knyff engraving of 1705.

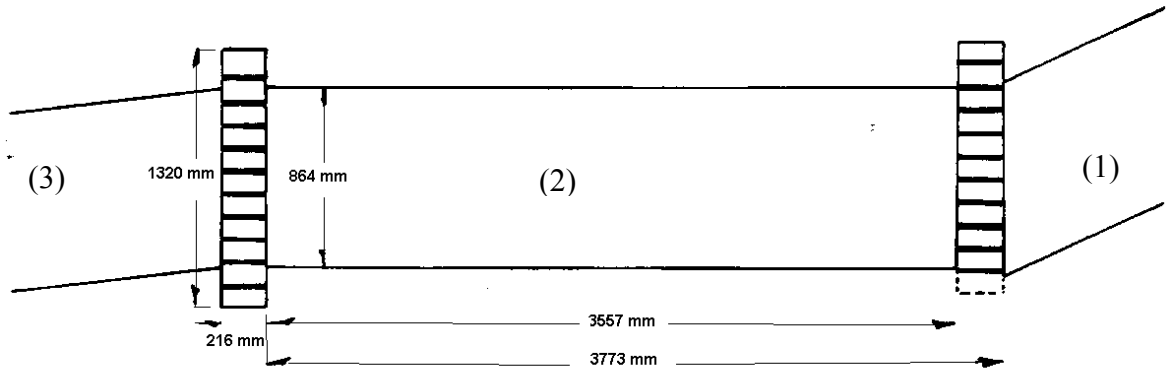


Fig. 1. Sketch showing bridge-tunnel culvert (2) and relationship with culverts (1) & (3)

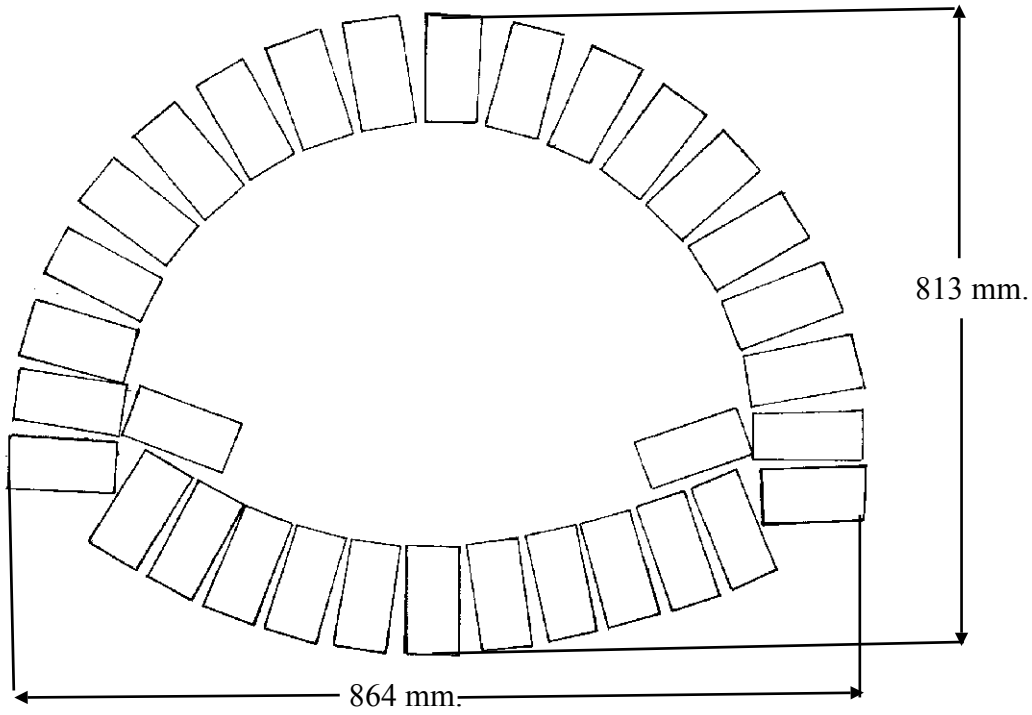


Fig. 2. Section showing layout of bricks.

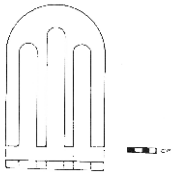


Fig. 3. Iron grille filter.

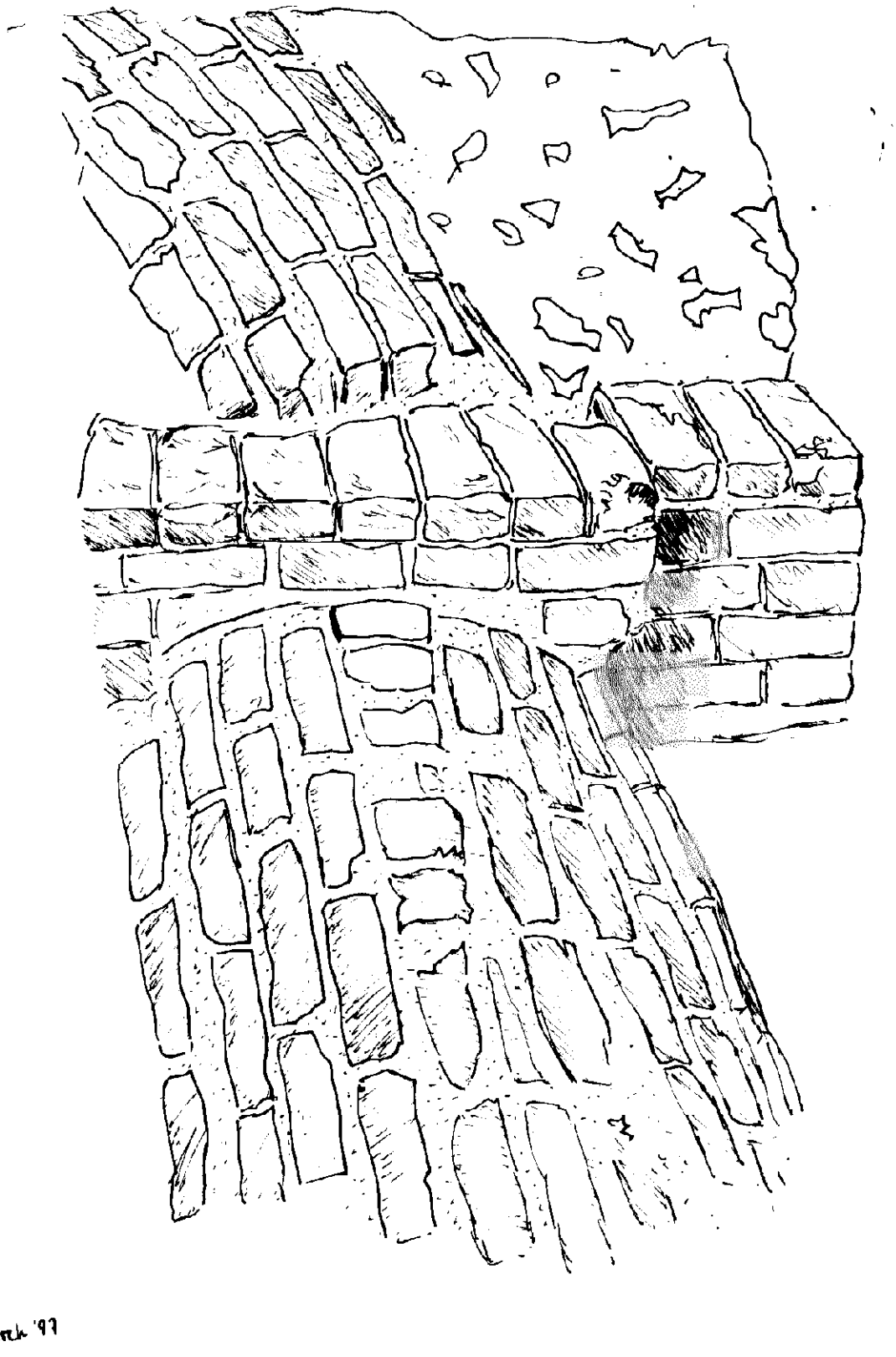


Fig 4. Sketch of exposed culverts (1) (upper) & (2) at join

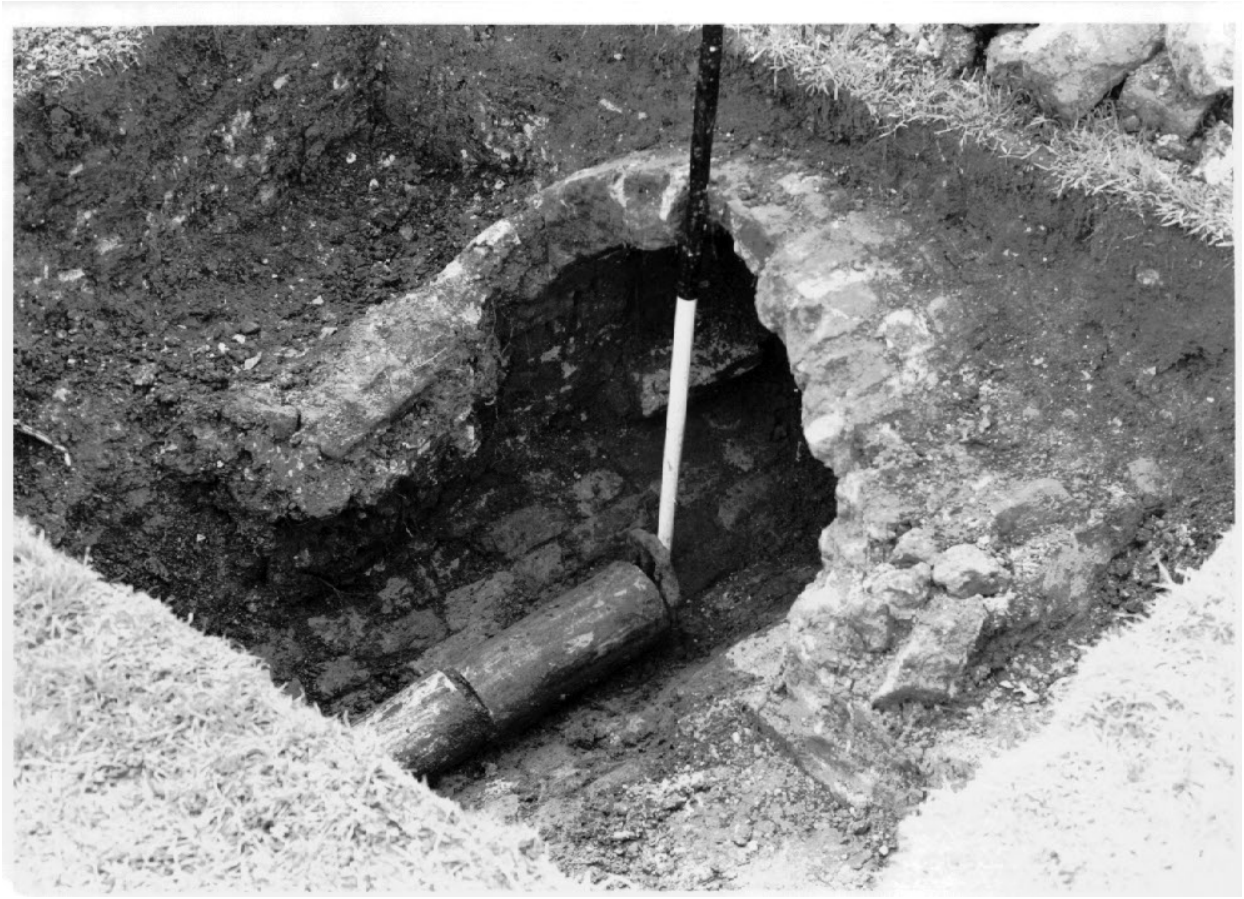


Fig. 5. Collapsed culvert with modern land drain insertion with filter protecting end 4.3.



Fig. 6. Incomplete trial trench 4.4.

General Layout of Excavations

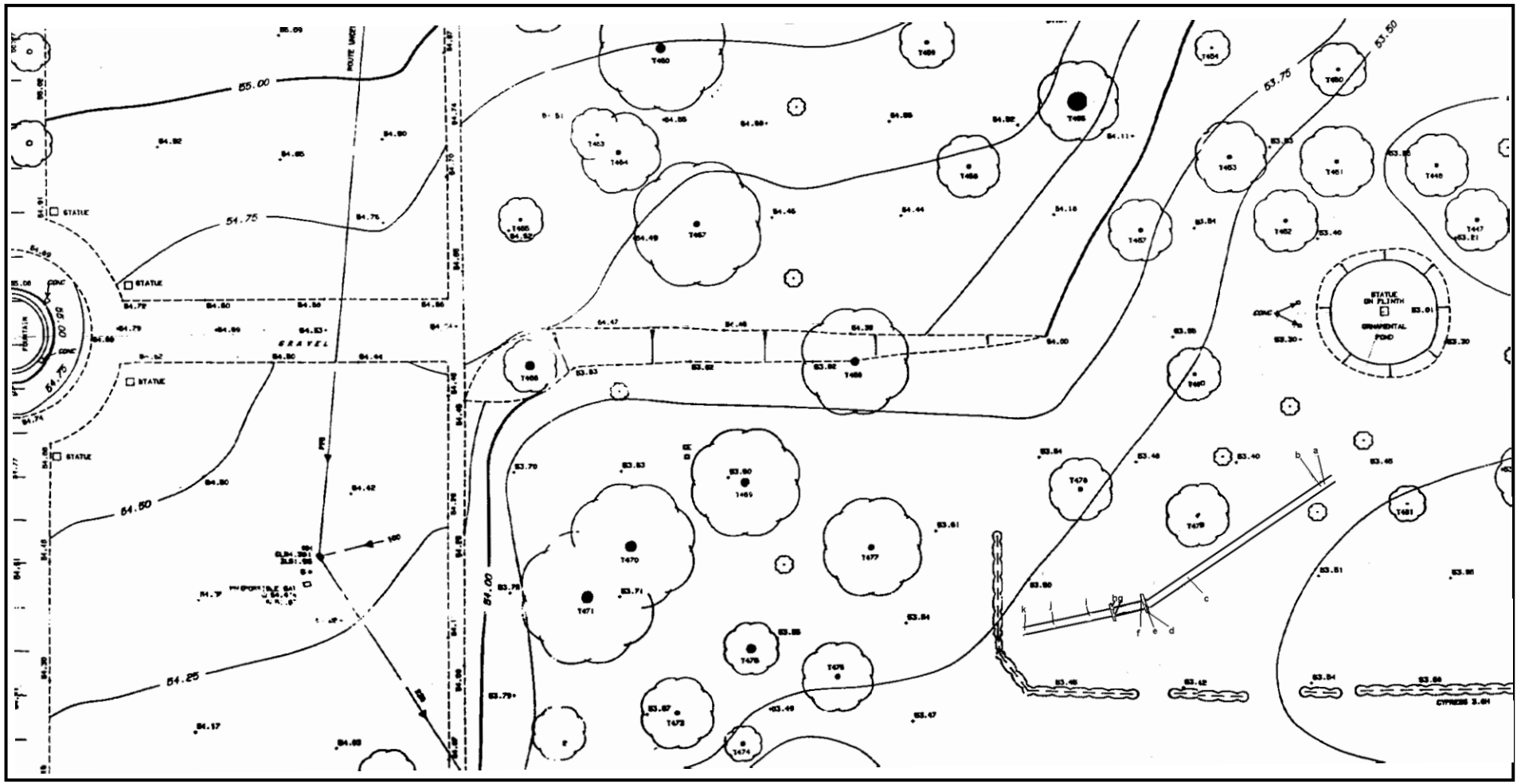


Fig. 7

Detail with Survey Locations

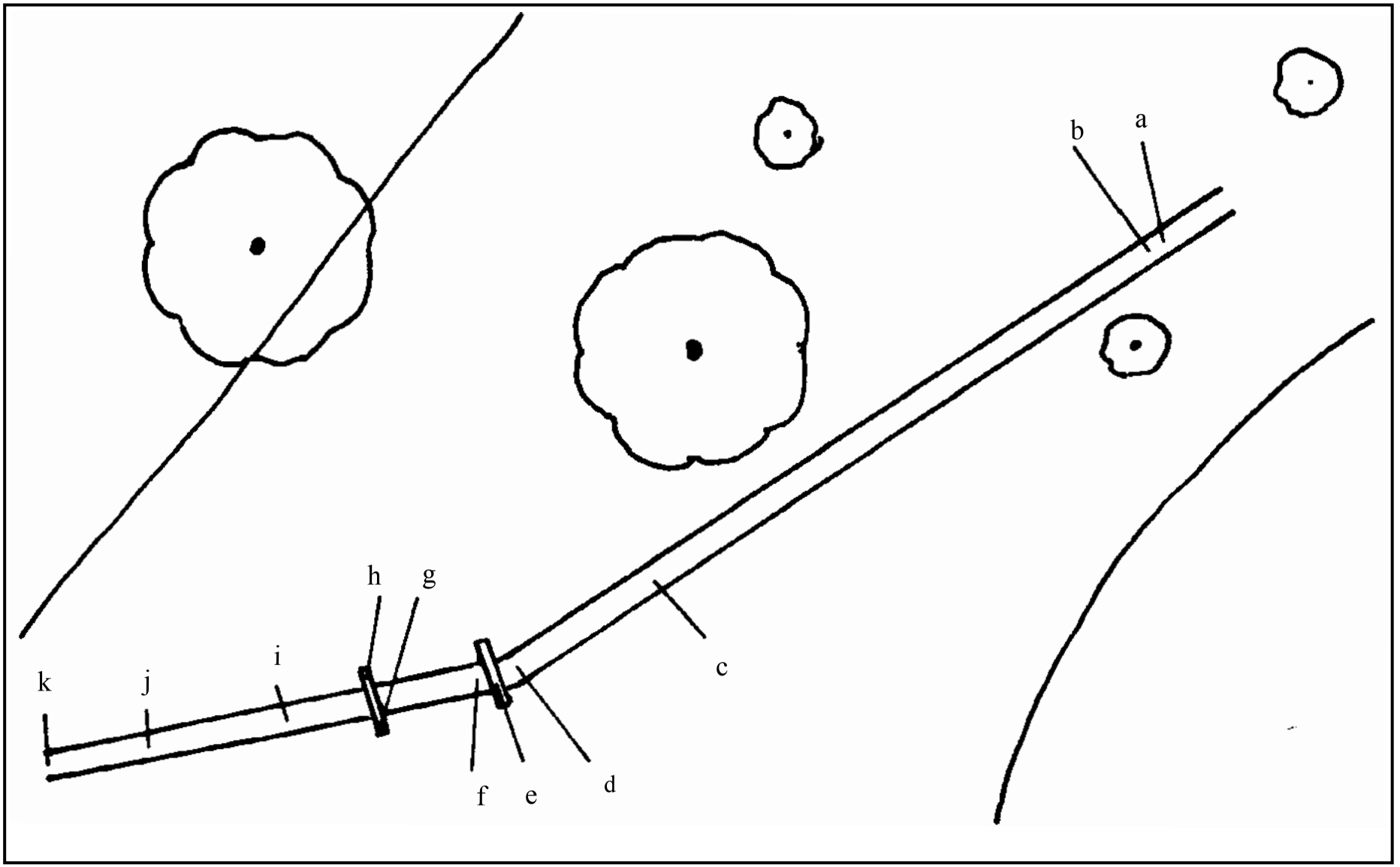
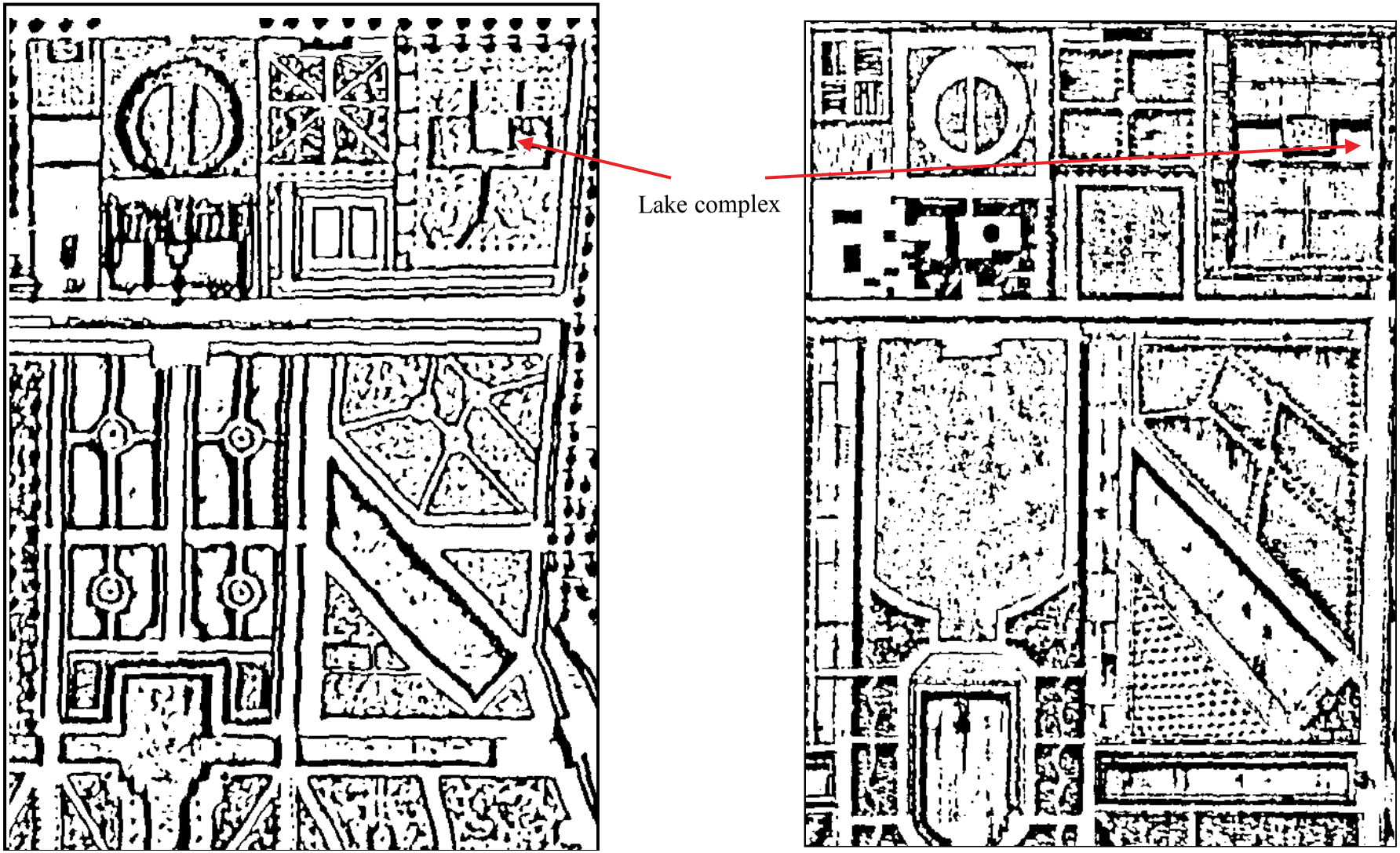


Fig. 8



Fig. 9. Photograph showing scorch mark in grass

Comparison of Garden Plans

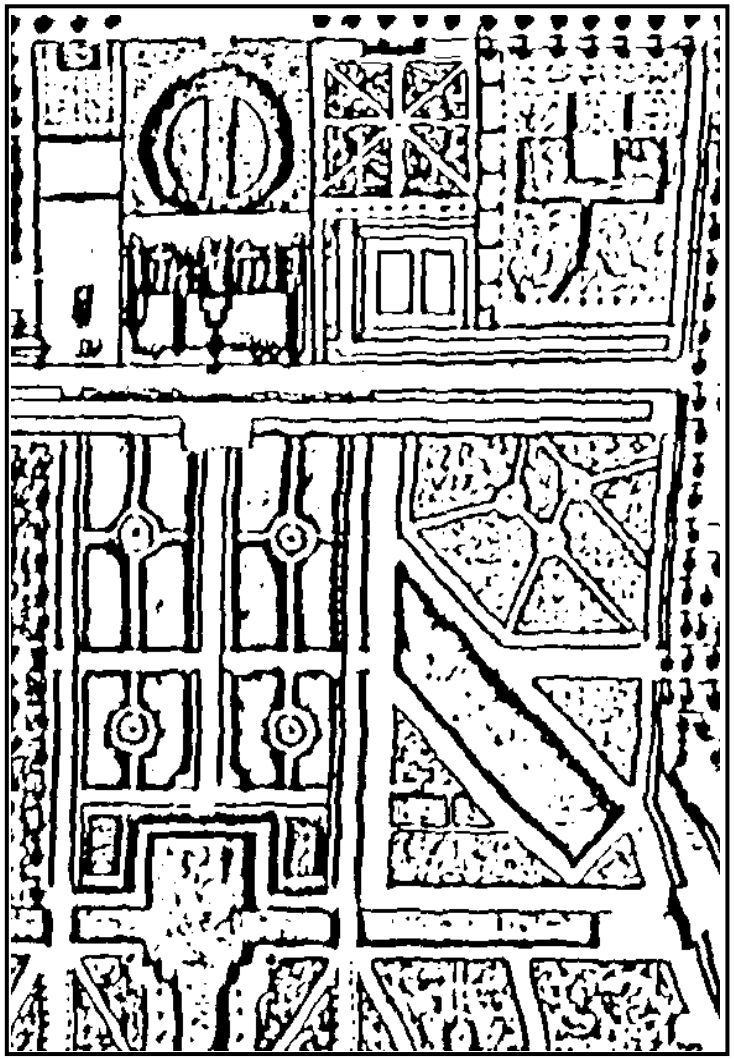


Detail from Lawrence drawing1719

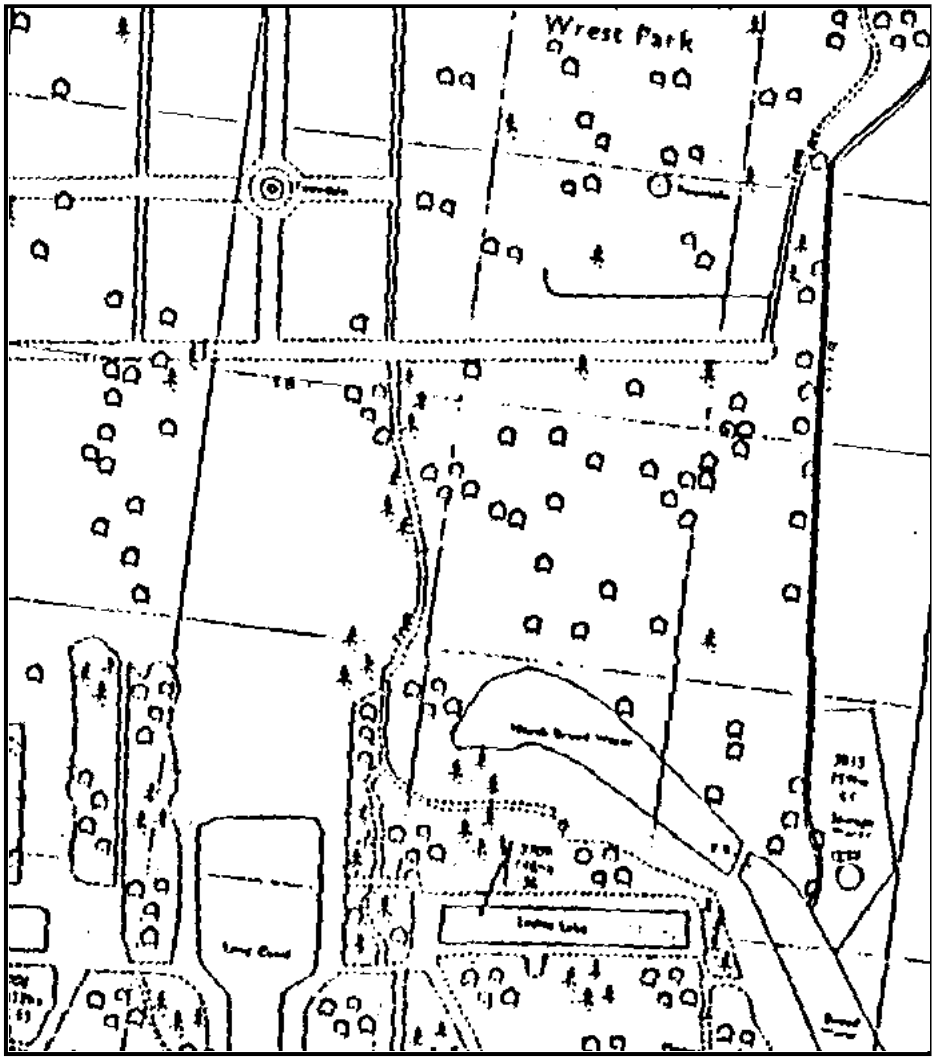
Fig. 10

Detail from Roque drawing 1737

Comparison of garden plans



Detail from Lawrence drawing 1719



Detail from English Heritage1986

Fig. 11

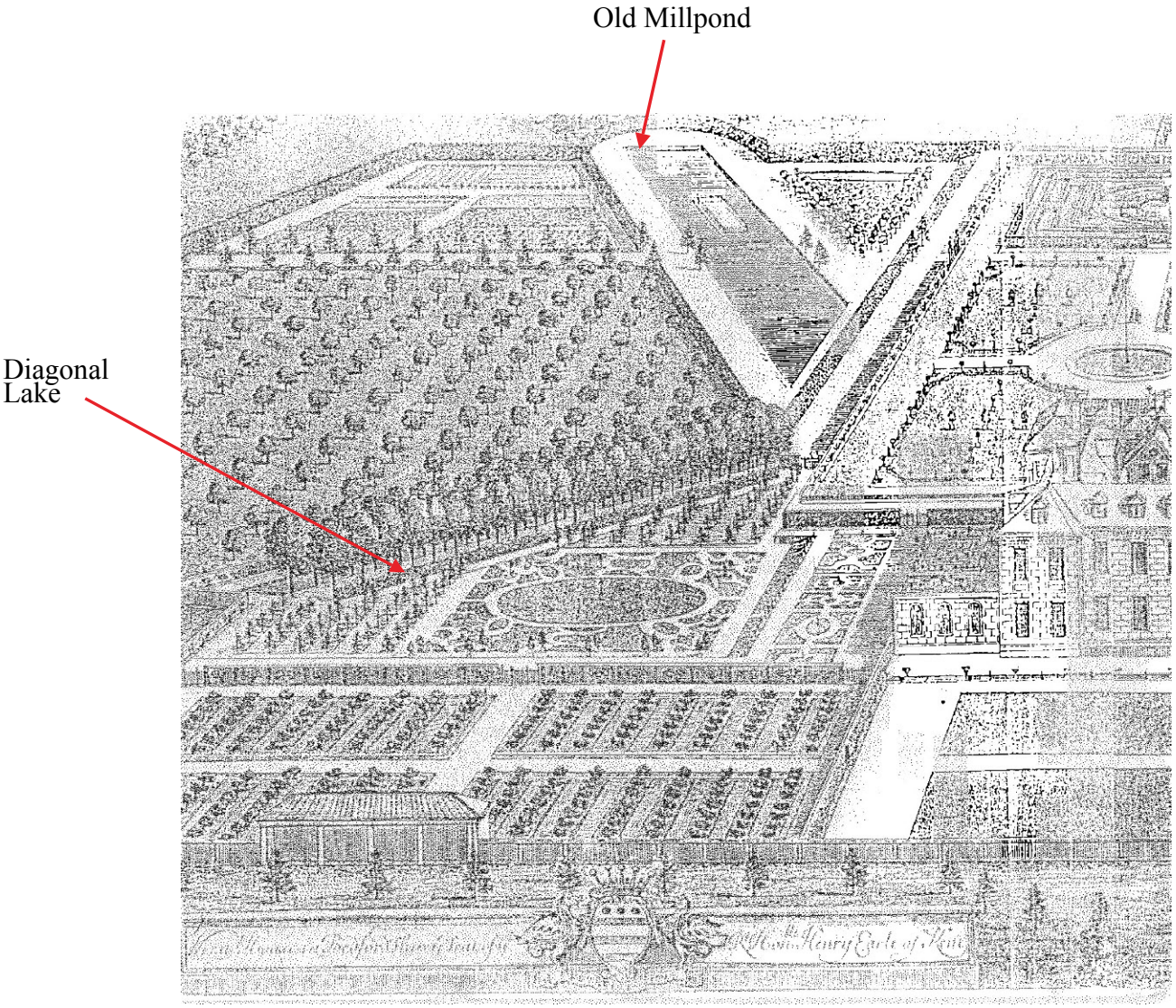


Fig 12 Kip/Knyff Engraving of 1705

The Society would like to thank the Silsoe Research Institute for giving us the opportunity to investigate the site, and allowing access to the historical information and estate maps.
We are also grateful to Mr. John Wilson who produced the sketch fig. 4.
All other photographs and drawings were by Society members.

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