

THE REMAINS OF AN OLD CORN-DRYING KILN IN WILMOT AVENUE

INTRODUCTION

In January 2022, Ian Burton of 5 Wilmot Avenue,¹ was laying some paving slabs to make a path in his new greenhouse when he spotted a hole in the ground a few centimetres in diameter with what appeared to be a metal plate on top of it (Fig. 1)



Fig. 1: The hole in the ground makes its first appearance.

Curious to find out what this was, he removed more of the soil to reveal a small brick-lined cavity roughly 46cm x 48cm x 64cm deep (Fig. 2). This, however, was only the start of the puzzle, for at the back of the cavity lay a much larger void extending deeper underground. Ian then set about clearing this and after much hard work was finally able to squeeze himself into a strange and very confined subterranean chamber and take photographs of his discovery.



Fig. 2: This brick-lined cavity was revealed when the hole was cleared out. Note the start of the much larger void at the back.

DETAILS OF THE CHAMBER AND A DISCUSSION AS TO ITS PURPOSE

It now became apparent that buried underneath his garden was an odd-looking circular chamber, roughly 137cm in diameter and some 152cm in height; its topmost seven courses of hand-made bricks were supported by metal ribs and corbelled inwards so as to form a dome (Figs 3 and 4), at the apex of which was a concrete cap acting as the structure's roof (Fig. 4). Ian took his photographs along to the March 2022 meeting of Chaddesden Historical Group to see if anyone could identify this mysterious object.

Suggestions ranged from an old well-shaft to part of a World War II air-raid shelter but these could not be equated with the photographic evidence. The fact that the structure was obviously of some age was particularly intriguing, for prior to the development of the east side of Highfield Lane in the 1920s and 1930s there was absolutely nothing hereabouts apart from farmland and a single isolated building, presumably a barn of some sort. By using the Georeferenced Maps facility of the National Library of Scotland's website, which enables the user to overlay old large-scale Ordnance Survey maps on top of modern satellite imagery, it became obvious that the greater part of this barn was

¹ The grid reference of the site is SK 3770 3635.

once situated in what is now Ian's back garden in Wilmot Avenue, extending a little way into the garden of a neighbouring property in The Crescent.² It therefore seemed highly likely that whatever this newly-discovered structure had been designed for, it was originally situated underneath the barn and formed an integral part of it.



Fig. 3: The chamber roof. Note how the topmost courses of bricks are corbelled inwards and the metal supporting ribs.



Fig. 4: This photograph was taken a little to the right of Fig. 3 and clearly shows the concrete roof cap as well as a recess in the wall of the chamber.

Scaled measurements taken from old Ordnance Survey maps showed that the barn was a comparatively small one (probably of three bays) measuring approximately 4m x 9m and oriented roughly north–south. It was certainly of some antiquity since it is featured on the Chaddesden enclosure map of 1792 (Fig. 5) where it sat astride a field boundary, however, by the time the first large scale Ordnance Survey map was published in 1883 (Fig. 6) this field boundary had vanished.



Fig. 5: Chaddesden enclosure map of 1792 showing the barn. Nottingham Road runs across the top of the map from left to right.



Fig. 6: The barn is shown again, this time on the Ordnance Survey map of 1883.

Frustratingly, the enclosure map gives no definite indication as to the owner of the site in the late eighteenth century, although it might perhaps have formed part of land farmed by the Holland family since their homestead lay only some 200m away. That the building was definitely a barn is supported by the fact that it apparently only had comparatively light usage – none of the early large-scale Ordnance Survey maps of the area show any sign of an access road or even a pathway

² The overlaying process is not 100% accurate and allowance must be made for a slight margin of error.

leading to it. This suggests the building had an agricultural use rather than an industrial one, and, this being the case, then by association the structure underneath Ian's garden similarly served some sort of agricultural purpose, but what exactly?

The barn itself was probably first constructed in the late eighteenth century for the purpose of storing and threshing corn. In pre-mechanisation days the sheaves of unthreshed corn would be stacked at one end of the barn. When the farm labourers could not work in the fields during the bleak winter months, they would open the sheaves onto the threshing floor in the middle of the barn and hand thresh them with flails to separate the ears of corn and the grain from the straw. The grain would then be winnowed by opening opposite doors in the barn and letting the chaff blow away in the breeze. Before proceeding further, it was essential that the corn was free of excess moisture – often difficult in our climate. Whether the harvested corn was intended for food production or to be saved as seed for the next year, it needed to be relatively dry. If corn was going to be ground into flour any significant water content in the seeds would soon clog the millstones at the local mill, and if the seed was intended for next year's planting then storing it damp would render it mouldy and unusable. Given the unpredictable nature of our weather, it seemed that the mysterious underground structure that Ian had found might once have formed the drying chamber of an old corn-drying kiln, possibly from the late Georgian / early Victorian era, which had directed a supply of warm air to the drying floor in the barn above.³

Possible remnant of corn-drying kiln, Wilmot Avenue, Chaddesden

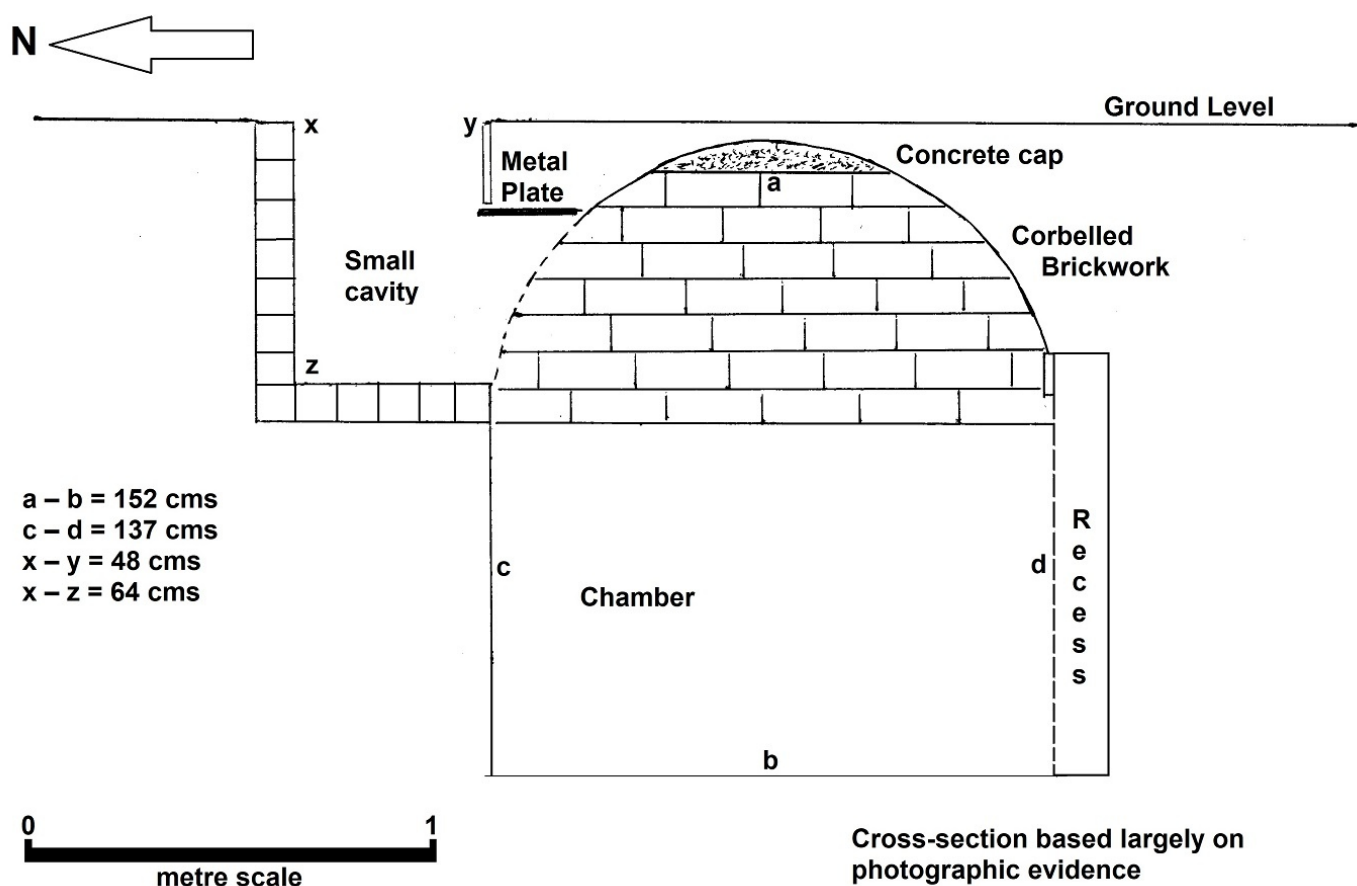


Fig. 7: A simple cross-section through the underground chamber. All dimensions approximate.

No doubt constructed by local builders, such corn-drying kilns came in an almost infinite variety of designs and many were located at or close to watermills and windmills, however, a search of Derbyshire's Historic Environment Record,⁴ which is maintained by the County Council, shows that some were simply associated with ordinary agricultural buildings.⁵ The way corn-drying kilns

³ 'Corn' of course is just a generic term for locally-grown grain crops such as barley, wheat and oats.

⁴ This can be seen online at: <https://her.derbyshire.gov.uk/>

⁵ For example, the barn at South Street, Chesterfield, ref. MDR15018.

operated was relatively simple: a fire was lit in the firebox at one end of a flue which directed warm air along to the bowl or drying chamber of the kiln. The heated air then rose and permeated through the grain, which had been spread on the drying floor above (also known as the platform or kiln-head) to a depth of 10cm or so, either on a bed of perforated tiles or a tightly woven wickerwork lattice, to dry it gently and slowly, the grain being repeatedly turned for perhaps seven or eight hours so as to ensure it dried evenly.⁶ Of course, the greater the size of the drying floor, the greater the amount of grain that could be dried at any one time.⁷ The purpose of the flue, which might be anything between two to five metres in length, was to ensure that stray sparks from the fire did not ignite the grain as it dried. The kilns were not usually provided with chimneys, just wide openings at the top. In some instances, like this possible Chaddesden example, the bowl or drying chamber was located below ground level.

If the Wilmot Avenue feature is the underground drying chamber of a corn-drying kiln which was once situated in the barn above then it is the first one ever to have been discovered here in Chaddesden. Indeed, given the scale of residential development hereabouts its survival is nothing short of remarkable, especially since the barn it was apparently formerly associated with was demolished about a century ago!

In previous ages Chaddesden's mixed farming economy meant that many farmers would have grown corn of one sort or another, presumably taking their produce along to the local mill⁸ for milling where, if necessary, it could first be dried in the miller's own kiln – no doubt for an extra charge. A look back through Chaddesden probate inventories for the period 1700–1850 has revealed a single somewhat oblique reference to a kiln. On 22 January 1724, John Morley a prosperous 'husbandman' (farmer) wrote his will and died shortly afterwards. The appraisers who went round his house and farm noting items of value recorded various bits of agricultural equipment 'In the Kilnhouse'.⁹ Of course, we don't know where John Morley's farm was situated in Chaddesden, nor what type of kiln this was, but it is very tempting to think it must have been a drying kiln of some sort since the 'Kilnhouse' was apparently situated next to the barn where he stored his barley, wheat and hay. Perhaps he was one of the first local farmers to have invested in his own purpose-built corn-drying kiln.

In the months after his initial discovery, Ian was able to dig out more of the structure and discovered it had a concrete floor. He also managed to investigate what was previously thought to have been the opening to a length of flue in its south face, which turned out to be a recess more closely resembling a small fire-hole or similar (Fig. 8).

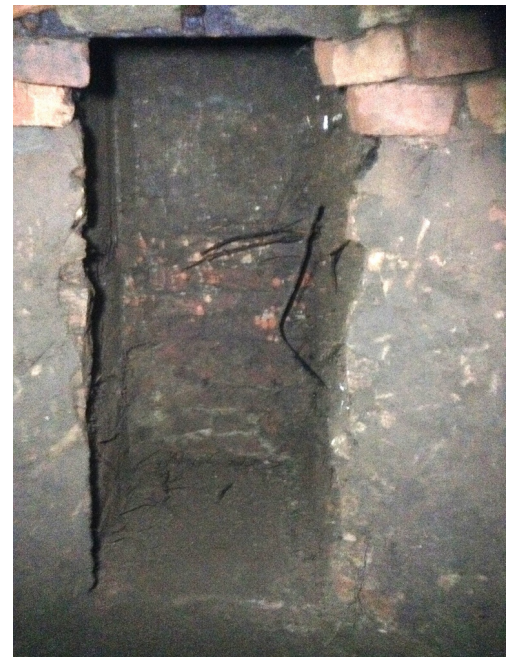


Fig. 8: The recess in Fig. 4 was excavated to reveal this.

SOME UNANSWERED QUESTIONS

Various aspects of this intriguing discovery still remain tantalisingly vague, leaving the following questions to be answered:

(1) If the structure is the drying chamber of a kiln, how did its owners access it for periodic cleaning and maintenance purposes? Did they have to crawl through the small cavity shown in Figs 2 and 7, or was there another way in, as yet undiscovered?

6 It was important that the heat in the drying chamber was not too fierce as the grain needed drying, not baking as would happen in an oven.

7 The drying floor area of some of the bigger kilns could be as large as 20 square metres.

8 Articles about the village watermills and windmill can be read on Chaddesden Historical Group's website.

9 Cholerton, P. F. (1983). *Chaddesden Wills and Inventories 1533–1868*, Unpublished MS.

(2) If the concrete cap of the underground chamber is an original feature, it would of course have completely prevented warm air from rising to dry the grain on the floor in the barn above and thus defeated the purpose of a drying chamber. However, the cap could equally well have been placed there at a later stage in history in order to repurpose the chamber for another function when the kiln ceased to be used. Alternatively, maybe the small cavity shown in Figs 2 and 7 was intended to direct the heat upwards to the grain drying floor above. It has also been suggested that the brick courses forming the dome of the chamber roof were probably self-supporting and that the metal ribs visible in Figs 3 and 4 could well have been supports for a chimney of some sort that was later demolished and replaced by the concrete cap, which does not seem to be bonded into the adjacent brickwork and must therefore be of a later date.¹⁰

(3) The drying chambers of corn-drying kilns were frequently bowl-shaped and splayed *outwards* to ensure the heat was fanned out below the drying floor above, however, the Chaddesden example is splayed *inwards* although perhaps this is nothing more than a local variation in design.

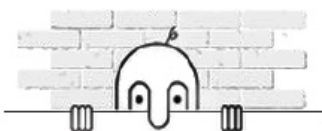
(4) If this is indeed a drying chamber then did it function with, or without, a flue? Might the recess shown in Fig. 8 be part of a flue assembly?

(5) How old is the underground chamber? Unfortunately there is little hard evidence for a date, other than the fact that the bricks visible in Figs 3 and 4 are hand-made. As noted earlier, the chamber – whatever its purpose – could well have functioned at any point in time between, say, the late Georgian and early Victorian periods, roughly 1780–1850. The earlier date would apply if the structure was as old as the barn, which is known to have been there in 1792

(6) Is it possible that this mysterious object was not part of a drying kiln at all? An alternative suggestion put forward recently is that it might have been an underground root store, where the farmer could keep his root vegetables, e.g. turnips, swedes, etc., over winter.¹¹ This seems plausible, but there are two major local factors to consider: First of all, a root store would need to provide a safe and dry environment for its contents, however, Ian has noted the chamber under his greenhouse readily fills with water after heavy rainfall; secondly, how would the farmer gain access to the chamber?

Finally, it may be that someone reading this article has a completely different explanation as to what this unusual underground chamber was used for. If so, do please contact Chaddesden Historical Group and let us know. Details of this discovery were forwarded in 2022 to the County Archaeologist and therefore may eventually appear on the Derbyshire Historic Environment Record.

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¹⁰ Thanks to Peter Barnes for this suggestion.

¹¹ Thanks to Annette Brownhill for raising this possibility. Underground root stores are still to be found on modern USA farms, and it is interesting to note that a semi-subterranean root store with a vaulted stone roof was restored a few years ago in the deserted hamlet of Lodge, Upper Nidderdale, Yorkshire (OS grid ref: SE 0577).