The Victorian model farm in south Gloucestershire and north Somerset

William Evans

ALHA Books No 25

From 1850 to 1880, British agriculturists responded to the repeal of the Corn Laws by enlisting the modern advances in chemistry and industrial organisation and steam power. Prince Albert may have led the way, but several in the Avon region were also setting an example. The new approach had little time to settle before British agriculture was hit by imports steamed in across the oceans, but it left its mark, as much perhaps as had the enclosures of an earlier age. Here William Evans tells how the story played out in these parts.

William Evans is a retired public sector and charity lawyer. He is treasurer of Avon Local History & Archaeology, and of Bristol & Gloucestershire Archaeological Society.

The cover picture is a photo of Eastwood Manor Farm Buildings, (National Monuments Record, 32763, © Mr Arthur A Chapman. Source: English Heritage Archive, by kind permission of Historic England).

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THE VICTORIAN MODEL FARM IN SOUTH GLOUCESTERSHIRE AND NORTH SOMERSET

CONTENTS

* Not meant to be the Unitary Authorities of today.
All sites may be found in OS maps Section ST. Grid References:
Whitfield 684 916; Wallscourt 617 779; New House 788 809;
Hollywood 576 815; Eastwood Manor 579 552;
Tyntesfield 503 718; Norton Hawkfield 593 653

THE VICTORIAN MODEL FARM IN SOUTH GLOUCESTERSHIRE AND NORTH SOMERSET

Background

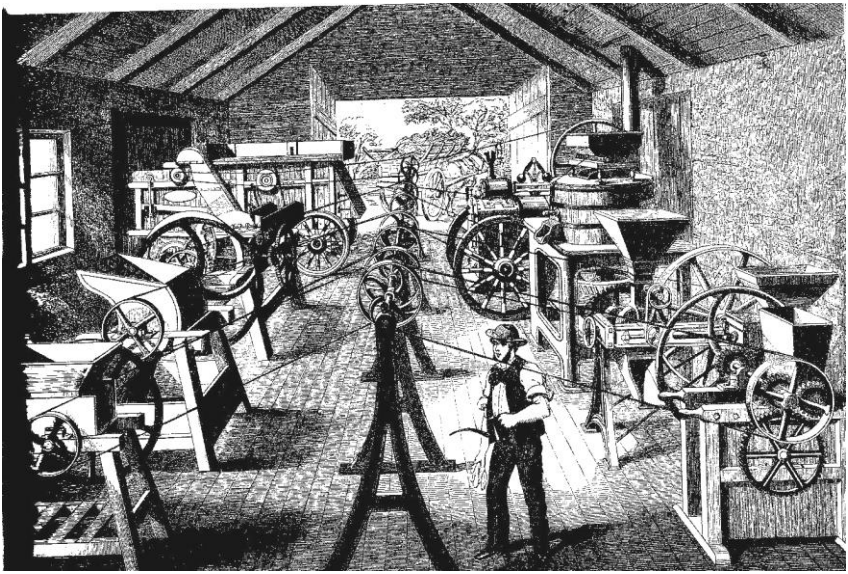
Definition

A model farm is a set of farm buildings or 'steading' deliberately planned and built by a landowner, as the centre either of a home farm for the owner's estate or of one for letting to tenants, with the aim of demonstrating good farming practices. Some model farms, including one in south Gloucestershire mentioned below, had names like 'Example farm' or 'Exhibition farm', and were intended to inform and educate the wider public as well as to encourage and improve the performance of the owner's own tenants. Many were intended to display the owner's wealth, architectural taste or social status, and were designed by well-known or fashionable architects or agricultural engineers. They were part of the changes in English agriculture between about 1740 and the 1870s which some historians have termed an agricultural revolution, and were part of a wider drive for improvement in various sectors of the economy.[1]

If model farms constitute a species, the Victorian model farm is a variety. They date from the first half of Victoria's reign, from about the mid 1830s to the 1870s, though one in north Somerset, mentioned below, was built in the 1880s. They put into practice theories about agriculture known as high farming. Most were laid out in a pattern that was rectangular and regimented, concentrating in one place, and sometimes under one roof, all the operations of a farm that were not in the fields.

The farming context

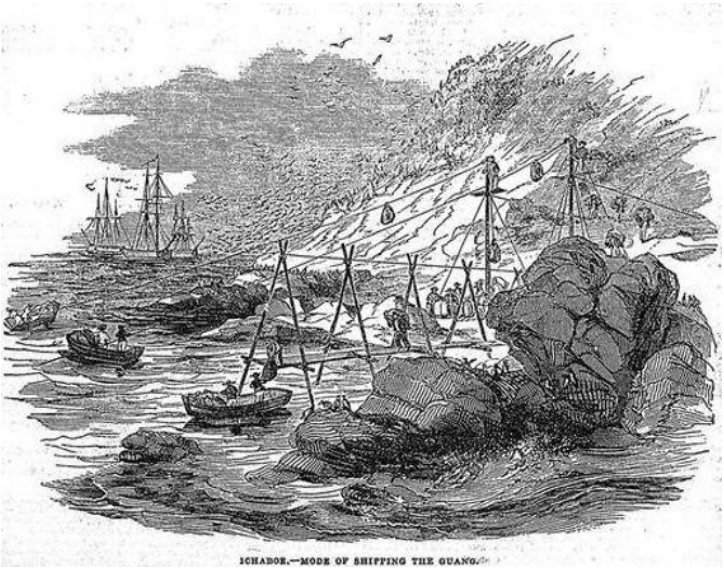
When Victoria came to the throne, farming had for many years been undergoing changes. One was the seeping of the industrial revolution into agriculture, as the use of machinery became more widespread.



Here is an illustration from a book proclaiming the benefits of modern practices.[2] It shows a dozen different mechanical devices, for winnowing, threshing, sorting, sieving, chaff-cutting, drilling and so on, and at the back is a steam engine which could be used to power all the machines and haul a plough in the fields outside. In the foreground is a stereotypical agricultural labourer, holding not a pitchfork or a scythe but an oil can and a rag.[3]

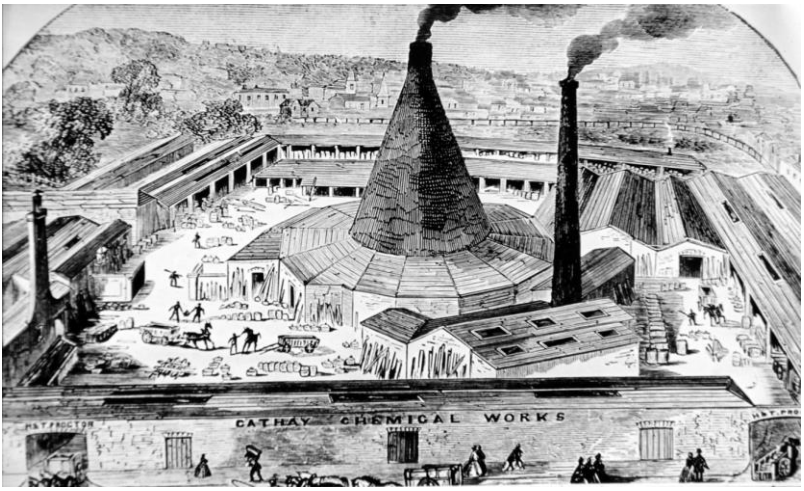
Another change was the advancement of science, especially in chemistry and biology, and their application to agriculture. Discoveries were being made about the biology of animals and plants, leading to improved breeds of cows, sheep and pigs, and improved strains of wheat and other grains. Humphry Davy had published his *Elements of agricultural chemistry* in 1813. An English translation of Julius Liebig's work on organic chemistry applied to agriculture appeared in 1840.

Connected with scientific progress was the increased availability of artificial manures. For generations farmers had manured their fields with the droppings of their livestock, but the discovery of guano in Chile and its collection and shipment offered a cheap fertiliser which farmers could use to boost crop yields.



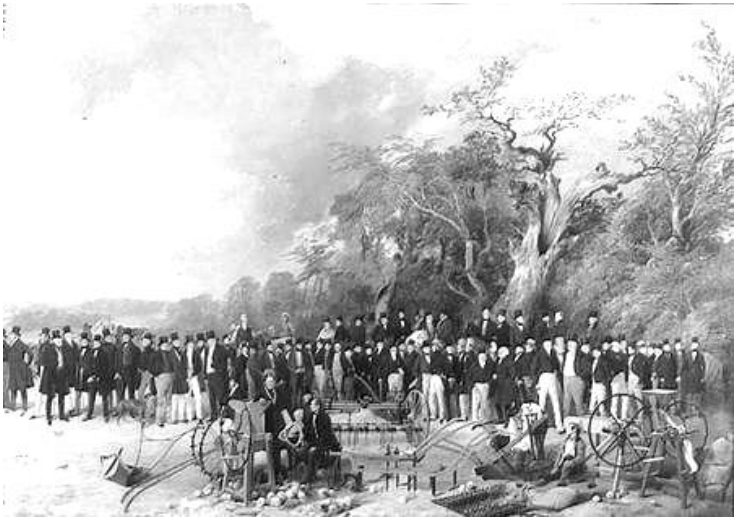
Shipping Guano off Ichaboe Island (Namibia) in 1844. (Wiki Commons/ commons license.)

One north Somerset family that made huge profits out of importing guano was Gibbs. Tyntesfield House near Wraxall was built out of the profits. In addition, advances in chemistry made possible the manufacturing on a large scale of artificial chemical fertilisers,[4] as at Thomas Proctor's Cathay works[5] at Redcliffe, Bristol.



These changes were accompanied by the dissemination of new ideas and information about farming practices, partly by books: Justus Liebig's *Organic Chemistry in its Application to Agriculture and Physiology,* published in English in 1840, became an authoritative text in scientific agriculture by 1842. In George Eliot's *Middlemarch* (published 1871 but set some years earlier) the landowning character Sir James Chettam has read Humphry Davy's *Agricultural Chemistry*[6] and is spending money on improving his farms. Change was also disseminated by newspapers which carried accounts of the latest innovations and experiments and regular articles by specialist farmer-journalists such as James Caird, who described the state of agriculture in England county by county.[7]

Agricultural information was also spread by general magazines such as the *Gentleman's Magazine* and the *Illustrated London News*; by specialist publications such as *The Builder*, which carried articles about new farm buildings; and by trade journals directed at farmers, landowners and land agents. Ideas were also spread by agricultural societies, of which the most important in north Somerset and south Gloucestershire was the Bath & West, founded 1777, with regular shows, demonstrations, competitions and journals.[8] The Royal Agricultural Society of England, founded 1839, also published a journal, and held meetings and shows in various places.

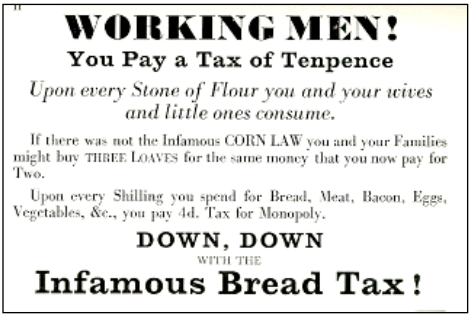


Opposite is a painting portraying a meeting of the Society at Bristol in 1842.[9] The main showground was the Downs; ploughing competitions were held in a field off Beggar Bush Lane; and lectures were in the Philosophical Institution in Park Street.[10] Isambard Kingdom Brunel attended.[11] Justus Liebig did not but was included in the picture anyway.[12] There was a Bristol Agricultural Society, but it was dissolved in 1855, its membership and activities being absorbed by the Bath & West.

The political context

At the start of Victoria's reign, owners and farmers of agricultural land were enjoying a period of comparative prosperity. The population of England was rising.[13] That meant more demand for bread, hence more demand for corn, so those who grew corn for milling into flour for human consumption made higher profits. As the number of people grew, so did the number of horses, so those who grew corn for feeding them also made higher profits. Whilst nearly a third of south Gloucestershire and north Somerset was wetland fit only for grazing, and the Severn vale was given over to dairy farming, corn was grown on higher ground, so farmers there shared in the increased prosperity. As farmers earned more profits they could afford to pay higher rents, so landowners benefited too.

Grain prices were kept artificially high by the Corn Laws. These had been in force since medieval times, but by the 1830s, following revision during the Napoleonic wars, they made the duties on imported corn go up if the domestic price of corn went down, and down if the price of corn went up. If the price of corn rose, farmers made higher profits; if the price of corn fell, higher import duties discouraged the importing of corn from abroad, and the cut in supply caused the domestic price of corn to rise, so farmers still made good profits.[14] Rents followed suit.[15] In times of scarcity, such as after a poor harvest, many people could not afford bread. As bread was the main component of the diet of most people,[16] there was political agitation to repeal the Corn Laws as in this typical poster.


WORKING MEN!

You Pay a Tax of Tenpence

Upon every Stone of Flour you and your wives and little ones consume.

If there was not the Infamous CORN LAW you and your Families might buy THREE LOAVES for the same money that you now pay for Two.

Upon every Shilling you spend for Bread, Meat, Bacon, Eggs, Vegetables, &c., you pay 4d. Tax for Monopoly.

DOWN, DOWN

WITH THE

Infamous Bread Tax!

At the same time politicians like Richard Cobden and John Bright campaigned for free trade, which implied the removal or reduction of import duties on corn, on the grounds that a free market would increase national prosperity. Cobden and Bright got support in places like Manchester, but also in Bristol, an international port where large quantities of goods were imported, and where merchants and others dependent on the port expected trade to increase if import duties were reduced or abolished. Cobden and Bright were also supported by some liberal landowners, such as Thomas Reynolds Moreton, the earl of Ducie of Tortworth.[17] Cobden corresponded with Ducie's agent John Morton about crop yield calculations.[18] Their campaigns were resisted by parliament, whose members were mostly large landowners or their nominees who stood to lose if the Corn Laws were repealed. Pressure grew until bad weather and potato blight caused famine in Ireland, and Peel persuaded parliament to repeal the Corn Laws in 1846.

Responses to repeal of the Corn Laws

The campaign for free trade and the prospect of repeal of the Corn Laws unsettled many landowners and farmers, who feared that imports of cheap grain from Canada and the Ukraine would make corn-growing less profitable. Many small farmers may not have been aware of the threat, but the alert and informed, especially those who read newspapers and farming magazines, or were members of agricultural societies, will have wondered what to do. Those fears were premature: corn from Canada, America and the Ukraine would not be exported cheaply and in bulk for decades. Trade was disrupted by events such as the Crimean war and the American civil war. Railway networks and steamships needed much development before they transformed the collection and distribution of agricultural products; but in the 1840s the future for domestic producers might well seem threatening.

One response was advocated by James Caird (1816-1892), who wrote on agriculture for *The Times* and other publications. His advice was to accept the inevitable, and to avoid its effects by shifting from growing corn for human consumption to raising livestock or growing corn for feeding to animals: 'Let the corn walk to market.' Caird also considered that, with rising national prosperity, farm labourers were tending to want

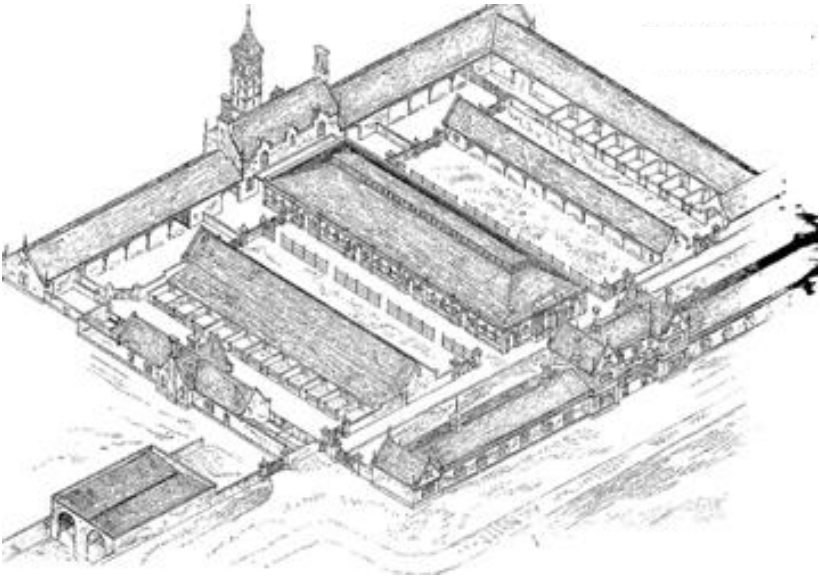
more meat instead of just bread. Farmers, he said, should take advantage of that, and modify their production accordingly.[19]

Another response to repeal of the Corn Laws was high farming, also advocated by Caird.[20] The theory was that high inputs would generate high outputs, which would lead to high profits.[21] In more detail, the idea was first to improve the land by deep ploughing; to drain it by laying clay tile pipes; to manure it heavily, using guano or artificial fertilisers; to remove trees and hedgerows so as to create larger fields that could be more efficiently ploughed, sown and harvested; to improve the farm buildings either by adapting them or by demolishing them and replacing them with buildings of modern design and construction; to lay those buildings out in an ergonomically efficient way so as to reduce the haulage and labour required as harvested and stored crops, animal feeds and manures passed through the sequence of collecting and processing; to introduce machinery to as many operations as possible; to power that machinery by steam if adequate water was not available; to collect and store animal manures and install means of getting them to the fields; and generally to organise operations so as to save labour and time and cut waste to the minimum. All this could best be achieved by concentrating the farm buildings in one place, preferably under one roof.[22]

The requirement for high inputs, involving high inputs of capital to pay for works such as removing hedges and trees, laying drains, manuring the land, improving buildings and installing powered machinery, let alone erecting completely new buildings, meant that high farming was limited to those who could afford such capital outlay: in effect, aristocrats or large landowners with cash to spend, or who had assets that could be mortgaged to borrow the huge sums involved. Tenants as well needed capital to pay for what was expected of them or required under the terms of their leases. Most model farms were established by wealthy individuals, and that was the case in south Gloucestershire and north Somerset. Only the rich could play. One model farm in Gloucestershire was established, not by an aristocratic or wealthy individual, but by a finance-driven institution: at Maisemore the farm was part of the bishop of Gloucester's estates, and the Church Commissioners, charged with the duty of raising cash for the purposes of the established church, must have seen converting it to a model farm as an investment.[23]

Prince Albert's model farm at Windsor

The paradigm of the Victorian model dairy farm applying high farming principles was that commissioned by Prince Albert at Windsor. It was completed in 1855. There was nothing revolutionary about the layout, which followed a pattern promulgated in 1827 by Charles Waistell in his *Designs for agricultural buildings*. Albert's model farm is shown below.[24]

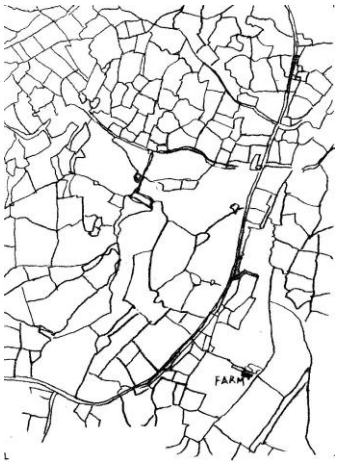


The principal features were a regular rectangular layout, with stock yards flanked by rows of cow stalls, and surrounded by buildings for storing crops, fodder and implements, workshops and offices; a manure house, pig sties and loose boxes; and dairy accommodation for milk collection, and storage and treatment. Machinery was powered by a steam boiler, the chimney disguised as a clock tower. In so far as there was an architectural style, it was neo-gothic, with elements reminiscent of churches and railway stations. Albert's farm provided a model which others copied and adapted, some out of deference to royalty, or because it was the latest fashion; others may actually have considered it a good idea.

Victorian model farms in south Gloucestershire

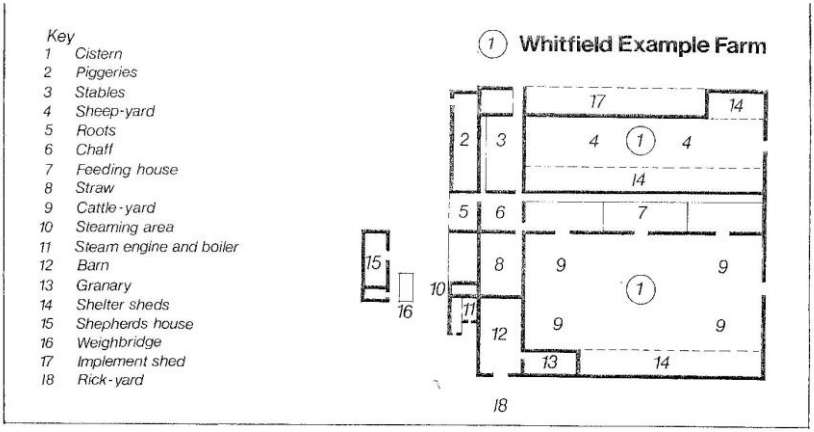
Whitfield Example farm, Cromhall

The earliest Victorian model farm in southern Gloucestershire was established at Whitfield, east of the main Bristol to Gloucester road (now the A38) near Eastwood Park in the parish of Cromhall.[25] The landowner was the Earl of Ducie, of Tortworth Court.[26] From 1818 his father had employed as agent John Morton, an experienced farm manager and writer on agriculture who, like Ducie, was active in the free trade movement. Morton corresponded with Richard Cobden on the application of free trade principles to farming.[27] In 1839 Morton and his son John Charles Morton re-ordered the Whitfield farm, then of 232 acres. It was a dairy farm, previously rented at £200 a year, employing six workers, out of which the previous tenant had made a profit of £28. The map, right,[28] shows the field layout after its reorganisation by the Mortons. To the north is the original layout of fields typical of a Severn vale dairy farm: small fields with irregular boundaries. The old Whitfield farm had 46 fields of between 2 and 8 acres, hedged, and with many trees.[29] Morton got Ducie to add 18 acres to the holding, and removed hedges and more than 1700 trees so as to create 24 large, more or less rectangular, fields. Removing the hedges and trees added another 26 acres of arable land to the holding. A watercourse was diverted. Over 100 miles of drains were laid: the tile works at Oldbury on Severn was established to meet the demand.



Morton built a new steading. Operations were located close to each other to reduce haulage and save time, and in a logical order. A three-storey barn housed threshing and winnowing machines, with the straw barn for sorting, chaff cutting and milling next door (next page).[30] Manure was channelled from the stock yards and piggeries (macadamised so as not to lose any) to cisterns for later spreading on the fields. All the machinery was driven by a steam engine, made by Clyburn of Uley,

whose business Ducie took over from 1841 to 1847, with Morton as director and Clyburn as engineer and manager. Clyburn also manufactured other machinery, including the Uley cultivator, for the Whitfield farm.[31]



Morton reckoned the new farm would cost about £3,500 to the landlord, and £3,750 to the tenant. Allowing the landlord 10% interest on his investment, he forecast a rent of £375 a year, and £480 a year profit. In the event the total cost was over £7,825, but part of that was offset by receipt of over £3,100 from the sale of timber from the trees removed. The rent of the farm went up from £200 to £450 a year. In 1841-1842 Morton claimed he had made a profit of over £160, but he paid no rent in the first two years and a reduced rent in the third. The profitability or otherwise of Whitfield was of interest to many other landowners: a copy of Morton's calculations found its way to Wilton House.[32]

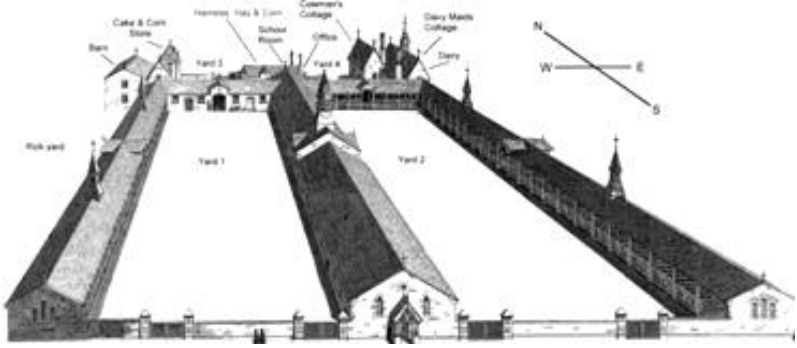
In 1844 Ducie granted Morton a lease of the farm for 14 years at a rent of £450 a year.[33] The farm later became the home farm of the Ducies' Tortworth estate until the 1950s, when it was let to tenants. It continues, much modernised and altered, but with the north range of buildings still standing and in use. In 2017 the farm's main output was organic beef.

Wallscourt farm, Stoke Gifford

Wallscourt farm was part of the Stoke Gifford estate of a branch of the Berkeley family based at Stoke Park. When Norborne Berkeley, Lord Botetorte, died in 1770 the estate passed to his sister Elizabeth, who had become a duchess of Beaufort. When her husband died she occupied

Stoke as her dower house. Wallscourt farm, let to tenants, was not profitable, and was known locally as 'Starveall.'

The reconfiguration of Wallscourt as a model farm started in 1851, when the sixth duke made arrangements with Thomas Proctor (see p. 3).[34] The duke granted Proctor a 21-year lease of Wallscourt farm with a rent reduction of £500 on condition that Proctor should pull down the existing farm buildings and rebuild them.[35] Proctor was already the tenant of the adjoining Stanley farm, (later the site of a Ministry of Defence procurement executive complex), of which Proctor had taken a lease for 21 years from Michaelmas 1850,[36] so as to create one farm of 600 acres. In 1854 Proctor bought the freehold of Stanley farm.[37] Proctor invested £5,000 in constructing a new steading, which as well as the usual stock yards, buildings for storage and processing, and accommodation for animals, included a dairy, a school room for the workers' children and for younger workers, and a house for the dairywoman. The architect was George Godwin.* The steading was described and illustrated in the *Bristol Times* of 14 July 1855, and *The Builder* newspaper (editor George Godwin) of 21 July 1855, from which the figure below is taken.



Proctor had been manufacturing chemicals for many years, and was aware of their use in agriculture (see p. 3). He knew Liebig, one of whose sons spent time at Proctor's works. Perhaps one of Proctor's motives in taking on Starveall was to demonstrate the efficacy of the fertilisers his business produced. Although Wallscourt was never advertised as an

*Godwin designed Bristol Guildhall, and worked on the restoration of St Mary Redcliffe, of which Proctor was a churchwarden and also chaired the fundraising committee.[38]

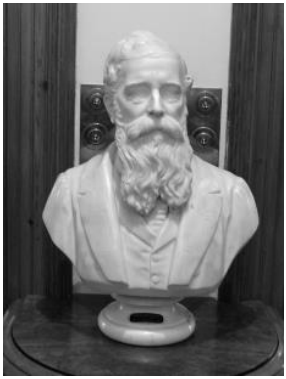
example or exhibition farm, Proctor may have seen it as an educational venture. It was also educational in the sense that, unlike most other farms, Proctor incorporated into it a schoolroom, where the mistress, in 1861 Louise Bromley, taught 16 youngsters, children of the farmworkers, in the mornings, and in the evenings 10 young farm workers, who attended voluntarily. The farm was also unusual in that it included a house for the dairywoman in charge of dairy and cheesemaking.

The buildings were of local limestone and Bath stone, roofed with Welsh slate. The design was neo-gothic, with quatrefoil openings in the south-facing gables (as shown below). The rectangular E-shaped layout followed that of Prince Albert's farm at Windsor. It included a length of railway, with a turntable, for transporting hay and other crops, distributing animal feed and collecting and shifting manure. Power came from a single cylinder stationary steam engine; a flywheel has been preserved.

For reasons not clear – Proctor pleaded ill health, but perhaps his other businesses in Bristol and Birmingham and work as a city councillor took priority – Proctor negotiated a surrender of his lease in 1861,[39] and moved from Wallscourt to Clifton. Beaufort accepted surrender of Proctor's lease, and agreed to pay Proctor £200 a year for 11 years in recognition of the capital improvements Proctor had made to the farm.

At the same time Proctor conveyed Stanley farm to the duke, who resumed control of both farms and re-let them. Under a succession of landowners and tenants Wallscourt continued as a dairy farm into the twentieth century. In 1981 the land was sold to the American manufacturer Hewlett Packard, who in 1984 demolished most of the farm buildings, but converted the farm house (which had become the main administrative centre of the Stoke Park estate) to a staff social centre.

Only a few examples of the farm buildings, mainly the southernmost elevations, and some of the machinery, were preserved. In 2012 Hewlett Packard sold the land to the University of the West of England, which has retained the remnants of the buildings, and uses the farmhouse as administrative offices.



Notwithstanding whatever ill health he was suffering in 1861, Proctor lived until 1876. In 1874 he donated his large house on the Promenade, Clifton, to Bristol city council as an official residence for the mayor, an office he never obtained. The house remains in that use, and contains a bust of him (above).[40] Proctor also paid for the drinking fountain at the top of Bridge Valley Road (left)[41] to commemorate the Society of Merchant Venturers' gift of part of The Downs for public use. Other benefactions included a small public park at Fishponds, which still exists, and a tree-lined walk alongside the New Cut, no longer traceable.[42] He was buried at Arnos Vale cemetery, with an imposing obelisk.

New House farm, Badminton

New House farm was constructed in 1860 for the Duke of Beaufort.[43] The picture (left)[44] shows the rectangular format, like that of Prince Albert's farm at Windsor. The farm was let out, and continues in operation to this day.

Hollywood Farm, Cribbs Causeway: model but not Victorian?

Holly House at Cribbs Causeway was a mansion built in regency style in the early years of the nineteenth century for John Britten Bence.[45] The house and its estate were bought in 1839 by John Davis, diplomat and sinologist, who renamed the estate Hollywood Tower. In 1908 George White the Bristol entrepreneur (Bristol Tramways, Bristol Aeroplane Company etc) bought the estate for his son George Stanley White, later managing director of his father's company. According to local tradition Hollywood farm, part of the estate, was a Victorian model farm.

In the absence of documentary evidence, it is difficult to date the buildings, which have been heavily restored recently (see left). The buildings were not shown on the 1894-1903 Ordnance survey 25 inches to the mile map second edition; but most of them appear in the 1898-1939 third edition, which suggests they may have been erected for George Stanley White rather than for John Davis, and therefore were not Victorian. The OS map shows the access to the buildings as being from Hollywood Tower, not from the Cribbs Causeway to Easter Compton road. The buildings are clustered, but not laid out in the rectangular E-shape plan seen in other local Victorian model farms.

White's descendents donated the estate to Bristol Zoological Society in 1965. The site was used for breeding and quarantining zoo animals, and to grow fodder for the animals at the main zoological gardens in Clifton. It opened to the public as a visitor attraction and wildlife park, *The Wild Place*, in 2013.[46]

Victorian model farms in north Somerset

Eastwood Manor Farm, East Harptree

William Taylor

William Taylor was born in 1838 in Norfolk. His father farmed seven acres at Wiveton.[47] William Taylor became a footman to John Henry Gurney, who in 1846 married his second cousin, then aged 16, Mary Jary Gurney. She was the daughter of Richard Hanbury Gurney M.P., a member of the Norwich banking family, and Mary Jary. When her mother died in 1857 Mary Jary Gurney became entitled, at the age of 27, to a life interest in a fortune said to have yielded her £20,000 a year in her own right.[48] In the autumn of 1859 she formed an attachment to Taylor, then aged 21. When John Gurney found out, he dismissed Taylor. The couple eloped and, for reasons not known, settled in East Harptree and lived together at Harptree Court.[49] Gurney divorced Mary and she married Taylor in Perivale, Middlesex on 11 March 1862, the register entry stating his place of residence as Perivale, hers as East Harptree.[50] Mrs Taylor called herself Lady Gurney.

Eastwood Manor estate was owned by Frances Elizabeth Anne the dowager countess Waldegrave. Having put the estate up for sale in 1858, in October 1861 she used two Bath land surveyors and a Glastonbury solicitor, who may have been trustees, speculative purchasers or undisclosed agents,[51] to sell the estate to Taylor for £18,850.[52] The estate at that time consisted of Eastwood, Pit[t] and Sherborne farms, totalling some 646 acres. Taylor bought a further 17 acres in 1865.[53] Taylor must have drawn on Mary Gurney's money, but he purchased the estate in his own name, at a full commercial value. She may not have wholly financed the construction of Taylor's new model farm, because in 1863 Taylor borrowed £10,000 from a Carmarthenshire landowner, and mortgaged the estate to him.[54] Perhaps Taylor raised that loan for other reasons, explained below, in which case money Taylor acquired through Mary Gurney, by 1862 his wife, may have paid for the construction of the buildings as well as the purchase of the land. Whatever Taylor's family arrangements may have been, in 1861 he had an estate that constituted nearly a third of the land in East Harptree parish. To establish a model farm Taylor turned to an expert, Robert Smith.

Robert Smith

Smith, born in 1809 at Oundle in Northamptonshire, farmed at Burley in Rutland and at the age of 26 was secretary of the Rutland Agricultural Association.[55] Having gained a reputation as a breeder of cattle and sheep, Smith was elected in his thirties to the council of the Royal Agricultural Society of England. He was also a member of the Bath and West of England Society.[56] Smith had several scientific articles published in journals, and was known to landowners interested in raising farming outputs by scientific methods. In 1848, when Smith was 39, John Knight, owner of large tracts of Exmoor, appointed Smith his agent to implement his huge reclamation project. In addition to his salary of £400 a year as Knight's agent, Smith also farmed 670 acres at Emmets Grange near Simonsbath.

In 1850 John Knight died, and was succeeded as owner by his son Frederic Winn Knight, who continued to engage Smith as agent. Smith published accounts of his methods.[57] At Lady Day 1861 Knight dismissed Smith, perhaps because of misconduct: one tenant of Knight's alleged that Smith ran up debts and had pressured tenants, most of whom struggled to overcome natural conditions to survive, let alone to make ends meet, to act as sureties for Smith's borrowings.[58]

After his dismissal, Smith continued to farm on his own account at Emmets Grange, and to develop a private land agency and consultancy business. In the absence of surviving correspondence, it is not possible to say when Taylor appointed Smith as agent and consultant at Eastwood Manor; whether Smith's role was as employee or as independent contractor; whether Smith actually moved to East Harptree to manage Eastwood Manor farm; or whether Smith visited as and when necessary. What is clear is that Smith designed Taylor's model farm.

The concept

Taylor's plan, inspired by contemporary high farming thinking, was to grow corn, not for milling for bread flour, but to feed to livestock. If grain was retained on the farm to feed to the animals, that would save the cost both of transporting the grain to the mill and of buying in food for the livestock. In farming parlance, following Caird, the grain was to walk to market. The aim was to house in one place and under one roof all the

farm's animals, stores, equipment and machinery: if everything the farm workers required was to hand or needed to be moved only short distances, that would save time and labour. Taylor aimed to take advantage of natural features of the land, in particular water: a stream fed an overshot water wheel to drive all powered machinery and a drinking water fountain for the animals. The layout allowed for diversion of the stream to wash down the yards, the waste to be fed to fields by a system of tanks and pipes, all by gravity and so at no cost of fuel. Having all the animals under cover would generate warmth which, it was thought in those days, would help them grow faster, so they could be sent to market earlier and fetch higher prices, taking advantage of the rise in corn prices in the 1850s.[59]

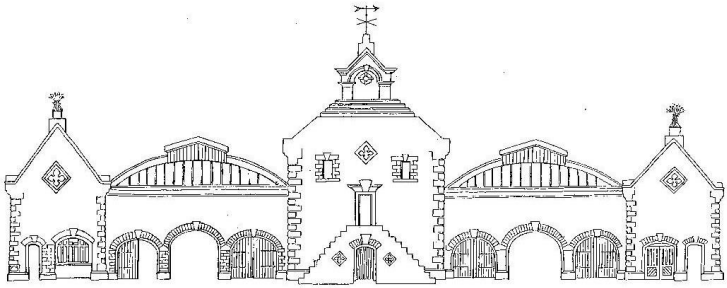
The design

If the description of the farmstead Smith gave to Kelly's *Post Office Directory* is anything to go by, he was at pains to stress that the ideas were Taylor's, and that all Smith did was to implement Taylor's concepts. Victorian ideas about deference, however, and the dependence of consultants on landowners for work make it more likely that Smith's ostentatiously self-effacing modesty was conventional or was calculated to flatter the client: the technical sophistication of the works at Eastwood Manor suggests that only an expert of Smith's experience was likely to have been the author.

Sources differ about the timing and the cost of the works. Some say they took 10, others 15, years to build, and cost £10,000, others £15,000. One architectural historian[60] dates them to 1858-9, two others[61] to 1859, another[62] to between 1858 and 1860, and another[63] says they were finished in 1860, all inconsistent with Taylor not acquiring the land until late 1861. Another[64] says they were built 'in 1868', which would be not inconsistent with Taylor purchasing in 1861, but is not reconcilable with Taylor having sold up in 1867. Assuming Taylor did not start building until after he had acquired the land, and that the works took a year or so to construct, a date of 1862-1863 seems preferable.

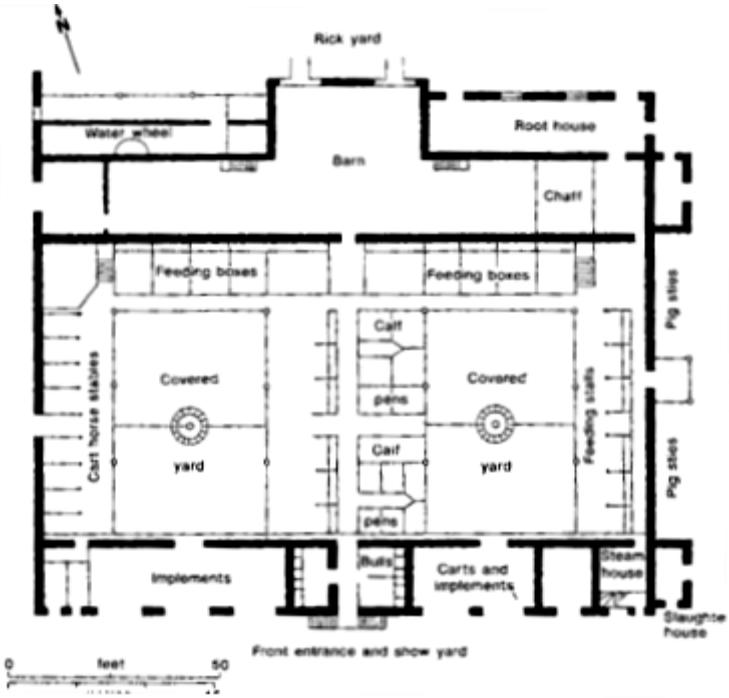
The huge building, covering an acre and a quarter, consisted of a roofed quadrangle: a central bullock yard surrounded by four wings each of two or three storeys. The roof was of glass and corrugated iron, supported by a frame of iron girders in five segmental spans, two 18 feet

high, and three of 36 feet (see Anton Bantock's drawing below and the photo, front cover). Some of the cast iron columns doubled as pipes for distributing water. Most of the ironwork came from Bristol ironfounders called Wright. Some of the other materials came from local sources: the flagstones for the bullock yard from Temple Cloud; the wood for the doors was local oak. The floors of the first storey were of Baltic pine, tongued and grooved so that nothing would fall through to waste.



The north range contained a large barn for machinery, an office and an equipment store. The south range contained sheds for farm machinery, a bailiff's stable, a coach house, granaries and store house (see plan opposite)[65].The three storeys of the east wing housed pigs below, cattle above, and corn on the top floor. The west range had two floors for cart horses and harness rooms, with spaces for storing chaff and corn, and an office above. The machinery was driven by a 27 foot (9 metre) diameter water wheel. Rail tracks led from the stacks to the threshing machines. There was housing for a dog, a wise precaution where grain is stored. A distinctive external feature is an ashlared stepped gable with quatrefoil openings, giving the symmetrical east elevation of the building a gothick, almost churchlike, appearance.

Writers[66] have remarked on the similarity of the cast iron roof spans to railway station architecture; appropriately, because Taylor invested in local railways and would have noted their roof structures at Bath and elsewhere, and because by 1860 engineers were increasingly involved in designing large farm buildings.[67]



The local impact

Other economic activity in the village, especially waterworks and mining, may have absorbed workers who would otherwise or previously have been engaged in agriculture. Bristol Waterworks Company, founded 1846, started in 1851 to lay a line of pipes to supply water to Bristol from the Mendips. The pipeline passed through East Harptree, and equipment was installed there. Workers will have been based in the village, surveying, setting out, excavating, hauling, laying the pipes and installing the pumps, filters and other equipment, and afterwards backfilling and maintaining the works. In 1861 six waterworks labourers lived in the parish, and it is possible that the civil engineer recorded in 1871 was engaged in the waterworks.[68] Lead working had prospered particularly at the end of the seventeenth century, but by 1850 the poor quality of the local product and cheaper imports had led to its cessation. In the 1850s, however, rising prices made it profitable to extract ore from old slag

heaps, starting at Priddy in 1857, at St Cuthbert's in 1862 and, from 1867, on Smitham Hill above East Harptree[69]. Taylor had property and financial dealings with James Bray, a mining agent, from 1861.[70] Mining employed 20 East Harptree people in 1861, and 19 or 20 in 1871, most of them skilled miners and labourers. Most of the product is thought to have gone to the lead shot works in Bristol until that closed in 1876.

The large drop in the number of agricultural labourers between 1861 and 1871, as recorded in the census, seems to confirm that the new model farm, which constituted so large a part of the parish's farmland, altered the pattern of local employment. The big rise in the number of non-agricultural labourers by 1871 suggests that many of the parish's agricultural workers were still employed, but no longer in agriculture: they had got jobs in mining or the waterworks. The 20 per cent drop between 1861 and 1871 in the total number of people employed in agriculture as a whole suggests that Taylor's new model farm employed fewer people. The similar fall in the number of farmers (as distinct from agricultural labourers) might be the result of nation-wide agricultural conditions, or of purchases and amalgamations, but Taylor's improved competitiveness may have put some small farmers out of business.

By 1871 some occupations had disappeared from the village: apprentices/errand boys; thatchers (who were not there in the 1861 census either). The baker had also gone, not surprising if the grain was no longer going to the mill to make bread flours. But overall the main occupations of the villagers seem to have persisted, and to have been augmented by the newly-emerging public sector occupations (police, firemen, relieving officer, postmen). Perhaps they were sustained in part by the mining and waterworks activities. Perhaps the absence of apprentices and errand boys in 1871 (or as a later age might term it, youth unemployment) is a sign of recession: that would be consistent with the decline in the number of shop and other assistants and in the number of labourers in specific trades.

If the numbers of people employed in the waterworks and lead mining are disregarded, there was no significant increase between 1851 and 1861 in the total number of people working in the village but not in agriculture, and a modest rise in numbers between 1861 and 1871. Taylor's model farm appears to have drastically reduced the number of agricultural workers, but many of those rendered unemployed found work in non-

agricultural jobs; the model farm was profitable, but it did not add significantly to the prosperity of the village under Taylor's ownership, because its profits went elsewhere, some of them into north Somerset railways.

The railway

Local tradition is that Taylor overreached himself by investing or speculating in local railways, particularly the Bristol and North Somerset company whose line from Bristol to Radstock via Pensford opened in September 1873; that Taylor's money 'went into the Pensford viaduct' [71] and that he lost his money in the failure of that company.[72] Whilst the initiative for that venture came from the local mine owners, especially Lady Waldegrave, local farmers and landlords of agricultural land supported the project because they saw the railway as facilitating cheaper and quicker transport of produce into Bristol and Bristol docks, and also to London, where grain and milk sold for 20% more than locally. It was Taylor's involvement with the Bristol and North Somerset railway that led to his financial discomfiture and his decision to sell Eastwood Manor estate after only six years' ownership. The reasons why became clear when a committee appointed to investigate the company's affairs reported in June 1867.[73] Of the 13,750 shares authorised, only 804 had been paid for and allotted; 355 had been issued in lieu of payment for land; 2026 had been issued to the contractors. Four directors, one of whom was Taylor, had signed notes to borrow £180,000. They had recorded the issue of bonds totalling £23,000, but had also issued another £36,000 in bonds without recording them. The total debts of the company were some £300,000, but because borrowing over £91,000 was not authorised by the company's articles of association, the directors who had signed the loan notes were liable personally. Taylor had to raise money, and fast. Eastwood Manor estate was put up for auction on 24 August 1867.[74] The purchaser was the Reverend Charles Adam Kemble, rector of Bath. Kemble rebuilt the manor house in 1874, but made no alterations to the model farm, which continued under his ownership until 1894,[75] and continued profitable.[76] Given that Kemble is reputed to have paid out of his own pocket (after providing for wife and eight daughters), for extensive renovations of Bath Abbey he had commissioned from George

Gilbert Scott from 1863 onwards, it seems likely that after 1867 the profits of the model farm went, not into the East Harptree economy, nor into the Pensford viaduct, but into Bath Abbey.

Tyntesfield, Wraxall

The Tyntesfield estate, acquired by the National Trust in 2002, was owned by the Gibbs family, importers of guano from Peru, where the fertiliser was dug mostly by Chinese labourers.[77] It was imported in large quantities into Liverpool and Bristol.[78] Profits from the trade, said to have exceeded £70,000 a year, enabled William Gibbs (1790-1875) to purchase the estate in 1842, and from 1863 to build the opulent mansion, designed in neo-gothic style by John Norton.[79]

The estate's home farm was constructed as a model farm, but not until the 1880s. Matilda Blanche Gibbs, widow of the William Gibbs who had commissioned the main house and who held a life interest in the estate, commissioned the design of the farm from Henry Woodyer (1816-1896), a neo-gothic specialist, a pupil of William Butterfield and a follower of AWN Pugin. The design took advantage of the slope of the land. On the upper level was a yard, with wings either side to accommodate animals, stores and offices; now converted by the National Trust into a ticket and information office and plant centre. On the lower level was a two-storey covered yard with substantial ironwork, for more animals; now operating as a shop and restaurant (see left).[80]

The farm is not remarkable, except in its date. By the 1880s the depression that afflicted English agriculture had severely affected farming in north Somerset, as elsewhere. The Gibbs family's reconstruction of their home farm will not have been motivated by the same considerations as prompted Ducie at Whitfield or Taylor at East Harptree. One possibility is that the family

gave priority to the construction of the main house, so that a planned reconfiguration and rebuilding of the home farm was deferred. Or perhaps the family or their advisers considered that the depression in agriculture was an opportunity.

Anthony Gibbs was succeeded in 1907 by his son, colonel George Abraham Gibbs (1873-1931), Conservative MP for Bristol West 1906-1928 and then Lord Wraxall. The second Lord Wraxall made few changes to the estate or its buildings before he died in 2001, with the result that the National Trust acquired the farm dilapidated but substantially unaltered.

Norton Hawkfield model farm

The model farm at Norton Hawkfield was of 374 acres.[81] It was one of the outlying farms of the Smyth family's Ashton Court estate. It was run partly as a dairy farm and partly for rearing stock. Next to the farm house was a square yard, with harness room, stables and loose boxes, trap house and milk house. Unlike Prince Albert's Windsor model, buildings arranged in a semi-circle enclosed two covered yards, calf house, chaff house, granary, barn, sheep dips and dairy.

The farm appears to have had an uneventful history, sustained by the large local market with Bristol nearby, until the agricultural depression of the 1870s reduced its profitability. Then followed the introduction of death duties. Greville Smyth, who had inherited the farm along with the rest of the estate in 1852 and was responsible for its reordering as a model farm, died in 1901 and Emily Smyth in 1914. During the 1914-1918 war Ashton Court was used as a military hospital, but its outlying farms continued operating. Unlike many other estates elsewhere in the county

such as Leigh Court at Abbots Leigh, the estate as a whole was not put on the market, only the nine outlying farms, presumably to enable the family to continue to occupy the principal mansion house. The farm was auctioned at the Grand Hotel, Bristol, on 25 May 1916, together with other outlying farms of the Ashton Court estate, including Pottery farm Bishopsworth; New Barn farm Norton Malreward; Hill farm Whitchurch; Whitwood farm Norton Malreward, Manor farm Norton Malreward and Lyons Court farm, Whitchurch.[82] The farm then continued until the end of the twentieth century, when the fields were sold off. The buildings are now used as a bed-and-breakfast hotel, though the premises are still called Model Farm.

Assessment

Agricultural Success?

Agricultural historians generally consider that British agriculture improved between 1850 and 1950,[83] whether judged by output, rents, wages or efficiency. It is less easy to identify how much of that was attributable to the influence of Victorian model farms, because there was so much else going on: advances in science and technology; improvements in plant and livestock breeding; transport improvements, not least the railways; the incentive of foreign competition; and two major wars, both of which led governments to adopt policies to support agriculture, if only to reduce reliance on imports.

One way of answering the question is to assess how many Victorian model farms survived or continued as farms. Most struggled towards the end of the 1870s in the depression that affected all English farming. Those in Avon succeeded agriculturally so long as tenants were able to utilise the facilities that had been provided by their landlords, previous tenants or their own efforts. As modes of farming changed, whether in response to changes in market conditions or as a result of new methods and technologies (such as electricity), some Victorian model farms became obsolete, at any rate in their original form. Thus at Whitfield Example

farm all but the northern range of buildings was demolished and replaced. Wallscourt succeeded so long as Thomas Proctor ran it, but once he surrendered his tenancy subsequent tenants adopted different practices. Hollywood, if ever a model farm, became part of a gentleman's residence, with the farm house acting at one time as the local post office,[84] no doubt as a convenience to the owner, who had non-agricultural business interests. The holding later became a sort of farm, but not of the sort that Victorians would have envisaged. Norton Hawkfield continued, but ceased to be viable as a farming unit in the twentieth century. Eastwood Manor and New House, by contrast, appear to have survived as farms, and without substantial re-ordering.

Whether a Victorian model farm was successful from the landlord's point of view will depend on the landlord's objective. If the landlord's aim, as at Whitfield, was to lead by example and to demonstrate improved methods, one way of judging success or otherwise is to look at the farm's influence on farming practices. In so far as it was intended to demonstrate what could be done, Whitfield Example farm was an immediate success. By July 1842 over a thousand people had visited it. The number of visitors suggests that Morton's aim of promulgating the gospel of high farming with liberal (on the part of the landlord) tenancy conditions attracted interest. Knowledge of model farms' successes and failures was promulgated through the farming community, and resulted in a host of minor improvements to a large number of holdings that continued to operate much as before, but with improvements or adaptations copied from or inspired by the local Victorian model farms. Many farms became more scientific, better organised, more businesslike. In the longer term, Whitfield Example Farm may not have been so successful as a demonstrator, because John Chalmers Morton, writing 25 years later, considered that farming methods had not changed much in the neighbourhood,[85] which suggests that Whitfield Example Farm had not improved farming practices locally. The tile works at Oldbury, however, continued, and continued to provide employment, for many years, which suggests that local farmers saw the advantages at least of draining their land.

Financial success?

During Victorian times there was scepticism about the financial wisdom of high farming. In *Orley Farm*, written 1860-1861, Anthony Trollope presents young Lucius as inexperienced and foolish in his plans to improve the family farm; his mother suggests that high farming requires too much capital; Lucius goes to Liverpool to buy good quality guano. Sir Peregrine Orme tells her that 'experimental farming is an expensive amusement,' and that anyone intending it 'should have a very considerable capital at his back.' Later he advises Lucius, 'For a country gentleman I know no prettier amusement than experimental farming; - but then a man must give up all idea of making his rent out of the land.' [86]

And in Trollope's *American Senator,* the Senator says to Lord Rufford:

> 'You say, Sir George, that it is a model farm; — but it's a model of ruin. If you want to teach a man any other business, you don't specially select an example in which the proprietors are spending all their capital without any return. And if you would not do this in shoemaking, why in farming? … If he would publish his accounts half-yearly in the Rufford Gazette, honestly showing how much he had lost by his system, how much capital had been misapplied, and how much labour wasted, he might serve as an example.'[87]

Because detailed contemporary financial accounts of the model farms in Avon have not survived, it is impossible to tell whether any were financially successful. The nearest we have to a set of accounts is the summary printed by John Morton for Example Farm, Whitfield.[88] The accuracy of that summary has been questioned.[89] Morton was concerned to publicise the advantages of the system he was advocating; omitted some large items, such as the cost of machinery (which came from Ducie's Clyburn works, so will have been obtained at no marginal cost); and required a rent waiver or reduction in the first two years of his tenancy. Nevertheless, offsetting against the costs the proceeds from selling timber when the hedges and trees were removed, which reduced the landlord's net capital expenditure, the farm paid a substantially increased rent, which from the landlord's financial point of view must have counted as a success. The subsequent history of Whitfield farm

suggests that as technologies, practices and markets changed, its form did not prove permanently suitable. Like most other farms, it suffered during the depression of the 1870s; buildings have been demolished; the farm survived and continues, but now specialises in the rearing of organic beef.

With Proctor's huge capital investment, his fertilisers and his business management skills, Wallscourt farm appears to have been successful so long as Proctor was tenant, but after his departure subsequent tenants lacked Proctor's capital resources. The farm continued to be viable through a succession of owners and tenants (Beaufort sold it about the same time as the Smyths sold Norton Hawkfield), until it was sold to Hewlett Packard, the sales reflecting, not any lack of success in farming, but the prospect of higher returns on capital from investment of the proceeds of sale elsewhere, or the need to realise cash to pay off debt or death duties.

Hollywood, if a model farm, soon ceased to function as a farm in the conventional sense, and became in effect an adjunct to the owner's residence, and then a producer of animal fodder for the zoo, and later a subsidiary zoo in itself and a visitor attraction. The reasons for those changes appear to have been operational rather than financial. It was part of a manufacturer's residence, not an agricultural business.

New House farm at Badminton continues to operate, with few alterations apart from electricity and other modernisation, so can be considered to have continued financially viable.

In north Somerset the financial fortunes of Victorian model farms appear similarly patchy. William Taylor sold Eastwood Manor farm, not because it was financially disappointing, but in order to pay the debts he incurred as director of the north Somerset railway. He sold at a full price, which suggests that it was successful. The farm weathered the difficulties of the 1870s, and continues to operate in the same buildings, but with electricity installed for light and to power machinery, so it can be considered a continuing financial success.

The same cannot be said of Norton Hawkfield. Like the other outlying Ashton court estate farms, it fared badly in the closing years of the nineteenth century. When it was sold in 1916 the tone of the estate agent's particulars was modest and reassuring, and the rent of £1 10s an acre reasonable but unexciting.[90] The sale of the estate's outlying farms was

forced partly by death duties and other financial considerations external to the farm. The farm continued to be viable until the late twentieth century, when the fields were sold off and the house retained for use as a bed and breakfast hotel. Like Eastwood Manor farm and Wallscourt, Norton Hawkfield model farm's history was at times determined by external events and circumstances that had little to do with farming.

Tyntesfield model farm's history also suggests financially disappointing outcomes, for a different reason: during its long period of occupation by the second Lord Wraxall there was no investment, little change, and gradual decline. The farm was still working when the National Trust purchased the house and some of its estate, but it was badly maintained and suffering from lack of investment and management, and it could hardly be described as flourishing or even viable. The Trust has not sought to re-establish the farm, whether as a model farm or any other sort of farm. The survival of Eastwood Manor farm and of New House farm suggests that under different ownership or management Tyntesfield model farm could have continued to be financially viable.

Legacies of the Victorian model farm

The Victorian model farm can be seen as a stage in how agriculture changed in England from a traditional activity aimed at producing enough food to enable individuals and their communities to survive, to one whose main purpose was to deliver profits. Once agricultural units produced surpluses, and once markets for those surpluses developed, landowners could demand rents from tenants or could negotiate the conversion of feudal services into money rents, so that as well as, or instead of, producing food, land could be an investment to produce money. From Saxon times religious foundations were endowed with manors or other landed properties to fund the foundation's activities. By the sixteenth century land was a primary source of wealth, agricultural activities being the main generator of income for those magnates not engaged in trade or the exploitation of minerals or other natural resources. By the 1830s already wealthy landowners looked to extract the maximum profit from their land as from any other asset. Model farms were one way of doing that. Their legacies can be traced accordingly in landowners treating farming as a profit-generating business.

It would not be reasonable to expect Victorian model farms to have provided a template which farmers across south Gloucestershire and north Somerset flocked to follow. Only the very wealthy had the resources necessary for high farming. The depression of the 1870s shrank rents, and made agricultural land no longer the first-choice investment. The rich deployed their capital elsewhere. That is one reason why the Victorian model farm was a short-lived phenomenon, and why there are few Victorian model farms in the area, and no post-Victorian imitations.

The replacement or improvement of outdated farm buildings did not start with the Victorian model farm: landowners who could afford the capital had long been making such improvements, and continued to do so. But the Victorian model farm introduced or accelerated other changes, in combination, which have had longer-term effects on farming and on the landscapes in which people practise agriculture.

One change has been increased mechanisation, of which Whitfield is the earliest local example. The industrial revolution led to the invention of machines for many sorts of manufacturing and processing. Some were applied into agriculture. Threshing machines had been introduced shortly after the Napoleonic wars – hence the Swing riots in southern counties in the early 1830s – but it was from the 1840s, as the 1842 Bristol show demonstrated, that mechanisation became widespread for myriad agricultural operations. The Great Exhibition will have accelerated the trend. Mechanisation has continued and intensified ever since. The Victorian model farm's emphasis on mechanisation and the use of steam power (and, in both south Gloucestershire and north Somerset, cheap local coal) led to more and more operations being mechanised. The tractor, the combine harvester and the silage maker descended from the mechanisation the proponents of the Victorian model farm advocated.

Similarly, with its emphasis on ergonomic reorganisation of operations and buildings, of which Eastwood Manor is the prime example, the Victorian model farm led to a more general industrialisation of farming. The same ideas and principles that informed the Victorian model farm also inform modern industrial farming, such as the battery rearing of pigs and poultry, uniformity of plant spacing, uniformity of products, a reduction in the range of varieties grown, the automated harvesting of many crops including top fruit, and intensive use of glasshouses.

Similarly with the removal, as at Whitfield, of hedgerows and trees, a frequent feature of modern farms, carried to an extreme in the vast treeless and hedgeless fields of east Anglia, but not so far in south Gloucestershire or north Somerset.

Another inheritance from the Victorian model farm is the intensive use of chemicals. Natural manures continued to be collected, conserved and spread, but more efficiently than before, but artificial chemicals were brought in to supplement or replace natural manures produced in-house. Promoted by people like Thomas Proctor at Wallscourt, the use of chemicals has continued and expanded, both in their application to fields as fertilisers, but also in their application to crops eg as pesticides, and to animals e.g. as antibiotics and growth hormones.

Hence modern ecological concerns about soil erosion, exacerbated by the removal of trees and hedgerows; loss of wildlife habitats; a general reduction in biodiversity; contamination of rivers and groundwaters by nitrates from fertilisers applied in excess to fields and washed out by rain; pesticide residues in crops; growth hormones in meat; and antibiotics in meat and milk: all transmitted into what humans eat. Many of the concerns ecologists and other scientists express about the degradation of the environment can be traced back to practices introduced or intensified by, and inherited from, the Victorian model farm. Driven by the demands from rising populations in Bath and Bristol, south Gloucestershire and north Somerset were in the forefront of the changes.

Acknowledgements

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I have relied heavily on the accounts of Eastwood Manor farm, East Harptree, by Anton Bantock in his 'Eastwood Manor Farm, East Harptree', 15 *Malago* (1982) p 2ff; and of Whitfield Example farm, Cromhall in Celia Miller's 'Whitfield example farm, a Victorian model' in *BIAS Journal* vol.16 (1983), p 201-27. Much of the detail about William Taylor of Eastwood Manor farm was researched by Bob Lawrence for an article we jointly wrote, 'William Taylor's agricultural experiment: Eastwood Manor Farm, East Harptree', in SANHS *Proceedings*, vol 157 (2013) pp.104-113.

Dr Jonathan Harlow first suggested that ALHA should publish booklets on the local history of its area, similar to those edited by the late Peter Harris for the Bristol Branch of The Historical Association. Dr Harlow has made a mighty contribution to the local history of our area in editing all the ALHA books published so far. He has edited this one with his customary rigour and insight, suggested several improvements, and saved me from some howlers. For what is published, I accept full and sole responsibility.

Abbreviations

BA	Bristol Archives
BIAS	Bristol Industrial Archaeological Society
GA	Gloucestershire Archives
GDR	Gloucester diocesan registry
OS	Ordnance Survey
OUP	Oxford University Press
RASE	Royal Agricultural Society of England
SANHS	Somerset Natural History & Archaeological Society
SHC	Somerset Heritage Centre
TNA	The National Archives

Endnotes

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https://www.invaluable.co.uk/auction-lot/richard-ansdell,-ra-1815-1885-the-meeting-of-644-c-9c2c4145b8#

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23 GDR /G2/3; Church of England Record Centre, ECE/6/1.

24 drawing from J C Morton *The prince consort's farms* (1863)

25 J Morton, *The nature and property of soils*, (James Ridgway, 1840), ed.4, 1843, gives full details of Whitfield farm in the appendices, pp.237-342. A more recent account is C Miller, 'Whitfield example farm, a Victorian model' in *BIAS Journal* vol.16 (1983), 201-27. See also J Bravender, 'The farming of Gloucestershire' in *Journal of the Royal Agricultural Society* XXV, I (1850) 166-167.

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28 Author, based on Wade Martins on OS base

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41 https://upload.wikimedia.org/wikipedia/commons/thumb/b/b4/Aldermanproctersdrinkingfountain.JPG/240px-Aldermanproctersdrinkingfountain.JPG

42 The trees may be those shown in http://maps.bristol.gov.uk/knowyourplace/images/her_pc/6228.jpg.

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45 Images of the house at http://hollywoodestate.co.uk/overview; http://s536354328.websitehome.co.uk/about-us/history/, 25 October 2017 John Britten Bence, baptised 20 April 1766 at Christ Church, City, Bristol, Bristol Archives P.Xch/R/2, came from a family at Henbury and had property in central Bristol. I am grateful to John Stevens for the reference and Bob Lawrence for clarification.

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