

# Research and development in the history of olive horticulture in South Australia

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One of the more interesting aspects of the history of the olive industry in South Australia — and an issue that is still relevant — is what can be loosely described as ‘research and development’: the growth of a body of ‘scientifically-derived’ information on aspects of olive culture and its dissemination throughout the industry. Initially knowledge about olive cultivation and oil production was received, mostly from France and Italy, through books, correspondence, occasional visits overseas and even more occasionally from visitors from olive producing areas. From the 1890s, however, this was supplemented increasingly by local research and development, increasingly formal, increasingly scientific and increasingly institutional. This paper is an attempt to analyse the nature, origins and evolution of such research in olive horticulture in South Australia.

Several major themes have emerged. Firstly, the evidence — or rather the lack of it — suggests that local research in olive culture focussed almost exclusively on olive horticulture. Apart from information gathering, there are few examples of private research on other, fundamental aspects of the industry such as oil extraction and chemistry. Detailed knowledge of the processing of olives and especially of the structure and operation of mills and presses was wholly derived from European practice. This came initially from limited pre-colonial personal experience, from studying agricultural manuals and books on Mediterranean horticulture and, most importantly, from the 1860s, from study tours of oil producing countries. In the 1870s and 1880s, Davenport, Boothby, Villanis and others published general descriptions of French and Italian mills<sup>1</sup>. With such sources, there was no evident need to improve on such an ancient and proven process.

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<sup>1</sup> Samuel Davenport, report of the meeting of the Chamber of Manufactures, July 19 1870, *The South Australian Register*, July 20, 1870; Samuel Davenport, ‘Cultivation of the Olive and Manufacture of its Fruit’, *South Australian Industries and Manufactures*, 1875; William Boothby, *The Olive, its Culture and Products in the South of France and Italy*, 1878; Paolo Villanis, *The Cultivation of the Olive and the Methods of Making Olive-Oil...*, 1884.

Innovation was limited, therefore, to the conversion of agricultural machinery to new, olive-related purposes – Boothby’s chaff-cutter olive mill – or to peripheral processes – C. G. Heyneman’s cotton-wool oil filter<sup>2</sup>.

Secondly, because it focussed exclusively on olive cultivation, olive research was concerned primarily with ‘acclimatisation’ — the successful adaptation of the olive tree to South Australian environments — and, related to this, with ‘nomenclature’ — the identification and correct naming of olive varieties. Acclimatisation was pragmatic, trial-and-error research that sought to establish simply the viability of an introduced species. Although crude in method, acclimatisation was the necessary precursor to analytical and scientific investigations.

Such acclimatisation trials by the early proponents of the olive industry were fundamentally experimental and therefore represent an example of early horticultural research. From the beginning of white settlement in mid-1836 olive stock was introduced into South Australia simply to determine whether olives would flourish and, therefore, constitute a potential economic benefit to the colony. From 1836 the experience with olives, reported by the amateur horticulturist, George Stevenson in *The South Australian Register*, suggested that the olive was well suited to South Australian conditions<sup>3</sup>. In January 1845 Stevenson declared that “the soil and climate of S. Australia are in all respects congenial to [olives]” and recommended to the Colonial Treasurer that the South Australia Company should import more and better olive stock. “Should the Company... desire to make an *experiment* on a scale worthy of itself”, he wrote, “I would recommend that they should send... for the best ... Olive plants...”<sup>4</sup>.

Contemporaries were confident that the early acclimatisation experiments were an unqualified success. “...There is little doubt”, enthused the editor of *The South Australian Register* in 1875, “that South Australia for climate and soil as an olive-producing country is almost if not quite unrivalled.”<sup>5</sup> In 1886 Sir Samuel Daveport wrote of the olive’s

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<sup>2</sup> [SA] *Journal of Agriculture and Industry*, July 1909, p.973-4

<sup>3</sup> George Stevenson, Lecture to the Adelaide Institute, *The South Australian Register*, 10 December 1839

<sup>4</sup> George Stevenson, ‘Memorandum for William Giles’, Mortlock Library, BRG 42/37, 27 January 1845

<sup>5</sup> *The South Australian Register*, June 17 1875, p.7

“special adaptation for South Australia...”<sup>6</sup>. By the time that the limits of agricultural expansion had been reached in the 1920s, the suitability of olive culture in most parts of the State was well established. In January 1917, Arthur Perkins, the Director of Agriculture, noted that “we have gone to the length of proving the complete adaptability of the olive to local climate and soil...”<sup>7</sup> George Quinn, the State Horticultural Instructor at the same period, was more circumspect: “While it cannot be claimed that all parts of the State are equally well suited to the production of the tree and its fruits many districts have shown very definitely the possibilities awaiting future enterprise in Olive Culture.”<sup>8</sup>

Related to the question of acclimatisation, olive promoters and producers recognised the importance of olive varieties for adaptability, fruit yield, oil yield and oil. Naming and description of olive varieties was based partially on French, Italian and later Californian sources but also partially on South Australian experience. Even as early as the 1860s there is a hint that, although the olive might flourish under the South Australian sun and despite the confidence that only the best varieties had been imported, not all varieties available were universally productive. In 1888 Samuel Davenport noted “that there is much difference in the varieties of olive in quantity and in the quality of oil they give and care is needed...to secure good sorts only”<sup>9</sup>. There was an evident need to correctly identify – and name – those varieties which, particularly under South Australian conditions, were most favourable and then to propagate only those; the early emphasis on adaptability – the proof of viability – shifted to improvement. Whereas adaptability could be determined with relatively primitive methods, the influence of variety on fruit and oil yield and oil quality required a more systematic approach, relatively sophisticated laboratory analysis and well trained technicians. Such research was beyond the resources of most individual private producers.

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<sup>6</sup> Sir Samule Davenport, ‘The Olive in South Australia’ in J. F. Conigrave, *South Australia: a sketch of its History and Resources...*, 1886, p.100. Although regarded as the founder of the olive industry in South Australia, Davenport was generally more circumspect than many olive promoters and confined his enthusiasm to the area around Adelaide; possibly he was more aware than most of unsuccessful trials in some areas of the colony and elsewhere in Australia.

<sup>7</sup> Arthur J. Perkins, ‘On the Scope in South Australia for Extension of Olive Groves’, *Journal of Agriculture of S.A.*, January 1917, p.443–4

<sup>8</sup> George Quinn, ‘Notes on Olive Growing in South Australia’, *Journal of Agriculture of South Australia*, February 1920, p.603

<sup>9</sup> Samuel Davenport, ‘Vine and Olive Culture’, Mortlock Library, PRG 40/20, undated but probably 1888

This is demonstrated by the single documented case of local development: Hardy's Mammoth. This cultivar was first mentioned in July 1901<sup>10</sup>. Evidently Hardy's Mammoth was a promising "local seedling" and therefore more likely the product of good fortune and observation than systematic selection and testing. Later Hardy described the Mammoth as "a seedling of his which he had been growing for many years. It was a good bearer, with a large berry and easily gathered; it contained a high percentage of oil, and was a good variety for pickling."<sup>11</sup> Hardy reported on the oil yields of Hardy's Mammoth and three other varieties<sup>†</sup> and suggested that

The marked difference in the percentages of oil in the different berries showed the possibilities of increasing our yields of olive oil, and it was a question whether it would not pay to graft over all the seedling trees with the best variety. Each tree would need to be tested, and this meant a greater expense than he was prepared for. He thought that analyses of soils, fruits etc., of commercial importance should be conducted free, or at greatly reduced cost. It had cost him £3 to test these four kinds of olives.<sup>12</sup>

Cost and effort constituted major obstacles to research in an industry that, unlike wine and some other fruits, remained relatively small and usually only marginally profitable. Equally, despite their predominantly liberal political views and general opposition to government, the early olive growers shared an expectation that the State — or, earlier, the South Australian Company — should promote and protect agriculturists' interests and therefore assume responsibility for research and development activities. Supporting the establishment of Roseworthy Agricultural College, in 1886 the editor of *The Advertiser* wrote

It is not difficult to recall a period when a suggestion for the application of scientific research to the serious business of agriculture would have provoked among practical and even experienced farmers an expression of mingled pity and ridicule. In a country so largely dependent as is South Australia on the success of agriculture as an industry, it is peculiarly important that no means should be neglected for ensuring that success.<sup>13</sup>

And in 1932, addressing the Alawoona Agricultural Bureau, R. Pengilly added that "farmers should be able to leave the actual experimentation and trials to men and

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<sup>10</sup> [SA] *Journal of Agriculture and Industry*, July 1901, p.999; reporting meeting of the Central Agricultural Bureau, June 12, 1901

<sup>11</sup> [SA] *Journal of Agriculture and Industry*, June 1902, p.929

<sup>12</sup> Ibid.

<sup>13</sup> *The Advertiser*, March 20 1886

equipment better suited to the work and be content to put to good account the results from the experiments when made available for him.”<sup>14</sup>. Research in olive culture became, from the 1880s, the almost exclusive domain of government or quasi-government agricultural organisations whose charters explicitly included scientific improvement, experiment and research and whose staff were trained, professional horticulturists and analytical chemists. However, the experience of the preceding 50 years had set the horticulturally-biased agenda for systematic research activities from the 1880s and ensured that such research and development was responsive to the local olive growers.



The decade or so from the mid-1880s was a period of agricultural depression in South Australia and a shock to farmers who had, since settlement, enjoyed the dual benefits of cheap, accessible land and relatively good seasons. Drought, declining productivity, depleted soil fertility, falling export prices, increasing labour costs and regulation of land appropriation induced a general decline in agriculture. For the agricultural improvers who, from 1888, had both quasi-governmental status and a forum in the Agricultural Bureaux, the solution to this malaise was progressive, scientific agriculture based on research and the dissemination of the results through extension and educational services, including experimental and model farms.

Until the 1890s, the only organisation that undertook any horticultural research was the Botanic Gardens. This role had evolved from the earliest incarnations of the Gardens from 1839 under the influence of the Colonial Botanist, John Bailey, and George Stevenson and was reinforced during the stewardship of George Francis from 1855 to 1865<sup>15</sup>. The first two Directors of the Botanic Garden, George Francis and Richard Schomburgk, were both advocates of ‘acclimatisation’; Francis was instrumental in the attempts to found a South Australian Acclimatisation Society from 1862<sup>16</sup> and

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<sup>14</sup> R. Pengilly, ‘The value of Experimental Stations to South Australia’, *[SA] Journal of Agriculture*, November 15 1932, p.448

<sup>15</sup> See B. Best, *George William Francis, First Director of the Adelaide Botanic Garden*, 1986

<sup>16</sup> Best, *op cit*, p124–8; G. Francis, “Acclimsatisation” [paper read to the Philosophical Society], *The Garden and Field*, June 19 1862

Schomburgk negotiated the incorporation into the Botanic Gardens of land reserved for the Acclimatisation Society on condition that it was “devoted for the cultivation of objects similar to those intended...”<sup>17</sup>. The following year the Botanic Gardens opened an Experimental Garden to demonstrate the adaptability of a growing collection of plants and later a Model Garden for the instruction of South Australians in the best adapted plants. The Botanic Gardens added to these ‘acclimatisation laboratories’ as its responsibilities extended to include, for examples, the planting of North Terrace, parts of the Parklands and the grounds of Government House, some of which included olives.

In the Annual Report of the Central Agricultural Bureau for 1892–3, A. Molineux, the most influential agricultural reformer, urged the Government to establish an ‘educational’ orchard ‘for growing fruit-trees and vines under their correct names’<sup>18</sup>.

The Bureau was aware that fruit nomenclature was inextricably involved in confusion, many varieties being known under several different names, which names were also attached to other varieties also bearing several names properly belonging to other sorts. It was therefore recommended that a typical orchard should be established under the care of the Director of the Botanic Gardens, and that he should procure truly named varieties of all kinds of fruit from several reliable sources; that these should be cultivated, compared closely one with the other, so that no doubts should remain with regard to the correct name of each variety of fruit; that the relative good and inferior qualities of each sort should be carefully noted in every way; that buds and scions should be available (under proper conditions) to all applicants; and that the orchard should be conducted strictly on educational and progressive principles and not with a view to compete in any way with fruitgrowers.<sup>19</sup>

The Minister of Agriculture approved the proposal in 1895. The ‘Type Orchard’ was placed under the control of the Director of the Botanic Gardens. ‘Nomenclature’ was a botanic rather than an agricultural issue and at that time only the Botanic Gardens had authenticated stock and the facilities to source and propagate large numbers of trees. Also the site intended for the orchard was close to the Gardens – the Exhibition Grounds, now a large part of the Universities of Adelaide and South Australia!

At the same time, the Government’s hand was forced by Thomas Playford, the Elder. As Commissioner for Crown Lands in 1879, Playford had proposed the creation of an

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<sup>17</sup> Botanic Gardens Library, *Official Minute Book [of the Board]*, R. Schomburgk to Chief Secretary, July 9 1866

<sup>18</sup> M. Holtze, ‘The Typical Orchard, Mylor’, *[SA] Journal of Agriculture*, August 1, 1902, p.23

<sup>19</sup> *[SA] Journal of Agriculture*, December 1899, p.446

agricultural college with professional staff and research as one of its objectives; and as a fruitgrower and market gardener at Norton Summit, he was also personally aware of as well as politically sensitive to the needs of this branch of agriculture. After a distinguished political and administrative career, in 1894 Playford was appointed Agent-General in London. “Knowing the difficulties which fruitgrowers experienced in procuring fruit trees true to name in Australia, Mr Playford at once began to purchase and send out from the best nurseries of Great Britain consignments of fruit trees correctly named by European pomologists.”<sup>20</sup> When these trees arrived in South Australia, “there being no Agricultural or Horticultural Department in existence to receive them, the trees were handed by the Treasury Department to the Director of the Adelaide Botanic Garden for planting at his discretion”.<sup>21</sup> This embarrassment of riches precipitated the Government into action.

Probably because the area was waste Crown Land (it was an Aboriginal Reserve)<sup>22</sup> and possibly because the Hills orchardists and ‘blockers’ wielded increasing political influence<sup>23</sup>, a second location near Mylor was selected in April 1898, the site prepared and in August 1899 the first trees were planted. To avoid the ‘cultivar confusion’ that evidently threatened the State’s horticulture, most of the main stock was sourced from outside South Australia, from the Botanic Gardens of New South Wales and Victoria and from leading nurseries in England, France, Germany and the other Australian States<sup>24</sup>. These original varieties were augmented over the period of the Type Orchard. This was an expensive and time-consuming task since the varieties were meant to be authenticated. Additionally, trees could be obtained only from “nurseries where no grapevines are cultivated and will be accompanied by certificates in compliance with the international regulations for the prevention of phylloxera”<sup>25</sup>, a significant limitation in sourcing new

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<sup>20</sup> G. Quinn, quoted in R. Fowler, ‘Adelaide and Coromandel Valley Experimental Orchards’, *Journal of Agriculture of South Australia*, July 13 1927

<sup>21</sup> G. Quinn, ‘The State Experiment Orchard, Coromandel Valley...’, *[SA] Journal of Agriculture*, March 15 1935, p.973

<sup>22</sup> Jan Polkinghorne, *Mylor – Valley of Dreams*, p.73

<sup>23</sup> See J. Hirst, *Adelaide and the Country, 1870–1917*, (1973), Chapter 4: Wooing the Country: Politics 1890–1917, pp153–215 for an analysis of rural politics and the increasing political importance of rural farmer.

<sup>24</sup> M. Holtze, *op cit*, p.23

<sup>25</sup> M. Holtze to the Minister of Agriculture and Education, 28 January 1897, Botanic Gardens Library

olive stock. At its height, in 1904–5, the orchard was claimed to be ‘the largest collection of fruit trees brought together into one collection south of the line [equator]’<sup>26</sup>. According to his official report in 1904, the Director of the Botanic Garden, Maurice Holtze, claimed that the collection comprised 4955 varieties<sup>27</sup>

The trees were planted in a meticulous hexagonal plan by which all trees were 12’ apart. Varieties of the various fruit were planted in blocks, in alphabetical order, from left to right, and Holtze devised an elaborate labelling system; the varieties were recorded in three separate orchard books, none of which seem to have survived. Despite the declared intentions of the orchard manager, a complete catalogue was not published.<sup>28</sup>



*[Mylor Type Orchard, c.1905]*

The location and soils of the orchard favoured more temperate fruits and perhaps reflecting the interests of the more influential orchardists of the Hills, the collection was dominated by apples, pears, plums, peaches and cherries. From the beginning, however, the orchard included olives. In 1899, the initial planting, there were 14 ‘sorts’<sup>29</sup>; in 1900 this reduced to 8<sup>30</sup> and in 1902 the number had increased to 40<sup>31</sup>..

Unfortunately, because the original orchard books are not available, we have no direct account of the varieties that were planted at Mylor. However the register from the

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<sup>26</sup> A. Holtze, ‘The Mylor Type Orchard’, *Garden and Field*, January 21, 1905

<sup>27</sup> M. Holtze, Report on Mylor Typical Orchard’, *Proceedings of the Parliament of South Australia, Report of the Minister of Agriculture for 1903–4*, 1904

<sup>28</sup> M. Holtze, *op cit* and A Holtze, *op cit*

<sup>29</sup> ‘The Typical Orchard at Mylor’, *The Garden and Field*, November 1899, p.134; *[SA] Journal of Agriculture*, December 1899, p.446

<sup>30</sup> *[SA] Journal of Agriculture*, December 1900, p.430

<sup>31</sup> M. Holtze, ‘The Typical Orchard, Mylor’, *[SA] Journal of Agriculture and Industry*, August 1, 1902, p.25



Corromandel Valley Experimental Orchard referenced the trees that were propagated from stock at Mylor in 1908<sup>32</sup>. These include the following (22) olive cultivars:

Atroriolacae Brum-Ribier

'Black Italian'

Borregiola

Bouquettier

Bouteillon

Buchine

Frantoja

Gaeta

Hardy's Mammoth

'Institute'

'Large Fruiting'

Late Blanquette

Longue d'Ascoli

Lucca

Morihioso

Picholine

Pueblana

Regalise de Languedoc

Rouget

Rubra Baillon d'Aise

Salome

Verdale

Ultimately the Mylor Type Orchard provided little direct benefit to the olive industry. Firstly, the olive growers prided themselves on having excellent, productive stock and had little use for an enterprise that could only confirm what they already knew. Both George Francis and Samuel Davenport had in fact sent named cultivars for the collections

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<sup>32</sup> Department of Agriculture, *Variety Testing Records, State Experimental Orchard, Blackwood, 1908-*, PIRSA

of the Botanic Gardens of Sydney and Melbourne<sup>33</sup>. Accounts of official inspections of the orchard and visits by regional Agricultural Bureaux mention very few of those known to be olive growers: only Thomas Hardy and A. H. Peake.

Secondly, the site of the orchard was hardly suitable for olive culture. From its inception, the location was criticised by progressive agriculturists: ‘The site was selected because it was waste Crown Land and as we pointed out at the time, it had few other recommendations.’<sup>34</sup> The soil of the orchard was “of a poor, hungry, sandy character which is freely interspersed with soft, crumbly sandstone, and is well below the average of hill’s land” although the clay subsoil remained moist “even during the hot weather”<sup>35</sup>, hardly a recommendation for planting olive trees. Also the Hill’s climate – ‘temperate’ rather than Mediterranean – and the susceptibility to frost did not favour olives. From as early as 1902 it became apparent that ‘for peaches, apricots, almonds and all citrus fruits the climate of the hills is rather too cold to bring them to perfection’<sup>36</sup> and many ‘Mediterranean’ and semi-tropical fruit trees did not survive, probably explaining the decline in the number of olive varieties in 1900. Finally, considerable resources were required to increase the area of the site to accommodate the increasing number of varieties of apples, pears and plums; from about 1902, the orchard manager simply ran out of space. It was probably for a combination of these reasons that, in 1902–3, the olives were shifted from their original site in ‘Block F’ to an adjoining plot<sup>37</sup> outside of the ‘controlled’ area. Although olives struggled on at Mylor (several have survived), this relocation shifted the trees out of the scientific focus of the Type Orchard.

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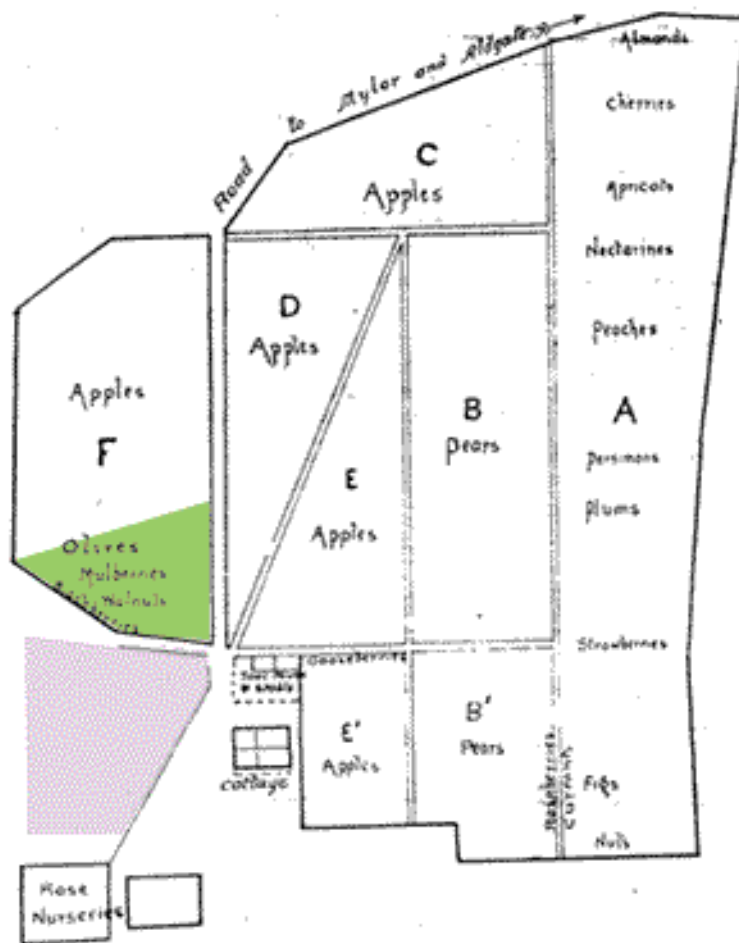
<sup>33</sup> For example, Müller to Davenport, 25 October 1860 and 20 May 1864, Mortlock Library, PRG 40/20

<sup>34</sup> ‘Type Orchard, Mylor’, *The Garden and Field*, April 25 1903, p.550

<sup>35</sup> A. Holtze, ‘The Mylor Type Orchard’, *Garden and Field*, January 21, 1905, p.268

<sup>36</sup> M. Holtze, ‘The Typical Orchard, Mylor’, *[SA] Journal of Agriculture and Industry*, August 1, 1902, p.25

<sup>37</sup> *The Garden and Field*, April 25 1903, p.550



[Plan of Mylor Type Orchard, c.1900; original olives shown in green, shifted to purple area, c.1903]

Thirdly, the declared purpose of the Mylor Type Orchard was limited to ‘nomenclature’, a source of some confusion, criticism and, later, friction between the Botanic Gardens and the reconstituted Department of Agriculture. Continually Holtze insisted that Mylor was a ‘Type’, not a ‘Typical’ orchard and should not be confused with a Model or Demonstration or Experimental Farm. “The garden has been called a ‘typical orchard’, reported *The Garden and Field*, “but this, Dr. Holtze thinks, is wrong because it conveys the idea in many minds that the orchard is to be a sort of model orchard.

Nothing, he points out could be more erroneous, for how could one make a model out of such defective, irregular material.<sup>38</sup>

“Let it be ever and always remembered,” *The Garden and Field* later added,

that the orchard is not an attempt to teach practical orchard methods, but to determine nomenclature, to test all known varieties, and provide authentic types of varieties, first to enable growers to identify their varieties, and, second, to provide scions true to name... many useful experiments can be carried out but these are incidentals and not essentials<sup>39</sup>

Holtze resisted any attempt to redefine the role of the Type Orchard, initially even refusing to irrigate or fertilize the orchard lest even this prejudice the purpose of the orchard. Recommendations for experiment and extension were duly noted but mostly ignored<sup>40</sup>. Evidently there was need for an alternative agency, more actively involved in practical horticultural research and from which, incidentally, the olive industry might derive some benefit.

At the turn of the century the only other institution apart from the Botanic Gardens that was involved in horticultural research was the Roseworthy Agricultural College, founded in 1881 and operational in 1883. At Roseworthy, however, the capacity for horticultural research was restricted partially by the emphasis on farmer training rather than research during the College’s first two decades, partially because of an understandable pre-occupation with more economically and politically important agriculture such as wheat and other cereal crops and sheep, and partially because, like Mylor, Roseworthy did not have a climate (or at least rainfall) conducive to general horticulture.

Ironically Roseworthy was well suited for olives. The original site was called ‘Olive Farm’ after the olives planted by the first farmer, James Trego-Williams, in about 1864 and probably purchased from Davenport<sup>41</sup>; these olives have entered the mythology of the Roseworthy, the fortunes of the College are meant to be tied to the well-being of the olive trees. As early as January 1885 Davenport wrote to the first Principal of the College,

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<sup>38</sup> *The Garden and Field*, April 25 1903, p.550

<sup>39</sup> A. Holtze, ‘The Mylor Type Orchard’, *Garden and Field*, January 21, 1905, p.269

<sup>40</sup> For example, the report of Longwood Agricultural Bureau, *Journal of Agriculture of S.A.*, June 1 1905, p.692; this suggested several ways in which the orchard could have been more useful to orchardists.

<sup>41</sup> Vee Herriot, *The House on the Hill*, nd, pp.5

Professor Custance, encouraging olive cultivation at the College<sup>42</sup>. And again, in November 1891, Davenport requested the newly appointed Government Viticulturist and Lecturer in Viticulture, Arthur Perkins, to bring olive cuttings with him from Tunisia<sup>43</sup>. Before he left to assume his new appointment at Roseworthy, Perkins also enquired about olive cuttings from Montpellier where he had studied viticulture<sup>44</sup> and soon after his arrival in Australia accepted an offer of olive truncheons from Davenport's Beaumont grove<sup>45</sup>. It is possible that olive trees from these truncheons were planted in the 'southern' orchard. By his training in Southern France, experience in mixed farming in Tunisia and with the encouragement of Davenport, Perkins had developed a professional interest in olive culture that persisted when he became the Secretary and then Director of the Department of Agriculture in 1914.

Perkin's attempts to cultivate even a general orchard for teaching horticulture, let alone experimental plantings, proved to be elusive<sup>46</sup>. Rabbits and hares, the droughts of 1895–7 and 1899, the hailstorms of 1898 and Perkin's dedication to his main work as Professor of Viticulture from 1904 contributed to the "painful list of failures". The exceptions were almonds and olives: "Alone almonds and olives withstand the effects of the bad seasons and poor soil."<sup>47</sup>, Perkins reported in 1899, but these two species did not constitute the orchard that Perkins needed for teaching horticulture. In 1902 George Quinn, the Department of Agriculture's Chief Inspector of Fruits was appointed as Horticultural Instructor at Roseworthy and renewed efforts to create a teaching and demonstration orchard at the College.

During the last quarter of this year [1902]... I have taken over the direction of the work in the orchards and gardens of the Agricultural College at Roseworthy and delivered the lectures and demonstrations in fruit culture at that institution... Upwards of 500 trees have been planted in both [?] orchards.... The southern orchard has been planted with varieties selected expressly for educational purposes. Practically all of the

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<sup>42</sup> State Records Office, GRG 61/1

<sup>43</sup> In J. Daniels (ed.), *The Personal Letterbooks of Professor A.J. Perkins*, Roseworthy Agricultural College, 1982, p.30

<sup>44</sup> *Ibid*, p.65

<sup>45</sup> *Ibid*, p.112

<sup>46</sup> M. B. Spurling, 'From Tree to Vine, Horticulture and Viticulture at Roseworthy' in J. Daniels (ed), *Roseworthy Agricultural College, a Century of Service*, Roseworthy Agricultural College, 1983, pp. 108–9

<sup>47</sup> Roseworthy Agricultural College, *Annual Report*, September 26 1899, p.11

hardy kinds of fruit trees grown in this State are represented. A complete register has been taken of the rows and the position in each row of every variety of tree set out, and suitable labels will be attached to each tree.... A nursery is also in the course of establishment, and the students in future will be able to enjoy a more complete course of practical work in horticulture — and fruit culture in particular.<sup>48</sup>

Olives were planted in the College ‘northern’ orchard in 1907, probably earlier in the ‘southern’ grove<sup>49</sup>. These trees were grafted as seedlings in 1906 in the College nursery and all were cropping by 1916. The following year H. E. Laffer reported on the relative percentage of oil in the varieties at Roseworthy, as tested by the State Agricultural Chemist<sup>50</sup>:

Variety	Percentage Moisture	Percentage Oil in Fresh Olives	Gallons per ton
Marchiosa	42.36	27.29	66.73
Palermo	36.69	25.58	61.83
Boutillon	43.67	25.28	61.80
Leccure	40.11	24.95	61.00
Arecuzzo	41.46	23.51	57.50
Palsand	41.91	22.10	54.00
Piegale	39.06	21.75	53.19
Unknown	48.78	19.37	47.36
Sir Geo. Grey	43.61	18.19	44.48
Bouquettier	54.68	17.64	43.13
Tarascon	45.86	16.93	41.00
Del Morocco	54.58	11.54	28.22
Smiths Variety	49.97	11.51	28.14

Laffer commented favourably on Arecuzzo which fruited in its sixth year and promised to be a ‘good cropper’, and Marchiosa and Leccure both of which carried heavy crops in 1917. Nevertheless he warned “that the profitable production of oil is not simply a matter

<sup>48</sup> G. Quinn, [Report of the] Horticultural Instructor and Inspector of Fruit, Report of the Minister of Agriculture for 1902–3, Proceedings of the Parliament of South Australia, 1903, p.42

<sup>49</sup> H. E. Laffer, ‘Oil Percentage in Different Varieties of Olives’, Journal of Agriculture of South Australia, February 1917, p.549

A photograph dated 1910 shows relatively mature olive trees in the southern orchard; since the pines lining the driveway were planted, according to Quinn, in 1902, it is likely that these olive trees were planted at least as early as 1902 and the ‘northern’ group in 1907. See J. Daniels, *The Personal Letterbooks of Professor A.J. Perkins*, Roseworthy Agricultural College, 1982, p.114

<sup>50</sup> Ibid

of cultivating those varieties which give analytically the highest percentages”, citing as other important variables regularity of cropping, fruit yield, ease of extraction as well as seasonal variation, local conditions and soil types. These results, he emphasised, were only indicative. These are also the only results published of any research in any aspect of olive culture at Roseworthy.

Unfortunately Quinn’s register also seems to have disappeared, although at least some of the olive trees in the ‘northern’ orchard retain their labels and it has been possible to reconstruct this grove.



*[Roseworthy’s ‘southern’ olive grove, c.1912]*

As with the Mylor Type Orchard, the significance of Roseworthy was not so much the actual research that was undertaken but the opinion that agricultural improvement relied on research supported by extension and other educational activities. The Mylor and Roseworthy experiences confirmed the need for a well-located, specialised Experimental Orchard in South Australia, and, like Roseworthy, under the direction of the Department of Agriculture.

The issue that precipitated the establishment of such an Experimental Orchard was the transfer of the old Lunatic Asylum (the eastern part of the Botanic Gardens) to Glenside. In May 1902 the Colonial Surgeon, Dr Cleland, advised the Board of the Botanic Garden

that “the North Terrace Asylum would be vacated in a short time and suggesting that, as the Asylum ground adjoined the Botanic Garden, the Board should endeavour to obtain this ground.”<sup>51</sup>. At about the same time, 1903?, the Botanic Gardens was brought under the administration of the Department of Agriculture and, therefore, the competing influence of George Quinn, the Department’s Chief Horticulturist.

It was at this juncture that [Quinn’s] desire to establish a State controlled demonstration and experiment Orchard first became known to the Botanic Garden Board. That Board generously offered to forego a prior claim... and agreed to the suggestion that it be granted to the Horticultural Section of the then newly formed Agricultural Department, and further, that the kinds of fruit trees found to be unsuited to the Mylor conditions of soil and climate be transferred to the Hackney Road site and thus preserved from extinction.<sup>52</sup>

‘Generously offered’ perhaps understates the tension between the Botanic Gardens and the Horticultural Division over control of these 13 acres. Cabinet’s approval of Quinn’s plan in June 1906 signalled the ascendancy of the Department of Agriculture as the pre-eminent horticultural research agency for at least the following 30 years.

[Eventually the Botanic Gardens lost control of the Mylor Typical Orchard as well. In May 1911 Holtze conceded “that as practically the Government Orchard at Blackwood will be a duplication of the Mylor Collection, it would be advisable to retain the latter only until the correctness of the nomenclature of the trees at Blackwood is verified by comparison with the Mylor Type trees.”<sup>53</sup>. Holtze suggested that the Mylor Orchard be retained by the Botanic Gardens and transformed gradually into an arboretum; this was agreed, the Orchard removed, but, because the site was so unsuitable and inaccessible, the Mylor site was sold.]

In 1907 Quinn set up a nursery at the southern end of the old Asylum grounds, adjacent to Waterfall Gully or First Creek (in what will soon become the National Wine Centre and across Hackney Road from where John Bailey planted some of the first olive trees in 1845) and started transferring the varieties ‘found most intolerant of the Mylor conditions’. These included peaches, apricots, plums, fig, citrus, grape vines, almonds

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<sup>51</sup> Botanic Garden Library, *Minute Book [Board]*, 2 May 1902

<sup>52</sup> G. Quinn, ‘The State Experimental Orchard, Coromandel Valley...’, *[SA] Journal of Agriculture*, March 15 1935, p.973

<sup>53</sup> Botanic Garden Library, Letter, Holtze to Commissioner of Crown Lands, 12 May 1911



and olives. However, by the time that the Hackney site had been prepared, the Municipal Tramways Trust appropriated all but 4 acres which were developed as the Adelaide Demonstration Orchard for citrus trees and grape vines<sup>54</sup>, those fruits unsuited to the Blackwood site.

As an alternative to Hackney and on Quinn's advice, in March 1908 the Government took possession of 52 acres at Blackwood "for the purpose of establishing an orchard in which to conduct experiments and demonstrations in fruit culture and to test varieties of fruits not common to the State"<sup>55</sup>. The involvement of several local orchardists in the selection of the site, notably G. Laffer, the President of the Fruitgrowers' Association, ensured that the site was likely to be approved by fruitgrowers and was favourable to the most economically important fruits, particularly apples and pears.

By the end of 1908 the property had been fenced and ditched and 15 acres cleared and prepared for planting<sup>56</sup>. Quinn adopted a hexagonal layout, planting and labelling scheme similar to that at Mylor, perhaps not surprising given that the first stock came directly or indirectly from Mylor and also given the rapid development of the site. The distance between trees was increased from 12' to 20'<sup>57</sup>.

In the winter of 1908 part of the initial 15 acres was planted with the varieties ill-suited to the Mylor orchard, including 27 olives. These were either propagated at the Hackney nursery from scions collected from Mylor or transplanted directly in the new site. By the time of planting this had been augmented by a new shipment of figs and this growth in the number of species continued until at least the 1930s. In 1911 the remaining collection at Mylor was transferred to Blackwood. By 1917 the olive varieties numbered 45, "but it remains to be seen how many are of value"<sup>58</sup>. In 1923 there were 40 varieties<sup>59</sup>. By 1935

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<sup>54</sup> G. Quinn, *op cit*, p.973

<sup>55</sup> *Ibid*

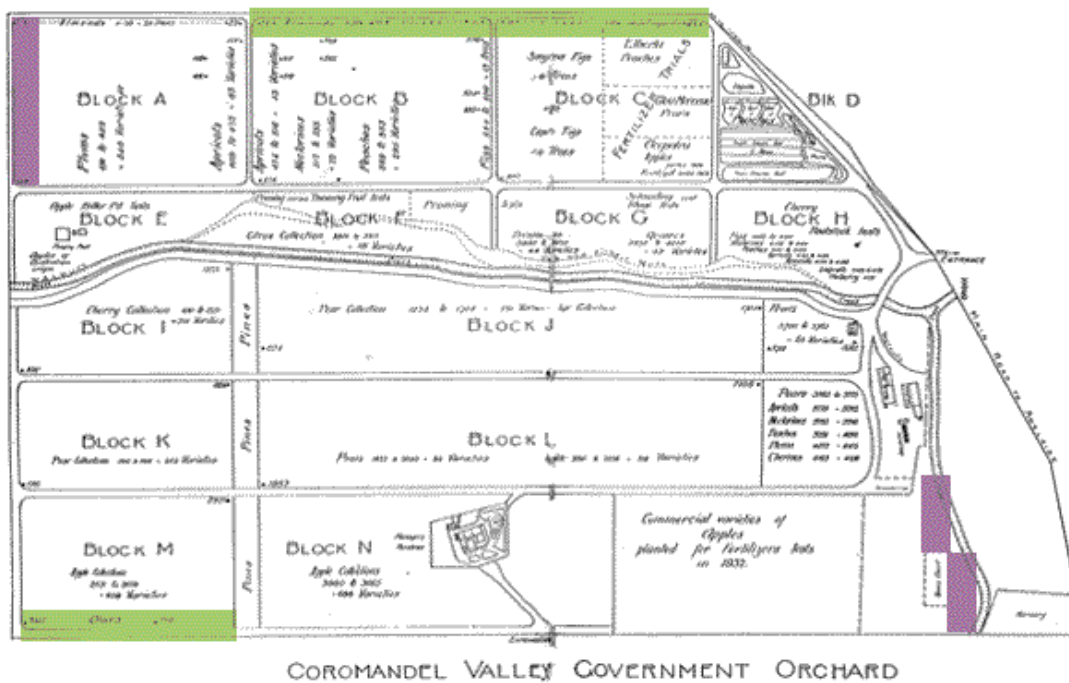
<sup>56</sup> G. Quinn, *[Report of the] Horticultural Instructor and Inspector of Fruit, Report of the Department of Agriculture and Intelligence, 1907-8, Proceedings of the Parliament of South Australia, 19078, 1908, p.33*

<sup>57</sup> G. Quinn, 'The State Experimental Orchard, Coromandel Valley...', *[SA] Journal of Agriculture*, March 15 1935, p.980-4; G. Quinn, *[Report of the] Horticultural Instructor and Inspector of Fruit, Report of the Department of Agriculture and Intelligence, 1907-8, Proceedings of the Parliament of South Australia, 19078, 1908, p.33*

<sup>58</sup> Report of the South and Hills District Agricultural Bureau, *Journal of Agriculture of SA*, October 1917, p. 279

the Experimental Orchard eventually occupied 37 acres and comprised some 4637 varieties, of which 34 were olives<sup>60</sup>. In 1939 there were 55 varieties of olives “growing under observation” at Blackwood<sup>61</sup>.

The initial 27 olives were planted in a row along the southern boundary, now Turners Road, at the top of the slope and in what is the sunniest aspect. There was another row of 13 olives planted diametrically opposite, in the north eastern corner. And, although not marked on the 1935 map, there are also rows of olives in the other two corners. Although this might be coincidental, Arthur Perkins, in 1908 the Director of the Department of Agriculture, had long advocated the use of olives as windbreaks and economically useful filler trees and these additional rows might have been planted for this purpose<sup>62</sup>



*[Plan of the Coromandel Valley Experimental Orchard; original olives in green, subsequent plantings in purple]*

<sup>59</sup> [SA] *Journal of Agriculture*, March 15 1923, p. 690

<sup>60</sup> G. Quinn, ‘The State Experimental Orchard, Coromandel Valley...’, [SA] *Journal of Agriculture*, March 15 1935, p.985

<sup>61</sup> R. Fowler, ‘The Olive in South Australia’, [SA] *Journal of Agriculture*, April 1939, p. 812

The 27 varieties planted at the Blackwood Orchard from 1908 to 1912 and later tested were<sup>63</sup>:

Variety	Date	Source (Primary source)	
Atroriolacae Brum-Ribier	August 1908	Mylor	Sahut, France
'Black Italian'	August 1908	Mylor	Emerald, Victoria
Ascolana	July 1912	Fresno, California*	
Borregiola	August, 1908	Mylor	Naples, Italy
Bouquettier	August, 1908	Mylor	Hurstville, NSW
Bouteillon	August, 1908	Mylor	Naples, Italy
Buchine	Sept, 1910	Mylor (!)	Sahut, France
Early Blanquette	August, 1908	Emerald, Victoria	
Frantoja	August, 1908	Mylor	Sahut, France
Gaeta	August, 1908	Mylor	Naples, Italy
Gros Redonneau	July, 1910	Payenham, SA	
Hardy's Mammoth	August, 1908	Mylor	Adelaide, SA
'Institute'	August, 1908	Mylor	Adelaide Institute!
'Large Fruiting'	August, 1908	Mylor	Emerald, Victoria
Late Blanquette	August, 1908	Mylor	Emerald, Victoria
Longue d'Ascoli	August, 1908	Mylor	Naples, Italy
Lucca	August, 1908	Mylor	Naples, Italy
Morihioso	August, 1908	Mylor	Naples, Italy
Mission	July 1912	Fresno, California	
Picholine	August, 1908	Mylor	Emerald, Victoria
Pueblana	August, 1908	Mylor	Naples, Italy
Regalise de Languedoc	August, 1908	Mylor	Sahut, France
Rouget	August, 1908	Mylor	Naples, Italy
Rubra Baillon d'Aise	August, 1908	Mylor	Sahut, France

<sup>62</sup> A. Perkins, 'Breakwinds', *Journal of Agriculture of SA*, January 1916, p. 532; A. Perkins, 'On the Scope in South Australia for the Extension of Olive Groves', *Journal of Agriculture of SA*, January 1917

<sup>63</sup> Department of Agriculture, *Variety Testing Records, State Experimental Orchard, Blackwood, 1908-*, PIRSA

Salome	August, 1908	Mylor	Emerald, Victoria
Verdale	August, 1908	Mylor	Hurstville, NSW

Significantly, only three of the 27 varieties were sourced locally: ‘Institute’ from the Adelaide Institute (now the State Library), Gros Redonneau from Wick’s Nursery at Payenham and ‘Hardy’s Mammoth’ from Hackett’s Nursery in Adelaide. This suggests that nomenclature remained an issue and local stock could not be trusted. A few years later, in 1917, the Acting Manager of the Blackwood Government Orchard indirectly confirmed this. After explaining that olive “seed does not come true to the parent stock” he suggested that “the originals of our best types of trees were probably selected seedlings...” and, therefore, not true to type<sup>64</sup>.

By 1940, “of the varieties growing at the Blackwood Experimental Orchard, the Verdale is the most profitable”, wrote R. Fowler. “Other promising varieties are Manzanillo, Cucco, Picholene de St. Chamas, Mission, Hardy’s Mammoth, Baruni and Sevillano Gordal. These all bear fruit suitable for pickling and produce an average quantity and quality of oil, with the exception of Sevillano Gordal, which is essentially a pickling olive only...”<sup>65</sup>.



*[The Blackwood Experimental Orchard, c 1935]*

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<sup>64</sup> Report of the South and Hills District Agricultural Bureau, *Journal of Agriculture of SA*, October 1917, p. 277

An interesting although highly speculative possibility is that the 40 olive varieties from Mylor were duplicated at Blackwood and Roseworthy and that the varieties planted in the north-eastern corner of Blackwood are the same as those tested at Roseworthy in 1917. It is also possible that these were replicated later in the other corners at Blackwood. This would have been entirely consistent with the olive research program at Blackwood. It would also explain why only the initial 27 Blackwood trees were recorded. Perhaps DNA profiling will confirm this or otherwise.

Under the administration of the Department of Agriculture, the role of the Blackwood Experimental Orchard was significantly different from that of the Mylor Type Orchard. Its basic function remained identification of varieties — nomenclature — and distribution of correctly named cultivars to nurseries and major orchardists. To this it added systematic observation and collection of data. “Though the type portion of the Orchard occupies a considerable part of our space and time”, wrote the Manager, R. Fowler in 1927, still a large amount of other experimental work is undertaken.”

From our accumulated data carefully recorded, we are in a position to advise as to the flowering periods, the ripening seasons, the habits of growth, fruit capacities, the quality of the product, the hardiness and keeping qualities, as well as the relative liability or resistance to pests and diseases of every variety of tree ordinarily grown in Australian orchards...<sup>66</sup>

Consequently, the development of the original 27 olive trees was duly recorded from 1917 to 1928–9. This could have been because many of the trees planted as grafted seedlings in 1908 would have first fruited in 1917; it also coincides with the appointment of W. J. Spafford as the Department of Agriculture’s Superintendent of Experiments.

Most significantly, as well as the general observations undertaken for all fruits in the orchard,

In connection with [the olives], we have a small plant for making olive oil, and our records contain tabulated information as to the relative amount of oil each variety will produce per ton of olives, and the average number of olives that go to make a pound of fruit. We are now testing several new varieties to ascertain their value from a “pickling” point of view.<sup>67</sup>

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<sup>65</sup> R. Fowler, ‘Cultivation of the Olive’, *[SA] Journal of Agriculture*, November 1940, p. 199

<sup>66</sup> R. Fowler, ‘Adelaide and Coromandel Valley Experimental Orchards’, *Journal of Agriculture of South Australia*, July 13 1927

<sup>67</sup> Ibid

The Depression of the 1930s was probably the major reason that testing of the olives was terminated. By 1933 the experiments of a more or less permanent nature at Blackwood were restricted to apples, pears, cherry and peach and general pruning trials<sup>68</sup> and no olives were planted when the Fullarton Orchard was established about the same time for citrus, vine and almond trials. However there was sufficient information collected in the decade of the olive observations that, in 1939, Fowler could claim that “it is possible now to make a selection of the most suitable varieties for both oil making and pickling.... With our present knowledge and the selection available, groves could now be planted with trees producing the larger berries and these trees... would produce more regular crops....”<sup>69</sup>

Planting the olives in rows against the boundaries probably saved them. According to J. Allan Beare (the Senior Research Officer, Soil Conservation) and John Harris (the Manager of the Experimental Orchard), by 1936 the original plantings had largely outlived their usefulness for experimental work, the soil was depleted and erosion had become a major problem<sup>70</sup>. Consequently most of the orchard was progressively cleared, rehabilitated, contour ploughed and then replanted, almost exclusively with those fruits which thrived at Blackwood and which were most economically valuable. Ironically, by being both literally as well as experimentally peripheral to the main pomological research at Blackwood, the olive trees have mostly survived, albeit poorly maintained, as ornamental windbreaks.

The Department of Agriculture planted olives in other experimental sites elsewhere in the State, although the Blackwood Experimental Orchard was the only orchard in which olives were observed, tested and recorded. Perkin’s radical proposal for the Eyre Peninsula Training Farm at Minnipa, for example, was intended to prove the practical and economic viability of “surrounding each field with a regular belt of four rows of olive trees, planted 40 ft apart”<sup>71</sup> rather than assessing the characteristics of the fruit. A

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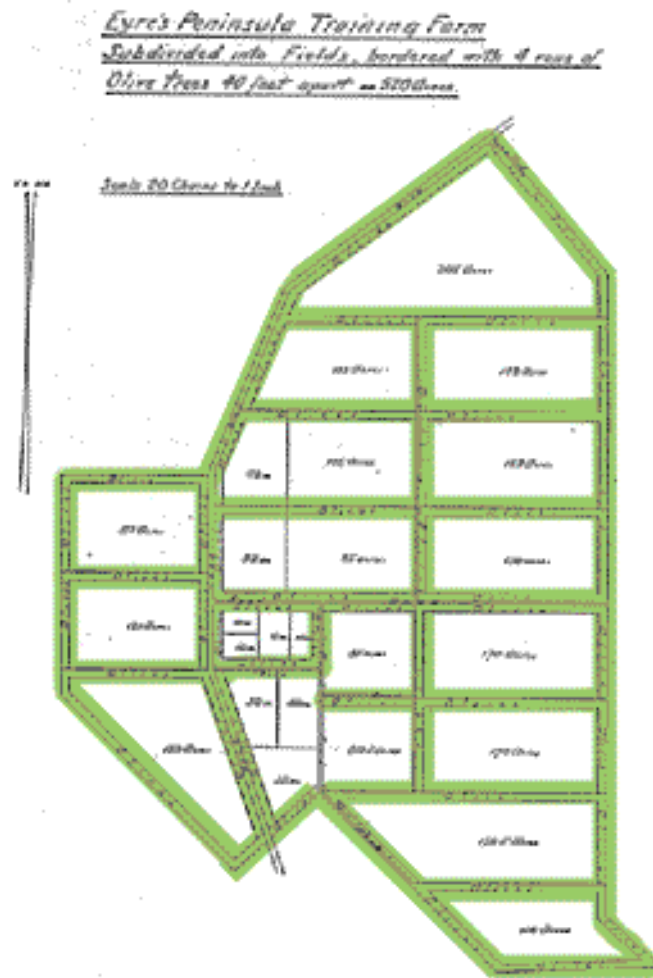
<sup>68</sup> R. Fowler, ‘Government Experimental Orchards, Blackwood and Fullarton’, *[SA] Journal of Agriculture*, November 15 1933, p. 383

<sup>69</sup> R. Fowler, ‘The Olive in South Australia’, *[SA] Journal of Agriculture*, April 1939, p. 814

<sup>70</sup> J. A. Beare and J. B. Harris, ‘An Orchard is Rebuilt’, *[SA] Journal of Agriculture*, June 1955

<sup>71</sup> A. Perkins, ‘On the Scope in South Australia for the Extension of Olive Groves’, *Journal of Agriculture of SA*, January 1917

trial grove was also planted with only limited success at the Veitch Experimental Farm in the Murray Mallee<sup>72</sup>. And, as far as I am aware, no olives were planted at the Department's other Experimental Orchards at Kybybolite or Berri.



*[Plan of the Minnipa Farm; planned olive belts  
in green]*

The terminal decline of the Blackwood Experimental Orchard coincided with the demise of the ‘colonial’ olive industry and represented the end of olive research in South Australia until more recent times. In 1927 Perkins, then Director General of the Department of Agriculture, pleaded for “nation-wide research into the economic position

<sup>72</sup> [SA] *Journal of Agriculture*, October 1931, p. 274

of our various rural industries” and, indirectly, the viability of the branches of agriculture. Significantly, even for this olive enthusiast, the need for research into olive culture did not attract special attention<sup>73</sup>. With post-war rural depression, the problems of the irrigation colonies on the Murray and the limited success of the soldier settlements in the Mallee, the Department of Agriculture focussed on higher priorities than olive research.

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<sup>73</sup> Athur J. Perkins, *A plea for nation-wide research into the economic position of our various rural industries*, Adelaide, 1927



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†. Interestingly Hardy had the samples tested at the School of Mines and Industries, suggesting that his winery did not include laboratories that were capable of such relatively simple analyses.

The results of the tests were:

Hardy's Mammoth, large berry, 27.4 per cent. oil; imported olive from Frontinia, small berry, 24.3 per cent. Oil; Boquettier, from gaol plantation, 14.7 per cent. Oil; small seedling from Parkside, 14.7 per cent. Oil.

\* The Californian connection is interesting here. In August 1899 the Chairman of the Central Agricultural Bureau tabled a report on *Olives* by F. T. Bioletti from the University of California; this detailed a number of varieties and their characteristics (oil content etc); it is also the first reference that I have found to 'Mission'. (*Journal of Agriculture and Industry*, September 1899, p. 163-4). And in April 1901 the Chairman of the Clare Bureau, W. Kelley, wrote:

Travellers who have visited European olive groves and interested themselves in the methods there, as also the processes employed in preparing the oil for market, have, as a rule, been disappointed. In many places in Europe, where the olive has been grown for centuries, comparatively little effort has been made in the way of improvement, either in the cultivation of the soil, the system of pruning, the methods of gathering fruit or in its manufacture. To obtain useful information in all the branches of the olive industry the learner should not look for it in Italy, Spain, Portugal or other European countries, where old methods are in vogue, but to new fields of enterprise, where there are no great-grandfatherly systems to hamper the hand or the brain. I think that I am correct in stating that California takes the lead at the present time in olive culture.

(*Journal of Agriculture and Industry*, April 1901, p. 750-1)