

DARWIN'S GARDEN

*The Estate and Gardens at Down House, Bromley
A Preliminary Assessment*

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Summary

Darwin and his family moved to Down House in September 1842. They did not fundamentally change the shape of the property. The present kitchen garden and pleasure grounds were already in place, their principal ornament being a row of fine lime trees; the Home Meadow was good hayland, if in need of maintenance.

The most substantial changes to the garden and estate came in the years 1843 to 1846, a period of feverish activity when the house itself was considerably altered. In these years the Sandwalk was formed and various mounds constructed from earth excavated during the lowering of the road to the east. The North Orchard was considerably extended by the purchase of land to the west. More fruit trees were planted, mostly apples. Paths were relaid and many made anew.

Current research suggests that for the rest of his time at Down Darwin merely enhanced the structure of the garden and North Orchard. There were, however, several important additions: first the pigeon house in 1855 (its exact location has yet to be determined), and then, in 1862, the hot-house and green house complex in the Kitchen Garden. The Kitchen Garden is also known to have contained experimental beds. Perhaps the now-ruined laboratory block dates to this campaign. Darwin built these to further his research into the development of species varieties, which gives this part of the estate special historic interest.

After Darwin's death in 1882, his wife Emma gave up full-time residence and came to Down only for the summer months. Most of the information we have concerning the estate and garden dates from the last years of his life and the 1890s. Further research, particularly on the 'fifties and 'sixties is needed.

The history of the garden and estate in this century is not well understood, although it is likely that the garden was not much altered through the interwar years. Since it has suffered considerably. The North Orchard, such an important feature of the original estate, has been replaced by a scheme of c1960. Fortunately, little has been done to the Sandwalk.

2. A History and Analysis of the Gardens and Estate¹

2.A. The Attraction of Down²

In an autobiographical note written towards the end of his life Charles Darwin (1809-1882) recalled how he had come to live at Down House.

*After several fruitless searches in Surrey and elsewhere, we [he and his wife Emma] found this house and purchased it. I was pleased with the diversified appearance of the vegetation proper to a chalk district, and so unlike what I had been accustomed to in the Midland counties; and still more pleased with the extreme quietness and rusticity of the place.*³

This account, penned in 1876, tells only part of the story. Down was rural, true, but had Darwin merely been seeking a quiet place in the country to live and work, he would most certainly not have settled in this fairly uninspiring stretch of West Kent. What he needed was a position far enough out of London to avoid social duties, the endless round of calls and dinner parties which his class and position in life required of him, yet near enough to stay in touch with the intellectual life of the town. His son and first biographer, Francis observed in moving to Down his father 'intended to keep up with scientific life' and not become a 'complete Kentish hog'.⁴

In short Down was about as rural a place as any to be found within the orbit of the metropolis. It still is. When the Darwins arrived in 1842 the West End was a twenty-mile coach journey away. The first railway line to pierce the leafy Kentish and Surrey fringe of London were little better. Stations at Croydon and Sydenham were a ten-mile coach journey, an hour's drive or more depending on the weather. The suburban railway boom of the 'sixties and 'seventies brought things a little nearer, but the village held out against suburbanisation. As Darwin's fame grew an increasing number of scientists took the trouble to visit him at Down, but the distance kept less serious students at bay leaving his peace intact.

¹ Here I must acknowledge the contribution of Solene Morris, Curator of the Darwin Museum, to this report.

² 'Down' was spelled without an 'e' until 1850 or so, when the spelling was changed to avoid confusion with County Down in Ireland. Darwin refused to alter the spelling of Down House.

³ *The Life and Letters of Charles Darwin, including an Autobiographical Chapter*, ed. Francis Darwin (London: John Murray, 1888), vol. 1, pp. 78-9.

⁴ *Life and Letters*, vol. 1, pp. 318-9.

There were other reasons for seeking refuge. Already, by the early 1840s, Darwin's fragile health was showing signs of cracking.⁵ He began to experience the first symptoms of the vague and unspecified illness which scholars and biographers today now accept was psychogenic in origin.⁶ Whether this remove from society into the bosom of family life helped or hindered him is to be wondered, since the malady might have been the product of an emotionally difficult childhood. Speculations of this sort, however, must not keep us too long, since London in the 1840s, even the genteel streets around Upper Gower Street where the Darwins had settled in 1839, certainly had its dark side. Returning to the metropolis in July 1842, fresh from a two month tour in the Midlands, Darwin, in the words of recent biographers, 'found the city a cauldron', brimming with the sufferings of the poor and the militant cries of the Chartists. There were his specimens collected on board the *Beagle* still to be analyzed and written up, and other, more unsettling ideas to work through. He needed a place to think. The time was ripe for a move.⁷

2.B. The Down Estate in 1840

We have little in the way of documentary evidence for the development of the gardens and small estate at Down before Darwin first saw it in July 1842.⁸ There are two engraved views of the house from the Regency period in the Darwin Museum collection. One (Engraving 1) shows a carriage drive leading up to the entrance front of the house with the country lane (now Luxted Road) to the left. Soon after taking the lease Darwin closed the entrance on the north side of the house, moving it to its present location on the long east front.

This engraving allows us to draw two firm conclusions with regard to the estate and garden: first, the apple trees which would later cluster up against the north elevation⁹

⁵ *Life and Letters*, vol. 1, pp. 318-9.

⁶ Stephen Jay Gould, 'Why Darwin?', *The New York Review of Books*, 4 April 1996, pp. 10-14. Review of Janet Browne, *Charles Darwin: Voyaging* (New York: Knopf, 1996).

⁷ Adrian Desmond and James Moore, *Darwin* (London: Michael Joseph, 1991), pp. 296-7.

⁸ The precise date of the Georgian house which Darwin leased in August 1842 has yet to be established. Hedley Atkins (*Down. The Home of the Darwins. The Storey of a House and the People Who Lived There* [London: Royal College of Physicians and the Curwen Press, 1974], p. 17) states it was built in 1778 for one George Butler soon after he bought the estate. Recent fabric analysis undertaken by my colleague Richard Lea argues for two distinct eighteenth-century phases, the first dating to before 1750. See his 'Down House, Bromley, Notes on the Historical Development of the House', Historical Analysis and Research Team Report, June 1995. BRO 47.

⁹ Described in Gwen Raverat, *Period Piece. A Cambridge Childhood* (London: Faber and Faber, 1987 reprint of 1952 edition), p. 152. The orchard was overlooked by the

are not shown and therefore must have been added by Darwin himself; and, second, that the row of Lime trees¹⁰ running from the northwest corner of the house (and now sadly decimated) did not continue across the north front of the house.

The Tithe Map (Maps 1) for the parish was agreed in 1840 and gives some idea of the estate's layout.¹¹ The owner-occupier of Down House and its sixteen acre estate was the Rev. James Drummond. Some fifteen acres, then as now, was meadow. The present 'Kitchen Garden' (1 rod and 34 perches) is clearly shown, but then, in 1840, it was simply a 'garden', an extension of the 'Pleasure Grounds' in the vicinity of the house. There is some suggestion of a terrace immediately to the west of the house, along the lines of the present flower/pleasure garden. In Darwin's day this was marked by an iron fence, which was moved to the west end of the lawn sometime after 1900.

Most of what would become the North Orchard was purchased in August 1845 from Mr. Sales. The land for the tennis court was acquired in 1881. One of the most of interesting features of this map is the belt of trees in the southwest corner of the meadow, following the eastmost line of the present Sandwalk. This suggests that the idea for the Sandwalk, where Darwin took his daily constitucionals, developed from a shaw, a narrow run of wood and shrubbery, often masking a sloping bank, that is traditionally found between meadows in this part of Kent.¹²

2.C. The Down Estate in Darwin's Eyes: The Letter of 24 July 1842

The landscape in 1840 was not the most beautiful which the Homes Counties had to offer, and Emma Darwin was certainly not taken with it. In later life she recalled finding it 'harsh', even 'desolate'. In the memoir of her mother, Henrietta Litchfield (*nee* Darwin) recalled that the family had always regretted Charles not settling in 'prettier' part of the south.¹³ Nevertheless, Henrietta admitted that before long even her mother had grown fond of it. Certainly Emma was closely involved in the planting and maintenance of the ornamental garden and the Sandwalk (see below).

Darwin himself saw so many demerits in the property that it is a wonder he pursued the lease at all. A letter he wrote to Catherine Darwin on 24 July 1842 was equivocal in

lavatory window, the only one of the first floor of the north elevation.

¹⁰ These were probably planted in c1800. See O. J. R. and E. K. Howarth, *A History of Darwin's Parish, Downe, Kent* (Southampton: Russell and Co., 1934), p. 76.

¹¹ IR 30/17/151, Public Record Office, Kew. The Tithe Apportionment is held at PRO IR 29/17/115.

¹² Howarth, *Darwin's Parish*, p. 82.

¹³ H. E. Litchfield, *Emma Darwin. Wife of Charles Darwin. A Century of Family Letters* (Cambridge: The University Press, 1904), vol. 2, p. 44.

almost every regard. Although the drawing room of the house -- which he would later describe as 'very ugly'¹⁴ -- faced south, it had no view worth boasting about

except our own flat field and bits of rather distant ugly horizon. -- close in front [here Darwin is most likely referring to the north or entrance front; the description blends into the garden of the south front], there are some old (v. productive) cherry trees, walnut trees -- yew -- spanish chestnut, -- pear -- old larch, scotch fir & silver fir & old mulberry trees make a rather pretty group -- They give the ground an old look, but from not flourishing much also give it rather a desolate look. There are quince & medlar & plums with plenty of fruit, & Morrell cherries, but few apples -- The purple magnolia flowers against the house [south front most likely]: There is a fine beech, in view in our hedge [to the south and west]. -- The kitchen garden [to the south of the stables] is a detestable slip & the soil looks wretched from a quantity of chalk flints, but I believe it really productive. The hedges grow well all round our field, & it is a noted piece of Hay-land... There are many very odd views round our house deepish flat-bottomed valley and nice farm house, but big white, many, ugly fallow fields; -- much wheat grown here...¹⁵

There were also laurels in abundance most of which were eventually uprooted to make way for azaleas.¹⁶ The principal charm of the gardens in the vicinity of the house was the 'row of fine limes trees on the west', where, as Henrietta Litchfield recalled, 'we constantly sat out'.¹⁷ From the start these provided some shelter from the wind which scours across East Anglia and Kent. One of Darwin's long-term aims was to build up an impenetrable windbreak along this line, sheltering the area which would become the focus of family life during the fine weather.

2.D. The Purchase of the House and Life at Down

Uncertain as to its suitability Darwin initially tried to negotiate a one-year lease with Drummond, but his attorney warned this might prove dangerous since the property was mortgaged for £2,500 and nonpayment of the interest on the part of the freeholder could, in his view, lead to the leaseholder's furniture being seized. Darwin's architect, Edward

¹⁴ *The Correspondence of Charles Darwin*, ed. F. Burckhardt and S. Smith, vol. 2 (Cambridge: The University Press, 1986), p. 352, letter to W. D. Fox, dated 25 March 1843.

¹⁵ *Correspondence*, vol. 2, p. 324.

¹⁶ *Correspondence of Charles Darwin*, vol. 4, ed. F. Burckhardt and S. Smith (Cambridge: The University Press, 1988), p. 345, letter to Emma Darwin dated 31 October 1847.

¹⁷ Litchfield, *A Century of Family Letters*, p. 44.

Cresy, who lived locally, strongly urged him to purchase outright since the place was ready to occupy and in fairly sound condition. This he knew for a fact, as he had been in charge of repairing and reroofing the house in 1839. There was also, Cresy pointed, a good local supply of skilled and inexpensive labour. After some uncertainty Darwin offered £2,202. It was accepted and he took possession at the end of August. Emma and their three-year old son moved in on 14 September. Three days later Charles joined them.¹⁸

Soon he had settled into the daily pattern of life as it would be described by family and friends -- work, correspondence, an hour's walk (usually around the Sandwalk), lunch, rest, more work, some literature, a simple tea, two games of backgammon with Emma, and then bed.¹⁹ The regime went on and on, with only the briefest breaks, for nearly forty years. As early as 1846 Darwin was able to sum what was happening to him at Down.

*My life goes on like Clockwork, and I am fixed on the spot where I shall end it.*²⁰

2. E. Estate Improvements and Changes to the Garden, 1843-1847

Fortunately Darwin's financial records are fairly detailed for the early period of occupation.²¹ Work in earnest commenced just after New Year 1843 with the Home Meadow. Previous tenants, Drummond and Captain Johnston before him, must have neglected it, for an entry in the Classed Accounts for 7 January shows a payment of £11.18.6 to a Mr. Shore, a local farmer, for a 'walk round the field' and the removal of 'forty-three loads of chalk flints etc.' Over the next two weeks trees were uprooted. Shore went over the field once more. Finally, towards the end of the month, came harrowing.

In late February attention turned to the garden itself. Dung was brought in and tools. An entry for March records the first of several purchases of 'fruit trees' for the orchard immediately north of the house. In early April seven loads of gravel were delivered, most of it to be used for making paths. A payment to a local bricklayer, Laslett, on 15 April is annotated 'for Garden Walk'. This is almost certainly the long walk which leads from the row of limes to the west verge of the property. According to a letter from this time

¹⁸ H. Atkins, *Down*, p. 15. R. Lea, pp. 4-5.

¹⁹ Atkins, *Down*, pp. 35-6.

²⁰ *Correspondence*, vol. 2, 345.

²¹ There are four volumes of Classed Accounts held in the Down House Manuscripts Collection. Vol. 1, September 1839 to September 1843, Ms. 211; vol. 2, September 1843 to September 1853, Ms. 212; vol. 3, September 1853 to September 1866, Ms. xlb (otherwise unclassified); and vol. 4, September 1866 to 1881, Ms. 213. Hereafter references to these will be by volume number of date.

Darwin was also forming a new kitchen garden, the present one, which, with 'sundry other projected schemes' made his days 'very full'.²²

The work of pathmaking with chalk and gravel went on for four years, through 1847, according to entries in the *Classed Accounts*.²³ In May 1852 setting with tar was tried, though whether on a new or an established path is not certain. In the first half of the 1860s, the network was in need of maintenance. Several payments to George Snow, a carrier based at Borough in Southwark, show that a great deal of gravel was transported south from this distribution point.²⁴ By 1869, the date of the first edition *Ordnance Survey* (Map 3), the North Orchard was well crossed with curving paths.

At the same time Darwin was improving the house. He moved the entrance from the north to the east elevation and had the polygonal bay on the south front constructed.²⁵ Moving the entrance improved circulation inside the house and helped keep out the harsh wind. It also enabled Darwin to fill in that exposed northeast corridor with fruit trees, mostly apples. But the new arrangements left the entrance pressed up against the public way (now Luxted Road), so in order to gain privacy Darwin decided to lower the lane and build a wall. A motion regarding the lane was put to the parish vestry late in April 1843. This involved excavating 170 yards of road, digging down 18 inches to more than two feet at the point where the road came nearest the house.²⁶ High flint walls were erected along those parts which directly bordered the newly planted north orchard. Walls enclosing the new entrance forecourt were also built.

In September 1843, in a letter to Charles Lyell, Darwin reported that: 'We have at last got out house and place tolerably comfortable; and I am well satisfied with our change in life'.²⁷ A letter of December details what else had been achieved 'Out of doors': '...we have levelled the broad walk and put a step which is a great improvement; only my heart bled at the number of Mulberry roots we cut through -- we have done all our own planting -- and are making the side of the house tidy and resetting the lawn, and have made the paths by the cow yard tidy and dryer'.²⁸

²² *Correspondence*, vol. 2, letter to W. D. Fox, dated 25 March 1843.

²³ See entries in *Classed Accounts* for 26 October 1846, 10 and 19 January 1847.

²⁴ *Classed Accounts*, 11 July 1864, 2 May 1865, and 3 January 1866.

²⁵ Richard Lea, 'Down House, Bromley. Notes on the Historical Development of the House', *Historical Analysis and Recording Team Report*, English Heritage, June 1995, p. 7, fig. 5.

²⁶ *Correspondence*, vol. 2, p. 360.

²⁷ *Correspondence*, vol. 2, p. 389.

²⁸ *Correspondence*, vol. 2, *ibid.*

The material excavated from the lane was eventually used to form a series of banks and mounds in the garden itself.²⁹ In a letter to Susan Darwin from September 1845 Charles notes the 'series of great earthworks' then underway. Some of the earth heaped around the pair of yews to the southwest of the house by previous owners was removed, opening up a view of the field and 'an old Scotch fir' which was particularly fine. Then the Darwins's adult relations pitched in to form what must have been a very broad mound in front of the former entrance on the north side of the house, between two lime trees.³⁰ Evergreens were planted on it, but, failing to flourish, they were removed a few months later. In 1858 this mound was itself removed to make way for the Drawing Room.³¹ The long bank running from the northwest corner of the house, just north of the surviving Limes, remains and dates from the same period. The L-shaped return which closes the pleasure lawn also probably dates to this campaign. In August 1845 Darwin had also come into possession of Mr. Sales's orchard, the large rectangular plot running west from the old carriage drive.³² Some of the flint walls bordering this area must date from this time.

2.F. Emma Darwin's Contribution to the Garden and the Sandwalk

The letters quoted above make it clear some of the work in the garden was carried out by Darwin and his wife themselves with the occasional help of one or another relative, and, furthermore, that this work was not restricted to the planting. As unlikely as it may seem to think of Charles and Emma heaping great shovelfuls of earth onto a mound, the image fits with what is known about Charles's constitution, for although he tended to be frail even at a young age we know he was also capable of great bursts of exertion. And as for Emma, she delighted in physical work in the garden and kept at it for years, 'cutting and carving among the shrubs' to the amazement of more than one visitor.³³ Edna Healey has even argued that the charm of the garden and the beauties of the Sandwalk were due largely to Emma not Charles. It may have been Emma's idea to build a sandy path at the southwest bow of the property; there had been a similar feature round the lake at her childhood home at Maer in Staffordshire.³⁴

The Sandwalk was hatched in these first years of feverish activity at Down. Early in 1846 he leased a one-and-a-half acre piece of land at the southwest corner of the estate from

²⁹ Atkins, *Down*, pp. 24-5.

³⁰ *Correspondence*, vol. 3, p. 248, dated 3-4 September 1845.

³¹ Atkins, *Down*, p. 28.

³² He paid £182.19 for it, according the Classed Accounts entry for this date.

³³ Litchfield, *A Century of Family Letters*, vol. 2, p. 207; and Edna Healey, *Wives of Fame. Mary Livingstone, Jenny Marx, Emma Darwin* (London: Sedgwick and Jackson, 1986), pp. 163-4, 178.

³⁴ Healey, *Wives*, p. 164.

Sir John Lubbock. It was fenced and planted with native trees and bushes. A Circular path dressed with sand was laid out, what recent biographers have referred to as 'his thinking path, the "Sandwalk", on which he would plod henceforth on his midday constitutional', counting laps with local flints piled up at the head of the circuit.³⁵

The Sandwalk was planted with several varieties: hazels, cherries, alders, limes, hornbeams, and dogwoods. There was a line of hollies down the exposed east side and a birch privet. The sandpit at the south end of the wood provided the dressing for the paths. At the bottom of the Sandwalk was the 'summer house', a modest open structure, almost certainly of wood and probably painted dark green. No illustrations of it are said to survive, although further research (see below) might well bring an early twentieth-century photograph to light.

Henrietta Darwin said the formation of this small wood was Charles's idea, but she recalled how her mother, who often accompanied him on these daily constitutions, had taken a keen interest in the wood. Emma Darwin made her own very firm mark on the Sandwalk by planting a wild garden amongst the trees. She encouraged the growth of bluebells, anemones, cowslips, primroses, and in particular wild ivy. There were also sloes. She saw it as her job to struggle against the less desirable local plants, in particular the dog's mercury and Jack-in-the-hedge, and once hired a local boy to help to root out these invaders.³⁶

By the end of Darwin's life the air of wildness pervading the Sandwalk caught the imaginations of the youngest Darwin children and the increasing number of Darwin grandchildren. One of the latter, Gwen Raverat, left a most vivid account of this place, which, of all the places at Down, 'seemed most to belong to my grandfather'.

From the far end of the kitchen garden, through a door in a high hedge, from thence a fenced path between two great lonely meadows, till you came to the wood. The path ran straight down the outside of the wood... till it came to a summer house at the far end from which only countryside was visible.

That west path she called the 'Light Side', sunny and pleasant. However, the return journey led the children along a mossy path among the trees and hollies, an experience she found 'truly terrifying'. There they were confronted by the 'Hollow Ash', burned out, it was said, by a tramp whom the children once caught lounging in the summer house at

³⁵ Atkins, *Down*, p. 25, 27-8. According to Atkins Darwin purchased the land from Sir John Lubbock in 1874 in exchange for a strip of grazing land of exactly the same size, 1 acre 2 rods and 10 perches. The quote is taken from Desmond and Moore, *Darwin*, p. 336.

³⁶ Litchfield, *A Century of Family Letters*, vol. 2, p. 44.

the end of the wood. More horrible still was the giant beech, the 'Elephant Tree', which was sometimes dubbed 'Bismarck' for its ferocious physiognomy.³⁷

2.G. Later Works in the Garden as Measured against Other Expenditures and the Hard Tennis Court

Later entries under the 'Garden' heading in Darwin's accounts do not tell of specific developments. My own reading of the documentation persuades me that most of the structural alterations to the landscape were probably carried out in this first campaign of 1843 to 1846-47; however, further research is needed to establish what was done in the 1850s and 1860s.

According to the 'Classed Accounts' expenditure on the garden fell off after September 1846 and stayed fairly even until September 1863. From then until 1875 annual garden increased dramatically, running between 75% to 100% higher than in the previous period. In the last five years of records, 1877-1881, there is another substantial increase, this time 50% to 75% over the previous period. Expenditure on the stables and livestock (entered as 'Fields, Cows, Pigs, etc.' in the Classed Accounts) also rises in these years, though not so dramatically. The amount spent on 'Household', that is, daily living expenses, increased after 1868 as did the amount spent on 'Menservants'.³⁸ Expenditure on the 'Furniture and Repairs' (which includes capital improvements to the house) is much more periodic, as one would expect, so that there is a spike in outgoings in 1873, corresponding to the construction of the glass-topped verandah on the south front, and in 1876-79, when the two-storey extension on the southwest corner was built and the entire house, it would seem, redecorated. (See Appendix for a Summary Analysis of Classed Accounts, 1842-3 to 1881).

All that can be said for certain at this point is that the Darwins's style of life increased steadily in the 1850s and 1860s, and then steeply in the 1870s, but this is no more than one would have expected. What did the extra expenditure on the garden buy in these years of high spending? Perhaps more elaborate planting schemes?

³⁷ Raverat, *Period Piece*, pp. 156-7. Also Atkins, *Down*, pp. 26-7.

³⁸ Entries for 13 June and 27 August 1846 record the improvement of domestic offices, carried out by Laslett for a total of £349. There were more alterations to the offices in October 1847, with Laslett receiving £94 for the work. That month records a payment of £25 to the architect Cresy, which, to judge from its size (slightly more than 5% on roughly £450) covered only this work not the construction of the bay. There are more alterations 'up stairs' in autumn 1851, when £43 was paid to Laslett. As for the number of domestics, Gwen Raverat, writing of summer life at Down in the 1890s, recalled that three men -- John the coachman, Price the butler, and the footman -- slept in a bare boarded, long attic room. There was, in addition, a housemaid, a cook and three or four maids. *Period Piece*, pp. 151-2. There was no resident gardener, but a local man brought in as day work.

During the 1870s or possibly earlier, the Darwin children took to playing tennis on the lawn by the yew trees. The court appears in the foreground of a watercolour made late in Darwin's life (Watercolour 3). In 1881 Darwin purchased a small plot of land from Sales at the west end of the North Orchard and laid out a hard tennis court there in the winter 1881-82.

2.H. The Garden as a Living and Working Laboratory

2.H.1. The Fertiliser Scheme

The 'Classed Accounts' are at least detailed enough to enable us to pinpoint when new structures were added to the garden (and stables). First came a 'garden tank and shed', constructed between February 1851 and April 1853. These entries must refer to Darwin's experiments with a system to distribute liquid manure, probably both to the garden and the field. (Darwin was always looking at way to make the agricultural side of Down more productive.³⁹) A letter of 26 April 1853 to Charles's brother Erasmus passed along 'thanks' for help with the tanks.

I am scheming a great water work & and I heartily wish you were here to scheme: it is to make a very large tank; and then to be able from this to fill three others, which are much smaller but deeper or as deep ...[as] the large shallow one. I thought of doing it by a siphon...[which] I propose to be [off] gutta Percha: it would have about 180 feet from top to further ...[to the next] tank, not quite in a straight line.⁴⁰

He discussed the scheme with his architect Cresy in April and May 1853. From the Classed Accounts we learn that the project required some brickwork from the builder Laslett. Eventually Darwin contributed a short note on the system to one of his favourite publications *The Gardeners' Chronicle and Agricultural Gazette*.⁴¹ Another payment for a tank occurs in 1854, suggesting that Darwin might have extended the system. A final tank was installed in the orchard in autumn 1879.⁴² As yet no physical evidence of this scheme has come to light. Care should be taken to record any traces of this system which might be exposed during excavations.

³⁹ He only really began to earn money from livestock in the 1870s, but even then the income did not even begin to offset his expenditure on this part of the estate. See Classed Accounts for 1873 through 1881. The most earned was £37 in 1879.

⁴⁰ *Correspondence of Charles Darwin*, vol. 5 (1989), pp. 137-40, and note 1.

⁴¹ Vol. 15, 19 April 1853, p. 237.

⁴² Classed Accounts, entry for 23 October.

2.H.2. The Pigeon House and Natural Selection

In the mid 1850s Darwin was struggling to develop and defend his idea that selection underpinned the development of species. He believed that the tendency for embryos of all species to resemble one another in their early stages of development demonstrated a common ancestry and so he turned to the domestic animals for proof. Early in the 1850s he got the idea, in the words of recent biographers, to '[e]xpose the similarities among the hatchlings of breeds cropped and coiffed by man -- breeds derived from a single ancestral stock...'⁴³ Breeders and fanciers had been aping the process of natural selection for centuries. He wrote scientific colleagues, Fox, Lyell, and Hooker on the subject. He killed, boiled and skeletonised countless rabbits, ducks, pigeons, fowl of all description in fact, gruesome work that troubled him and even more Emma. He immersed himself in publications like the *Poultry Chronicle*. Pigeons, it was decided, were best suited to his purpose.

A pigeon house was needed to keep his experiments going. In March 1855 work started. A letter of 25 April notes that this hexagonal structure, approximately 16 X 10 and 9 feet high, was 'nearly complete'.⁴⁴ By May⁴⁵ he had got his pigeons and in July £10 was paid for the work.⁴⁶ Under the 'Science' heading for the next few years there are regular entries for 'pigeon food'. The house is not shown on any Ordnance Survey maps, and a cursory inspection of the garden has not turned up physical evidence for it. It was probably located close by the laboratory and greenhouse, and, given the nature of the work, away from where the children were likely to roam.

2.H.3. The Hothouse and Laboratory

The furore generated by *The Origin of Species* was never ending. Perhaps the strain led Darwin to contemplate the implications of his theory on plants which were less likely to excite stern moral opposition. In summer 1862, on holiday with Emma on the Devon coast, Charles spent hours 'on his hands and knees, watching insects visit wild orchids'.⁴⁷ Here was a perfect answer for his critics. Surely the bizarre rococo frills which made this plant the pastime of the rich had some real purpose. Guiding bees in the act of pollination? In a matter of months Darwin became as engrossed in orchids and bees as he had been in pigeons and geese a few years earlier. Over the winter of 1862-63 he had Horwood, Lubbock's gardener at High Elms, build him a hot-house in the kitchen garden. The structure was complete by March 1863. A greenhouse was built in the summer. This is the complex which survives in today. It was probably augmented by a

⁴³ Desmond and Moore, *Darwin*, p. 425.

⁴⁴ *Correspondence of Charles Darwin*, vol. 5, p. 321.

⁴⁵ *Correspondence of Charles Darwin*, vol. 5, p. 337.

⁴⁶ Classed Accounts, entry for 6 July, to Lewis.

⁴⁷ Desmond and Moore, *Darwin*, at p. 509; see pp. 510-20 for a general discussion.

lean-to structure, now gone, built on the return of the greenhouse wall facing west. There is no note in the 'Classed Accounts' regarding the now ruined laboratory which connects with these structures. It may well date from this time, but does not appear on the Ordnance Surveys.

2.H.4. Science in the Garden and the Experimental Beds at Down

There is little doubt that Darwin used the garden at Down as a living and working laboratory. Part of this function was centralised on the kitchen garden where he planted experimental beds, probably close by the hot-house/laboratory complex. But the quality of Darwin's mind, its incessant searching, taken together with his lifelong quest to define, elaborate and defend a single theory unifying all living nature, meant that the most mundane corners of the estate, whether the primroses in the garden beds or the climbing plants in the Sandwalk, were grist for his intellectual mill.

It is not the purpose of this interim report to detail every interaction of nature and mind that might have taken place at Down: a few highlights will illustrate the point. For a start there were the Darwin children themselves. On at least one occasion Darwin derived scientific information from watching his family expand and mature.⁴⁸ At the same time he was engaged in a debate with a French botanist, Auguste St. Hilaire, over the production of buds. He wrote Joseph Hooker, Director of Kew Gardens, of his hypothesis that a reduction in the amount of sap tends to produce buds, a reaction he knew 'from trees in orchards'.⁴⁹ It is easy to imagine Darwin noticing this in the saplings he had so recently planted in his North Orchard and in the Sandwalk.

This pattern -- in which casual observations made in and around Down were systematised into by science -- intensified in the 1850s, when Darwin was trying to demonstrate the general truth of his theories by reference to common British plants. In April 1854, under the 'Science' heading in his 'Classed Accounts', payments to Rivers, a nurseryman from whom Darwin had earlier obtained ornamental plants, are recorded for peas. In a letter from about this time to Julius Fairhead, a nurseryman at Teynham, Darwin put a series of questions on their variability. From it we learn that Darwin had been studying different species in his experimental garden since at least 1852 and was now ready to try out some of his conclusions.⁵⁰ In the mid 1860s Darwin corresponded with another nurseryman, Thomas Rivers of Sawbridgeworth, on the subject of 'bud variation'.⁵¹ Nurserymen had that same sort of practical knowledge of species variation as poultry breeders and pigeon fanciers, and Darwin was keen to draw on their expertise.

⁴⁸ Healey, *Wives of Fame*, p. 166.

⁴⁹ *Correspondence of Charles Darwin*, vol. 3, p. 311.

⁵⁰ Described in *A Calendar of Correspondence of Charles Darwin* (New York and London: Garland, 1985), no. 1467.

⁵¹ Detailed in the *Calendar*, *ibid.*

It would be wrong to think of the pleasure gardens and experimental gardens at Down as distinct and separate. A chance discovery in the meadow or among the bedding plants one season might in the next be the subject of a learned paper. In a letter of 1856, for example, Darwin was delighted to report the discovery of some seeds in the earth right under a huge beech tree which he had just had cut down. This he dated to 77 years, based on its rings, which provided him with a specimen to test his theories on the length of time and under what circumstances seeds could lay dormant.⁵² He was then engaged in a complicated debate on species migration. An experimental notebook for that year records work on long-buried seeds and their vitality. A letter on this subject to the *Gardeners' Chronicle* followed.⁵³ There were also studies of climbing plants, perhaps suggested by their spread in the Sandwalk, where, of course, one finds cowslips, the subject of another study and learned paper. In the mid 1870s came papers on the two forms of flower in primula.⁵⁴ In time his interest turned to the formation of the soil itself through the action of earthworms. To study the problem he installed the 'worm stone' at the foot of the large Spanish chestnut just west of the pleasure lawn. The list goes on and is nearly as long as Darwin's bibliography.

One of the more interesting aspects of this interaction between garden at Down and Darwin's science is Charles's friendship with Sir John Lubbock, his neighbour at High Elms and later Lord Avebury (whom many English Heritage staff will recognise as the sponsor of the first Ancient Monuments Protection Act, 1883, and first Ancient Monuments Inspector). Lubbock's father, also Sir John, was a City banker and noted meteorologist. The son showed stronger inclinations for science and, although he did eventually join the family firm, devoted more of his time to that study, eventually becoming a strong supporter of natural selection, an important biologist in his own right, and a writer on science for a general audience, all this in addition to his later political career. (Lubbock was responsible, among other things, for the Bank Holiday Act.)

The story is often told that Charles encouraged John (born in 1834) to take up botany and biology, persuading the elder Lubbock to buy a microscope for the boy. As Lord Avebury recalled: 'He let me do drawings for some of his books, and I greatly enjoyed my talks and walks with him [in the Sandwalk]'. Later, in the mid 1850s, Charles helped with specimens for Lubbock's first paper. In 1862 he was invited to help Darwin watch hive bees suck clover flowers, a by-product of his work on orchids noted above.⁵⁵

⁵² *Correspondence of Charles Darwin*, vol. 6 (1996), p. 45.

⁵³ *Correspondence of Charles Darwin*, *ibid.*, note 1.

⁵⁴ A. G. Duff, *The Life and Work of Lord Avebury (Sir John Lubbock)* (London: Watts and Co., 1924), p. 173.

⁵⁵ Horace G. Hutchinson, *Life of Sir John Lubbock, Lord Avebury* (London: Macmillans, 1914), vol. 1, pp. 23, 33, and 44. See also *The Life and Work of Lord Avebury*, pp. 14, 16, 68, 171.

Another fruitful area of inquiry is Darwin's correspondence with Dr. Joseph Hooker, Director of Kew Gardens. The 'In-Books' and 'Out-Books' in the Kew Archives may well record specimens being sent to Darwin at Down in connection with their long-standing correspondence on how long seeds could survive in salt water. They were extremely close, and in 1881 Hooker showed Darwin plans for his new house and garden at Sunningdale. Charles suggested a bow window at one corner in order to take in a good view of the garden, and the architect provided what was required.⁵⁶

2.I. The Ornamental Aspects of the Garden

As for those features of the garden proper, the herbaceous borders, rose gardens, and annual beds, there is ample evidence in the form of watercolours (Watercolours 1-4), photographs (Photographs 3-5, 10), and written descriptions. These demonstrate that for the most part the gardens at Down were typical Victorian creations. Further research may show otherwise, or, rather, as I think more likely, that they typical but for one or two species related to Darwin's work. One would expect the more esoteric species to have been planted in the 'experimental beds' in the kitchen garden, but again this is an area where more historical detective work needs to be done. The 'Classed Accounts' are not much use in this regard, since the information they contain is fairly telegraphic. An entry for 1843 reads simply 'fruit trees'. We know from later descriptions that apples predominated, and the accounts show a concentrated planting programme in the autumn of 1848 and winter 1849. The supply was replenished from time to time through the 1850s, perhaps even expanded. Darwin also brought in 'native trees' and 'bedding plants' from one of the several local nurserymen he regularly used. A payment for 'Rose trees' appears for the first time in 1849, and perhaps this marks the start of the planting of the Rose Walk, the path linking the northwest corner of the house with the Sandwalk (fig. 000).

The recollections of the Darwin children and grandchildren are more informative and picturesque. The memoir written by Gwen Raverat, who visited Down during the summers of the 1890s, is particularly useful in this regard. She remembers foxgloves and salvias particularly in the beds by the verandah. The latter were clustered near the sundial. The paving here was distinctive.

large round, water-worn pebbles, from some sea beach. They were not loose but stuck down tight in moss and sand, and were black and shiny, as if they had been polished...

There was a large mulberry close by the house, under the nursery window. Nearby was the only hand pump for the house. Immediately north of the house were apple trees clustering together, filling the watercloset window overlooking them with green light.⁵⁷

⁵⁶ Mea Allan, *The Hookers of Kew, 1785-1911* (London: Michael Joseph, 1967), 200, 238-9.

⁵⁷ There was no interior plumbing during the Darwin's tenure. The Classed Accounts record payments for the construction of 'earth closets' in June 1878.

Raverat remembered a swing between two great yews 'and on the top of the lawn... a Spanish chestnut, which sometimes had chestnuts almost big enough to eat'. This stood by the worm stone. A long pebbled walk to the kitchen garden was flanked by 'tall syringa and lilac bushes'.⁵⁸

Henrietta Darwin recalled with fondness the flower beds by this verandah, 'where we constantly sat out', and the 'large flat lawn...

slightly sloping upwards so that the flower beds made a brilliant effect from the window. The house became covered with creepers and shrubberies and orchards sheltered it from the south, where there was an open field, with a group of walnuts, cherries and Scotch fir near the house, and a few ashes and other trees further off... there was no extensive view, only a little peep of distant woodland... An immense pollarded beech of a peculiar mushroom-like shape, which grew in our boundary hedge, could be seen as a landmark from a distance.

These flower beds were filled 'with hardy herbaceous plants, intermixed with bedded out plants and annual'. There were six rectangular beds -- there are four now -- and several more circular ones. They contained phloxes, lilies, larkspurs in the middle, portulacas, verbenas, gazanias, and low growing plants in front'. It was often, she concluded, 'untidy'. The long walk along the kitchen garden to the Sandwalk was bordered with 'flowering shrubs'.⁵⁹

A sketch map drawn up in July 1931 by Leonard Darwin shows what he remembered of the property with the help of the first edition Ordnance Survey, and this adds to Raverat's and Litchfield's recollections (fig. 000). The position of the Scotch firs is noted. Cherries and beeches are shown near the house to the southwest. The near field, which is bisected by a public footpath, had a single oak, a group of beech and thorns, and one or possibly two ash trees. A hedge of holly running from east to west cut the meadow in two. Finally, we know that the small triangle of land to the east of the bottom of the Sandwalk, known as 'Little Canada', was planted with North American species.

3. Further Documentary Research

3.A. The Scientific Garden

Further research should concentrate on the relationship between Darwin's work and the garden at Down. There is a great deal of information in secondary sources -- biographies mostly, but also in the first nine volumes of published correspondence -- describing Darwin's experiments on poultry and his study of plants. It would be possible, with a little effort and ingenuity, to compile a schedule of experiments conducted in the kitchen

⁵⁸ *Period Piece*, pp. 141-3, 147, 152, 161.

⁵⁹ *A Century of Family Letters*, p. 44.

garden and from this to determine what sorts of things might have been planted there. This research will probably also shed more light on the ornamental side of the estate.

Because of its specialist nature, this sort of research is best carried out by a historian of science in conjunction with a garden historian. Archival sources include papers at Kew and the Lubbock papers, which are still held by the family. Darwin also corresponded with Huxley and Lyell, and their papers should be searched for relevant information. Occasionally, these men came to Down on social calls, so there may well be information about the house and pleasure gardens in biographies, published correspondence or private papers. Ultimately English Heritage may wish to devote a large part of its display to this side of the estate, since it is as effective and elegant a way as any to teach the visitor about Darwin's science.

3.B. The Ornamental Garden

One of the most important sources will probably turn out to be Emma Darwin's letters, which are, to the best of my knowledge, unpublished. She was one of the famous Wedgwood family, whose archives are held at the University of Keele.⁶⁰ There is bound to be a great deal of information in the archives of the Downe House Girls School, which operated in the house from 1907. It has since moved to Cold Ash near Newbury in Berkshire. These may contain photographs or written accounts detailing the state of the garden in the early twentieth century, when it probably retained the character it had in Darwin's day.⁶¹ Then, of course, there are the archives of the British Association at the Bodleian in Oxford, which held the property between the wars.

Many eminent Victorians came to Down, despite its 'rurality', particularly in the 1870s, and it is likely that they left some recollection of it. Desmond and Moore's recent biography is the best way to find out who came and when. There are bound to be good early twentieth-century biographies of most visitors, if not more recent works, published correspondence etc. Then there are materials published by and still in the possession of the Darwin family itself. I was only able to sample some of the published writings. Are there collections of letters? Perhaps. What about more photographs among surviving family members? Probably.

It is hoped that this work will, at the very least, establish the whereabouts if not the appearance of several features which have vanished without a trace: the pigeon house, in particular -- was this the haunted gazebo Raverat recalled in the North Orchard? -- the exact construction of the laboratory block, and the location of the system for distributing liquid manure.

⁶⁰ See B. and H. Wedgwood, *The Wedgwood Circle, 1730-1897, Four Generations of Family and Their Friends*, Westfield, New Jersey: Westfield Editions, 1980.

⁶¹ See Anne Ridler, *Olive Willis and Down House, the Advance in Education*, London: John Murray, 1967.

4. Preliminary Recommendations

This preliminary research suggests that several areas of the garden and issues deserve particular attention in the short term.

- A detailed survey of extant plantings, their age, species, etc. Some judicious garden archaeology will prove invaluable, and allowances should be made for it.
- A properly resourced research project should be undertaken as soon as possible. It is essential to involve specialists from at least two disciplines, garden history and the history of science.
- The North Orchard was a conspicuous feature of the estate, important both for Darwin's science and in the life of his family. Ideally it should be restored; however, giving this area the appearance it had in Darwin's day runs foul of present proposals to arrange some form of access at this point. This is one area where our work to make the property more accessible to the public might well be criticised.
- The Row of Limes trees should be reinstated. Visual sources suggest there were eight or so; garden archaeology is needed in this area. There is also said to be an air raid shelter cut into the long mound nearby. The exact location of the trees can be determined with by garden archaeology along the present line. Sources suggest there were eight or ten.
- In Darwin's day the iron fence at the west end of the pleasure grounds was placed nearer the house, and consideration should be given to reinstating it along the line shown in Ordnance Survey maps.
- There were originally six flower beds, not the present four, and several more of the round beds. Some of those which have vanished have left traces in the turf. Archaeology can probably determine the location of the rest. It would be a relatively simple matter to plant these as described by Gwen Raverat and as shown in watercolours of c1880, taking care to use species typical of the time. The garden front of the house was covered in climbers, and the verandah wreathed in Boston ivy.
- Any excavation in the North Orchard may turn up evidence of the pigeon house and the liquid manure supply system (tanks, gutta percha pipes, etc.). The pigeon house should be reinstated and the tank system recorded.
- The Sandwalk was an important extension of the pleasure garden, justly famous for being the place Darwin took his daily constitutionals and mulled over his scientific work. The trees dating from Darwin's time should be retained. The locations of others as well as the hollies and the birch privet described by Raverat should be determined and the plantings reinstated. The wild flowers encouraged by Emma should be brought back.

- The project should allow for the reconstruction of the summer house at the south end of the Sandwalk, its precise form to be determined through research in the Downe House School and British Association archives.
- The provenance of the ruined laboratory building must be decided as soon as possible. My initial impression is that although the facing bricks seem to be early twentieth century, the wall behind might well date to Darwin's time. If it can be shown that the structure was indeed Darwin's lab, then reinstating it must be a priority as it is central to the historic importance of the estate and garden.

Dr Chris Miele
Historical Analysis and Recording Team

May 1996

5. List of Sources Cited and Consulted

- Allan, Mea, *The Hookers of Kew, 1785-1911*, London: Michael Joseph, 1967.
- Atkins, Hedley, Down. *The Home of the Darwins. The Storey of a House and the People Who Lived There*, London: Royal College of Physicians and the Curwen Press, 1974.
- A Calendar of Correspondence of Charles Darwin*, New York and London: Garland, 1985.
- The Correspondence of Charles Darwin*, ed. F. Burckhardt and S. Smith, vols. 2-6, Cambridge: The University Press, 1986-93.
- Darwin, Francis, ed., *The Life and Letters of Charles Darwin, including an Autobiographical Chapter*, London: John Murray, 1888.
- Desmond, Adrian, and James Moore, *Darwin*, London: Michael Joseph, 1991.
- A. G. Duff, *The Life and Work of Lord Avebury (Sir John Lubbock)*, London: Watts and Co., 1924.
- Gould, Stephen Jay, 'Why Darwin?', *The New York Review of Books*, 4 April 1996, pp. 10-14. Review of Janet Browne, *Charles Darwin: Voyaging* (New York: Knopf, 1996).
- Healey, Edna, *Wives of Fame. Mary Livingstone, Jenny Marx, Emma Darwin* (London: Sedgwick and Jackson, 1986)
- Howarth, O. J. R. and E. K., *A History of Darwin's Parish, Downe, Kent*, Southampton: Russell and Co., 1934.
- Hutchinson, Horace G., *Life of Sir John Lubbock, Lord Avebury*, London: Macmillans, 1914, 2 vols.
- Lea, Richard, 'Down House, Bromley. Notes on the Historical Development of the House', Historical Analysis and Recording Team Report, English Heritage, June 1995,
- Litchfield, Henrietta E., *Emma Darwin. Wife of Charles Darwin. A Century of Family Letters*, Cambridge: The University Press, 1904, vol. 2.
- Morris, Solene, Curator, Darwin Museum, Down House, Downe, Kent. Conversations with author, April-May 1996.
- Raverat, Gwen, *Period Piece. A Cambridge Childhood*, London: Faber and Faber, 1987 reprint of 1952 edition.

Manuscript Sources

Classed Accounts, Darwin Museum, Down House Manuscripts, Downe, Kent, volumes covering years 1839-1881.

Appendix: A Summary Analysis of the Classed Accounts, 1842-3 to 1881.

	Household	Repairs	Furniture	Menservants	Gardens	Fields etc	Stables
1842/43	380	742.16	256.6.3	77.10	88.01.6	69.07.12	158.12
1843/44	435	486.11	112.0.6	80.10	193.02.12	37.14.6	46.18.0
1844/45	365	32.9.8	60.15.6	77.0.0	111.02.0	34.04.6	29.8.0
1845/46	447	390.13.3	11.4.0	80.15	149.04.6	35.19	59.14.9
1846/47	525	196.7.8	110.5.8	82.8.6	58.17.6	60.08	47.0.6
1847/48	580	47.11.7	62.1.3	87.12.6	45.16	42.12.1	42.15.0
1848/49	655	109.8.10	39.14.8	90.6	47.10.1	47.7.7	75.18.0
		Furniture and Repair					
1849/50	575	150.8.7		101.17	73.8.6	38.13.1	57.17.8
1850/51	615	112.16.0		108.16.6	51.1.0	34.4	109.10.6
1851/52	600	258.2.10		108.16.6	56.3.6	43.3.10	34
1852/53	625	206.10		124.0.6	80.13.6	42.15.8	61.18.9
1853/54	735	208.18.10		127.10.6	69.18	53.11.7	79.2.3
1854/55	737.5.7	187.2.5		110.18.6	67.5.6	65.13.6	37.8
1855/56	750.8	99.13.2		125.19.6	65.6.6	67.6.9	29.4

	Household	Furniture and Repairs	Menservants	Gardens	Fields etc	Stables
1856/57	749.13	75.10.6.	123.10.6	68.7.10	65.18.3	100.13.8
1857/58	833.2.6	280.15.2	121.3.6	71.15	54.6.6	70.9.10
1858/59	834.6.4		154.11	56.10.2	42.17	229.3.4
1859/60	855.3.8	185.0.6	145.8	61.6.4	99.2	276.0.3
1860/61	961.8.7	156.3.10	153.9.6	68.12	145.2.3	211.0.10
1861/62	899.14.9	117* *118.16 cowshed & stable entered here,not stable	158.14.3	76.11.3	84.14.4	360.3.9
1862/63	1009.8.2	164.1.6	165.6	98.4.2	60.6.9	129.13
1863/64	823.18.9	182.3.1	160.10.6	124.2.6		12.9.1
1864/65	952.16.1	113.11.4	164.18.0	120.2.5	72.8.6	142.5.6
1865/66	887.2.0	257.18.9	162.0.7	142.13.6	94.12.8	170.19.5
1866/67	906.7.7	214.4.7	196.15	159.16	94.4.9	329.1.9
1868	1065.13.2	280.6.3	243.3.0	144.1.11	85.7.6	198.13.6
1869	1176.19.4	250.14.3	224.6.0	154.19.1	120.2.10	152.0.1
1870	1073.6.5	444.18.1	236.17.8	125.1.1	80.4	209.9
1871	1108.16.11	257.0.5	230.5.6	133.16.7	11.6.9	166.6.4

1872	1050.3.5	150.17.6	260.15.7	128.5.7	86.2.7	154.1.3
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	Household	Furniture and Repairs	Menservants	Gardens	Fields etc	Stables
1873	1168.19.5	399.19.12	252.13.6	146.0.6	83.17.7	141.16.3
1874	1083.6.9	275.15.7	265.18	153.0.6	80	150.11.6
1875	1080.2.6	185.15.4	242.19.7	142.0.6	70.4.6	205.7.4
1876	1171.6.3	429.11.10	241.9	177.18.9	111.18.11	246.17.10
1877	1103.8.4	1008.18.2	215.8.11	193.8.3	92.19.10	351.4.0
1878	1173.13.4	475.10.5	290.17.3	181.1.7	85.11.6	242.7.7
1879	1057.2.9	681.6.3	251.14.3	201.4.10	140.14.4	116.18.7
1880	1137.8.11	319.19.4	254.11.6	292.0.2	159.6.1	141.17.10
1881	1159.6.5	388.8.5	260.10.11	256.10.11	70.3.6	95.9.3

7. List of Figures

Maps

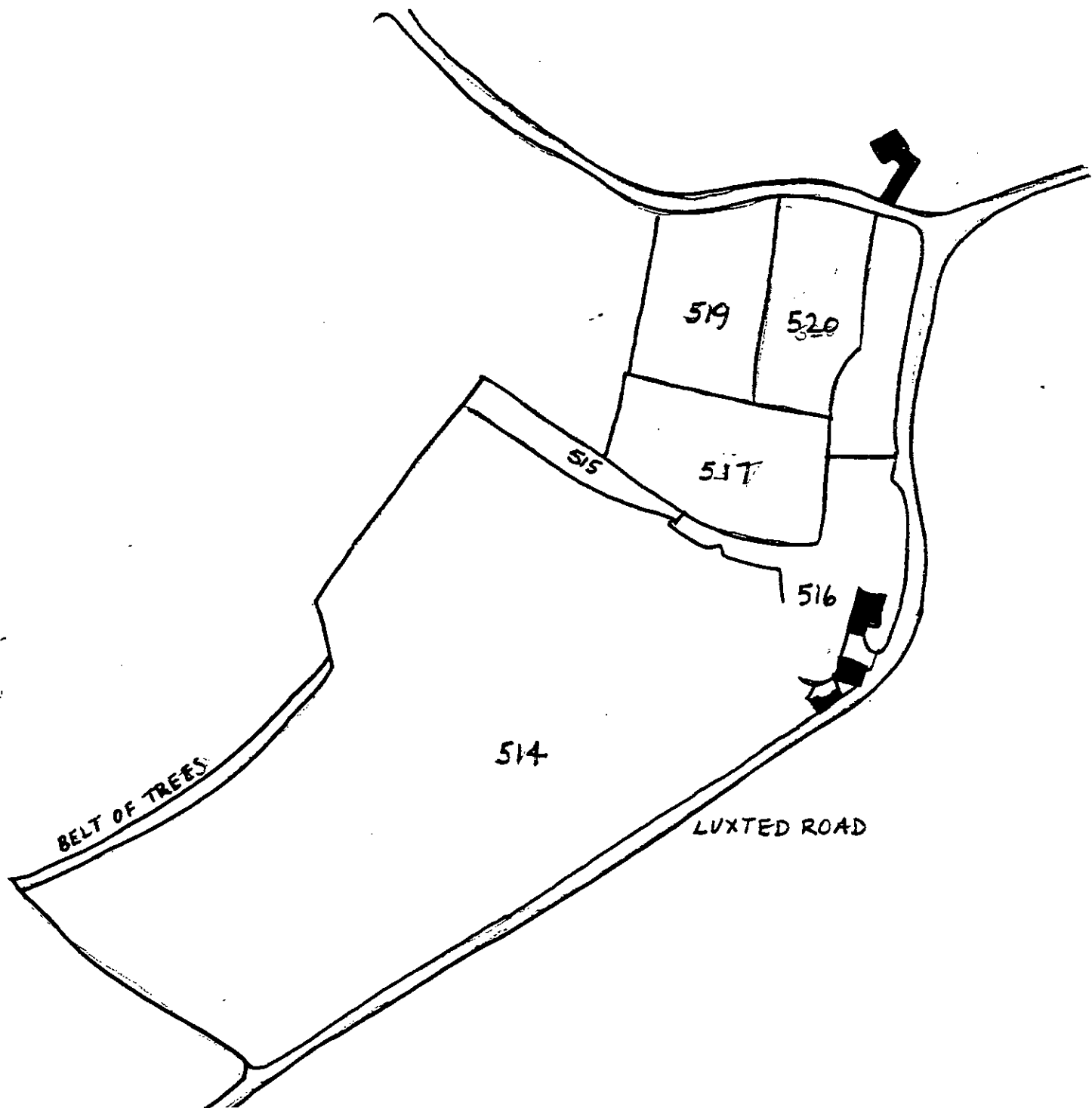
1. Tithe Map of Down, Kent. Public Record Office, Kew, IR 30/17/151.
2. Leonard Darwin's sketch of the plantings at Down House made with the help of the 1868-69 Ordnance Survey in July 1931. Darwin Museum, Down House, Downe, Kent.
3. First edition Ordnance Survey Map, 1868-69. 1 to 2500 scale.
4. Second edition Ordnance Survey Map, 1895-96. 1 to 2500 scale.
5. Map of Down House after conversion to Buckston Browne Research Farm, c1930. Darwin Museum, Down House, Downe, Kent.

Photographs

1. The Pleasure Gardens from the southwest, c.1877 ?, by Leonard Darwin. Darwin Museum, Down House.
2. The Pleasure Gardens and Garden Front of the House, c.1877?, by Leonard Darwin? Darwin Museum, Down House.
3. The Flower Beds west of the Verandah, after 1872. Darwin Museum, Down House.
4. The Flower Beds as seen from the Verandah, looking southwest, 1877-1910? Darwin Museum, Down House.
5. The Rose Walk, 1877-1910. Darwin Museum, Down House.
6. The Laboratory?, interior, looking north during its use by the Downe House School. Darwin Museum, Down House.
7. The Approach to the Sandwalk from the north, showing Horace Darwin. c.1880?. Darwin Museum, Down House.
8. The north end of the Sandwalk with the 'Hollow Beech'. Horace Darwin in shot. c. 1880?. Darwin Museum, Down House.
9. View of the beds in the Rose Walk, c.1910. Darwin Museum, Down House.

Watercolours and Engravings

1. Down House from the north, showing carriage drive to principal entrance. c.1830-40. Darwin Museum, Down House.
2. View of the Flowering beds as seen from the north side of the house on the site of the 1856 extension. Julia Wedgwood, c1855. Darwin Museum, Down House.
3. View of the garden front from under the yew trees and across the tennis court. A. Goodwin, c1881. Darwin Museum, Down House.
4. Garden front of the house from the northwest. A. Goodwin, c.1880. Darwin Museum, Down House.
5. The verandah and flower beds. Julia Wedgwood, 1886. Darwin Museum, Down House.



Tithe Map, 1840, Public Record Office, Kew: IR 30/17/151

Tithe Apportionment, PRO: IR 29/17/151

514 Rev. James Drummond, Great House Meadow, 15.3.14, 'Pasture'.

515 _____, _____ Garden, 0.1.34, 'Garden'.

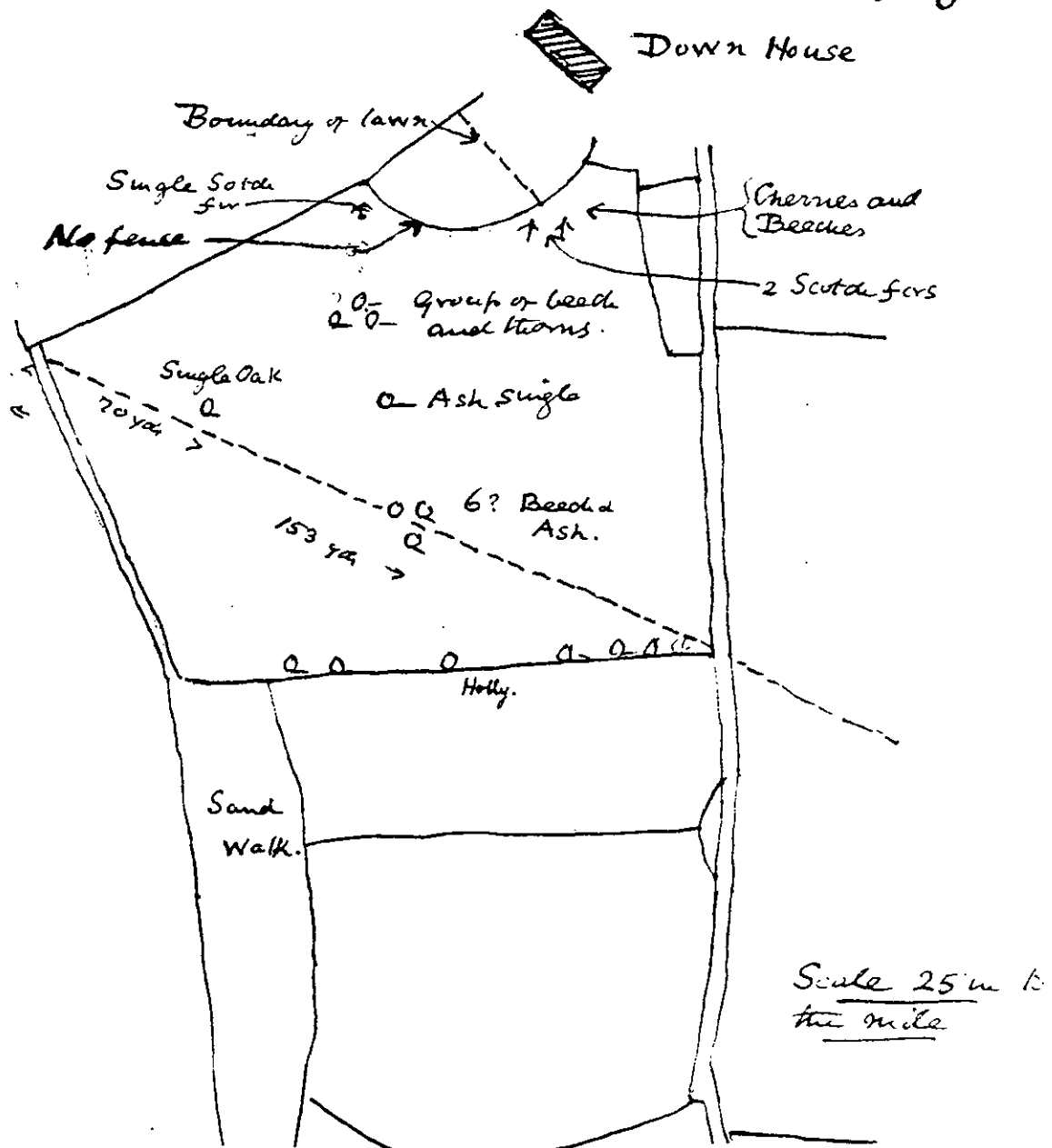
516 _____, Hall, Pleasure Grounds, and Garden, etc., 1.3.7.

Drummond's total ownership given as 18.0.15.

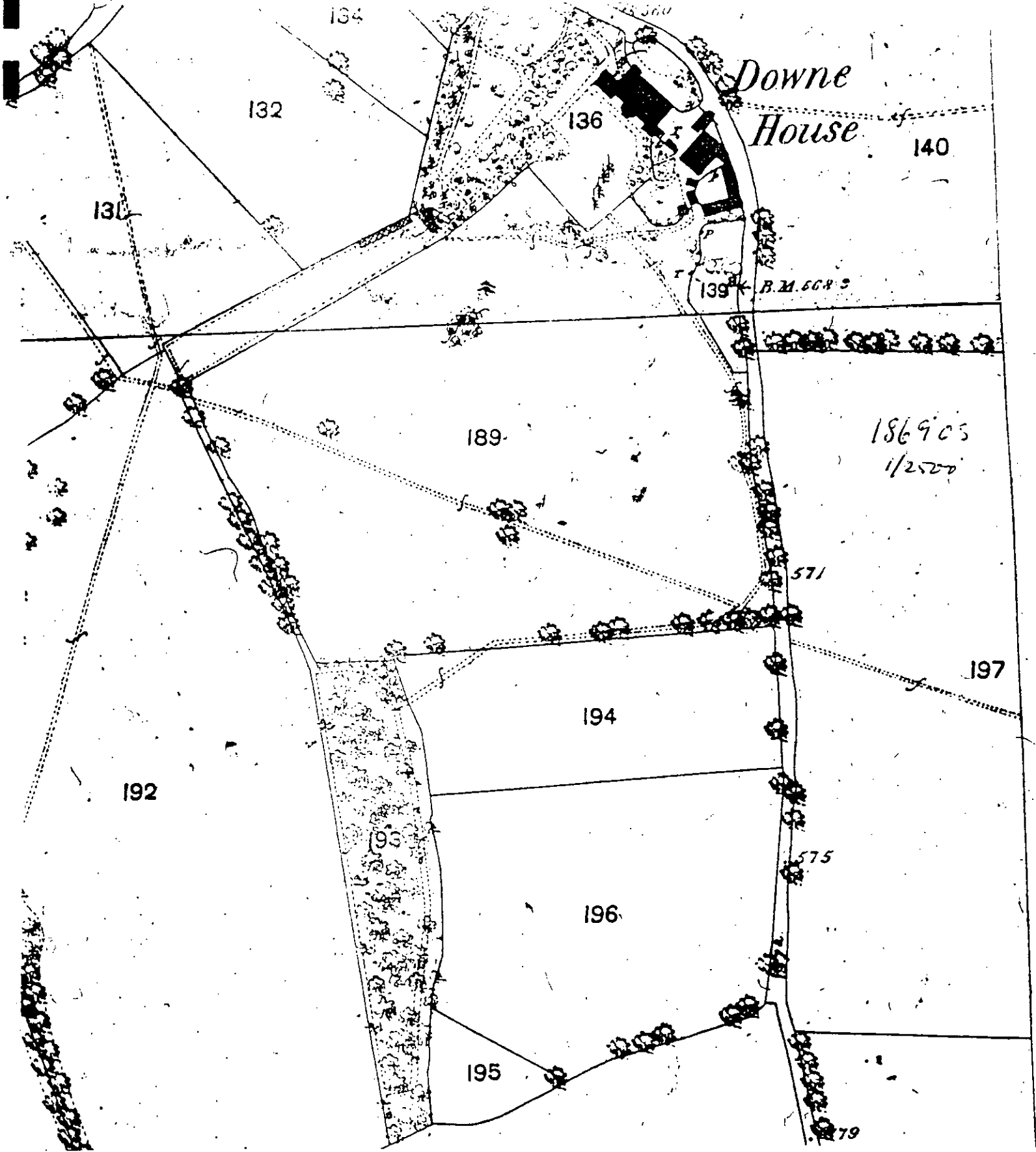
517, 519, 520 described as 'Pasture'. Owner occupier Timothy Sales.

Sketch partly by memory and partly based
on Ordnance Survey Records of 1868 showing
position of trees at Down at that date

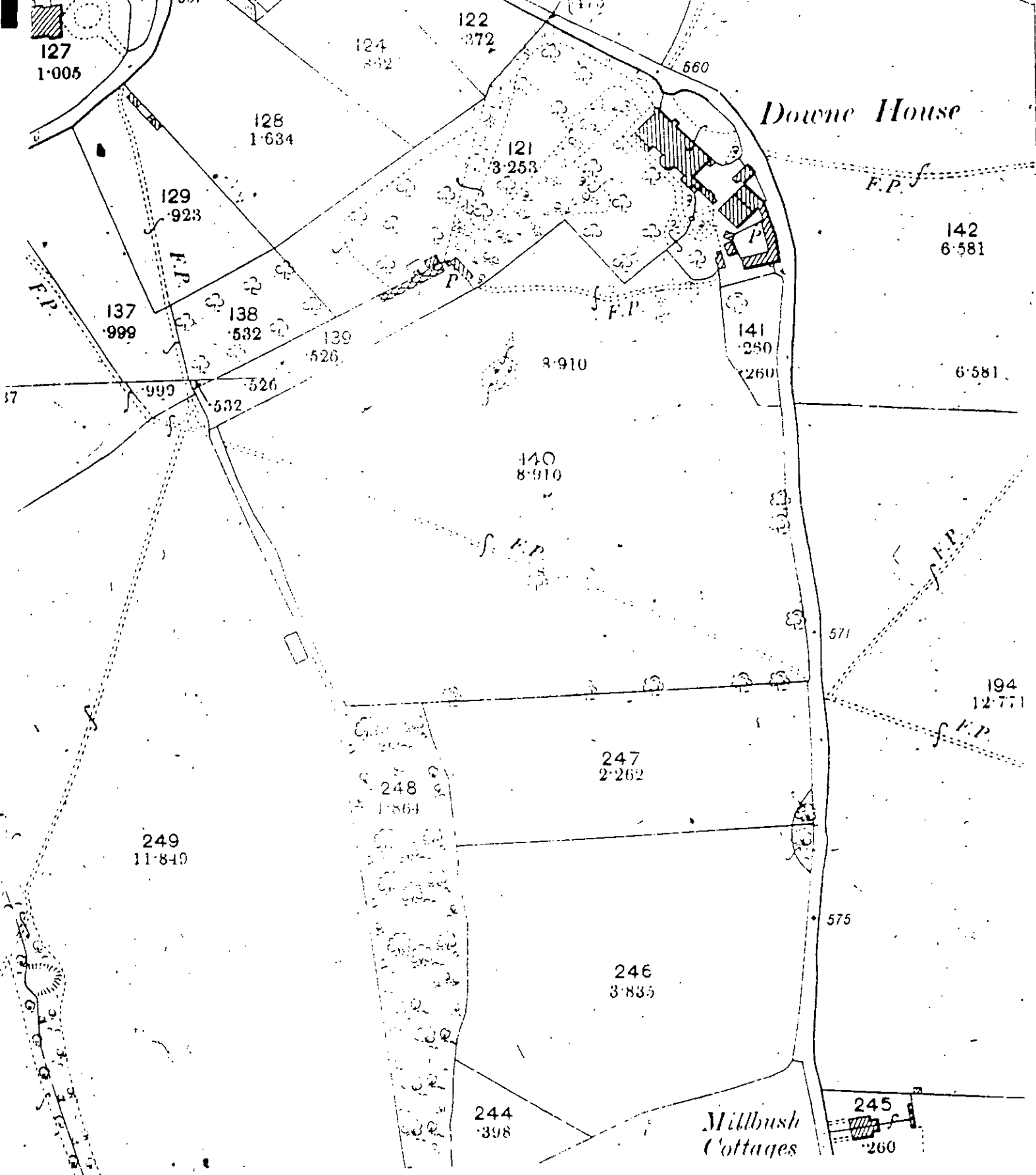
Leonard Darwin
July 1931.



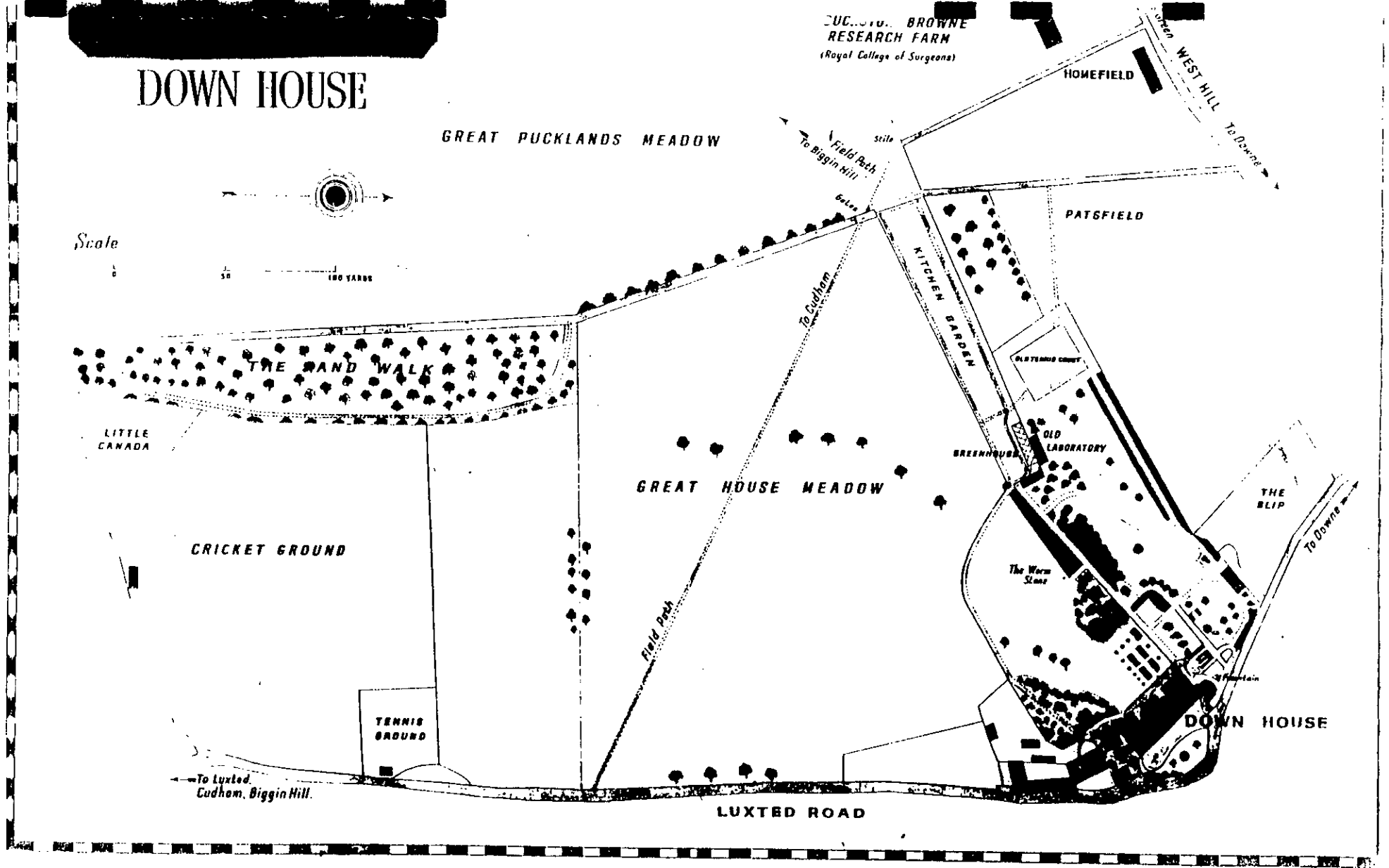
2. Leonard Darwin's sketch of the plantings at Down House made with the help of the 1868-69 Ordnance Survey in July 1931. Darwin Museum, Down House, Downe, Kent.



3. First edition Ordnance Survey Map, 1868-69. 1 to 2500 scale.



4. Second edition Ordnance Survey Map, 1895-96. 1 to 2500 scale.



5. Map of Down House after conversion to Buckston Browne Research Farm, c1930. Darwin Museum, Down House, Downe, Kent.

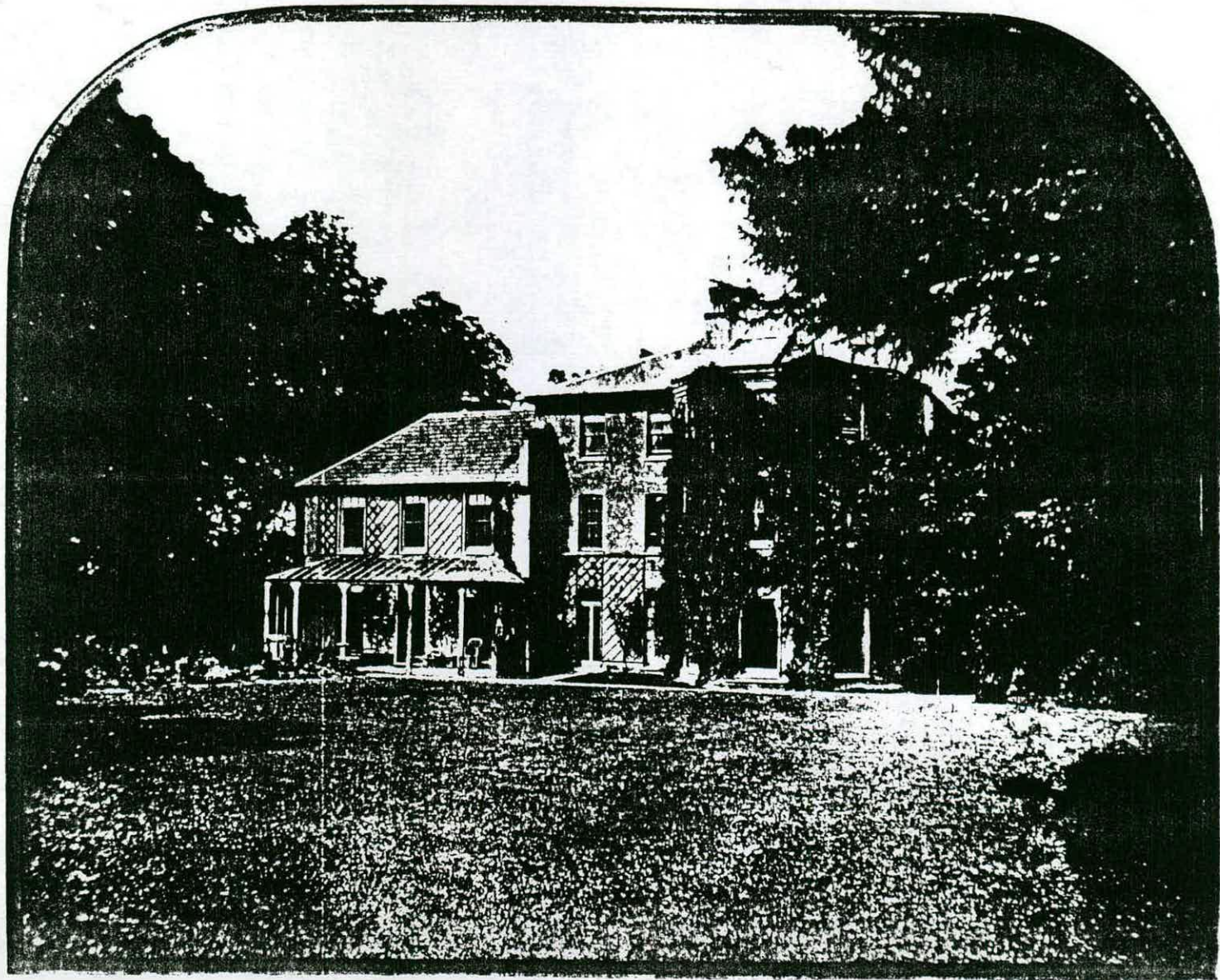
Eng. 1





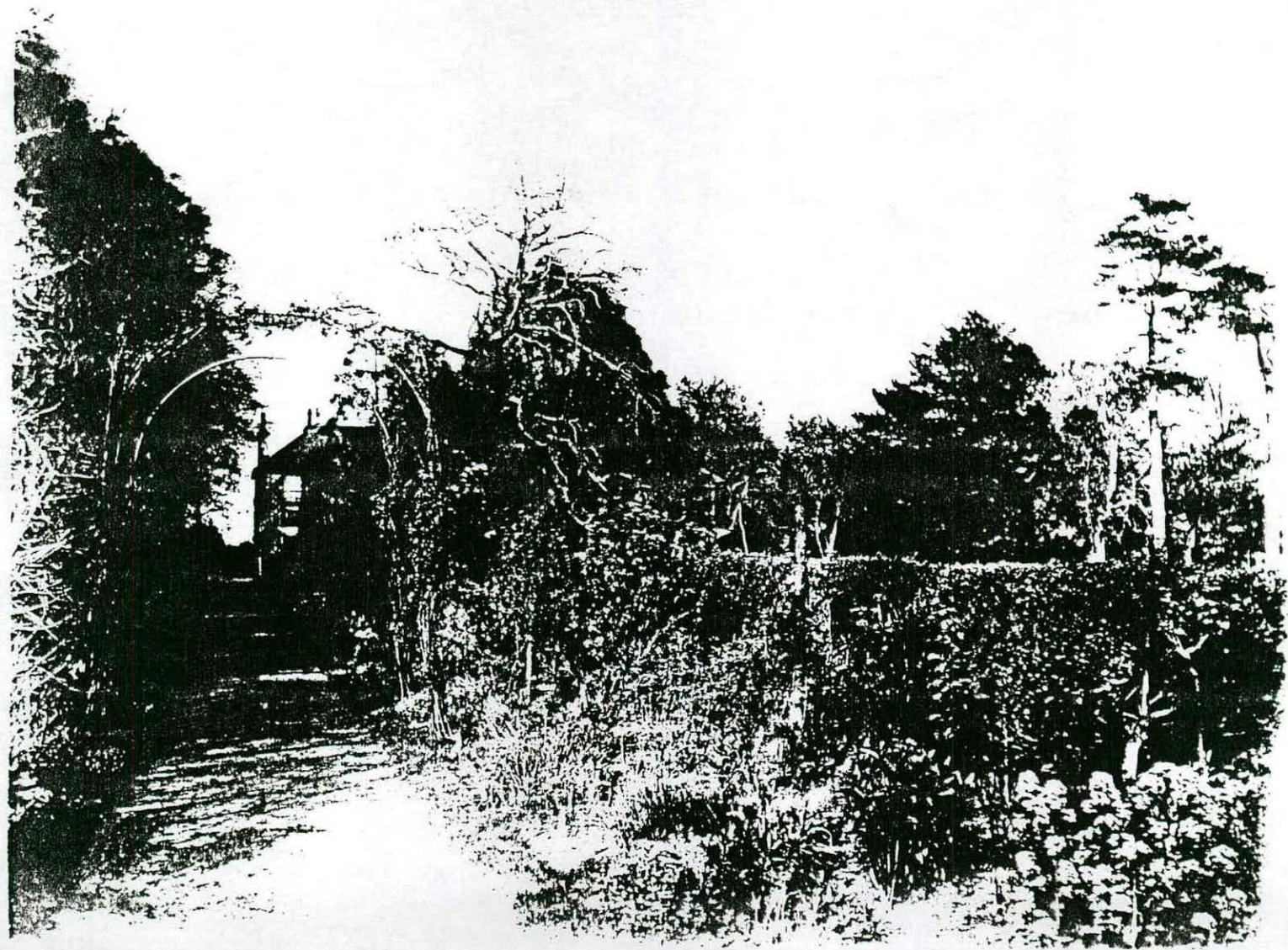
Down House 1877?

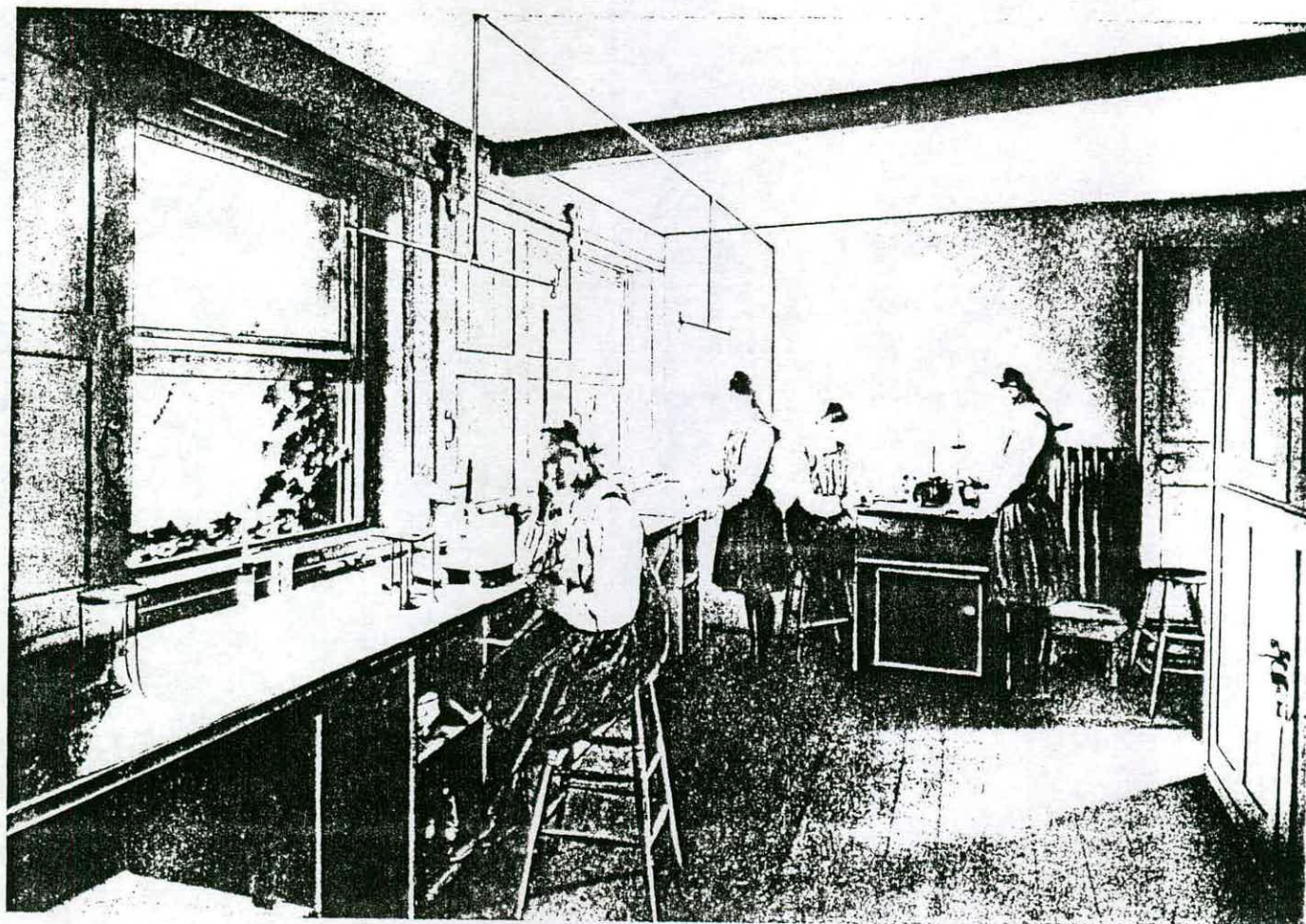
by Leonard Darwin.



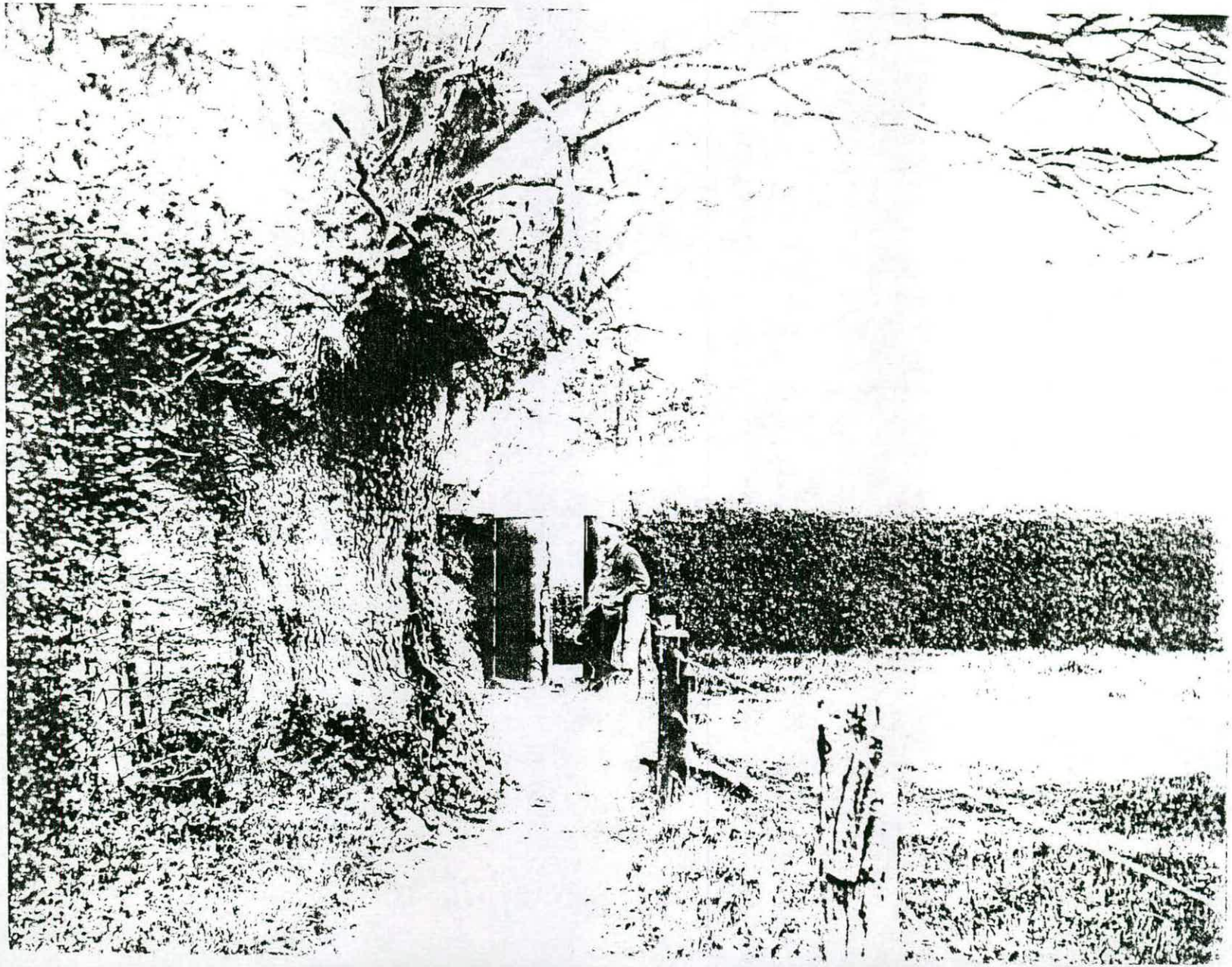






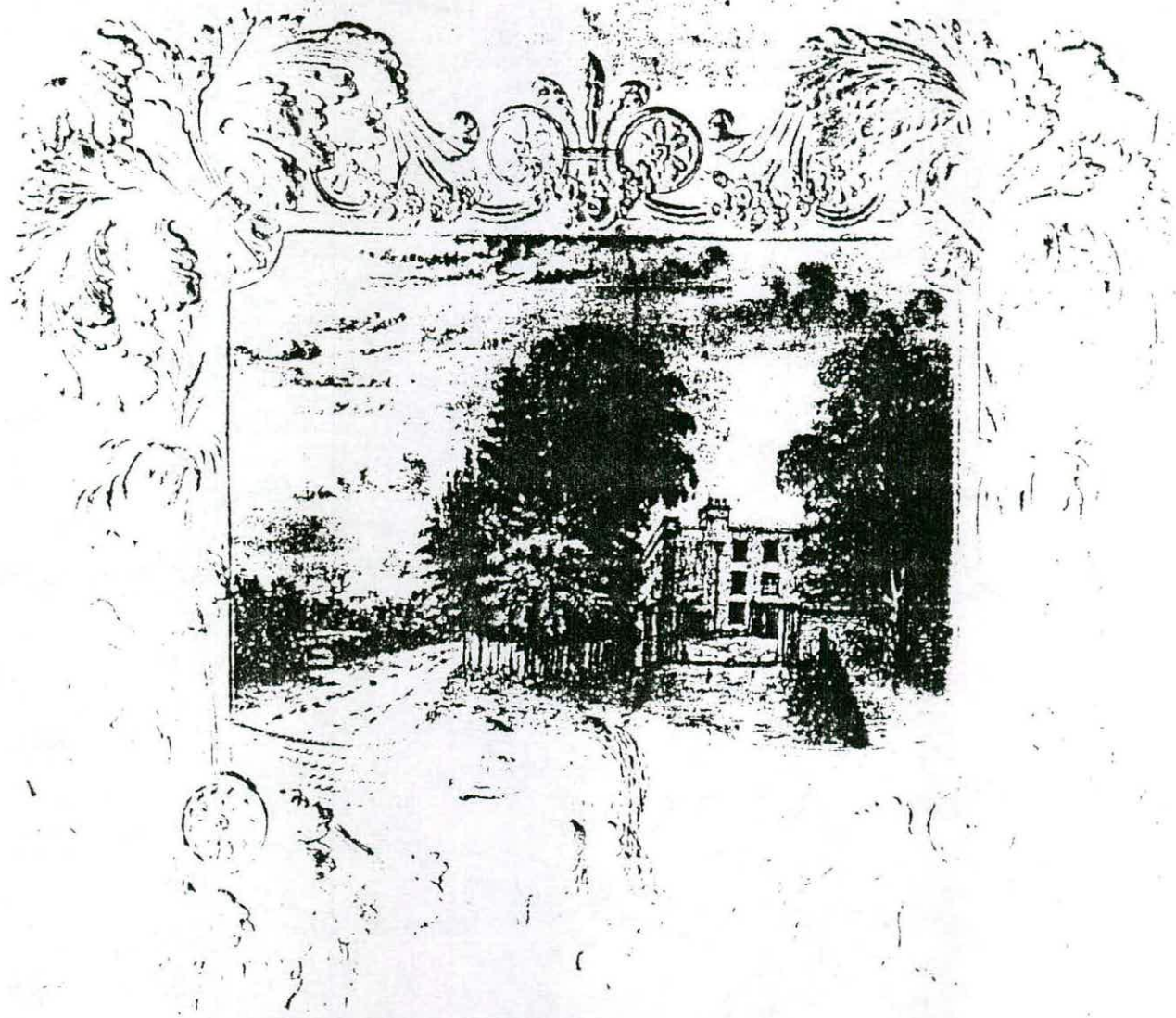


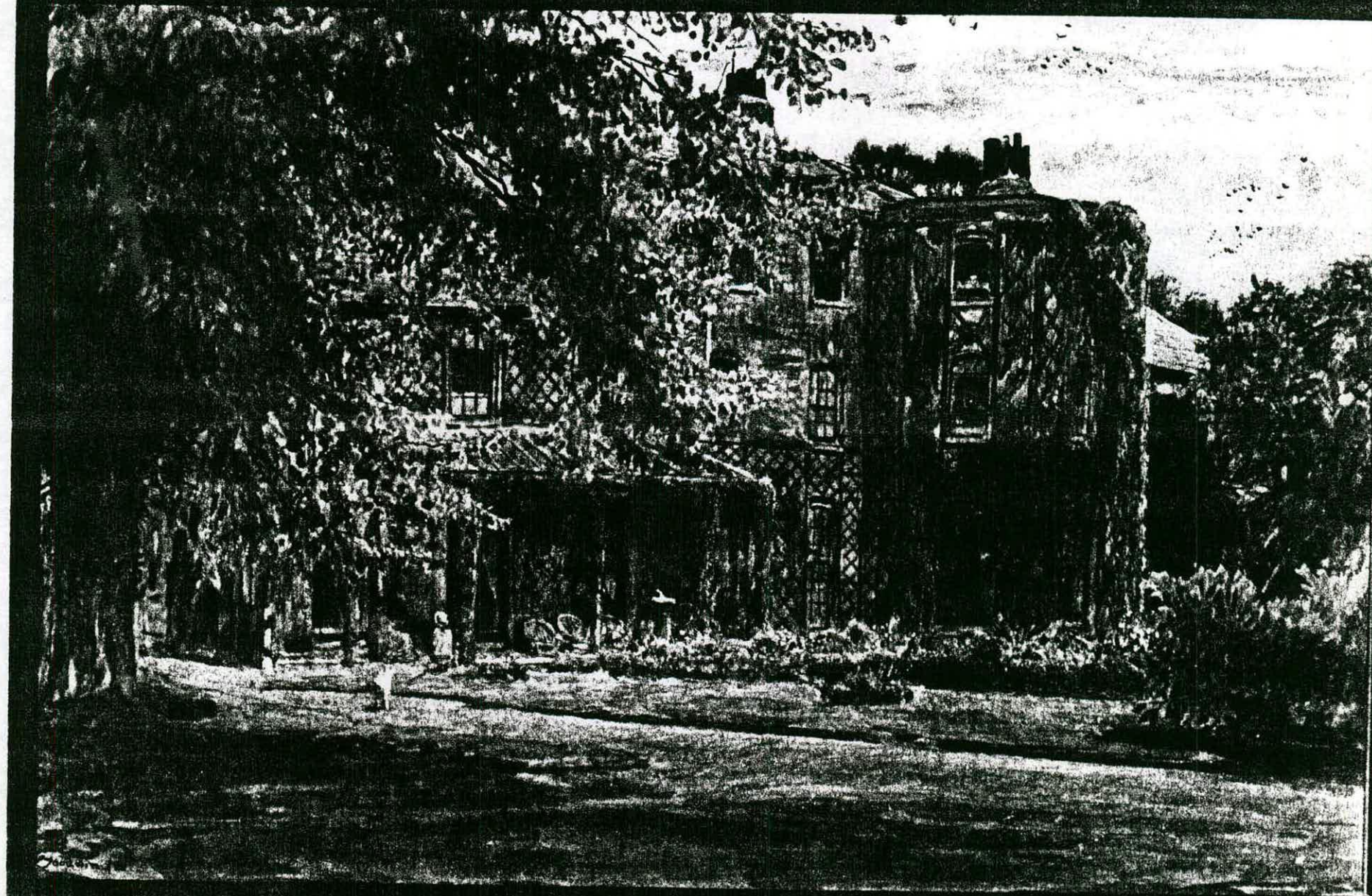
The Laboratory



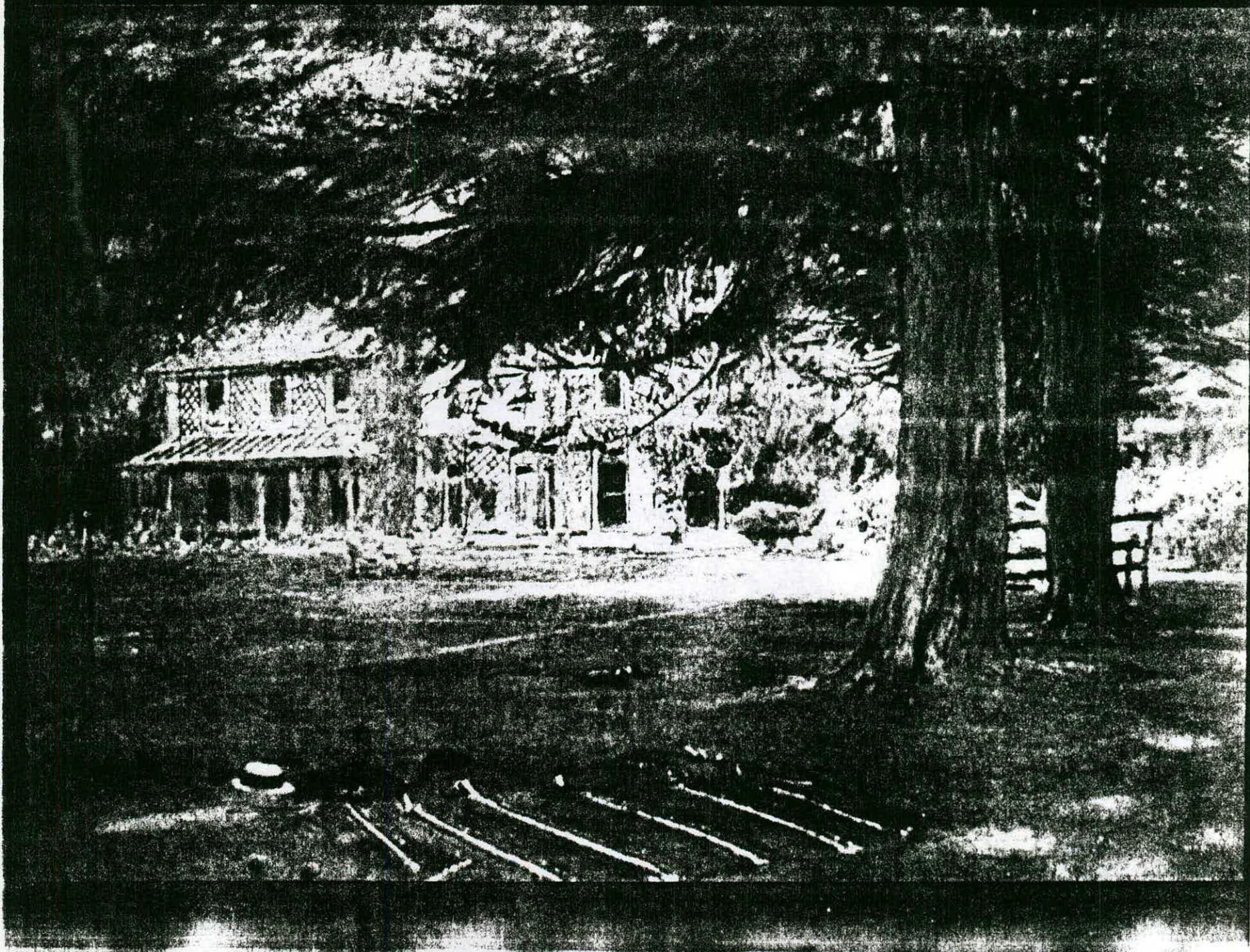














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