

# Cast-iron cow-stalls at Cane Hill Farm, Coulsdon

by Derek Bayliss

*In the 1850s cast iron began to be used by farmers for cow-stalls. The material was cheap, light, strong and hygienic. The stalls described in this article were made in the early 1880s by Musgrave & Co. of Belfast, to patents taken out by James Musgrave, one of the partners of the firm, in 1858 and 1867<sup>1</sup>. The stalls were at Cane Hill Farm, Coulsdon, Surrey (TQ 297592), in the present London Borough of Croydon; the farm was built in association with Cane Hill Lunatic Asylum. It provided occupation for patients and supplied food for the Hospital. One set of cow-stalls there survived virtually intact until this survey in 1978, but has since been removed.*

## Cast iron in dairies and cowhouses

In the early 19th century the more advanced farmers and town cowkeepers began to provide better housing for their cattle. For example William Harley's *The Harleian System* (1829) described a house he had built in Glasgow in 1810 for 300 cows, with stone floors, wooden fittings, labour-saving feeding passages, good drainage and ventilation<sup>2</sup>. During the 1850s, which have been called the 'Golden Age of British Farming', farmers like many other people, began to experiment with the use of cast iron. It was cheap, light and strong, and was hygienic because it was easily cleaned and non-absorptive and did not have crevices for dirt to lodge in. Concern for hygiene, particularly in town cowhouses and dairies (there were 10,000 cows in the County of London in 1889, and cows went on being milked in the City of London until 1953<sup>3</sup>), led to legislation such as the Metropolis Management Amendment Act 1862, which provided for licensing of London cowhouses and no doubt indirectly further encouraged the use of cast iron.

Most cast-iron cow-stalls have disappeared with recent changes in farming, and particularly the introduction of milking parlours from the 1920s on. I was therefore very interested to find a set made by Musgrave & Co., who were one of the first to use cast iron for this purpose, on one of Greater London's few remaining farms, Cane Hill Farm at Coulsdon.

## Cane Hill Farm

The farm was built in association with Cane Hill Lunatic Asylum, now Cane Hill Hospital. In the early 1870s the county of Surrey (which then included much of the present south London) found that its 'lunatic asylums' at Brookwood and Wandsworth were not large enough, and it set up in 1875 a 'Committee of Visitors... to provide an Additional Lunatic Asylum for the County of Surrey'. This considered numerous sites and settled on Cane Hill<sup>4</sup>.

The Asylum was to house 1,124 persons initially, but to allow for possible expansion to 2,000. Building began in 1880 and patients were received from 4th December 1883. Like many of the large hospitals and institutions built in the country around London in the late 19th century, it was designed to be a self-sufficient community in many ways, not least in order to provide occupation for suitable patients, as many were expected to remain as inmates for long periods if not for life. Thus Cane Hill had its own bakehouse and laundry, shoemakers', tailors' and

upholsterers' shops; and its own water supply. The Committee considered whether it should generate its own gas, and have its own branch railway, but decided against both suggestions<sup>4</sup>.

A hospital farm, worked partly by the patients and supplying food for them, was part of this pattern, and indeed there was already one at Brookwood Asylum. The site of Cane Hill Farm was approved in April 1880, and the house for the farm bailiff was reported to be ready for occupation in March 1881; however the farm buildings were still not complete in February 1883. Initially hay was harvested; potatoes, cabbages, coleworts (rape or colza) and turnips planted; and pigs bought 'to consume the refuse of the Asylum'. Oddly there is no reference to cows at this stage and milk was being bought by contract. But the growth of fodder crops suggests that cattle were being kept, and the cowhouses show every sign of being part of the original farm buildings. We can thus date them, and the cow-stalls, to about 1883<sup>4</sup>. A sketch of the plan of the farm in 1897 is shown in Fig. 1. The Asylum passed to the LCC in 1889, with much of Surrey's suburban population. The farm has been run for the last 15 years or so as riding stables by the present tenant, Mr Kent, and before that by his father.

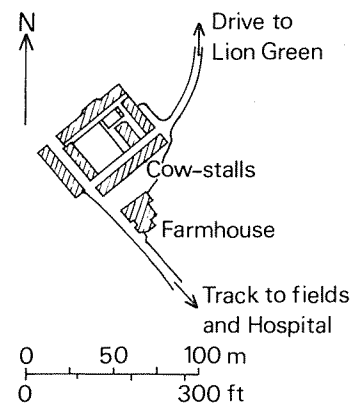


Fig.1. *Cane Hill Farm, Coulsdon; sketch plan taken from 1897, 1:2500 Ordnance Survey*

## The cow-stalls

The former cowhouses are built of brick, with slate roofs. The cows were housed in two wings with a store between. In the west wing there was a complete installation of eight stalls for two cows each (though two stalls were damaged by a fire a few years ago). This installation was recently cleared away to make space for storing straw. The east wing presumably once had a similar installation, but in recent years it has had only parts of three stalls and some extra hay racks; these are still there.

The stalls (Fig. 2) were separated by cast-iron partitions, described in the patents as 'division plates', and each had a hay rack and a trough across the back. Behind them was a feeding

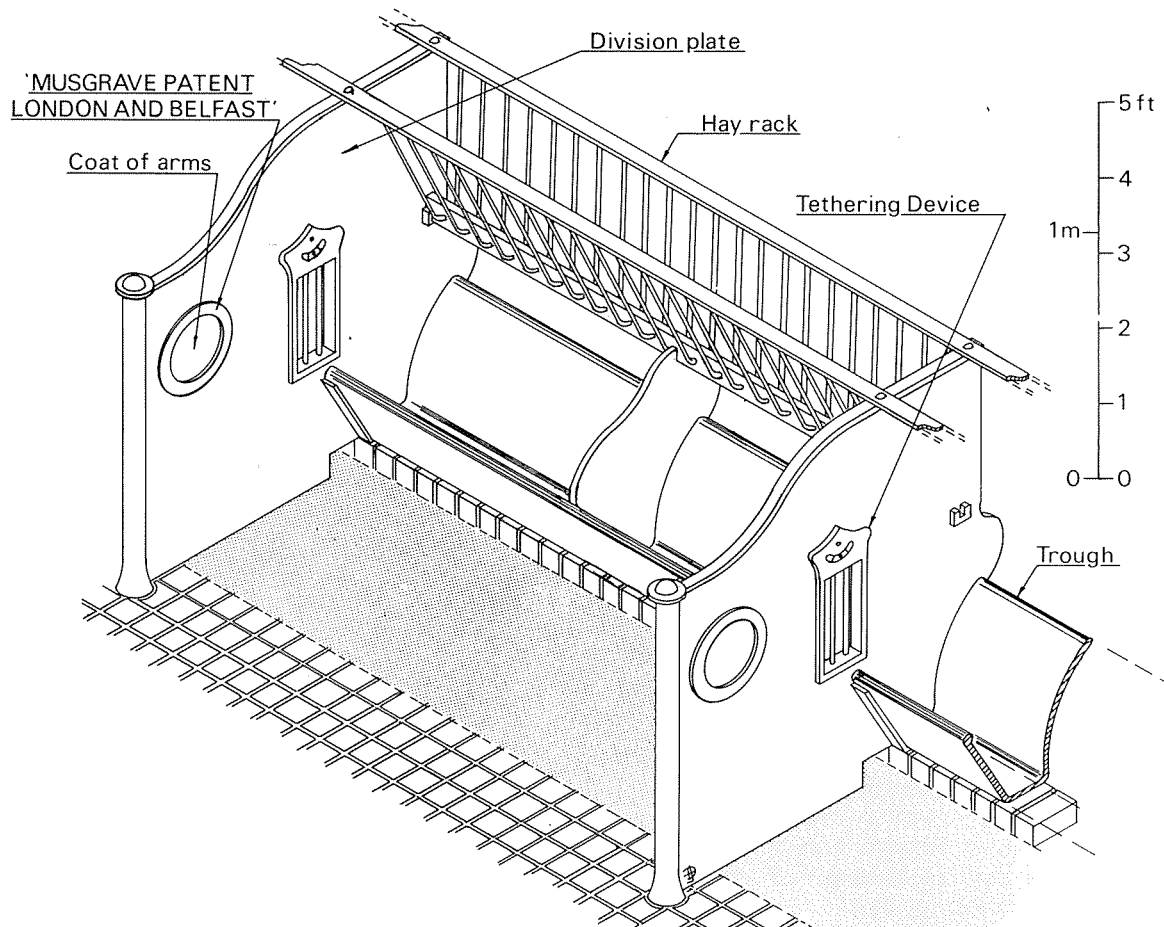


Fig.2. Isometric sketch of cast-iron cow-stalls at Cane Hill Farm

passage, from which the troughs and hay racks would have been filled, using a small truck. (One manufacturer, the St. Pancras Iron Co., in a 'model' town cowhouse in Kensington, even ran a little railway along the passage<sup>5</sup>.)

The stalls were 8ft wide (although Musgrave's second patent, and other manufacturers' catalogues, suggest that 7ft was normal), and about 5ft deep overall. The division plates were 'cast . . . of thin metal . . . with a moulding all round the edge', as described in the first patent, but were slightly larger than the dimensions suggested in the patent (4ft 5in long instead of 4ft; 4ft high at the front, and 5ft at the back instead of 3ft 9in and 4ft 6in). The front part of the casting was a round, hollow cast pillar with a slightly splayed base,

to withstand the pressure of the animal at that part, and to prevent injury from sudden contact with a thin edge.

The division plates incorporated a tethering device, and were decorated with a coat of arms surrounded by the inscription 'Musgrave Patent — London and Belfast'.

The bases of the division plates were horizontal, as in the first patent, instead of sloping down towards the front to fit a sloping floor for better drainage, as in the second. To fasten the plates to the ground, the first patent suggests either sole plates resting on flagging or rammed earth, without foundations, or keys ('joggles') cast at the foot of the plate, and a widening of the front

pillar at its base to fasten into the floor. The second patent describes ' . . . a hollow iron base block' below the pillar,

. . . with a check in same to receive the base of the pillar . . . so as to avoid any projection. The pillar is fastened to the base block by two sloping screws . . . and nuts.

While the stalls were in place, it was not possible to see how they were fastened, though there was no sign of sole plates. But when they were removed it could be seen that the method in the second patent had been used. The base of the pillar had sat in an oval hole, 8in by 6½in, in a rectangular cast-iron base block 24in by 12in, and had been held by two screws or bolts at 5½in centres on the long axis. The base block had a diced surface like the floor, though the grooves were not as deep. Further back the bases of the plates had snapped off at or just above floor level, suggesting that they were wedged or keyed in.

The hay rack was 'formed of vertical iron rails bent to the shape and passed through a bottom rail', which was about 2ft 9in from the floor, as described in the first patent. Below, just above floor level and resting on bricks, was a cast-iron trough for water and moist foods such as turnips. The trough in each stall had a central division,

so as better to separate the cows when feeding, and also to support the centre of fodder rack.

Each stall had two watering devices bolted to the partitions on



Plate 1. Former cowhouse (1883) at Cane Hill Farm, Coulsdon in 1978. The complete set of cow-stalls were in the nearer wing.

(photo Derek A. Bayliss)

either side, which apparently worked by the cattle pressing on them. They, and the pipes behind the stalls to supply them, appeared to be of aluminium; the patents mentioned nothing corresponding to them, so it seems they were clearly later additions. The first patent describes holes in the division plates at the end of the trough, so that water can flow from stall to stall, but there were no such holes at Cane Hill, and the original water supply was probably through pipes or troughs to each stall, as described in the second patent.

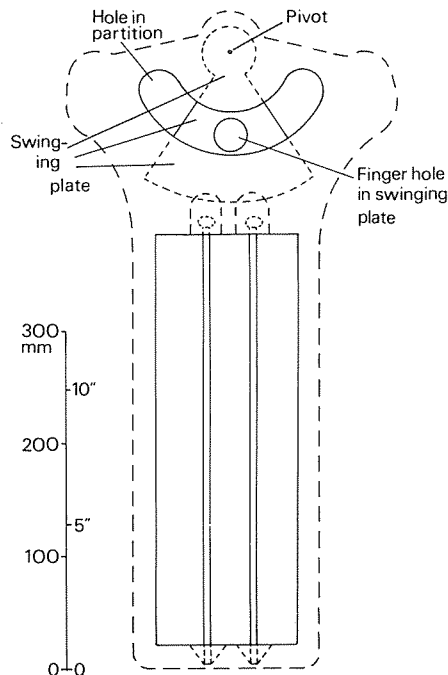


Fig.3. Tethering device on division plate of cow-stalls. Pecked lines are boundaries of raised areas on cast metal surface; dotted lines are hidden parts of swinging plate. The plate swings within the partition (between part of main casting and bolted-on cover) to hold or release tops of iron rods.

Both patents provide for the cattle to be tethered by a chain and ring to vertical rods attached to the division plate, thus providing for cows of different sizes. They also allow for the cows to be easily released by sliding the rod up so that the ring can be slipped out underneath it. In the first patent, the rod has a small pin in it which can be removed, thus permitting the rod to be slid up into a socket. In the second patent, instead of the pin, there is a metal plate hanging above the rods. In its normal position this holds them in place, but it can be swung up to left or right to allow the rods to be lifted up. Either the plate hangs on one side of the division plate, but has a thumb-piece projecting through a slot to the other side; or there are two plates, one on each side, joined together through the slot. While the first patent suggests two rods to each division plate, the second suggests three or more; rather oddly, since there would only be one cow on each side.

At Cane Hill (Fig. 3) there were only two rods, but otherwise the tethering device was a variant on that described in the second patent. The plate hung in a hollow in the division plate; on the one side the cast surface was raised to form a cover for it, while on the other a corresponding cover was bolted on. Each cover had a curved slot in it, and there was a finger-hole in the corresponding part of the hanging plate, so that it could be swung aside to let one of the rods be lifted and the tethering chain released.

The patents do not say what is to happen when the stalls meet a wall. One end of the stalls in the west wing was free-standing, but the other was against the east wall. Here a similar tethering device, with only one rod, was fastened into the wall, as was the end of the hay rack. The trough ended in a metal plate against the wall.

The floor was of diced bricks, sloping slightly towards a drain. A section in each stall was left unpaved; Musgrave suggested that the flooring should be

...omitted in front of the feeding trough, and substituted by a softer substance to save the knees of the cattle, and prevent them slipping.

Most of the shallow drain had a surface of rough cement, with cast-iron grids at intervals, suggesting a later filling of a deeper gully. The first patent describes a cast-iron gutter with or without a lifting or sliding grating; the grating could hold litter to separate liquid and solid manure.

The only other object of note in the cowhouse was a cart jack, the survivor of a pair made by the local blacksmiths, Wakelings of Chipstead Valley Road, Coulsdon. This was photographed but not recorded in detail.

### Musgrave's patents

A comparison of the Cane Hill cow stalls with Musgrave's two patents suggests that they owed relatively little to the additions and improvements in the second patent, even though they were made well after it. The second patent supplied the method of fastening the division plates to the floor; the principle of the tethering device, though in detail it was an unpatented variant; and, so far as we can tell, the original method of water supply. But one of the main features of the second patent is an 'improved trough', with a hopper above and behind it, so that fodder may be released by stages into the trough. This was not used at Cane Hill, and neither were such smaller features as a fixed or tilting water trough resting on the feeding trough; a sloping lower edge for the division plates; or 'a moveable plate which has the name of the animal on both sides'. If the Cane Hill stalls were typical, they suggest that the firm kept to a more straightforward design than the second patent might suggest.

Musgrave claims in the first patent that

The advantages of these improvements in cow stalls are, first that the fodder is raised above the turnips or other moist food, and is freely exposed to the air, which prevents its getting heated or rotten. Second, the cow does not pull the fodder under her feet in feeding, but any that falls from the rack drops into the trough and is eaten there. Third, a long range of stalls can be simultaneously watered . . . . Fourth, the whole can be cheaply and easily fixed, as foundations of stone or masonry are not necessary . . . : and, lastly, my method of manufacturing the improved stall divisions . . . and . . . the racks . . . and troughs . . . enables me wholly to employ iron, (which is superior for this purpose in cleanliness, durability and compactness, to any other material) and to make the parts so light and yet sufficiently strong that I can afford to sell them at a price that will render such stalls more generally available to the public.

The third and fourth advantages did not apply to the Cane Hill stalls, and we may guess that it was above all cleanliness and economy which recommended Musgrave's stalls to those responsible for the new Asylum.

### James Musgrave and Musgrave & Co., Belfast

The firm of Musgrave & Bros. was in existence as hardware merchants and ironmongers at 59 High Street, Belfast, by 1843–4. It expanded and acquired other premises, and in 1872 was incorporated as Musgrave & Co. In the late 1880s it was at 65–67 Ann Street, and by 1900 it had moved to 250–258 Albert Bridge Road;<sup>6</sup> it remained here, latterly as heating, ventilating and structural engineers, until it was wound up in 1965.<sup>7</sup>

James Musgrave became a partner in the firm early in life, and did much to develop the manufacturing side, which 'was practically a new industry' in Belfast, though it is interesting that the firm was still classified as 'hardware merchants and ironmongers' in an 1887 Directory. He gradually turned his attention to public life, becoming Chairman of Belfast Harbour Board in 1887 and being responsible for great improvements to the harbour. Patents granted to the firm in the late 1870s and 1880s were in the names of T.F. Shillingford and J.A. Hanna. Musgrave also held other public offices in Belfast, notably Chairman of Belfast Technical School; with his brother he was a large landowner in Donegal, where he promoted improvements in agriculture, industry and transport, becoming Chairman of the Donegal Railway from 1896 to 1904. He was made a baronet in 1897, retired from the Harbour Board in 1903, and died in 1904.<sup>8</sup>

It is thought that the firm continued to make cast-iron cow-stalls into the present century, and possibly up to the First World War. The North of England Open Air Museum at Beamish, Co. Durham, has a late set from Kent, and knows of others in Cheshire, Northumberland and near Aberdeen.<sup>9</sup>

### Acknowledgements

I am grateful to Mr John A. Kent for allowing me to study the stalls; Cane Hill Farm is of course private property and should not be visited without permission. I am also grateful to Richard Bellaby and David Hamilton for the drawings; also to Mr John Gall of the North of England Open Air Museum, Mr Henry Gunston, and the staff of the British Library (Science Reference Library, Holborn branch), the Greater London Record Office, and the Irish and Local Studies Department, Belfast Public Libraries, for their help.

### References

1. Patent 1858 no.1711, 'Stalls and Enclosures for Horses, Cows and Pigs', pp.3–4, 12–15; Patent 1867 no.2698, 'Stable, Cowhouse and Harness-Room Fittings', pp. 8–9, 20–22. Quotations are from these patents unless otherwise attributed. A third patent, 1867 no.993 'Fittings for Stables, Harness-Rooms, etc.', which foreshadowed no.2698, only reached the provisional stage.
2. Harvey, N. *The Story of Farm Buildings*, Evans Bros, London, for the National Federation of Young Farmers' Clubs, 1953, pp.28, 37.
3. Harvey, 1953, op. cit., p.28; Harvey, N. *Old Farm Buildings*, Shire, Princes Risborough, 1975, p.20.
4. Minutes of the Committee of Visitors appointed to provide an Additional Lunatic Asylum for the County of Surrey, 1875 onwards. Greater London Record Office.
5. Harvey, 1953, op. cit., p.29; information from Mr John Gall, North of England Open Air Museum.
6. *Belfast Directory*, later Belfast and Ulster Directory, various dates.
7. *Belfast Telegraph*, 5 May 1965.
8. *Belfast News-Letter*, 1 January 1897; *The Northern Whig*, 23 February 1904; Patterson, E.M. *The County Donegal Railways*, David & Charles, Newton Abbot 1962, 2nd edition 1969, p.195.
9. Information from Mr John Gall, North of England Open Air Museum.