

The development of the Northfield Laboratories and Research Centre

By J.C. Radcliffe

SINCE the turn of the century the Department of Agriculture has conducted research centres and farms throughout South Australia. Those at Parafield, Kybybolite, Turretfield, and Minnipa are the earliest that are still in use. There have been other experimental farms and orchards at Booborowie, Berri, and Blackwood. Until the 1960s, however, the Department of Agriculture had never owned any central research laboratories.

This was partly a result of the establishment of the Waite Agricultural Research Institute at Glen Osmond by the University of Adelaide in 1924, following a gift of land by Mr Peter Waite to the University in 1913. For many years the South Australian Government gave financial support to the Waite Agricultural Research Institute which in return undertook to provide specific services to the Department of Agriculture in a number of fields, including entomology and plant pathology.

In the years immediately after the Second World War, the South Australian Department of Agriculture was housed both in the old Education Building and in Crompton Building in Flinders Street. It later occupied three floors of Simpson's Building in Gawler Place, a building which A. Simpson & Sons had previously used as a factory for the production of cast-iron wood stoves. The building included an area adapted for use as an elementary soils laboratory where samples from fallow trials throughout the State were processed. There was also a dairy laboratory and a small herbage drying and sorting room.

Simple research equipment was stored in the basement for use in unsophisticated plot trials which were conducted mainly in the Adelaide Hills. The easiest access was via a goods lift and straight out the front doors of the building, past incoming clients, to vehicles parked at the Gawler Place kerb.

THE SELECTION OF NORTHFIELD

For some years Dr (later Sir) Allan Callaghan, as the Director of Agriculture, sought the opportunity of developing central research facilities for the Department of Agriculture. Such an opportunity arose in September 1957 when the Premier of South Australia (Hon. Thomas Playford) announced that, because of the rapidly falling incidence of tuberculosis, the Bedford Park Sanatorium was to be closed.¹ Within a few days Dr Callaghan had proposed that Bedford Park should become a Department of Agriculture research centre.² The Hospitals Department, however, suggested that the Sanatorium might be used as a third mental institution for Adelaide.

Dr Callaghan subsequently reviewed the possible use of the Northfield Mental Hospital Farm and, although he preferred the Bedford Park site, recommended that it should be considered as an alternative.³

In May 1958 the Premier, the Chief Secretary (Hon. Lyell McEwin), and Dr Callaghan visited the Northfield farm. Shortly afterwards Cabinet approval was given for the site to become the new Department of Agriculture research centre.⁴ The Flinders University of South Australia was later built on the Bedford Park site.

The Northfield land included a property purchased from Leopold Conrad in 1917 for £38 an acre, partly 'to be divided into half acre or acre blocks for soldiers or widows of soldiers who want sufficient land to keep a cow and a few poultry to add to their income',⁵ and Erskine Lodge, a property purchased from Johnny and Sarah Hannah Williams of Daisy Hill, near Oakbank, for £34 17s 6d an acre in 1917 for the site of a mental hospital.⁶

PLANNING THE LABORATORY

The Wheat Industry Research Committee of South Australia offered to contribute levy funds, provided by wheat growers from the newly proclaimed Wheat Tax Act, 1957, towards the construction of a wheat research laboratory, to be used in perpetuity by the South Australian Government.⁷ A standard modular high-school building was proposed, modelled on the newly completed Findon High School.

The Minister of Agriculture (Hon. David Brookman) proposed that the entire Adelaide-based staff of the Department of Agriculture should be transferred to Northfield.⁸ Calculations showed that two high schools would be required,⁹ and the proposal did not proceed further in this form.

Messrs P.M. Barrow, E.D. Carter, and A.J. Beare, of the Department of Agriculture, prepared specific suggestions for research and administrative facilities. The Architect-in-Chief's Department translated these into proposals for two buildings to accommodate research laboratories for wheat and livestock-based research and for administration, and a barn and facilities for an artificial breeding centre, at an estimated cost of 7s 5d a cubic foot, totalling £398 000.¹⁰ In ensuing negotiations the project was reduced to the laboratory proposals for a single building, and the estimated costs were lowered to £157 000. Cabinet approval to proceed was given in July 1961.¹¹ The Wheat Industry Research Committee of South Australia agreed to contribute £44 500 to the project and the Wheat Research Council £8000.¹²

Dr John Radcliffe, who is Director-General of Agriculture, was appointed a Dairy Research Officer to Northfield within a few days of its opening in 1965. He was Officer-in-Charge of the Northfield Research Centre from 1973 to 1978.

¹ *South Australian Parliamentary Debates*, 25 September 1957.

² Minute, Director of Agriculture to Minister of Agriculture, 25 October 1957 (DA 627/57).

³ Minute, Director of Agriculture to Minister of Agriculture, 20 January 1958 (DIGH 824/39).

⁴ Cabinet approval, 23 June 1958 (DIGH 824/39).

⁵ Details of the approval and purchase of Conrad's land are in CSO 1325/16.

⁶ Details of the approval and purchase of Williams's land are in CSO 271/17.

⁷ Minutes of Wheat Industry Research Committee of South Australia, meeting of 21 April 1958 (DA 700/57).

⁸ Minute, Minister of Agriculture to Chief Secretary, for Cabinet, 20 June 1958 (DA 627/57).

⁹ Note by W.A. Tapp, Architect, 26 March 1959 (DA 627/57).

¹⁰ Estimate by G.H. Lees, Principal Architect, 18 May 1959 (DA 627/57).

¹¹ Cabinet approval, 24 July 1961 (DA 627/57).

¹² Minute, Director of Agriculture to Director, Public Buildings Department, 27 September 1961 (DA 627/57).

TRANSFER OF NORTHFIELD FARM

Meanwhile, the Department of Agriculture had been negotiating to assume responsibility for the Northfield Mental Hospital Farm. The area was encompassed in parts of Sections 318, 319, 320, 496, 498, 499, and 740 of the Hundred of Yatala.¹³ Portion of Section 498, on the corner of Grand Junction Road and Blacks Road, was reserved as the new site for the Mounted Police Barracks,¹⁴ though the area was ultimately used for the Gilles Plains Animal Research Centre of the Institute of Medical and Veterinary Science,¹⁵ which was in turn transferred to the Department of Agriculture in 1982.¹⁶ A further 70 acres (28 ha) of the same section was reserved 'for a Colony for the intellectually sub-normal'¹⁷ and became the site of Strathmont Centre.

An inventory had established that Northfield farm employed seven men, and had four horses, 134 cattle, sixty-seven sheep, and 708 pigs,¹⁸ a Case tractor, several motor vehicles, and 'numerous drays'.

The Department of Agriculture found that no records had been kept of the stud Suffolk sheep for four years, and recommended their disposal. The dairy cattle were of 'very mixed breed' and were to be 'culled to the limit permitted by production commitments'. The piggery was:

... in such a dilapidated condition that its total replacement is necessary. Type is variable from good to bad, registrations have been neglected for four years, nutrition is excessive and unbalanced. ... Although hygiene is non-existent, housing is warm and the herd is surprisingly free from disease symptoms on casual inspection.¹⁹

The Department of Agriculture assumed responsibility for the operation of Northfield farm from 1 January 1963. Mr Brian R. White was appointed Dairy Research Officer, with initial responsibility, and Mr Brian W. ('Bill') Bussell, formerly Piggery and Dairy Superintendent at Roseworthy Agricultural College, was appointed Officer-in-Charge soon afterwards. All sheep and pigs were disposed of as soon as possible, and the establishment of a research dairy herd was made the first priority.

COMPLETION OF THE LABORATORIES

On 1 October 1964 staff moved into the new Northfield Laboratories, which were officially opened by the Premier of South Australia, Sir Thomas Playford, on 26 January 1965.²⁰ The laboratories housed research and technical staff working in the Agronomy, Soils, Dairy, and Horticulture branches of the Department. The facilities were a revolutionary advance for the staff. Additional funds had been obtained for the purchase of modern equipment that provided an excellent technical base on which to establish research. Additional items, such as a Technicon auto analyser and X-ray soil diffraction equipment, were bought with funds in following years.

FACILITIES FOR DAIRY RESEARCH

As a prelude to establishing dairy research, the entire boundary fencing of the Northfield property was replaced, and a plan was developed for nineteen experimental paddocks with an identical area of 10 acres (4 ha). Lime-stabilized laneways dressed with quarry rubble were built to provide all-weather access for stock and vehicles to the paddocks. (Soon after assuming control, the Department had had the unpleasant experience of having all of its Northfield tractors and vehicles bogged almost irretrievably in the heavy black soils following substantial midwinter rains.) The fences were erected, virtually single-handed, by Mr A.W. ('Nugget') Hill who laboured long and hard to complete the project before his retirement.

A new research dairy, on massive pier-and-beam foundations, was built on a site off Folland Avenue. Laboratories were provided near by for dairy genetics and milk chemistry research staff, and experimental cattle yards and a feed shed were built later. Following two disastrous haystack fires whose origins were generally ascribed to clients of an adjacent institution, three new haystacks were built at different locations on the farm. Each was protected by a security fence whose design had been recommended by neighbouring colleagues from Yatala Labour Prison.²¹ The hospital herd was converted to a programme of artificial breeding, the aim being to produce a grade Friesian herd with reasonable genetic homogeneity in order to increase the probability of detecting significant management treatment differences. The principal sires used were Vynette Fond Hope King and Anama Mars Jasper—both offered by the Artificial Breeding Board of South Australia which was by then established in its new facilities on the north-western corner of the Northfield site.

In later years specific facilities were established for calf-rearing research, dairy beef feedlot experiments, compensatory growth comparisons, and feedstuff digestibility trials. A new research centre office was erected. Farm staff rebuilt the original hospital dairy in Pine Drive from a walk-through to a modern herringbone design so that research work could be carried out in two separate locations. The Grand Junction Road complex, which had previously been used for the artificial breeding centre, was later redeveloped as a dairy technology laboratory and a pilot-scale dairy factory was installed there.

NORTHFIELD PIG RESEARCH UNIT

Following amendments to the Swine Compensation Act, 1962, which provided an annual sum of £2500 for the operation of a research piggery at Northfield, a new site, near Grand Junction Road, was selected for development.²² The complex was designed with two components. After protracted design negotiations, a production

¹³ Memorandum, Superintendent of Mental Institutions to Director-General of Medical Services, 17 June 1958 (DIGH 824/39).

¹⁴ Minute, Architect-in-Chief to Minister of Works, 22 June 1959 (DIGH 824/39).

¹⁵ Minute, Chief Secretary to Acting Minister of Lands, 13 July 1961 (DIGH 824/39).

¹⁶ Institute of Medical and Veterinary Science Act, 1982.

¹⁷ Minute, Director-General of Medical Services to Director-General of Agriculture, 25 September 1961 (DA 190/59; DIGH 824/39).

¹⁸ Memorandum, Superintendent of Mental Institutions to Director-General of Medical Services, 8 October 1958.

¹⁹ Undated report on Northfield farm (DA 190/59).

²⁰ Arrangements for official opening, Northfield Laboratories (DA 873/64).

²¹ Details of construction are in the following sources: dairy—DA 636/63; feed shed—DA 690/67; cattle yards—DA 254/70.

²² Report by Chief Inspector of Stock, 16 May 1963 (DA 464/63).



Above left: Some of the facilities available on the farm section of the Northfield Research Centre in 1964.

Above right: This small potting shed was used for plant quarantine work.

Left: The shed was later replaced with this more modern shed and glasshouse.

unit on semi-commercial lines was erected: it contained farrowing units, a production shed, a mating unit, and a small office. An isolation unit, some distance from the production unit, allowed for research into specific pig diseases. A recognized local piggery builder, Pig Equip of Murray Bridge, constructed the unit at a total cost of \$97 470.²³ The design included strict quarantine provisions which allowed the unit to be run as a minimal-disease piggery. The first pigs arrived in November 1970, the basic genetic material coming from Wonga Piggery in Queensland. Virtually all subsequent introductions have been by hysterectomy. The production unit was expanded with a further grower shed in 1978.²⁴ Physiological research was initiated with the installation of a hot room in 1978. A major complex for pig physiology research and additional office accommodation were provided in 1982.²⁵ All Adelaide-based pig research and extension staff have been at Northfield since 1983.

The Northfield Pig Research Unit has been managed since its inception by Mr Paul Heap. Industry has been closely associated with the development of the unit through the Northfield Pig Liaison Committee. The foundation producer members were Mr Jim McAuliffe (whose father had managed the Northfield Mental Hospital Farm in the 1930s), Mr Lance Dawkins, and Mr Colin Lienert.

HORTICULTURE UNIT

A separate isolated horticultural unit was established at Northfield in 1966 as a recognized quarantine station for the receipt of new plant introductions. The first components of the Horticulture Estate, established by Dr R.J. ('Rip') van Velsen, were two glasshouses for virus-free potato and vine introductions, and a small potting-shed which the staff had constructed out of a prefabricated garage. Later, a larger potting-shed, with soil-sterilizing and mixing facilities and two attached laboratories, was built over the original shed which was then dismantled from within the new building. In 1978 Commonwealth funds enabled four large new quarantine glasshouses to be added to the complex, to keep pace with the demand for additional introductions of new horticultural material.

An adjunct to the horticultural facilities was the erection in 1975 of a cool-store complex containing ten separately controlled constant-temperature rooms for post-harvest fruit-handling research.

CONTINUED DEVELOPMENT OF NORTHFIELD LABORATORIES

Meanwhile, more Rural Industry Research Funds became available as a result of increased funding contributions by producers. Additional Commonwealth and State funds also became available for further staff appointments in the mid-1960s and the 1970s, thereby increasing pressure on the accommodation capacity of the Northfield Laboratories. A succession of senior officers, including Messrs Peter Barrow and Reg French,

²³ Completion report, payment certificate, 7 August 1972 (DA 464/63).

²⁴ DA 143/74.

²⁵ DA 1367/74 and Report of Parliamentary Standing Committee on Public Works on Department of Agriculture (Pig Physiology Unit at Northfield), *South Australian Parliamentary Papers* 157/1980.

and Drs Rip van Velsen and Doug Reuter, were able to secure additional temporary buildings to accommodate more staff.

Initially, four prefabricated former double school-rooms were delivered to the site. Some came in completely knocked-down form, others came fully assembled. One needed the assistance of four farm tractors to get it correctly placed.²⁶ These were followed by two Samcon demountable buildings, four transportables erected for the work of the Aphid Task Force in the late 1970s, and two more transportables erected in 1983 to accommodate staff for more recently awarded externally funded projects.

Plant growth facilities are an integral part of plant research, and over the past twenty years a comprehensive range of glasshouses, shadehouses, field 'poly-houses', bird-proof enclosures, and a modern potting-shed have been built near the Northfield Laboratories. Although most have been commercially erected, a significant proportion of the facilities, especially those for temporary use, have been built by the staff. These facilities share a 5 ha site, west of the laboratories, with storage sheds needed to service field plot research both at Northfield and on research sites on farms throughout the State. Recent buildings include a quarantine insectary and specialist facilities for the safe handling, mixing, and storage of agricultural chemicals.

Excellent workshop facilities have been developed over the years both at the research centre and at the laboratories. Many officers, following graduation, have been introduced to the realities of research by being shown how to weld and then being given an assortment of steel to construct their own research equipment. Specialized tillage, seeding, threshing, and small seeds harvesting units have been built at Northfield. Other equipment has included a mobile rainfall simulator, experimental pig-feeding equipment, farrowing pens, a formaldehyde applicator for silage production, alkali hay treatment equipment, and a front-end loader grab for large fodder rolls. The development of this equipment indicates the ingenuity and self-help which have characterized research and technical staff at Northfield.

The staff have sought to develop a pleasing environment in which to work, designing and installing attractively landscaped gardens at each of the main locations. A major contribution was made by members of the

Women's Agricultural Bureau when, on 9 June 1967, they planted a grove of trees west of the main laboratories. These trees, eighteen years later, have become an attractive recreation area for staff and visitors alike.

OTHER PLANS

The development of any major complex is likely to involve the preparation of a variety of plans which for one reason or another do not proceed. There have been several proposals for Northfield, too, which were not implemented. Early plans included transferring the Fruit Fly Eradication Unit from the Glenside water-tower to a Northfield site facing Lord Howe Avenue.²⁷ It was later moved to Prospect, but it is possible that this unit may once again be considered for Northfield when the dairy research centre is moved to the Adelaide Hills.

Preliminary plans to build a Rural Youth complex at Northfield were prepared in 1970, but did not proceed. In 1975 proposals were advanced to erect a wholesale fruit and vegetable market at Northfield²⁸ but these were also abandoned.

The development of Northfield could have been significantly influenced by the recommendation in 1966 that the entire Department of Agriculture head office should be moved to Northfield.²⁹ This was a revival of the proposal considered in 1958. Plans were prepared, the project was approved by the Public Works Committee,³⁰ and specifications to tender call stage had been completed in 1973³¹ when it was announced that a new city would be built at Monarto. The Department of Agriculture was one of the departments to be considered for relocation.³² Neither the proposal to transfer to Northfield, nor the move to Monarto, proceeded further and, in the meantime, the Department's head office was moved to the Grenfell Centre in Adelaide.

Throughout the development of Northfield there has been a strong *esprit de corps* among the staff. The South Australian Government, rural industries, and the staff have created a research facility in which it is a pleasure to work. In consequence, the research programmes that have been developed have brought significant benefits to South Australian rural producers and to the State's economy. The papers which follow give details of this research.

²⁶ Acquisition of prefabricated schoolrooms is encompassed within DA 153/68 and DA 153/68 IIC 1.

²⁷ Proposals to transfer Fruit Fly Eradication Unit to Northfield (DA 143/74).

²⁸ Chairman, East End Market Relocation Committee recommending a 50-acre site south of Strathmont Centre for a fruit market, 29 September 1975 (DA 1666/73).

²⁹ Recommendation by Public Service Board Commissioner that all headquarters staff be transferred to Northfield except for a group of ten officers servicing animal quarantine inspection, East End Market inspection, and an

Adelaide extension office for primary producers and for urban residents with home garden and poultry inquiries, 29 April 1966 (DA 847/63).

³⁰ Minute, Director of Agriculture to Minister of Agriculture, 30 March 1971 (DA 847/63).

³¹ Headquarters buildings, Northfield, designed by Cheesman, Doley, Neighbour, & Rafton (PRD 544/69; DA 1313/71).

³² Submission by Chairman, Public Service Board, to Cabinet, 27 July 1973 (MA 43/73).