Land and Food: Agricultural and Related Education in the Victorian Colleges and the University of Melbourne

Lindsay FalveyandBarrie Bardsley

Biographical Notes

Professor Lindsay Falvey

Professor Lindsay Falvey is Dean and Chief Executive Officer of the Institute of Melbourne School of Land and Environment, the successor of the Faculty of Agriculture, Forestry and Horticulture at the University of Melbourne and the Victorian College of Agriculture and Horticulture. He is a member or Chair of a number of industry and university committees and companies. He was previously Managing Director of the international consulting companies, Coffey-MPW Pty Ltd and MPW Australia, in which capacity he was responsible for large development projects in 60 countries. Professor Falvey has lived and worked in Asia for more than 20 years and maintains an active interest in Asia, natural resources and agricultural education, and international development. He began his professional career in the tropical north of Australia as an agronomist with the Northern Territory Administration. He holds degrees of PhD from the University of Queensland and bachelor and master degrees from La Trobe University. He is also the author of five books and more than 80 papers.

Barrie Bardsley

Barrie Bardsley was Professor and Deputy Dean in the Faculty of Agriculture, Forestry and Horticulture until his retirement in 1996. He completed a degree in Agricultural Science at the University of Melbourne in 1989, and began work with the State Department of Agriculture as a pasture specialist in West Gippsland. He went on to complete a Postgraduate Diploma in Extension and a PhD, both at the University of Melbourne. He was appointed a Regional Officer for the South East of the State, later becoming Deputy Chief of the Division of Extension Services. In 1985, Barrie was appointed Principal of VCAH-McMillan, and built on his interest in extension and adult learning. He acted as Principal at VCAH-Burnley for a short time before his appointment as Deputy Director and Dean of the College in 1988. He became College Director in 1994. With affiliation between the University of Melbourne and VCAH, he was accredited to the University. In retirement in 1996, Barrie retains an involvement with the faculty as a Senior Associate, with a strong commitment to the rural community.

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university's existing Faculty of Agriculture and Forestry. At the same time, the far reaching changes occurring in government funding for higher education, within agriculture and related industries, and other changes related to a change in management perspectives in *Land and Food*, have combined to produce the Institute of Melbourne School of Land and Environment. This story of the evolution of agricultural and related education in South Eastern Australia leading to the formation of the ILFR is a small attempt to provide a perspective on current developments.

We have willingly accepted the histories in existing works which cover colleges or aspects of *Land and Food*'s forming entities and have quoted from those liberally. Quotes, which are usually indented are attributed to their respective authors. In other cases, large sections are reproduced from histories produced previously through the Victorian College of Agriculture and Horticulture.

The book traces the story of the forming entities of *Land and Food* in chronological order touching on high points and attempting to draw out elements which contribute to today's culture within this very large faculty. The personalities in the early stages of agricultural education, including the persuaders, rogues, visionaries, politicians, academics and farmers, are, we believe, mentioned in context.

Such an origin for a great institution is not unique in Australian history. The association of boom and bust gave rise to visionaries and opportunists, both of which contributed to the introduction of a system that has led us to today's united institution. The boom and bust economic cycles of Australia particularly at the end of the 19th Century were compounded in the case of agricultural education by cycles of droughts and export markets. Such ups and downs have led to innovative political manoeuvring to sustain an essential service in agricultural, food, forestry and horticultural education over the past 130 years. Contending with these cycles has produced a

resilience of spirit, clarity of vision and strength of conviction. These traits continue in *Land and Food*, particularly through its partnerships with industry and other stakeholders.

When tracing the origins of agricultural and related education in South Eastern Australia some interesting historical parallels can be drawn. For example, the Council for Agricultural Education was conceived as the initial governance mechanism for agricultural education which led to the formation of Dookie and subsequently Longerenong Colleges. Experience taught that the power of the Council should be separated from government to minimise opportunistic political intervention in long term decisions. This evolved into the colleges being part of the State Department of Agriculture. Later, when separating from that state umbrella through the creation of the Victorian College of Agriculture and Horticulture, a council was again formed. In the most recent change of the merging of the colleges with the university's activities in the sector to create Land and Food, a new board or council has been created. Whilst some may see this as a return to the past, or even the resurrection of a sound idea, it may more fairly be seen as learning from experience. The new governance structure is intimately involved with industry and other stakeholders. This represents the change in emphasis by government in areas which confer private benefit and the evolution and maturation of agriculture and related industries in Australia.

For those who feel that we have returned to the logic of last century, it would be wise to read such documents as the statements of Wallace, the Director of Agriculture (not to be confused with Wallis, the first Secretary for Agriculture) who noted in the September 1904 Journal of Agriculture that

'A chair of agriculture at the university would be useful in educating men who would afterwards become lecturers and officers of the Department of Agriculture, that farmers' sons would never attend in any great number and I am afraid that those who did would not return to the plough.'

So much has changed - we are charged with educating all persons not just men; we do not simply train persons for lecturing or working in government but increasingly for the agribusiness sector. The children of farmers do attend in great numbers and may not aspire to return to the plough, rather they return as progressive managers who have a perspective of continuing learning to access new technological developments. With such changes as these, changes in mechanisms of governance and indeed ownership of agricultural and related education are warranted. The corporate model aims to set long and medium term policies through the governing body and allow management to implement policy. Such an approach contrasts with the involvement of the Council of Agricultural Education, as highlighted in the 1899 Fink Commission's interviews mentioned in Chapter 2. Today's management of agricultural and related education requires a vision to implement and a clear definition of responsibilities and authorities. This is the point at which we have now arrived.

In reviewing the various histories of the entities forming Land and Food, we have been impressed by the resilience of persons with a commitment to agriculture as a sector. At the same time we note the ambivalence of government. It is salutary for those involved in agriculture and related education to consider that the general public's ambivalence toward agriculture and related fields may not be a new phenomenon. That these strong and productive institutions have been created, developed and survived, to merge into this strong and diverse organisation in such an environment, should provide hope of continuing development of the faculty for the next 130 years.

This book contains histories mainly written by others. In the final chapter we share our own perspectives on the future directions of agricultural and related education. The importance of the sector is at least as great as it has ever been in Australia. Economically, agricultural and related industries continue to be the dominant interest of Australia. This may not commonly be recognised when statistics separate manufacturing from primary

industries (and neglect the social benefits of rural communities); yet a large proportion of the manufacturing industries relates to agriculture and products derived from it. As a consequence agri-industry and related industries represent a major employer throughout the country. Students who pass through faculties related to agriculture, food, forestry and horticulture, move into positions of responsibility for managing more than 90 per cent of the land within Australia. This is not only through natural resource management education but also through agricultural, forestry and national parks, and urban park management education. As a critically important sector, it behoves all who are associated with it, through delivery of education, to ensure a continuing high quality support service to these sectors.

In collating this history we are conscious that the University of Melbourne has become the main custodian for agricultural, food, forestry, horticultural and related environmental education in South Eastern Australia. In transferring this responsibility to the university, all associated with industry should be proud while at the same time maintain an active monitoring role. At this point in Australia's history, universities appear an appropriate mechanism for delivering quality products in sectors demanding education, training, research and related services. It is logical that education moves out of government departments and those small institutions unable to make the large capital investments necessary for international leadership in such education, join into larger groupings. However, lest we make the mistake of believing that we have finally, after 131 years, created the optimal structure for agricultural education in Australia, let us recall the words from the Dookie history by Aldridge and Kneen (1986)

'In 1874 A. R. Wallis, Victoria's newly-appointed Secretary for Agriculture wrote: 'In my opinion a well organised system of agricultural education by means of academies, situated in country districts and having farms attached, will be best adapted to the requirements of Victoria.' He continued: 'It is by no means essential that an agricultural college should stand alone and have

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We make no claims that the Institute of Melbourne School of Land and Environment is the ultimate or the best structure for agricultural education. We do observe however, that in a period when reductions in government funding, and major structural adjustment which is affecting rural sectors more consistently than some other sectors of the Australian economy, that we have a large diverse and competent entity to serve agriculture, food, forestry, horticulture and related environmental sectors as they relate to South Eastern Australia. We also have the potential, through the University of Melbourne's approach in managing its own position, to be world leaders in some fields of major relevance to South Eastern Australia. This seems to contain the essential elements for continuing service to critically important industries in Australia and the world. Alumni of the colleges and departments which make up Land and Food, industries which support these entities, students participating or contemplating enrolment in courses of the faculty should be aware that here is a major international focus of education in the sciences, arts and technologies. They should note that these contribute to human development and understanding of its environment as practised in the fields of food and fibre production and environmental management.

In combining the six colleges of the Victorian College of Agriculture and Horticulture and the two departments of the

Faculty of Agriculture and Forestry, the new faculty brings together two major cultures. The various styles of operation and approaches to education are reflected in the different origins of the colleges and the university. In the period leading to the creation of the Institute of Melbourne School of Land and Environment, it has become clear that each entity has much to learn from the others. We trust that some of these cultural interactions shine through the story presented in these pages.

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Dean and CEO
Institute of Melbourne School of Land and Environment
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Chapter 1: Origins of Agricultural and Related Education

The university and college traditions which have developed over the past seven centuries represent one of the remarkable features of international life (Van den Bor et al, 1989). The clearly defined culture of universities which allowed peripatetic scholars to roam Europe in medieval times continues to allow modern academics to move between countries, largely unaffected by the limitations of language, religion and politics or culture. It is within this international culture, and one of skills training based on schools, that agricultural education first developed during the 1600s.

An essay attributed to Cressy Dymock published in London in 1651 includes a proposal ...

'for the erecting of a Colledge of Husbandry and in order thereto for the taking in of Pupills or Apprentices and alfo Friends or Fellowes of the same Colledge or Society ...'
The Institute of Agricultural History at the University of Reading dates the opening of the Academio Dei George in Florence at 1753 (Creasey, 1995) and Beveridge (1991) records a Chair in Agriculture as being established at the University of Padua in 1764. One summary of the early history of agricultural education may be styled *The True (1929) History of Agricultural Education*.

Creasey (1995) traces the University of Hohenheim in Germany to its forebear, the Agricultural High School founded in 1818 and the French National School of Agriculture at Gignon to a foundation date of 1827. The origins of agricultural education in Europe appear to be either far-sighted university appointments or private initiatives, such as the formation of the first Italian

school of agriculture. The latter, established by the Marquis Ridolfi in the 1830s, served the sons of farmers without the requirement for fees due to an apparent reluctance of farmers to pay for education.

The establishment of a Foundation Chair in Agriculture at Padua was followed by the establishment of a similar chair at the University of Edinburgh in 1790 (Fleming and Robertson, 1990). The first appointee at Edinburgh, Professor Andrew Coventry is regarded as the founder of the Scottish system of agricultural education. He was active in discussions with farmers, landowners, and students and has been described as a researcher and extension worker (Beveridge, 1991). The Scottish system provides an appropriate basis for describing the subsequent development of successful agricultural education systems. It was based on a philosophy that education, research and advisory activities were parts of a whole, an ethos which the Land Grant College (LGC) system of the United States was to progressively adopt.

The True (1929) History of Agricultural Education

Ferdinand Kindermann (1740-1801), a Bohemian, sometimes called "father o which agriculture, music, and religion were taught along with the three R's. T Tirnova in 1791. ... In Hungary agricultural schools were established at Zarv for 50 years "the model agricultural college of Europe". ... Near the end of th part of a broad plan for improving the agricultural condition of Prussia, and in practical and scientific farming, and when visitors to his farm at Celle, in establishment of the agricultural institute in that town. In 1806 he founded th Royal Academy of Agriculture, 1824. ... In 1811 the academy at Tharandt, in In Wurtemburg, the agricultural college of Hohenheim was founded in 1818, in other countries. ... About 1820 Matthieu de Dombasle founded at Roville, private means maintained it for some time. In 1829 the school at Grignon an became State schools. ...True (1929)

Scotland: The Scottish system evolved to link colleges of agriculture established between 1899 and 1904 with the

universities. The colleges had the objectives of maintaining a teaching institution for agriculture in different regions of Scotland and, providing extension teaching to associated counties. The linkages between colleges and universities continues today through selected joint appointments.

Soon after the establishment of the colleges, agricultural research institutes were established such as the Rowett in 1912. This completed an integrated system of research, teaching and extension, with staff who could accept responsibilities beyond their nominated institutions. As Beveridge (1991) notes, ...

'since the second World War a complete network of field advisory officers and staff covering all of Scotland has developed and been administered from the Colleges, while, within the Colleges wide-ranging specialist backup services have been built.'
Recent revisions to the system have led to the privatising of advisory services, centralising of college administration, and a commodity focus for research. These changes are seen by some as serious cuts due to the withdrawal of grants sustaining advisory work and research and development which benefit farming and industrial interests but which, in the government's view, should be paid for at full cost (Williams, 1989).

United States of America: The agricultural education system of the United States is widely recognised as having been a major contributor to agricultural development in that country and beyond. The so-called Land Grant Colleges evolved to integrate research, teaching and extension activities within each state. While it is sometimes suggested that the concept was developed with foresight in the late 1700s, the original concept was for teaching in rural areas to which a research function was subsequently added, and later a formal extension activity. As Penders (1971) observes, the extension function was added in recognition of the need to extend educational activities to those unable to attend colleges, and to ensure the dissemination of research results from the universities and related research

stations.

Both the Scottish and United States systems retain strong organisational links between research, teaching and extension. The separation which occurs in other countries between institutions responsible for research and extension and those responsible for research and education introduces additional costs and inefficiencies in the development and delivery of new information and may be loosely termed *The European System*.

While the Scottish (and possibly Northern Ireland) system, shares a philosophy with the United States, new systems developed elsewhere, such as in Australia, perpetuated the separation of functions as was the practice in England.

The European System

There is no formal link between the Agricultural University on the one hand a
European concept of university teaching which must be "free", that is, not so
agricultural university in any other European country. Meanwhile a certain c
strives to obtain more freedom in agricultural research and is developing cer
training of extension personnel. ...Penders (1971)

Australia: Agricultural education in Australia followed similar developments in the United Kingdom and its colonies. Colleges of Agriculture were established in South Australia [1885] and Victoria [1886] and subsequently in other states. Tribe and Peel (1989) observe that colleges were established to train young people for farming, as indicated in a Hawkesbury College prospectus

'the primary objective ... is to train young men in the practice and science of agriculture, and as far as possible to fit them for the profitable management of farms.'
In recent decades, colleges have progressively separated from their parent State Departments of Agriculture to merge with or evolve into universities, some retaining their focus on vocational education. During the early part of this century, universities

began the establishment of faculties of agriculture, an event which in itself had an impact on the development of the existing agricultural colleges. Interactions between colleges and universities were initially common as indicated in the statement of Sir Samuel Wadham (1951).

'In Adelaide, Roseworthy Agricultural College became formally associated with the University [of Adelaide] in 1905 when students with the college diploma, who had matriculated, were given status in the Faculty of Science, and permitted to take a BSc degree after passing a special two year course, while science students could spend two years at the college in partial fulfilment of the requirements of that degree. The course did not make much progress until the foundation of the Waite Institute in 1924 led to a great upsurge of interest in the subject. Melbourne went a stage further in 1905 and created a faculty: however, this had no special staff until 1911, when the State Government provided 1,000 pounds a year for five years for the salary of the first professor, the late Dr. T. Cherry, whose appointment lapsed in 1916 while he was on active service overseas.'

Linkages between Australia and the United States can be seen in the history of Australia's agricultural education. The establishment of the Victorian colleges, notably Dookie and Longerenong, owe much to local interest in the establishment of LGCs in the United States. However, subsequent events in Australia, in particular economic hardship in the depression of the 1890s, led to different levels of development of agriculture in the two countries. Once universities were established, the influence of the United States was reduced, and Australian graduates entering post-graduate education commonly studied in the United Kingdom, although this shifted gradually towards the United States over time. With the establishment of PhD degrees in Australia, initially at the universities of Melbourne and Sydney in the 1940s, interaction between the systems declined and the proportion of Australian students holding graduate degrees from Australia progressively rose. In the post-World

War II period, increased Federal and State funding led to greater emphasis being placed on vocational courses in the sciences and social sciences and on research. A trend to produce students who were useful upon graduation was seen as inevitable in applied fields such as agriculture, medicine, law and teaching (Rowe, 1960).

Tribe and Peel (1989) provided a history of agricultural development in Australia and highlighted the natural resource disasters which occurred through ignorance of development in a new environment. Rapid levels of innovation and recognition of the need for research and education derived from such circumstances.

The image of agriculture has not been assisted by the relative neglect of farmer education. This has allowed criticism of the knowledge levels of persons charged with managing the bulk of most countries' terrestrial resources. Campbell (1983) claimed distressingly low levels of farmer education in Australia in the face of evidence linking education to the adoption of new practices. In the 1960s, less than two per cent of the 6,000 to 8,000 persons entering farming in Australia each year had formal post-secondary education. This figure was the lowest proportionally among developed countries (UNCSTD, 1979). Educational linkages to other sectors of agriculture such as processing, marketing and resource management have also been criticised in the Australian system.

The importance of informal and vocational education in Australia suggests that statistical generalisations based upon participation in higher education courses, do not provide an accurate indication of the depth of education of those engaged in agriculture. The figures of Table 1 which compare educational participation in OECD countries, indicate wide variations between countries and should warn against extrapolation. It is also conceivable that low participation rates of farmers in education may be of slightly less concern where there is a well-trained service sector for agriculture. In addition to farming

related activities, the breadth of agricultural education includes food processing, social and environmental issues, and marketing.

Insert table 1 here

The decreased proportion of the population engaged for agricultural production, an outcome of technological innovation itself, has led to urban dwellers becoming largely ignorant of food production systems.

One recurring argument within agricultural education is the relative muddiness of the boots of agricultural scientists. Campbell (1983) eloquently argued against both this absolute requirement and statements that agricultural education institutions should be located in rural areas. The integrated nature of agricultural education brings together the natural and social sciences and therefore necessarily draws from a wide range of faculties in large universities. Outside the United States, institutions which combine vocational and higher education are not commonly based in rural areas. The merging of colleges and university departments associated with agriculture and related education and research in Australia, makes possible a bridging of the city-urban gap while strengthening the links between research and education, including extension.

Vocational Agricultural Education

The difference between vocational and university education for agriculture may not be as clear as is commonly assumed. Eddy (1956) noted that in the United States

'the LGCs have developed from institutions which were little more than trade schools.'
Likewise in Australia, Campbell (1983) noted that agricultural colleges have progressively been upgraded to become degree

granting institutions somewhat akin to university faculties of agriculture. Campbell applauds the two states of Victoria and Western Australia for standing against this trend and retaining skills-based vocational education as a primary focus in agricultural colleges to complement the integrated science-based offerings of universities. Falvey and Bardsley (1995) in discussing the revitalisation of agricultural education in the Australian university system identify the need for distinct and high quality skills-based courses and degree courses with pathways between the two. They also note features from the LGC system worthy of emulation; one of these was the practical orientation to agriculture maintained through industry involvement.

Agricultural education may be perceived as a vocationally-oriented professional education. The separation of funding and organisational arrangements between university and vocational education in many countries introduces an artificial barrier which requires innovative management to overcome. Nevertheless, one must acknowledge the essential difference between skills-based training and the acquisition of general knowledge for integrating a range of disciplines.

Hall (1972) notes that skills training is commonly dropped when funding cut backs and rationalisations occur in agricultural education within the integrated Scottish system. He also notes that:

'the long term well-being of vocational agricultural education requires an annual recruitment of good university graduates' Thereby suggesting that teachers in vocational institutions require a breadth of knowledge to understand the application of skills even if the curricula of such courses is more oriented to technologies and skills. Within Australia, separate funding mechanisms for vocational and higher education introduce a need for improved management and recent policy changes appear to herald a period of greater integration of courses.

Preconceptions as to the distinctions between training and education lead to confusion as to the roles of institutions. In arguing for strengthening of vocational education nearly 25 years ago, Hall (1972) noted that pressure on university undergraduate training for graduates to be job-ready, has already vocationalised university education in Australia far more than is admitted, and that the LGCs of the United States have hardly shied away from such a vocational orientation

Urban Influence

Commercial farmers have become a minority of modern society and their political influence has waned as a consequence. This places agricultural education institutions which service that sector in a vulnerable position, particularly when it is recognised that, to date, the majority of their funds have come from government levies or taxes. Others have presented this in more alarming terms concerning the loss of personal and local knowledge about rural geography, life and indeed contact with the land.

It is curious that in discussions of this social phenomenon, various commentators refer to the loss of political influence of agriculture and agricultural education in the same breath as commenting about the value of land maintained by rural dwellers on behalf of society. With such a demographic shift, city-based agricultural, food, horticulture and forestry education should feel even more confident of its future in a wider brief of natural resource management education.

The history of agricultural and related education in south-eastern Australia exhibits strong overlaps with the developments in the United States, and bears the imprint of Australia's colonial origins from Britain. The early establishment of colleges at the request of what today might be called industry, provided a practical basis for training which over the decades developed into educational provision of the breadth necessary to service the complex agriculture of Australia. The introduction of a land

grant system based on that of the United States, the establishment of parallel systems between the colleges and universities, and the eventual growing together of the colleges and the university sectors may all be seen as logical steps in an evolutionary path. The short histories of the colleges and departments presented in the following chapters indicate the entities which have come together to form Australia's largest agglomeration of agricultural and related education.

The decreased proportion of the population required for agricultural production, an outcome of technological innovation itself, has weakened the link with the wider population. The fact that this linkage has broken down also suggests that the focus of such education is large scale production agriculture. This issue will be discussed further in Chapters 12 and 13. However, it is first appropriate, in the next chapter to introduce the Prelude to the establishment of agricultural colleges in this part of Australia.

Chapter 2: Prelude

Based on extracts from Aldridge and Kneen's, "Dookie College: The First 100 years",© 1986 VCAH, and Maunders and Jaggs', "An Asset to the State: Longerenong Agricultural College 1989 - 1989 ",© 1989 VCAH.

Prelude

Agricultural education in South Eastern Australia began with a vision somewhat akin to that of the United States although it was destined to falter as a consequence of the times, nature of the new country, and the type of agricultural development taking place. Maunders and Jaggs (1989) in their history of Longerenong College introduced the prelude in terms of the expansion of farming in South Eastern Australia.

Expansion of Farming

After faltering in the period immediately following the official discovery of gold in 1851, farming expanded to serve the rapidly expanding markets generated by the rush, at the cost of substantial soil degradation. By the end of the decade, government was under considerable pressure to 'unlock the lands' currently held on pastoral leases to accommodate new arrivals and farmers who wanted to move from exhausted land.

Pressure for an agricultural policy which would favour farming over squatting interests was applied during the 1860s and later by a loose but powerful alliance between farmers, would-be farmers and elements of Melbourne's growing business class, linked by common vested interests and antagonism towards squatters. Among its weapons was a powerful ideological tool, the vision of a new ideal society founded on small independent farmers, a yeoman democracy. It was a form of rural populism peculiarly suited to the times, tapping memories of the pre-industrial past, and offering promises of freedom from wage slavery. However it was underpinned by thoroughly utilitarian considerations, and as Maunders and Jaggs (1989) suggested, it was a...

'belief that man by the process of civilising the wilderness as a

small farmer could through his own efforts (and with a little help from the state) reach that state of bliss which would enhance not only the future of his family, but also the prosperity of the state.'
Like all myths, the myth of the yeoman farmer had implausible aspects which in no way diminished its appeal. Like many other myths it also became embedded in the field of public policy, as the history of agricultural education was to show.

In the event, demands that government 'unlock the lands' were largely successful. Land Acts of 1862 (Duffy Act), 1865 (Grant Act) and 1869 (Grant's second Act) made provision for pastoral leaseholds to be subdivided for selection by persons of modest means. Selectors were required to peg and fence their selection, build a homestead and buy the freehold at an agreed price and time. Squatters attempted a rearguard action. In addition to straightforward intimidation of selectors, they developed a range of tactics to circumvent the law and to get freehold possession of their previous leasehold land. These included 'dummying', that is, making use of fraudulent applicants who would turn over their selection as soon as it was registered. Nevertheless, by the early 1870s, 'squattocracy' was irrevocably in decline.

Genuine selectors were by no means universally successful. Many fell prey to adverse conditions, sickness and debt, but the mystique of the yeoman survived. Together with the myth of the noble bushman it was to be fostered by Henry Lawson, Banjo Patterson, Joseph Furphy, Steele Rudd and others as an integral element of that emerging national identity which Vance Palmer has called 'the legend of the nineties'. A majority of Australians had lived in towns since the early days and continued to do so, but the 'real' Australian was increasingly portrayed as an independent, sunburnt countryman who bowed the knee to God but called no man master.

The Seeds of Agricultural Education

The extension of farming provided the essential conditions for

the introduction of agricultural education, but did not itself create the demand. For this we must look to a wider range of national and international factors which coincided between 1870 and 1885. At the highest level, they included the expansion of international trade and a consequent recognition by all advanced governments that nations' prosperity must increasingly depend on cost-efficiency in all aspects of production. Knowledge, especially the technical knowledge on which cost-efficiency depended, could no longer be regarded as a private possession but as national capital.

After the first, disorderly period of the gold rush, Victoria responded to international free trade by adopting policies of protection for fledgling industries and encouraging agricultural exports. Both were endorsed consistently and successfully by the Argus and The Age. Support for agriculture primarily took the form of encouraging closer settlement through the Land Acts and providing railways at public cost to carry produce. However, an erratic thread of concern for technical advance had existed from an early period. Progenitors of the Royal Agricultural Society were started in the Western District and Port Phillip in 1840 and 1842 respectively and received small government grants to improve farm practice by staging agricultural shows, while a Board of Agriculture operated an Experimental Farm at Royal Park from 1858 to 1869. Its director, Thomas Skilling, used his first annual report to suggest that it be converted into a 'Training Establishment' for

'imparting agricultural ... (and) ... literary education to persons desirous of following farming pursuits in this colony.'
Nothing came of Skilling's recommendation but the principle of government support for technical development survived, albeit in an attenuated form. In the year the farm closed, the second Grant Act made provision for land to be reserved for experimental purposes.

A more vigorous movement for systematic agricultural education emerged in the 1870s. It was carried in the first

instance by three men: A. R. Wallis and the brothers J. L. and T. K. Dow. Wallis, a graduate of the Royal Agricultural College, Cirencester in England, was appointed foundation Secretary when a Department of Agriculture was established in 1872. The Dow brothers were agricultural journalists for *The Age* and *Argus* newspaper groups. Behind them lay powerful mercantile and political groups which continued to promote farming, rather than grazing.

The movement's beginning can be placed at 1871, when Wallis (writing as 'Ackermann') produced a series of articles for the *Australasian*, calling for agricultural education. In the same year a Royal Commission on Foreign Industries and Forests made a survey of rural councils and agricultural societies. The Commission reported that agricultural education should be carried out in elementary schools rather than colleges. It further recommended, reservations for tree culture to demonstrate 'what trees would succeed on the arid, waterless plains in the Wimmera and Mallee districts'.

Despite this recommendation, no provision was made for agricultural studies when 'free, compulsory and secular' education was introduced in 1872. Wallis continued to press for it, without success, but also argued for the introduction of specialist colleges. Referring to reports of American experience and his own observations in central Victoria, Wallis argued that light soils in low rainfall areas were already at risk of exhaustion, especially where farmers followed the 'suicidal practice' of cropping cereals year after year without fertiliser or fallowing. He argued that Victoria must recognise that overseas countries were gaining incalculable advantages from their systems of agricultural education. The prelude to agricultural education in South Eastern Australia largely revolved around Wallis' views.

Aldridge & Kneen (1986) in their history of Dookie College discuss Wallis further (Refer to the box).

Alexander Robert Wallis

Alexander Robert Wallis was born in 1848, the second son of the Reverend A
Brighton, Sussex. Determined upon a career in agriculture he had himself 'att
at Cirencester where he studied the theory and practice of agriculture for thre
Land Surveying, Therapeutics and Pathology, Botany and Plan Drawing. He

Later that year (1869) he took the examination set by the Royal Agricultural
science. He then studied forestry at Stuttgart Polytechnic and frequently visit
experimentation.

Wallis was scarcely 23 years old and still studying at Stuttgart when he was c
York State. He refused. But on being offered a position as an agricultural jou
'Argus') he took the job.

The Wallis Years

Despite his youth, Wallis took the long-term view in the establishment of an agricultural education system in Victoria, that agricultural colleges would come, but only when the intellectual climate was right. Before that, a series of basic experimental, research and information-exchange programmes had to be in place.

He began with the existing system of Agricultural and Pastoral Societies, a ready-made structure for gathering and spreading 'scientific data'. By adroit manipulation of Government prize-money, he encouraged the amalgamation of smaller societies and a professional approach in larger ones. Government-assisted prizes were not to be awarded for 'sporting dogs, lap-dogs, rabbits, ferrets, cats, guinea pigs, hunters, fancy needle-work, Berlin wool-work and suchlike', but only to 'legitimate agricultural exhibits.' While weeding out the smaller show societies, he encouraged the formation of local farmers' clubs where agriculturalists could meet and discuss related matters . . . thus promoting the social well-being of the farmer and ameliorating his isolation.

He retrieved the collection of books and pamphlets of the original Board of Agriculture (disbanded 1869) from the Melbourne Public Library and used it as the core of a museum and library he set up in his already-cramped office. He collected raw data throughout the State on meteorology, entomology, soil types, fencing, vine-growing, farming practices, and acclimatisation. In his first three years as Secretary (1873-5 inclusive) he published his annual report to his Minister in book form. The 1874 book, well over 300 pages, included not only his report to the Minister, but also a report on the Victorian State Forests (for which he had been given responsibility) and as many as 20 other scientific papers of interest and use to the man on the land - many of them penned by the Secretary himself. These reports were distributed to all Mechanics Institutes, Public Libraries, Pastoral Societies and prominent farmers and land holders in Victoria. Interstate and overseas government agencies also received copies.

As if this were not enough, Wallis kept up a voluminous correspondence with overseas colleagues, exchanged and distributed seeds, judged at shows, mounted exhibitions in his office, conducted lectures, and advised his Minister on policy when required.

Wallis' vision-splendid was of an Agricultural Department created and defined by an Act of Parliament, with himself at the head, answerable only to his Minister. It was reasonable for him to expect that such a thing would come into being and would grow as the State's agriculture developed. The reality was insultingly different. Wallis was given a small room in the offices of his 'rival' department (Lands) with one 'eager but inexperienced boy' as his staff. At one stage, nearly two years after his appointment, his office furniture was 'temporarily' requisitioned for use in another Lands Department branch.

Neither the Government nor his Minister supported Wallis in his gargantuan one-man task. For instance Wallis was allowed to establish a Chemical Branch for soils analysis, staffed by

another Cirencester graduate (W. E. Ivey). Almost simultaneously Wallis' Minister became Minister for Agriculture and Industries and a year later (1874) Minister for Agriculture, Forests and Industries. Ivey was lost to Wallis for months on end in forestry duties while Wallis was not only burdened with the administration of the existing forests boards, but also required to write a lengthy memorandum to his Minister on a proposed forests bill. His advice was largely ignored.

Wallis' main public mouthpiece, his comprehensive annual report, was scrapped in 1875 when the Government decided it was too expensive to print. By 1876 questions about the efficiency - even the usefulness - of the Department of Agriculture were being asked by the Press and in Parliament. Forestry policy was also under fire.

It was against this background that the Agricultural Colleges issue came to a head. It must be remembered that the 1870's were boom years for the Colony of Victoria, which by that stage rivalled New South Wales in wealth and population. Roads, railways and reservoirs were being constructed apace, telephonic communication had arrived, steam power had supplanted the horse in industry and much of commercial transport. Accelerating change was the order of the day and Wallis' commitment to painstaking research, proper planning and steady development was ill-suited to the tempo of the times.

In 1874 the Minister (Casey) had reserved at least two sites selected by Wallis for experimental or model farm purposes; one at Trentham, one at Dookie. In 1876 the new Minister (Duncan Gillies) met a deputation from Western District agricultural societies which demanded the immediate creation of a 'central College of agriculture'. The Minister sought Wallis' advice. Wallis referred him to his essay of 1873 (the one that won him his position as Secretary for Agriculture) in which he had distinguished between two groups which had to be considered in the question. The first was the adult, established farmer whose need was for visual instruction on how best to

utilise and conserve his resources. The other was 'the youth' who were blessed with time to be taught both theory and practice of agriculture. It would be premature, he said, to establish a 'central College, having its full complement of professors, its experimental grounds, its laboratories, its veterinary hospital and other indispensable appurtenances' before catering for the first group.

He advised his Minister that one central and two or three branch experimental farms be developed in various regions to investigate crop-rotation on Australian soils and fertiliser application rates. He said sites with differing soils, climates and vegetation should be chosen. In addition to Dookie and Trentham, he suggested sites in the Wimmera or Gippsland and another at Macedon. Gillies accepted Wallis' premise that test farms fulfilled the immediate needs of agricultural education, but decided upon a single farm where Wallis had recommended three or four. That farm was Dookie (refer to Chapter 3).

The Wallis Legacy

... even allowing for ... a less than complete understanding of the bureaucrati
spatial organisation and physical resource use, and the more volatile impact
societies, to educate the rural community through annual shows and 'test' far
flax machinery, stock diseases and horticulture, to provide scientific advice t
He also strove to place state forestry on a more logical organisational footin
single-handed contribution to Victorian rural development. Quite as importa
everything he did in Victoria: Wallis tried to lay the foundations for a theore
abrasive, he was moralistic, he was dogmatic; and in 1882, he was also very

First Attempt at a College

In 1880, accompanied by Wallis, Minister Duffy visited the Dookie farm within a month of his appointment, and within three months, 15 students (selected from 46 applicants) were admitted to the farm for training in 'the practical branches of agriculture.'

It must be remembered that Dookie, on the fringe of a region only recently taken up by selectors, was established as a test or experimental farm for the benefit, primarily, of northern settlers. Students were of secondary importance both to Wallis and to the farm manager, Thompson, whose diary bears scant reference to book learning.

The students worked a five day week on the farm, assisting with all the tasks of running and developing the institution. Their learning was by 'ocular demonstration' but Thompson later said he took good care to explain to them the reasons for the different tasks and farm management decisions. However, a test farm on 'second class land' on the edge of a financially poor small-holders' settlement, 130 miles from Melbourne, was a far cry from what the agricultural establishment had in mind for its sons. Politicians from other rural constituencies were similarly unimpressed. They wanted a college with a capital 'C' and an influential group of them wanted it at Trentham or Macedon. Thwarted by the Government and a succession of Ministers, they set out to belittle the farm and ridicule both Wallis and Thompson. Their criticism ignored, almost without exception, the spirit and letter of Wallis' recommendation of Dookie as the centre-piece of a series of farms, leading to a collegiate institution with a full complement of professors in years to come.

Charles Young, the MLA who had previously described the farm as a 'sop' and a 'sham' became Minister in July 1881. He was the sixth Minister for Agriculture in nine years. From the outset Young thwarted and humiliated Wallis publicly. On his first day in office he berated Wallis before a deputation from the National Agricultural Society for not passing on funds which Wallis knew were not available. In the following months he overturned many of Wallis' standard practices and pointedly ignored his Secretary's advice and experience. In the words of a former Minister, he was 'offensive, arbitrary and despotic'.

This was not the way to treat the talented but overworked and

testy Wallis, who at this time had an office staff of two - a clerk and a boy - to administer the experimental farm, the State forests, the supervision of stock and horticultural disease prevention, the State soil analysis service, the distribution of seeds, and the battle against phylloxera. It was phylloxera - the dreaded grape vine parasite - which led to Wallis' demise. In what began as a minor squabble over compensation payable to a few Geelong district grapegrowers, Wallis ended up in front of a Board of Inquiry instituted by his Minister. The board substantially cleared Wallis of misconduct. However, the government of the day, acting on the Minister's advice, 'resolved to abolish the office of the Secretary of Agriculture and determined to allow Mr Wallis to retire ...' which he did, with 10 months' salary, on March 25, 1882. The Press which had supported Wallis throughout the controversy protested loud and long, but Wallis was not re-instated.

With the resignation of Thompson and the dismissal of Wallis - the farm's two driving forces - Dookie fell upon its darkest days, becoming a training farm for boys from the so-called 'Industrial School', an orphanage and reformatory which trained wards of the State for farm and domestic service. Farm diaries exist for only a few months of this five-year period, but they are enough. Life there was basic in the extreme, the dormitories were almost certainly infested with bedbugs, there was no warm water for ablutions, the diet was mainly mutton and cabbages. The boys worked six days a week, mainly grubbing stumps, clearing, picking up sticks, hoeing and the like. Although it is recorded they had 'a very good fife and drum band'.

During this time the Minister, encouraged by some sections of the Press, entertained ideas of selling the farm to parties interested in setting up a private agricultural college. The 'Australasian' (edited by J. L. Dow MLA) floated the idea of a College set up and run by a company of trustees free from political interference, stating 'there are no grounds for believing that the institution would yield satisfactory results to the State management ... in some way or other it must needs be divorced

from direct connection with the Minister of the day.'

The Founding Fathers

Maunders and Jaggs (1989) introduced the careers of some of the founding fathers of agricultural education in the following terms. They were to varying extents associated with Alfred Deakin, were involved in land and irrigation schemes and believed that farming must play a strong part in Victoria's future prosperity - and their own.

John Lamont Dow, son of a weaver, was born in Kilmarnock, Scotland, in 1893 and arrived in Geelong with his family in 1848. His father became a station manager and Barrabool shire councillor. John was brought up to farming and stock management and claimed to be a gun shearer who had averaged '98 big wethers, not bare-bellied ewes' a day during one season. In 1862 he went to the Gulf of Carpenteria with a pastoral company and became a pastoralist on the Herbert River tableland. When gulf fever drove him back to Victoria he worked on the land before joining The Age in 1873.

Dow entered parliament in 1876 as member for Kara Kara. He was elected on the selector vote, and nursed his electorate by helping selectors peg out claims. He also remained a practising journalist, thereby keeping his feet in both the urban and the rural camps. Among his interests was a system for graduated taxes on land, an idea similar to one put forward by Californian Henry George in his *Progress and Poverty* (1879), a work which achieved some popularity in Victoria in the 1880s and 1890s. During a visit to America with his brother T. K. Dow in 1883, they examined agricultural education as well as irrigation schemes. Like Wallis a dozen years earlier, they were impressed by the American system of land grant colleges supported on the proceeds of reserved public land leased out to private farmers.

J. L. Dow went on to hold the portfolios of Lands and Agriculture in the Gillies government (1886-90) and in that

capacity helped put through the legislation which gave the Chaffeys control of Murray waters at Mildura. His own financial affairs were, on the most charitable estimate, dubious. When the heady days of apparently unlimited expansion came to an end with the disastrous crash of the 1890s, Dow, along with many of his associates, fell into financial disgrace. When he went bankrupt for 26,000 pounds in 1893, with assets of 12 shillings, it emerged that he had been paying creditors from his parliamentary salary and had borrowed from the Chaffeys. He had also been borrowing money for personal land transactions from pious, profoundly dishonest James Mirams, MLA for Collingwood, early member of the YMCA and builder of a grandiose temperance hotel called the Federal Coffee Palace. In addition, he had been a director of Mirams' Premier Permanent Building Society, one of the depression's most spectacular failures. Another of Mirams' schemes had been connected with irrigation in the Goulburn area. It had involved sub-divisions for small fruit-blocks, sold on extended terms. Another scheme involved him in creating a company (with associates) which bought land from him at an inflated price, then creating another company to buy the original one to avoid the original promoters being liable for calls on their shares. J. L. Dow was involved in these schemes as well.

Mirams was brought to trial, along with all the other directors of the premier Building Society, except Dow, and sentenced to twelve months imprisonment. Dow did stand trial later but was acquitted, largely due to the efforts of lawyer Theodore Fink, who was to be associated with agricultural education a few years later as chairman of a Royal Commission on Technical Education. Despite his questionable business practices as Minister of Lands and Agriculture, Dow initiated schemes of great value to the colony. He tripled forest reserves, established Wilson's Promontory as Victoria's first national Park and expanded wheat and pastoral development in the Mallee. In 1888, he sponsored government bonuses for dairying, fruit and wine development. This led to the establishment of cooperative

butter factories with an export income of one million pounds by 1895, making dairying a major Victorian industry.

Dow's less flamboyant brother, Thomas Kirkland Dow, was born in Scotland just before the family migrated. He taught in a state school near Ballarat from 1870 to 1877, then joined the Leader newspaper. In 1881 he went to the Australasian newspaper and stayed until 1890. Like his brother he fell into bankruptcy, in his case through speculating in mining shares. Between 1890 and 1896 he was principal at Longerenong College then joined the Age as foreign correspondent.

Frederick Derham, another founding father of agricultural education, was Postmaster General in the Gillies government, a friend of Alfred Deakin and son in law of Francis Swallow, founder of the biscuit firm of Swallow and Ariell. Derham became a director of the firm, giving him a strong interest in wheat production. He was also involved in a 'colossal, outrageous series of land boom transactions' and went bankrupt for 550,000 pounds in 1892.

J. F. Levien, another minister in the Gillies government, was director of several companies and owner of a seed farm. He became chairman of Chaffey Brothers Ltd and his family firm became one of the largest produce growers in the Mildura scheme. When the scheme collapsed in 1895, riven by dissension and prevented from getting produce to market by low water in the Murray and the incomplete state of the railway, a royal commission found Levien's affairs to be like

'an abominable stagnant pool, with stenches so strong and dreadful in its muddy and mysterious depths, that one almost recoils from disturbing it further.'
Other figures included a Dr. Andrew Plummer, after whom one of the Longerenong houses was named, and Charles Yeo, who served on the council until 1917. But it is clear that they played lesser parts and that the lead came predominantly from Wallis, Derham, the Dows and their associates. The financial affairs of

the main figures, except Wallis, were insalubrious, but in recognising the importance of farming their judgement was sound. The value of farm products had overtaken wool by the 1880s and farming was to go forward again after the depression, employing one quarter of the adult male population (over 76,000) by the time of Federation.

The Council of Agricultural Education and the Foundation of the Colleges

Although Dookie began to accept students in 1879, management problems and political wrangling nearly brought the development of agricultural education to a premature halt. Wallis was dismissed from the Department of Agriculture in 1882, while Dookie lost its fee-paying students and was used as a training establishment for neglected boys under court orders. The reemergence of agricultural education as an issue, as well as its subsequent organisational structure, owed much to the Dows' visit to America.

In October 1884 Frederick Derham introduced an Agricultural Colleges Bill into parliament. The Bill was modelled, to a large degree, on United States Congressional legislation, the Morrill Act of 1862. Under this Act the United States government granted national lands to the states, to be leased out to fund agricultural colleges. These 'land-grant colleges', as they were known, later developed into universities offering a wide range of studies as well as agriculture.

Agricultural education, Derham claimed in his second reading speech, had become essential. Agriculture was now 'universally admitted to be a science' and it was

'most necessary that those engaging in the vocation in this country should thoroughly equip themselves so as to be able to fight on equal terms with other parts of the world'. Furthermore, Derham added a dig at pastoral interests, noting

that the annual value of farm products (£11,000,000) was twice the value of the wool clip and much more important to the business and professional community. The intention was for curricula to be determined by a Council of Agricultural Education, but American experience suggested that it should include a good deal of practical work, to put knowledge into action and develop students' muscles. Colleges were to be financed on the endowment system, using 14 and 33 year leases. In that way the land would remain in government hands. The Bill passed.

The Agricultural Colleges Act 1884 provided for the reservation of 150,000 acres, under the control of trustees, as an endowment for agricultural colleges and experimental farms. It also provided for the establishment of a council of eleven members, comprising three trustees, the Secretary of Agriculture, five representatives of agricultural societies and two members appointed by the governor in council. Members were to receive sitting fees and expenses, and the council's accounts were to be audited. The schedule to the Act listed five possible sites for colleges. They included Polwarth (2,800 acres) near Apollo Bay, Gunyah Gunyah and Jumbuk (2,500 acres) in the Yarram area of Gippsland, Jung Jung and Longerenong (2,386 acres), Dookie (4,889 acres) and Bullarto (817 acres) near Daylesford.

An amending Act passed the following year widened the agricultural societies' franchise to include all paid-up members. It also made provision for state school boys to be selected for free places by a competitive examination, to be held every three years in each of the colony's five agricultural divisions.

The council's first meeting was chaired by J. F. Levien, who was also a trustee, along with Frederick Derham and Charles Yeo. Government nominees were James Buchanan MLC and J. L. Dow MLA. The agricultural societies elected W. Madden, MLA for the Wimmera (later Horsham), Dr A. Plummer, J. Baird, J. Knight and T. K. Dow. Levien, Plummer and Derham held the office of chairman for considerable periods over the next twenty

years.

Regular meetings began in 1885. Initially the council favoured the idea of one central college with associated farm schools in various parts of the colony, proposing the old Model Farm at Royal Park for the central unit. Pressure then came from interests all over the colony, each anxious to have the college in its area. Shepparton Agricultural Society wanted Dookie reopened to fee-paying students. Stawell Shire Council invited inspection of a site near the town and Trentham Farmers' Union advocated Bullarto. Council's response was to recommend the re-opening of Dookie. Government agreed. Royal Park was then made over to the Corporation of Melbourne for a public park, although the council, on a motion by T. K. Dow, objected.

The Council of Agricultural Education took the view that agricultural education should not be confined to the college. It had extensive discussions with officials of the Department of Public Instruction (particularly Thomas Brodribb, Chief Inspector of Schools) 'to secure the teaching in all state schools in rural areas of the rudimental principles of agriculture'. A prize of £20 was offered for the best paper containing easy reading and object lessons on the rudimentary principles for state school children. Support was given by the Council of Boards of Advice. Brodribb took some time to act on it, for it was not until July 1889 that he submitted to the council a 'proposed series of agriculture lessons for state schools'. Little seems to have come of this.

The Council of Agricultural Education also agreed to:

'establish a farm school to educate young women in all duties appertaining to dairy, farm accounts and other duties, whereby they might assist in the development of the agricultural interests of the colony'
But nothing came of this either. Dookie intermittently provided short courses for farm women in the next century but it was not until the 1970s that women were admitted to full-time courses at

agricultural colleges.

The Council visited Dookie and reported:

'The land for the most part is only of a fair grazing character, but there is a moderate quantity of good agricultural soil. As a representative area of the class of land in the Northern district, however, the property is, for the purposes of the experiment, all that can be desired. The fences of the outer boundaries and subdivisions, also quarters for a manager, servants' quarters, stabling etc. were kept in good condition.'
Notwithstanding an offer of £1000 from the now private investor Wallis, Thompson yielded to pressure for him to return to Dookie. Both the Shepparton Amalgamated Agricultural Horticultural and Pastoral Society and the Moira Agricultural Society resolved at separate meetings to press Joseph Knight to

'use his influence to secure the reinstatement of Mr J. L. Thompson as manager of the Dookie Experimental Farm'.
Knight, who was familiar with Thompson as Farm Manager, show society committee member, lecturer in ensilage and livestock judge, would have needed little encouragement. Six days later the Council met and elected Thompson Farm Manager. A meeting of the National Agricultural Society of Victoria held on the same day under the Presidency of Dr Plummer received the announcement 'with unanimous applause'.

Agricultural administration was to change hands yet again before the College opened its doors on October 4 1886, for Levien was replaced as Minister by J. L. Dow (co-sponsor of the Agricultural Colleges Act of 1884), on February 18, 1886. But the die was cast: the half-realised experimental farm of Wallis' planning was to become the Dookie College of the agricultural establishment's imaginings.

The Role of Forestry

Wallis, the first Secretary of Agriculture in Victoria, was also

instrumental in raising the profile of forestry. Wright (1982), notes that -

'The forestry question had been a topic of some controversy for more than a decade for it was manifestly obvious that the demands of mining, construction, domestic use and the myriad other requirements that wood could serve in a pioneering society were denuding Victoria of its timber. A series of government reports, and regional public meetings, together with constant newspaper agitation, had led first to the creation of a number of local forest boards and then, on 6 March 1874, to the establishment of a Central Forest Board to oversee the entire system. This board originally comprised Robert Brough Smyth, Clement Hodgkinson and Ivey as secretary, but five days after his appointment Hodgkinson retired and was replaced by Wallis and the new Secretary for Lands, W. H. Archer. This Board operated from within the Department of Agriculture and through a network of local caretakers and the regional boards strove to bring a semblance of order to the disorganised forest system of Victoria. Finally, the government decided to legislate on the matter.

Wallis immediately set down his ideas. On 20 May 1876 he wrote a long memorandum of 'draft headings',

"of a Bill designed to confer such powers as my experience teaches me ...will be necessary ... to deal with the complicated question of the conservation and better management of our State Forests and timbered lands."
He then proceeded to outline in great detail the kinds of regulations he thought would be needed, the gazettal procedures necessary to ensure proper methods of definition and alteration to state forest and timber reserve boundaries - always a vexed question - the hierarchy of field staff and their powers, the connection between town development, soil and water conservation, and the absolute necessity of permanently reserving the colony's timber resources. Most importantly, he urged that a separate Department of State Forests, led by its own

minister and staffed with its own personnel, be established. Sadly, Wallis' influence was already in decline and his ideas, some of which were many years ahead of their time, were ignored. When Victoria's first State Forest Act was passed in 1876, it did little more than formalise the existing system of local forest boards. In 1879 the forest board method of timber management was scrapped and Wallis was left in sole control of too few foresters over too many acres; Victoria had to wait until 1919 before a separate Forests Commission was formed. In the meantime Wallis and his department had to bear the brunt of criticism of policies and regulations which they were largely powerless to alter.'

The Role of Horticulture

Horticultural education in South Eastern Australia originated with the Horticultural Society of Victoria's (HSV) development of what became Burnley Gardens.

In December 1860 some twenty-five acres of the Survey Paddock were permanently reserved for the use of the HSV, and in 1862 a portion of Richmond Council's land (the remaining portion of which later became Richmond Park) was granted to the HSV for 'experimental gardens'. The further submission of 1860 to both council and government gained additional land, so that the total held by 1865 extended to some thirty-five acres. Though the boundaries have seen some alteration, the overall extent of the property has not changed greatly over the decades.

Preparations and negotiations reached fulfilment when the following advertisement appeared in the *Richmond Australian* of 27 December 1862:

'Horticultural Society of Victoria Opening Day, grand flower show in Society gardens, Survey Paddock, Richmond, Jan 1st, 2nd 1863. Trains to and from Richmond, Hawthorn and Picnic stations every half hour. Ferries at end of Power Street and Riversdale Road.'

An important part of the opening celebrations was the planting of a Californian redwood, *Sequoia sempervirens,* wheeled over from Scott's Nursery at Hawthorn by an employee of the nursery, one Charles French (later to become the first Victorian Government Entomologist). For over a hundred years this tree has dominated the gardens at Burnley as a central feature of their design. Many other plants were wheeled across by young Charles in the months preceding the official opening.

The Society began to develop the area almost immediately. It launched a programme of highly successful experiments: acclimatising fruit trees to Victorian conditions, developing new varieties and improving breeding stock. Such was the success of this work that as early as 1873 a collection of fruit was sent to the Vienna International Exhibition. This was followed by a consignment to a botanical conference in Florence and a similar display in Paris seven years later. These early shipments were experimental and they helped pave the way for regular export of perishable produce. By 1886 such trade had become firmly established by growers such as James Lang of Harcourt who were gaining world-wide recognition for their produce.

Although ornamentals were planted from an early date, it was the development of fruit-tree varieties which preoccupied the HSV in the early days. In 1868 the society published a catalogue listing some 1400 varieties of a wide range of fruits. The catalogue included 319 apple varieties, 354 pears, 147 plums, 111 cherries and others. In 1868 cuttings of fruit cultivars arrived from England and were successfully granted onto local stocks.

A Mr Phillips was the first curator of the Burnley Gardens (as they appear to have been commonly known) from 1863 until his death in 1868. Following him, W. Clarson was honorary director (the new title for curator) from 1868 until 1876 when George Neilson was appointed to the management position which had reverted to the title curator. Neilson remained in this position when the Department of Agriculture took control of the

gardens in 1891, and continued until his death in 1897.

In 1883, having received assurances that the land would be permanently reserved, the HSV committee decided to save rental charges by building a pavilion in the gardens at Burnley for the shows which the society conducted. Despite its financial problems, the society borrowed the sum of £1000 and the pavilion was built in 1884. This large wooden building allowed many successful shows to be staged. The money was raised by the issue of £100 debentures, an arrangement which was to cause financial distress to the HSV when debenture holders insisted on repayment in 1890. Royal recognition and public approval did not eliminate the society's financial worries and the RHSV declared bankruptcy. It thus met a fate shared by many sections of the community at the time. The trustees resigned and the Victorian government took control of the horticultural gardens at Burnley.

Despite the financial strains of the times, officialdom recognised the importance of continuing the development of horticultural and agricultural education and the Department of Agriculture officially took over the site at the beginning of 1891. Next to the experimental farm and integrated with it, the new operators established a school. It was opened by Daniel McAlpine as the School of Horticulture - a name it retained until 1917.

Agricultural Education at the Turn of the Century

Maunders and Jaggs (1989) note that in 1889, a Royal Commission into Technical Education was appointed under the chairmanship of former land-boomer Theodore Fink. By this time, the worst of the depression had passed and Federation appeared certain. The depression had seen severe cuts in state education, even to the extent of closing Victoria's sole teachers' college. Federation drew attention to Australia's relations with the wider world, reminding those in authority that countries which had the highest level of educational development had the

highest rates of economic success. No one was more aware of this than David Syme, who campaigned for improved technical education in the Age. In response, Alexander Peacock, the Minister of Public Instruction, employed a well-tried tactic to defuse political pressure: he set up a Royal Commission.

The Fink Commission went beyond its terms of reference to examine elementary education, on the grounds that it formed the foundation of technical education. It gave extensive attention to agricultural education, recognising it as the first area of technical education to be taught through specialist colleges. It also thought the subject so important that recommendations were made for; students in state schools in rural areas to be instructed in the rudiments of agriculture and horticulture, and school gardens established where practical. The Council of Agricultural Education had developed similar proposals in the 1880s but they had not been implemented. However, the commission was not impressed by the colleges' record to date. After looking carefully into the operation of Dookie and Longerenong it pronounced the latter a failure, 'chosen in ignorance of the conditions essential for success.'

Whilst it is arguable that the Council might well have given more freedom of action to principals, it had difficulties of its own. Some members were elderly and preoccupied with other affairs. It was also constantly short of money. The allocation of endowment land was far less generous than in the United States and Treasury contributed next to nothing, as the colleges had barely started before the onset of the depression caused public expenditure to be cut drastically. Longerenong was built with loan funds and the Council was faced with demands for repayment, at times when proceeds from the endowment lands were poor. It was forced to run an overdraft and for a time even had to contend with its bank temporarily stopping payment in 1893.

Though the management of the colleges may have left much to be desired, Longerenong's (temporary) closure was probably

due to circumstances beyond the Council's control. Evidence about student experience and attitudes suggest that Sir Frederick Derham was right when he pointed out that students' interest was not strong enough to survive bad times.

'As long as the seasons were good and the operations remained interesting, the students remained, but when the long drought came on we could not carry on the place and get good results; the students seemed to get discouraged and the attendance gradually fell away...'
Agricultural education was established at the time when an emerging Australian sense of identity was manifesting itself in literature and art as well as in everyday language. The true Australia was embodied in the bush; true Australians were those who lived in and battled with the bush. But the bush was also a place for agriculture, where 'The straining bullock flicks the harpy flies' and 'The distant cow bell tinkles o'er the rise'. For Bernard O'Dowd, whose son entered Longerenong in 1908, the bush was

'*... the brooding comrade of our way,Whispering rumour of a new Unknown,Moulding us white ideals to obey,Steeping whate'er we learn in lore your own,And freshening with unpolluted lightThe Squalid city's day and pallid night,Till we become ourselves distinct Australian*'.

The ideal of the bushman and the independent farmer persisted into the twentieth century. Longerenong's reopening and subsequent directions were testimony to its tenacity.

Chapter 3. Dookie College: 1886

Based mainly on extracts from Aldridge and Kneen's, 1986 history "Dookie College: The First 100 years",© 1986 VCAH.

- Pre-History

Pre-History

What is now Dookie College formed part of the old Benalla Pastoral Run, (taken up by Edward Grimes in 1842) and the Gowangardie Run, (taken up by George Allen in 1848). The Benalla Run was of 48,000 acres, extending for eight or nine miles north of the Broken River, to the southern slopes of Mount Major. The only part of the Gowangardie run included in the College is the River Paddock, south of the highway. Both these runs changed hands several times before they were broken up as a result of the Land Acts of 1860 and 1862. The Land Acts of the 1860's and subsequent legislation were aimed at enabling the less wealthy to purchase small holdings 'for agricultural pursuits'. Under the Acts, a large area adjoining the 640-acre Benalla Homestead block was subdivided into allotments and thrown open for selection. The land was made available at £1 an acre with 20 years to pay, subject to certain residential conditions and to improvements of a stated value being carried out.

Twelve years after the district was thrown open to selectors, an irregular parcel of land running from the peak of Mount Major to the Broken River, remained unselected - along with a number of other unselected quantities in the district - at £1 an acre, it was considered too expensive. It was this land that the newly-

appointed Secretary for Agriculture (Mr A. R. Wallis) requested be withheld from the reluctant selectors in 1874. The with-hold request was converted into a temporary reserve order on October 11, 1875 'for the purpose of establishing an experimental farm'. This land, with a number of subsequent additions, became what we now know as Dookie College (refer to box: What's in a name?).

It is commonly held that the land reserved at Dookie was reject land, scarcely worth having. True, the selectors had not taken it up, but bearing in mind the availability of prime land elsewhere in the State for £1 an acre, the Dookie land was relatively expensive for what it was, and therefore had not yet attracted freehold buyers. In fact, Dookie was carefully selected from a wide range of still available parcels of land. Wallis and the Benalla District Surveyor (Mr Nixon) had scoured the area for a package of land 'sufficiently extensive for a full-blown college' and large enough 'if the greater part be worked for profit, to prevent the cost of the experimental portion becoming a charge on the public revenue'. Wallis 'departmentally stayed from selection' four sites in the Benalla district.

What's in a Name?

The town of Dookie was surveyed by J. G. W. Wilmott in 1873. In fact he se
official proclamation the town was called Dookie. Three years later, for an u
from the fact that Cashel was abandoned when the railway passed nearby in t
locally as Dookie although it was not officially proclaimed so under the Loca
hill to Dookie and all that remains of the town of Cashel is the old two-storey
College identities are buried. Dookie College was originally known as the Ca
Sinhalese word meaning 'lament' and had its origins in the lamentations of M
property. Surveyor Wilmott, who knew the Sinhala language, found out that

The farm was mostly timbered with box trees and the slopes of Mount Major liberally sprinkled with bulokes 'so that in appearance the farm possesses an advantage over the district in general and the view of the Strathbogie ranges is one of the best

in the locality'.

Work began clearing and fencing the land (roughly 4500 acres) in May 1877 with a government allocation of £1500, and continued for more than 18 months before the appointment of a farm manager, John Low Thompson. A clerk of works had superintended the early fencing.

John Low Thompson

The farm manager, appointed October 1878 was John Low Thompson, remer left a very vivid impression in my mind of imposing physique and definite pe had 'served for three years Mr M'Combie of Tillyfour', before becoming, in h college in the north of Britain for three years. Thompson arrived in Australia cattle to come to Australia. The cattle were imported by Joel Horwood of Bri Estate and later on Pendergast's Omeo Station before rejoining Horwood as n Thompson's six years of service. Thompson's contribution would have been s respected judge of livestock and a leading light with the local Agricultural So Horwood's grand-daughter, Agnes Clay Kentish in 1879, soon after resigning married couple's first home. Their first-born, Jessie, was born at Benalla in 18

When Thompson took up residence he found the farm fenced around the perimeter, with 50 acres of land cleared, grubbed and rough-ploughed. Pasture growth was luxuriant following good spring rains and bushfires threatened as a result. There was only one dam completed and water was short. Thompson and his wife lived in a tent and bark-hut settlement with the contractors for the first nine months, during which time he supervised the cleaning of another 247 acres and the ploughing of another 120 acres, 10 of which were also subsoiled in preparation for the vineyard and olive grove.

In March 1886 a plan of the proposed College buildings was approved and a tender for £2095 was accepted. A subsequent tender for outbuildings for £749/10/0 was also let. The total with extras for equipment, plumbing and the like, brought the cost of the original College buildings to £2973/13/8 - a far cry

from the Young-Wallace proposal of £5000 down and £20,000 altogether! The buildings designed by architect McDonald of Numurkah were widely criticised as being 'adequate for a farm property, but not for a collegiate institution'. They were framed in Oregon to prevent white-ant attack, and clad in weatherboard. The main building was 160 feet long and comprised a spacious lecture hall with raised stage, dining room, studies, library, teachers' quarters and sleeping apartments for the students. The outbuildings comprised kitchen, laundry, store-room, bathrooms, lavatory, servants quarters and a laboratory (which was not built until some time later). Regarding students, the Council said it was 'of the opinion that 14 was the earliest age at which a lad should be put to labour' and set that as the minimum entrance age.

A New Beginning

Thompson arrived back (refer to Chapter 2) at the new College on September 2, 1886. The following day his strong and sometimes flamboyant handwriting appears in the farm diary as if he had never left. He notes that the farm stock numbers were 'correct, but in very inferior condition.' By the time the first students arrived, Thompson had the place humming: the stock were all recently mustered and tallied, the vineyard and olive groves freshly cultivated, firewood laid in, furnishings arriving from Melbourne, experimental plots of mangold, corn, millet, peas, sunflowers and sorghum recently sown. Dookie Agricultural College - as distinct from the old Dookie Experimental Farm - opened on October 4, 1886, with the arrival of 23 new students. Another 17 arrived on the following two or three days. They were greeted by the founding Principal, Mr Robert Leaper Pudney, and the farm manager, Mr J. L. Thompson. The farm comprised 4846 acres, fully fenced and subdivided into a number of grazing paddocks. Some 400 acres were now under cultivation for cereals, hay and experimental purposes. There was an orchard, and on each side of the main entrance drive was a vineyard and an olive grove.

The first students arrived from Melbourne at Shepparton on the midday train, October 4, 1886, but did not make it to the College until evening . . . the 'lorry trip' of more than 20 miles took some hours. About two thirds were from country towns or districts, mostly in central, western and northern Victoria. Most of Gippsland was still being pioneered and the only lads from east of Melbourne sprang from Warburton and Yarram. Ages ranged from 14 to 21.

They were quite a bunch. Gamble went on to become Farm Manager, later Principal at Dookie and finally Chairman of the Council. Dowie, the College's 'gun' shearer, went on to be the first graduate elected to the Council of Agricultural Education (he was later Chairman). Dow happened to be the Minister for Agriculture's son, who later became Australian Trade Commissioner to the United States. Writing from an address at 25 Broadway, New York, in 1936, Dow related how he became the first student enrolled at the College:

'At a meeting of the newly-formed Council of Agricultural Education, following discussion of the endowment lands, the acting Secretary for Agriculture (David Martin) had said to the Minister, "We have the College buildings well under-way, but what about the students?" My father lifted his pen and wrote my name on a sheet of paper, saying: "There's one to start with."' The impact of (Principal) Pudney upon the College is hard to assess. If he was totally ineffectual it is unlikely he would have been asked to advise on the setting up of Longerenong, and invited to be its first Principal, or as is reputed, to have chosen the site for Hawkesbury Agricultural College at Richmond, NSW. Pudney's strength probably lay in his abilities as an administrator and diplomat. He was a fast man with a euphemism and generally obeyed the rule: if you can't say something complimentary don't say anything at all. In a field as contentious as agricultural education, riddled with name-calling politicians and journalists, he was a model of restraint. Thus it may have been Pudney's pliability, rather than his practical strengths, which motivated the Council to ask him to inaugurate

the second agricultural College at Longerenong after only a year's service at Dookie.

Thompson was the obvious choice to succeed Pudney and his five-year reign began with a decided swing towards the practical and physical sides of agriculture. Which is not to say academic subjects were neglected, for Pudney's replacement as science master was Hugh Pye, a man destined to become the State's greatest cereals researcher and a future Principal of Dookie College. Despite all the talk of 'a proper College' and free reference to it as Dookie College, Dookie was still officially designated a 'farm school'. Its official title did not change until Thompson's first term as Principal, when the Council officially designated it Dookie Agricultural College.

Thompson's views on students' ages and their physical fitness for the course were strongly held and he lobbied the Council more than once to increase the minimum age; but to no avail. He did succeed in another way; Council accepted his proposal, late in 1890, that lads of 17 years with a farm background and the ability to pass an examination in first-year subjects, could be admitted direct to second-year in the three-year Diploma course. Thus began the practice of 'new second-year students' under which the past Premier of Tasmania, Robin Gray gained admission to Dookie.

For the last few years of the 1880's money flowed like water and many of those who controlled the tap were Council of Agricultural Education members or friends of the College. Three prominent Parliamentarians' sons were students at Dookie. The endowment lands were leased out profitably and the prospect of more than adequate income was excellent. The railway line had reached Dookie in 1888 on its way to Katamatite and the Postmaster General (a Council member) had assisted in linking Dookie to Melbourne by telephonic communication; the old isolation was a thing of the past. With its modern dairy, its exemplary ensilage techniques, its stud stock and its intensive and very successful horticultural

practices, Dookie College became one of the nation's showplaces. The visitors' book of this time is filled with glowing references to Thompson and the farm.

Two signatories to the visitors book at this time are worth noting: the Director of Agriculture for NSW, who signed in March 1890; and one William Brown, of Guelph, Canada. Within 18 months of the NSW Director's visit, Thompson was in the employ of the NSW Department of Agriculture as founding Principal of the new Hawkesbury Agricultural College at Richmond - and Brown was the new Principal at Dookie.

The Crash and the Scots Professor

Indications of the crash of the 1890's appeared as early as 1888, when pointed questions from the London Banks were not satisfactorily answered and overseas funds began to dry up. Loans due for renegotiation were not renewed and investment in the new colony suddenly became suspect. Council of Agricultural Education members J. L. Dow (Minister for Agriculture) and F. T. Derham (Postmaster General) were thrown out of Cabinet as a result of their financial deficiencies. Former Minister, Joseph Levien, was later publicly chastised by a Royal Commission for his part in the failed Chaffey Brothers venture at Mildura.

It is unlikely that J. L. Thompson saw this coming, but his resignation and departure from Victoria in early 1891 could not have been better timed. In the aftermath of the crash, income from the endowment lands fell dramatically as many of the lease-holders failed financially. The enthusiasm of several Council members also waned as they applied their time and energy to more pressing personal matters, such as financial and political survival. Thompson's resignation was followed by 15 years of Council stringency, punctuated by one act of sheer economic folly, when in 1896, nearly 20 years after phylloxera struck in Victoria, the College winery was built. It could be said that the incumbent Principal, William Brown, (a Scot about

whom little is known - refer to Chapter 4) asked for what he got in more ways than one.

Brown took over from Thompson early in 1891 and almost immediately Council minutes began to hint of friction between Brown and his masters in Melbourne. In early 1892 Council resolved to inform Brown

'...(we) are disappointed to find that with a property of nearly 5000 acres, provision has been made for placing only 128 acres under cultivation.'
Obviously the depression was beginning to bite, for soon after, Council charged Brown with the responsibility of making the farm pay. It instructed him to put as much land as possible under crop, then attempted to justify the move saying

'unless this can be done sufficient practical teaching necessary for the large number of students cannot be given.'
The depression deepened during this time and to complicate matters a run of droughts began, further impairing the ability of endowment landholders to pay their rents. In February 1894 Council resolved that the Principals at both Dookie and Longerenong be 'dispensed with' at the end of March, each with a gratuity of two months' salary. In line with the Council's apparent uncertainty about the future of anybody's job, science master Hugh Pye was appointed acting-Principal, although he quickly became Principal, a post he held for 22 years.

The Quiet Man

If one man can be said to personify the Dookie College of the first half of the Twentieth Century, it is Hugh Pye, the science master who took over as acting-Principal from William Brown in May 1894. Pye, who had already served seven years as science master, was to be principal for 22 years. He presided over the completion and maturation of what must be termed 'the old College', establishing traditions of approach, management and excellence which reached into the early 1960's. His

influence, rarely exercised directly, was cumulative and far-reaching; two whole generations of agriculturalists and farmers passed through Dookie during his association with it. Two future Principals (Gamble and Drevermann) worked under him during his term. While Principal he gained world recognition for his pioneering work in wheat-breeding and established Dookie as a research centre of national importance. In later years he became so engrossed in his experimental work that he chose to be 'relieved' of his duties as Principal and appointed Government Cerealist, a post he held for another 15 years. He retired, aged 72, in 1931 after a 43 year involvement with the College.

Hugh Pye

The son of a schoolmaster, Hugh Pye was born at Mt Blowhard, near Ballara
Geelong Technical School for some years, before studying engineering at Me
science master at Dookie in 1887, part-filling the vacancy created by Pudney
was not at Dookie in year one, he taught every graduate student from the Col
College during this time. In later life, as controversy over his appointment an
Certainly none of the scores of photographs of him betray any hint of pomp c

After the magnificent Thompson and the larger-than-life Brown, Council was probably seeking a tractable Principal; a biddable person without the temerity to challenge them, someone who would take a 'steady as she goes' course in keeping with the times. And hard times they were, for 1894 was the beginning of the long grind back to order and some form of prosperity. Horrific though they were, the years of the crash had the virtue of excitement: who would fall next, owing how much, to whom and for what scandalous reason? Fortunately for Pye, his ruling passion was a pastime which, for the price of a camel-hair brush and a pair of tweezers, could yield astounding results. With genetics and plant-breeding in their infancy, the first great discoveries lay on the surface like nuggets of gold, obvious to those who knew what to look for.

Pye's interest at this time lay in pasture improvement, where he sought to select and develop native grass species. It was by pure coincidence that Pye met William Farrer in 1889. In the very same year Farrer began his cross-breeding experiments at his property 'Lambrigg', near Canberra. Farrer influenced Pye to specialise in cereals and the two became life-long collaborators (Farrer died in 1906). Pye was also motivated by a newspaper report that France had called a tender for high gluten wheat which Australia, despite its ideal conditions, could not supply.

According to the 1927 *Dookie Collegian* Pye produced his first crossbred wheats at Dookie in 1888, although it was not until 1894 that wheat breeding became an official part of the College's activities. Currawa and Major resulted from Pye's predilection for the so-called club-headed wheats (*Triticum compactum*), which he was the first to cross with common bread wheats (*T. vulgare*) to produce high yields combined with drought resistance. By the 1920's his best wheats were yielding 14 per cent gluten; two per cent above the French requirement that first motivated him. In Pye's time virtually the whole of Northern Victoria and Southern New South Wales wheatlands were sown to his varieties, notably Currawa, Major (in wetter areas) and Warden. At the time of his retirement it was estimated that his contribution to increased yields had been worth a minimum of £1.25 million over the previous 10 years alone.

By the time the College was more than 10 years old and routines were firmly established, some 500 acres were under cultivation, with another 350 cleared for the plough. There were 35 acres of grapevines, 15 of which were in full production, including about five acres of table grapes. There were 18 acres of orchard and four acres of olives. Pye's experimental plots comprised 28 acres below what is now called Lake Brooke, opposite the Hays paddocks.

Life went on, much the same as in Thompson's time, but with each year subtle and not-so-subtle changes were wrought. The

boom-times of the 1880's were receding into history, while the roaring days of the gold rush were more than a generation away. Federation - the birth of the nation - was exciting, a new form of patriotism and a new breed of politician (accompanied by a new breed of bureaucrat) was in the ascendancy. The age of the common man was dawning.

However, delusions of grandeur persisted among the agricultural establishment. Council still carried the vision splendid of establishing five regional agricultural Colleges, plus a central College and dairying and viticultural schools as well. Council believed, early in the 1890's that Dookie and Longerenong would both soon pay their own way (a spectre which Ministers have visited upon Principals and administrators ever since), freeing endowment funds for other projects. Council's belief that the Government was about to grant it £25,000 for future development in mid-decade fuelled its optimism. Its timing could not have been worse, for 1895 was the first of a series of seven bad years, culminating in the worst drought the State had yet seen. In the summer of 1897 temperatures in the Mallee reached 116 deg in the shade, the Murray was too low for irrigation water to run through the channels and the State's average wheat yield was around 4 bushels per acre. The temporary closure of Longerenong College and the transfer of its few remaining students to Dookie eased financial pressure on the Council, but the drought deepened until 1902, when, in August the Goulburn river at Murchison was running at 12 per cent of its normal flow; the River Murray fell to 6 per cent normal in December. During the 1890's pressure from agricultural societies in dairying districts for a dairy college continued to build, fuelled, of course, by Council's earlier boasts. Unable to fulfil its promises, Council in 1897 announced its intention to re-develop Dookie's dairy branch 'pending the erection of a properly equipped dairy school.'

The evidence given before the Fink Commission of 1899 gives us the best picture available for the state of affairs at Dookie at the time. Pye said there were 41 students at the College, ranging

in age from 15 to 24; more than half the lads were eighteen or over. Educational standards had ranged from Schools Certificate (grade six, State school) to university graduates. There were students from five Colonies (States) and some from the United Kingdom. Only 30 to 40 per cent of the students were farmers' sons, but the majority of graduates went on the land. Inquiry for a place at Dookie generally, but not always, exceeded the accommodation available.

The pass-rate that year was 50 per cent in the Diploma class, 57 per cent in the third session (term), 55 per cent in the second session and 40 per cent in the first session. The Diploma could be gained in two years, which was the equivalent of four sessions or terms. Actually 376 students had passed through Dookie, 98 of them gaining their diploma - a success rate of 26 per cent. Explaining this, Pye said many of the students came for one year only, for experience or to gain ideas they would not be exposed to at home on the farm. Some could not afford any more than a year. He said that while short courses would be useful, if they were run in parallel with the Diploma course the effect would be to discourage other students from going on with the longer course.

The Commission praised Pye for his 'zeal' in experimental work, but said his time would have been better spent devoted to College duties; it had been a great strain on his energies and without it the education of students might have been more efficient. It continued:

'The members of the Commission are of the opinion that the experimental work . . . should be managed in conjunction with similar work elsewhere by an officer appointed by the Department of Agriculture . . . if such work should be continued at Dookie.'
Fink notwithstanding, the dairy, including an extremely modern butter factory, was built and in 1900 a dairy instructor (D. G. Cameron) was appointed. Fink's recommendation on minimum age and educational requirements were ignored until 1905, when

demand for places again exceeded supply and Council re-opened Longerenong. Minimum entrance requirements were increased by two years, that is, the minimum age became 16 years and the minimum education standard became the Merit certificate (grade eight or form two).

By 1905, Dookie was again so well established and in such demand that Council decided to re-open Longerenong. To do this they robbed Dookie of one of its best men, the Vice-Principal G. A. Sinclair. Sinclair had become Pye's right-hand man since his appointment in 1889 as English, mathematics, book-keeping and surveying master. A qualified surveyor, he had laid out virtually all Pye's experimental plots and taken a keen interest in plant breeding too. Longerenong's gain, though, was short-lived, for after six years Sinclair resigned and joined the 'Australasian' as 'Yeoman Editor' (effectively, agricultural editor), a position he used to defend Pye and Dookie on many occasions before his death in 1926. He became a member of Council in 1917 and served as Council's representative on the University's Faculty of Agriculture (refer to Chapter 6) for some time. Sinclair was largely responsible for the establishment of women's classes at Dookie and pressed, unsuccessfully, for much wider-ranging education programmes for women in agriculture.

The year Sinclair left for Longerenong, the new Minister for Agriculture (George Swinburne) met with the Council 'to consider the question of improving Dookie College'. He said he wanted a College that would house 100 students and intimated he could produce £8625 independent of the Endowment Lands income, to achieve this. The plot thickens a little when it is known that Swinburne was also having discussions with members of Melbourne University, on the role Dookie might play in a proposed Faculty of Agriculture. Certainly a proportion of the promised £8000 would be used to provide accommodation and upgrade scientific teaching facilities for future Agricultural Science students, who, it was planned, would spend some time at Dookie. As it turned out, the money was

spent almost immediately, but the university students did not materialise at Dookie until 1912 when there were four.

A mid-1906 Council meeting saw the appointment of none other than Theodore Fink to Council. Since his inquiry into technical education, Fink had headed another Royal Commission; this one into Melbourne University, whose finances were in some disarray. His appointment to the Council of Agricultural Education as a Government nominee was followed by his appointment as Council's member of the fledgling Faculty of Agriculture at the university. There is heavy irony in the fact that Fink used his position on Council, a body whose abolition he had recommended, to win position as member of a faculty, whose establishment he had recommended against. Donor's son or not, Fink's stepping stone to university gave way under him when, four months after his appointment, Council threw him out. The minute reads: 'Theodore Fink, through non-attendance, to be advised he has forfeited his seat.' Fink was later appointed independently to the University Council and served with distinction for 17 years.

In 1904 a University Council committee - including Dr Thomas Cherry (refer to Box) - began to confer with the Council of Agricultural Education on the establishment of Agricultural Science courses at Melbourne University. Council took the view, predictably enough, that theoretical learning in an intensely practical subject such as agriculture, could not be separated from simultaneous 'hands on' experience. They plumped for a course comprising three years at Dookie followed by one year's pure science at University. The University, predictably enough, took the opposite view, a proposed course of three years science at University followed by a year's practical experience at Dookie. University representatives visited the College, accompanied by Council, and reported that the buildings and staff at Dookie were inadequate for a university course, re-stating their preference for three years at University and one at Dookie.

The Royal Commission did not recommend the immediate establishment of a Faculty of Agriculture, drawing attention to what they termed 'the costly failures of Longerenong and the Viticultural school at Rutherglen'. The Victorian community, it judged, was not ready to support such a course. Given the difficulties experienced by Council in filling Dookie and Longerenong in the late 1890's and early 1900's, it would be reasonable to expect that a thumbs down from a Royal Commission would kill the idea of yet another agricultural education institution. The opposite was the case, and Cherry was to have his day. The reasons are complicated. They lie in part, in Fink's valid criticism of the level of 'scientific agriculture' taught at Dookie, the State's only specialist agricultural school. But they also lie with the advent of a State Premier committed to making university education available to 'the children of the working classes with brains'. That Premier was Thomas Bent. Bent committed his Government to opening the university to courses in agriculture (and mining) for 'selected State school boys' and he adroitly used the university's financial embarrassment to achieve his ends. Soon after his appointment in 1904 Bent announced that £14,000 would be allocated to the University, for equipment and buildings to be used for 'special agricultural and mining classes', yet to be established.

Dr Thomas Cherry and the University

Dr Thomas Cherry was an eminent surgeon who at the time was Lecturer in b
famous Cherry butter churn) was a man of high intelligence and widely-rangi
bacteriologists and taken a special interest in the application of bacteriology t

It was Cherry who, in 1895, discovered the connection between the freshwate
Melbourne University) Cherry said he believed the time was ripe for the intro
recommended, should be three years at University and one at an agricultural
good matriculation should be the lowest entry requirement and envisaged the
Students attending courses at the respective institutions would be of a totally
preferred by future employers in both the public and private spheres.

Bent got his pound of flesh. He won not only his promised university course in agriculture, but also forced the University to accept students from state schools who had not matriculated. Only Leaving certificate was needed to enter the diploma course. The vanquished Council's pride was somewhat salved by the University's invitation to the Principal (Pye) and a Councillor to sit on the new faculty committee. That committee further decided that the Principal of Dookie should be the sole judge of success or failure of university students in their practical year at College. In 1917 it was decided that university students (refer also to Chapter 6) should spend their second - not fourth - year at Dookie because...

'it was undesirable that they should spend the final year of their course away from the influence of their university teachers'.
In the microcosm that constituted Dookie College, a college style was evolving far removed from the relatively primitive institution of the pre-telephone and pre-railway line days. Dookie had become a social centre of considerable repute. An invitation to the College ball was highly prized by the local young ladies and the Shepparton News printed not only the guest list, but also a detailed account of what every lady wore. All the gentlemen wore evening attire, including white gloves. No-one smoked.

College was increasingly run along Public School lines, evident in events such as the 'boat race dinner', where former general public school lads held a dinner - to which State school lads were not invited - to celebrate the Head of the River boat race. Place settings included fancy hats in old school colours, the 'cock house' sat at the head of the table. The schools were toasted in succession, school and games songs were sung, war cries were uttered in unison, speeches made and the winning school lionised. Auld Lang Syne and God Save the King were sung and, according to one report, the students then formed a crocodile for a 'triumphal entry' to the dance which was held concurrently in the assembly hall.

In March 1911 the 'Farmer and grazier' reported there were more than 100 students at Dookie, including several from inter-State, nearly 20 on an exchange scheme from the United Kingdom and five final year university students.

Dookie old boys were beginning to make their mark. Connor's son, a former Thompson student, was appointed Agricultural Commissioner for West Australia at a salary of £750. J. C. Lewis, who studied veterinary science after leaving Dookie became chief Inspector for the Northern Territory on £500 a year, and L. Bidstrup had become Chief Chemist for the Mt Lyell manure works at Adelaide. Another student, Winneke, was congratulated by Council on his appointment as a County Court Judge. Rudduck, the College's first veterinary science lecturer, was a graduate of the privately-owned Melbourne Veterinary College, then situated in Fitzroy. He was paid four guineas for his monthly visit to College, where he conducted a lecture followed by a practical demonstration of his topic, such as castration, speying, and conducting a post mortem. The Veterinary College offered a one-year scholarship to Agricultural College graduates. Scholarship or not, many Dookie graduates attended the two year Veterinary College course to become what was known as Licentiates in Veterinary Science. The Ruddock family established a line of commercial veterinary products which were popular in Victoria until the 1960's.

During Pye's time the college winery thrived for a relatively brief but glorious time under its designer, viticulturalist G. B. Federli. At its height - around 1904 - it was producing material from around 35 acres of wine grapes which yielded as much as 200 gallons an acre, unirrigated. The problem was that the winery came on stream at a time when hundreds - possibly thousands - of other growers had the same idea. Despite its excellent reputation for quality, College wine did not sell well in a market that was over-supplied and an economy still recovering from the depression.

In June 1915 the Council Chairman, a Captain Herring and a Mr Stubbs addressed the young men of College on the war. Thirty men, many of them students, answered the call. In the final examinations of March 1915 students virtually walked out of the examination room and into the enlistment booth. As if things were not bad enough, Pye had another drought on his hands. The State's oat crop in 1914 was reportedly the lowest since the 1850's and the average wheat yield for the State was 1.38 bushels per acre. Downstream from the Swan Hill the Murray was said to be dried up and most of the College livestock was sent to Gippsland on agistment. The next year was not much better.

Council saw that they must defend their position, for at least two Ministers since Swinburne had expressed dissatisfaction with it and intimated its abolition. The fact that Council finances were badly in the red lent wings to their fears. Shortly before his death in 1914 Langdon told the finance committee that Council's overdraft was around £5,000 and that scheduled expenditure would soon take it to £9,000 on which six per cent interest was payable. Despite efforts to prune it, the overdraft grew to more than £7,000 and the State Treasurer was called upon to guarantee the debt. Income, not expenditure, was the problem. At this stage endowment land tenants, crippled by the drought and the loss of manpower to the war, were more than £5,000 in arrears, making the 'real' deficit only £2,000. But there was no guarantee that the struggling tenants would pay what they owed. When Pye could not come up with major economies it was Dowie who moved that Council 'dispense with' the College rabbiter, fencer, waggoner, stockman, groom and married couple. The same motion lowered the Principal's salary from £600 to £500, with commensurate cuts in wages and salaries for the remaining staff.

Although the broad picture was one of turmoil, things were coming to a head. Pye had been embarrassed and shown to be out of touch. His salary had been cut, his management had been

questioned and his attempt to defend himself had been criticised. Student and staff numbers had been decimated, College students were complaining about their replacement lecturers and the food, university students were complaining about non-essential work (refer to Chapter 6) and there were press reports about student behaviour. The Minister was invited to see the College for himself and the minutes of a conference held at College during that visit record:

'The Minister expressed the opinion that in order to bring the College into a state of greater usefulness it would be necessary to affect a change in the Principalship ... the change should be effected by the end of the present session.'
Clearly the Minister had offered an 'either or' proposition and in order to save itself, Council jettisoned Pye.

Having thrown Pye overboard, Council threw him a lifebelt; in a deal with the Minister the position of State Cerealist was created. The position carried a salary of £600, half of which was provided by Council, the other half by the Department of Agriculture. Pye accepted with dignity and grace. The matter of principle aside, it would have been an easy choice: his beloved cereals plots were much more inviting than the in-fighting, politicking and number-counting that would have accompanied a decision to fight.

Having identified Pye as the problem, and removed him, Council was at a loss for a replacement. As an interim measure, Farm Superintendent Gamble was offered the position of 'officer-in-charge' on the understanding that he revert to his old post when a Principal was found. His salary was increased by £100 per annum. Pye vacated his residence at Dookie College in early 1917, but shilly-shallying over the Principalship continued until mid-year, when, after knocking back the application of a Mr A. H. Renard, Council appointed Gamble Principal 'until termination of the war'. He was to remain Principal until 1922.

The Last of the Old School

William Gamble was the first of only two Dookie graduates to become Principal of the College and, apart from J. L. Thompson, the only practical farmer to hold that position.

Pye and Gamble were very different people. Pye, the son of a schoolmaster, was a gentle and reflective man who followed his scientific speciality for virtually the whole of his life. Gamble was a son of the soil with wide practical experience and a military background who liked to be described as 'stern but just'. Gamble's advent as Principal coincided with the return home of the first troops from World War One and the establishment of farming short-courses for the returned men. Gamble's military approach to administration was reinforced by the presence at Dookie of a number of retired army men, pressed into service 'for the duration' to replace staff members who had enlisted and were absent on active service.

Pye's Legacy

It is worth picking up a few of the threads which were woven 'forward' from
McMillan. A. C. Drevermann, appointed Science master soon after the begin
1936 and was Principal at Longerenong from 1912 to 1927. William Gamble
Principal from 1916 to 1922, after which he served on the Council until the 1
and finally, Farm Superintendent in 1923, a position he held until 1955 when
although he was an innovative manager, traditions dating back to Pye, via Pa
martinet English and House Master appointed under Pye in 1907 remained at
after winning a pyrrhic victory for 'the old order' in the battle with H. A. J. Pi
Principal, attended Dookie as an agricultural science student in 1921 and stuc
and later defended the 'old ways' until his retirement in 1964. Thus the Colleg
guard' retired in the 1970's. Certainly, Dookie was recognisably Pye's Colleg

The military atmosphere was heightened by the return from the war of (now) Lieut. A. H. Stranaghan, the former English and House master who had been senior master and right-hand-man to Pye since his appointment in 1907. Stranaghan, somewhat of a martinet, had experienced disciplinary problems with students in pre-war years. His return in 1919 from occupied Germany

with 'experience in handling men in the lines' lent him confidence and authority which bluffed the lads for as long as 'Stran' remained at Dookie - which was another 22 years.

William Gamble

Gamble was a farm lad from Barfold, north of Kyneton, when he entered Do
medals (first prizes) for practical work, dairying, ploughing, cultivation plots
Gamble returned to the family farm after graduating in 1888 and gained seve
1898 at the age of 29. He served with the First Contingent of the Victorian M
supplies being sent to the army in South Africa. Post war, Gamble joined the
Manager at Dookie in 1907. The position was later upgraded to Farm Superi

The returned courses paralleled the recovery of student numbers at Dookie, beginning in 1916 when the four returned men increased total student numbers to 26. In 1917 there were 63 students - their numbers swelled by liberal scholarships and a further lowering of the entrance age to 14, and 25 returned men. Gamble was forced to scour the State for ex-students who would fill in as lecturers to supplement his war-depleted staff. In 1919, the year of Stranaghan's return, 118 students passed through the College, but the returned servicemen component was not available. The 'Farmer and Grazier' noted elsewhere that 237 returned men passed through Dookie during Gamble's time.

The returned men tended to form their own community at College - although many of them would have been no older than the students - and this association would have been extremely valuable in cushioning their re-entry into society. The College Honour Roll was published in full in the College magazine for four years after the war ended. Student and staff enlistments totalled 355. Deaths totalled 82. An accompanying list of distinctions included 10 Military Crosses, a Distinguished Flying Cross, a Distinguished Service Order, eight Military Medals, a Croix de Geurre and two Distinguished Conduct Medals won by ranks ranging from Colonel (W. H. Scott) to private.

In late 1918 Council investigated the possibility of women's short courses at Dookie. Subjects would include fruit preserving, domestic economy, first aid and hygiene and also book-keeping, milk testing and the like. The motion was carried and a committee went to work. The finished product was a nine-day course conducted during the College vacation and attended by between 30 and 50 women of all ages who were accommodated in the temporarily-vacated student quarters. The course began in 1919 and included: lectures, lantern slides and demonstrations in cooking, poultry-raising and dressing, dairy practices, pruning, dress-making, plant breeding, needlework, cuts of meat, fruit preservation, home hygiene and the kitchen garden.

The women's classes continued for about 10 years and encompassed the Principalships of Gamble, Birks and Drevermann. There was an unnamed problem early in the history of women's classes which caused Council to decree that the Principal must remain at College at all times during their course. Why the courses were discontinued is not recorded, but there followed a 20-year hiatus which ended in 1951 when they resumed at the disused Rural Training Centre with the additions of meetings procedure and child care courses.

In addition to the short courses for women and returned soldiers, the immediate post-war era saw the introduction of special courses for farmers' sons and the expansion of field days to encompass all aspects of farming

In a rare fit of generosity the Government of the day granted a considerable sum for agricultural extension (education) work and followed it up with the offer of grants for capital works. This cornucopia became slightly clogged when the Government refused to advance the funds for capital works until the money allocated for extension work and new courses had been spent. Council vainly pointed out that it could not carry out the proposed extension work or institute new courses without the necessary capital works expenditure. Following what had

become a time-honoured practice in times of peril and misunderstanding Council invited the newly-appointed Minister for Agriculture (Harry Lawson) to visit the College, which he did the month after he took office in November 1920. Dookie College, in December has a special magic and it certainly worked on Lawson, who was able to announce a mere six weeks later that Cabinet had freed £11,775 for improvements and capital works. The mid-year budget saw a further £15,000 granted to the Colleges.

Gamble presided over the renaissance of Dookie College, from a threatened and nearly bankrupt institution with a handful of students, to a College with a full complement of scholars and lecturers, a budget surplus and an apparently unassailable public image as a result of its role in the rehabilitation of Australia's returned war heroes. Through all this, Gamble stands out as a practical, no-nonsense agriculturalist and manager whose oft-quoted motto was 'dogged does it'.

Mullett and Birks

There were 26 applicants for the Principalship vacated by William Gamble in early 1922. The post carried a salary of £600 to £700 and a furnished residence with free fuel and lighting. Applicants varied widely in place of origin and qualifications. At one extreme was a Master of Agricultural Science and Doctor of Philosophy from Cornell University, Ithaca, New York. At the other 'Edgar Ward, farmer, Sydney'. Council short-listed only two for interview. They were Walter Richard Birks, a former Dux of Roseworthy and Bachelor of Science (Agriculture) from Adelaide University and Hubert Arthur Mullett, Bachelor of Agricultural Science (Melbourne) who was then Chief Field Officer for the Victorian Department of Agriculture. Birks and Mullett were interviewed by council in February 1922 and Birks was appointed.

Mullett's application is worth noting; it was a specially printed

document setting out his curriculum vitae and his practical qualifications which were most impressive. The sixth and final page was headed 'A Policy for Dookie' and intimated that the existing College course 'was not providing the kind of training farmers know is worthwhile'. This sort of comment from a 31-year-old University type would not have won votes from the men who prided themselves on making Dookie what it was. Mullett's letter of application closed with the following words: 'I regard the policy and the definition of the responsibility outlined as vital to success at Dookie. In the event of the Council not being in substantial agreement with it, I beg to withdraw the application.' Although expressed a touch arrogantly, Mullett's words on the relevance of the course were prophetic, Mullett later became a Director of Agriculture and a Councillor of uncommon good sense.

Council was jolted into the realisation that Birks was no traditionalist or tame cat when at its first meeting with Birks as Principal, he stated he was 'not prepared to accept the present curriculum as adequate training'. Councillors went home each with a copy of Birks' recommendations for wide-ranging administrative and educational changes to be discussed at the following meeting on May 9, 1922. In mid-1923 Birks reported to Council that four students were 'incapable' (the minutes, as usual, do not give much away). Instead of allowing Birks to act appropriately, Council called for an assessment of the lads' practical capabilities from the Farm Manager and expressed anxiety 're further depletion of students'. Such recourse to a subordinate for a second opinion must have rankled Birks, especially in view of his military background. He would have been further disappointed by Council's implicit message that it would rather have poor students than no students. The whole issue suggested that future attempts to raise standards would be similarly queried.

Walter Richard Birks

The new Principal, Birks, was a South Australian who matriculated from Prir
Roseworthy, where he was Dux of college in 1908. Another year at universit
before joining experimental establishments in South Australia where he serve
Wales Department of Agriculture. At the outbreak of World War One Birks j
Bapaume and Passchendale (where he was wounded) saw him emerge with tl

He remained overseas as Assistant Director of Education (Agricultural Sectic
conducted tours of Cambridge and Scandinavia with servicemen and made a
associated with Nilsson-Ehle, a world figure in plant breeding and continued
encountered the man who was to be his contemporary, Principal of Hawkesbu
R. Stranaghan).

Birks returned to Australia via Canada, the USA and New Zealand, where he
Wales Department of Agriculture and it was 20 months after this that he was

The following month (August 1923) Birks informed Council he was an applicant for the position of Principal at Gatton Agricultural College in Queensland. Birks had done the honourable thing in informing Council of his intention, but it was an act of political naivete, and left Birks with severely impaired authority when it became known he did not get the job. Henceforth Council was free to waive considerations of loyalty to a Principal who had demonstrated he would rather be elsewhere. Birks lasted another four years under this debility, but like any good bureaucracy, Dookie College continued to function with apparent normality. The promised Government funds were spent upgrading staff and student quarters, installing a new septic and water supply system and building new engineering, saddlery and machinery demonstration premises.

Dookie still did not have its full complement of students, but the farmers' classes that year were at capacity with 83 enrolled and the women's classes were oversubscribed by at least 50. Meanwhile Birks continued to push for higher educational standards at Dookie and sent in 'unsatisfactory' reports on a number of students. Council's response - in 1924 at least - was to seek consultation between its education committee and the parents concerned.

In 1925 when Birks recommended that three students 'not return' he was asked to furnish copies of their previous term's reports and to prepare a 'special report in each case ... and that this be done in all future cases'. This, despite the fact that in 1925 Dookie College had a full roll of students for the first time since the War, when student numbers had been supplemented heavily by returned men and age and educational entrance standards were considerably lower. There were 94 full time students that year, a total second only to Pye's remarkable, and very over-crowded, record of 108 students in 1911.

A notable Birks era appointment was Farm Manager Harry Park, who took over from C. S. Munro who went to manage Rupertswood, the grand Sunbury property originally built by Sir Rupert Clarke and owned at that time by H. Victor McKay of Sunshine Harvester fame. Harry Park remained as Farm Manager, then Farm Superintendent, for 33 years.

Towards the end of Birks' era Dookie College was probably in better shape than it had been at any time since the halcyon days of Pye's reign, which peaked in the years 1910-12. Despite the relative inferiority of College soils to the renowned black soils further north, Dookie College consistently outyielded the local farmers. Literally all of Dookie's wheat was sold for seed and under a system worked out by Birks and Pye, the wheat from many local farms was also accredited and sold as seed. Dookie's sheep flock was around 3,000 head and included purebred Lincolns, Border Leicesters and Merinos, the latter based on Boonoke blood and very largely established under Birks. The clip averaged 100 bales, worth around £2,000. The dairy herd of around 40 Ayrshires averaged around 310 lb of butterfat per cow; well above the State average. College and district milk were processed in the College dairy into butter and cheese. The piggery ran some 200 pigs, including first-class show stock. The college boasted that some of its 40 breeding sows returned an average of 30 shillings a week, year round, from the sale of their individual progeny. College fees were £35 a year. The College was self-sufficient in meat, milk, eggs and most fruit and

vegetables. The poultry branch ran 2,000 birds returning a gross £1,500 per annum. The College estate totalled 5,930 acres - 1,600 arable - and the sale of its produce yielded around £12,000 which a College pamphlet boasted 'left a handsome profit over and above the cost of operation of the farm'. The College was at last paying its way.

Birks had intimated to Council that 'he may be an applicant' for the position of Principal at Roseworthy. On May 24 Council accepted Birks' resignation with alacrity and resolved to offer the Dookie Principalship to Longerenong's Principal, A. C. Drevermann at £800 per annum. Birks' salary had been £650.

Albert Cameron Drevermann

Drevermann, who had reached adulthood before the turn of the century was, like Pye and Gamble, very much a product of the College system, having spent only five years of his adult life outside it. Although partial to Longerenong, Drevermann was universally known in the world of agriculture and agricultural education and, along with Pye and Gamble, was regarded as a 'favoured son'. Council was certainly far more comfortable with the 'insider' Drevermann than the 'outsider' Birks despite Drevermann's German origins and Birk's impressive war record. Having a German-born father named Frederick Wilhelm at the time of the Kaiser's war could have been an embarrassment, to say the least, in this period of near-hysterical patriotism, especially if one did not rush to enlist. Drevermann was cushioned by his father's marriage to a Scots woman and his record of community service as Bairnsdale's first Shire President.

Dookie College had been in existence for more than 40 years when Drevermann took over in July 1927 and a pattern of boom and bust was discernible; it had boomed under Thompson and bust under Brown, it had boomed and bust under Pye and despite the problems with Birks, it was a booming College that

Drevermann inherited. The farm was virtually paying its way, scholastic standards built up by Birks were higher than ever before, College amenities (septics, water supply, staff and student accommodation) were much improved and student numbers were at capacity.

Albert Cameron Drevermann

Albert Cameron Drevermann was one of six children fathered by Frederick W
Bairnsdale College (later Saint Andrew's College), and dux of his graduation
and book-keeper at Yarraberb Station, near Bendigo, a position he soon left t
spent at the Department's experimental perfume farm at Dunolly. In 1900 he
appointed Principal at Longerenong in 1912. He was principal at Longerenon
by then around 50 years of age, a chain smoker of cigars and afflicted by gall
he was a Dookie graduate, his first love was Longerenong where he, his your
Scot who died at Longerenong in 1924) were loved and accepted by the com

Things continued to boom during Drevermann's first three years. Dookie was connected to the 'Yallourn current' and negotiations were completed with Melbourne University to recognise the upgraded science component of the College curriculum and grant exemptions to Dookie graduates going on to study for the BAgrSc. This process took about two years and resulted in exemptions for Honours College graduates from the mandatory 'practical year' and certain units in the disciplines of chemistry, botany, zoology, entomology and agriculture. These exemptions were granted to selected students from 1932 onwards.

Drevermann was strict, fair and there was absolutely no compromise. Discipline under Drevermann was administered, for the most part, by the prefects, with the approval of the student body. Bullying of the weak and the different until they broke or conformed was one of the uglier traditions of the old College, but it had its reverse side. It is related how one new first-year student was bullied unmercifully by senior students until they learned it had been this lad's life-long ambition to attend Dookie and that he had financed his ambition by selling

rabbit skins and saving the money from the time he was old enough to set a rabbit trap. He was the only student at Dookie who had paid his own way. On learning this, third year had adopted the lad and from then on 'he could do no wrong'.

The best of times was followed by the worst of times as the depression deepened in 1930-32 and a long slide began which was not fully arrested until the new college of the 1960's. Wool and wheat prices fell by almost half and the effect on Council income from the endowment lands was immediate and severe. As the marginal farmers who rented the endowment lands began to feel the pinch, rental income fell accordingly. Council minutes for 1929-31 follow the pattern set in the hard times of early 1890's and the early 1910's: Principals were asked to report on College carrying capacities; on how jobs could be 'reorganised' and staff numbers 'rationalised' in the name of 'improved efficiency'. Council waited on the Minister re funds for 'urgent works'. The Minister of course was helpless. The Government of the day passed a number of Acts including the Financial Emergency Act and the Public Service Payments Reduction Act which reduced not only funds but also wages for literally everybody employed at College. Casualties included the women's courses, Hugh Pye's position as Cerealist and that of his former assistant Lillburn, leaving Farm Manager Harry Parks to conduct the experimentals as best he could.

Another casualty was the research programme into caseous lymphadenitis (cheesy gland) of sheep, being conducted at Dookie in conjunction with the CSIR (later, CSIRO). This appears to have been the first scientific animal research conducted at Dookie. In 1931 Council decided, due to financial pressure, to 'enter no further arrangements with CSIR as it interferes with the work of the stock branch.' This decision put an end to original research at Dookie College for the following 25 years. The ban still stood when Ian McMillan, then Zoology and Animal Production lecturer began work in 1957 on supplementary feeding with molasses and urea under the guise of collaborating with Melbourne University's Dr Derek Tribe for

the benefit of BAgrSc students at Dookie.

In his 1931 Principal's report Drevermann said:

'The People of this country seem to have conducted their affairs, both public and private on the assumption that they are not subject to the economic laws that operate everywhere else. The depression, however severe, will in the end prove a blessing in disguise if it teaches us to conduct our affairs in such a way as not to fly in the face of these economic laws'.
He went on to suggest that the Rural Economics subject should be upgraded and taught to second year students as well as third years.

Council chairman that year was James Menzies MLA for Lowan, whose son Robert Gordon was to make such a mark on Australian politics. Menzies was initially a store-keeper from the Wimmera town of Jeparit. He also was a partner in a stock and station agency and the local agent for H. V. McKay farm machinery. He represented Lowan from 1911 to 1920 and served on a number of Parliamentary committees although he did not distinguish himself as a politician. When he moved to Melbourne he retained control of a farm near Jeparit and kept his place on Council which he occupied from 1917 to 1945.

Dookie marked its 50th anniversary with a Jubilee year in 1936, still well and truly in the grip of the depression. Shortage of funds notwithstanding, it was a gala event as many of the original student and staff members were alive and well to celebrate it. Foundation student and former Principal, William Gamble was Chairman of Council, nominated for the position of his life-long friend foundation student Arch Dowie. J. M. B. Connor, son of one of the three Parliamentary 'founders' of the College was President of the Old Collegians. Ex-students included in their numbers a County Court Judge, a Director of Agriculture, Australia's Trade Commissioner in New York, two Dookie Principals, a doctor, and a host of senior business and public service executives, not to mention practising farmer

graduates. The Jubilee Souvenir published by Council noted that 2,050 students had attended College and 607 had received their Diploma. Thirty eight agricultural science students had attended and 251 returned men had attended short courses before going on the land.

Letters from two ex-students to Dookie in its Jubilee year are of note. One came from foundation student, David Dow, who had become Australia's Trade Commissioner in New York. The letter, although containing mostly humorous reminiscences, urged upon students the importance of soil conservation and erosion prevention in the light of America's 'dust bowl' experience. Several different people have been credited with initiating and executing the conservation scheme which saved much of the College's grazing and cropping land, but it was probably Dow - then around 70 years of age - who publicly blew the whistle.

College at this time had 1,000 acres under a wheat, oats, fallow rotation and the entire wheat crop was sold as certified seed. There were 50 horses and two tractors. Pasture had been improved by broadcasting subterranean clover and topdressing with superphosphate. Small areas had been sown to improved pasture species.

To celebrate the Jubilee, Council lashed out with funds for a new sports oval with turf pitch and 'modern fence' at the foot of the College entrance drive. The cost was £230. This is the only capital expenditure mentioned in Council minutes for some years, although Drevermann and others were pushing for a new biological laboratory to keep up the standard set by the university's recognition of Dookie science subjects. In fact the College property had run down considerably in the years since the crash. Council's economic stringency had precluded virtually all new works. Essential maintenance only was carried out on buildings, fences, machinery and equipment. Soil erosion, partly the result of overstocking during the depression years, was becoming a major problem which was simply not addressed.

In the closing months of Drevermann's Principalship the economic scene began to brighten. Council decided in 1937 to buy a new Fordson tractor from Malcolm Moore Machinery Limited - although it deferred a decision to replace the old Thorneycroft truck which had long served as the College 'bus'. More importantly a gift of £1,500 from Mrs Gavin Gibson of 'Boorinda', Dookie, towards the proposed new biological laboratory was matched pound for pound by the State Government. The Senior Science Master W. J. 'Spider' Webb is believed to have designed the laboratory in conjunction with the Board of Works. The laboratory was not finished during Drevermann's time as Principal, although he attended its opening in 1938. Nor did Webb stay to enjoy the fruits of his labour; he resigned two months before the laboratory was opened and his successor, G. T. Levick made it his kingdom until the early 1960's.

As the 1930's drew to a close events were occurring overseas which were to have far more effect on the average Australian than a tired Principal and a spot of soil erosion at Dookie. At home the Hume Dam - the largest public works programme yet attempted - had been opened, the crack 'Spirit of Progress' train was newly in service, and Australia had recently played host to the Commonwealth Games as part of the nation's 150th Anniversary. It was against this back-drop that Drevermann, early in 1938, resigned 'for reasons entirely private'. Council accepted his resignation and went quickly about the business of appointing a successor who, with unanimous Council approval, took over in July 1938.

The Enfant Terrible

Drevermann's successor was Harold Ambrose Jacques Pittman, without a doubt the most controversial Principal Dookie College has seen. His 19 month reign split the College, giving rise to animosities which lasted for decades and marked the beginning of the end of the Council which had administered agricultural

education in this state for more than 50 years.

Harold Ambrose Jacques Pittman

Born at Enmore, NSW, Pittman distinguished himself in his early schooling a teachers' scholarship. He graduated BAgrSc (Honours) from Sydney Univers geology during these courses. He taught for a short time at Yanco Agricultur and worked for a time at the South Australian Waite Institute on fruit pests a where he pioneered the inoculation of clover seed with nitrogen-fixing bacte never seen Dookie College.

Pittman was the most highly-qualified Dookie Principal Council had yet appointed, but the Dookie College that awaited him was at a cyclical 'low'. Starved of funds for almost 10 years and administered by an ageing and ailing Principal, Dookie College was a shabby and outmoded institution. Its tradition dated back to Pye and its heroes were yesterday's men. Further, north-eastern Victoria was in the grip of a drought said to be worse than that of 1914. Ten and a half inches of rain fell in Pittman's first-year following the previous season's fifteen. Most of the college's dams were dry and stock had been reduced and pulled in to paddocks served by the water main from the river to the College reservoir.

Into this comfortable, largely complacent rural scene sprang H. A. J. Pittman, 35, academic, educationist; a 'thoroughly modern Harry' not prepared to accept Council's word as holy writ and anxious to revolutionise what he saw as a moribund institution. In an era when the prevailing philosophy was 'be thankful for what you've got', his attitudes alarmed, then outraged the College establishment. Further, he was as stubborn and tactless as they come.

Stranaghan, the patrician disciplinarian now over 60 years of age fell out with Pittman almost immediately over a range of issues centred, for the most part, on student discipline and staff responsibility.

The drought, heightened by a phenomenal heat wave during the end of year examinations and the unprecedented bushfires of February 1939, added to the pressures working on the protagonists. And above all loomed the gathering clouds of war in Europe. There was a series of escalating misunderstandings between Pittman and the staff, culminating in allegations that Pittman had questioned the propriety of the relationship between students and the wives and daughters of staff members.

It was three weeks after the outbreak of World War II that Council conducted an Extraordinary Inquiry which close-questioned Pittman and Stranaghan in the presence of a Government stenographer. Several Councillors were present, but the leading inquisitors were the Chairman M. E. Wettenhall (MLA) and James Menzies. Hubert Mullett, by then Director of Agriculture was present for the Minister. Pittman's final address to the inquiry reveals his total unsuitability to the position of administrative head of an institution such as post-depression Dookie. He was highly qualified, intelligent and able, but a leader, he was not. Council adjourned the inquiry, enjoining all to secrecy, and resolved to meet again after the transcripts had been distributed and considered. Predictably enough, it recommended that 'subject to the approval of the Minister, the services of H. A. J. Pittman be determined by giving him one month's calendar notice . . .' The Director of Agriculture, Hubert Mullett abstained from voting on the issue. Council was accustomed to Ministers rubber-stamping Council decisions, but Minister Hogan was not your common or garden Minister. Council was not to know that Pittman had written personally to the Minister putting his own side of the story and asking for a public inquiry into 'conditions obtaining at the College'.

Hogan then proposed that Council meet with him on site at Dookie. No record of this meeting exists, although Pittman refers to it in later correspondence. What happened is unknown, but, as observed elsewhere, once Council got a politician on its own turf, it tended to get its own way. In this case the Minister was not won over completely, but his attitude softened.

Therefore, he advised Cabinet that it should recognise Council as the administrative body of the College and that if Council believed the trouble could be resolved by removing Pittman its opinion should prevail.

Pittman meanwhile had printed and widely distributed a four-page leaflet in the form of an open letter to the Premier titled 'The Real Truth about Dookie Agricultural College' which called for a 'full public inquiry'. Whatever happened next happened quickly and, it could be argued, marked the beginning of the end for a Council which had proven itself to be obstructive, reactionary and less than diligent in monitoring and conducting the affairs of its main reason for being, Dookie College.

G. B. Woodgate was officially Principal the day College re-opened. He was still there in 1944 when his friend Premier Dunstan introduced the new Agricultural Colleges Act and abolished Council forever. The following year Woodgate became the State's first Superintendent of Agricultural Education, and Hogan became permanent head of the newly-established Soil Conservation Board.

Soil conservation works at Dookie included the netting of the worst gullies on the property, on the theory that excessive run-off would carry plant material which would build up on the wire and form dams to decelerate the water and cause it to drop its burden of soil. Washaways were planted with a variety of trees, shrubs and grasses to ascertain their effectiveness when the drought broke, which it did on February 16, 1939. Six inches fell over 12 days and the year's rainfall totalled more than 36 inches. The rains provided spectacular proof of the growing erosion proneness of the drought-denuded and overgrazed district soils, which in some cases piled up three-feet deep against netting fences. Pittman's netted gullies, for the most part, did not worsen while other smaller gullies became ravines and scores of new gullies came into being. The sheet erosion from bare fallow paddocks was spectacular and virtually destroyed

the many months of work with horse and scoop that students had put in cleaning out the drought-emptied College dams.

In 1939 as the Pittman-Stranaghan drama built up, College became home for a group of young Jewish refugees from Hitler's Germany. A group of wealthy Sydney and Melbourne Jewish men formed what was known as the Jewish Welfare Guardian Society and paid the fares to Australia for twenty boys stranded in English refugee camps. Ten went onto farms in the Wangaratta district and 10 were sent to College. One of the lads was Paul Justus Baxter, 16 years, an apprentice furrier and son of a fashionable dressmaker, formerly 'by appointment' to the German Emperor, in Wiesbaden. He arrived, bespectacled and wearing clothes bought the day before at an old-fashioned mercer in Melbourne. Although Baxter did well academically - he topped the second-year class in English - he never did well in practical work. Farm Superintendant Park told him 'If ever you go on a farm you won't earn enough money to keep you in tobacco.'

Park was right. Baxter failed his practical work and left College to join the State Research Farm at Werribee as a plot assistant under his former Principal H. A. J. Pittman who was breeding ergot on rye as a source of ergotin, urgently needed by the war effort as a blood clotting agent.

Baxter, the Jewish refugee, was accused by the farm manager at Werribee of being a German spy when he was seen identifying United States planes from a booklet as they landed at Laverton. So to complete the farce, he joined the army where, as an 'enemy alien' he was used initially in a labour corps. Later he was a volunteer for malaria control experiments. On naturalisation he was allowed to serve overseas - as a batman to the commandant of a detention barracks in New Guinea. Baxter returned to Dookie after the war and got his diploma, rejoined the Department of Agriculture. Another of the Jewish students from this group, Harry Somers, became a painter. He is internationally-recognised for his 'point painting' and three of

his works now adorn the walls at Dookie College's administrative office.

It has been said that Pittman went determinedly backwards through his career with the Department of Agriculture. When he retired in 1968 he was still senior plant pathologist at the Plant Research Institute, Burnley, the position he was appointed to following his 'determination' in 1940. Colleagues at Burnley remember his prodigious memory and his ability to integrate subject matter from a wide range of scientific disciplines when making diagnoses and recommendations on plant health.

The Principal as Politician

George Bartlett Woodgate was almost certainly not Council's choice to succeed Pittman as Captain of its flagship, Dookie College. He was not only a university man like the troublemakers Birks and Pittman, but also an educationist. Further, his degree was in arts, not agriculture. True, he had been an excellent Principal at Longerenong, but Council, given its head, would have gone for a 'favoured son' from the establishment, a Dookie old-boy at least.

Dookie received Woodgate as a saviour. Granted he was an educationist without a specifically agricultural background, but he was also as stern and Victorian as they come, and a first-rate administrator as well. Nor, at 51 years of age, did he threaten senior staff members with pointed comments about his comparative youth as Pittman had done.

Within months of Woodgate's appointment Dookie was on the road to recovery and he was making his mark with some of the first and most effective erosion control measures the State had seen. Further, he was liaising with educational authorities to upgrade and standardise the academic requirements of both Colleges and coordinating these with the State system. He also laid plans for a vastly-expanded retraining programme for the returned men of World War Two. In short, his was a productive

and innovative time as Principal. But history will not remember him for this as much as for the fact that he presided over the demise of the Council of Agricultural Education.

Ministerial patience with Council over the 55 years of its existence had worn perilously thin on occasions. Council had been threatened with abolition at least three times over varying issues; notably student numbers, educational standards and the sometimes lax administration of the endowment lands. On these occasions solidarity between Council and its Principals had pulled it through. Even Hugh Pye remained loyal when Council sacrificed him to a bloody-minded Minister. Unlike Pye and the others, Woodgate was not a son of the system. Common decency aside, he owed no allegiance and would have seen all too clearly what an autocratic and reactionary body Council had become. In his 21 years of service to Council he had developed strong and well thought-out views on agricultural education and had kept up his contacts with fellow students and teachers, who were by now in positions of power in the University and the Department of Education. Many of his ideas on administration paralleled those of A. R. Wallis, who first formulated a policy on agricultural education for his Minister in 1870s.

As expected, the Dookie College that Woodgate inherited was a depressed and depressing place. Student numbers had fallen dramatically with the onset of war; in 1939 there were 41 first-year students, the following year it was 21 and the year after, 11. At its nadir, 1942, College accommodated ten diploma year students, 11 second years and no first years at all - they were all sent to Longerenong. In 1943 there were four diploma year students although second year jumped to 19 when the lads came back from Longerenong. In 1942 Dookie temporarily became home for 140 students and staff from Melbourne Grammar under a wartime evacuation scheme. Dookie's first-year applicants were sent to Longerenong. The scheme only lasted a year and the lads from Longerenong did their second year at Dookie as usual. Aside from getting College into shape again, Woodgate's two immediate tasks were to institute a soil

conservation programme and to ready the College as a rehabilitation centre for returned soldiers, many of whom were College students who had interrupted their course to go to war.

George Woodgate

George Woodgate was born in Melbourne in 1889. Little is known of his fam 'monitor' teacher, aged 15, at Yarra Park (Richmond) State School in 1905. D graduated with a Bachelor of Arts, then at Teachers' College he obtained his several years in country schools he joined the Melbourne High School as scie degree and diploma were conferred in 1919, some time after his appointment Melbourne High and, possibly, Longerenong. He is said to have been very w could well have made contacts at university and teachers' College more easil committees. His application for Principalship at Dookie in 1922 (unsuccessfu Young Men's Literary and Debating Society, to the executive of the Victoria Teachers' Association.

With students numbers reduced by as much as 75 per cent in the first two or three years of Woodgate's time, it is a wonder that so much soil conservation work was carried out. How the rest of the farm fared is not clear because after his first year the College magazine discontinued the practice of publishing the Principal's report, which traditionally included a full account of farm activities and production.

Nineteen-forty-three saw the return of University agricultural science second year students. Administrative and reputed discipline difficulties had made their accommodation at Werribee impracticable. A university memorandum to Dookie staff pointed out that the arrangement was 'for 1943 and probably for the duration of the war'. It said:

'The scheme recommended is intended as a wartime measure. Neither the Council of Agricultural Education nor the University nor the Department of Agriculture should view it in any other light.'
At the end of the war, Faculty recommended that Dookie become the permanent residence for second year students. The

students were to live and work on the same basis as Dookie students, pay the same fees and be subject to the authority of the Principal who was 'hereby appointed as disciplinary officer of the university in respect to such students'.

The following year's eight University students included Pierre Gorman, who was completely deaf. Gorman was trained in lip-reading from the age of 18 months. This, and later speech therapy enabled him to communicate well enough not only to pass his Agricultural Science degree, but also to go on to win his PhD at Cambridge and become senior lecturer in special education at Monash University. He was the first completely deaf student to graduate from an Australian university.

Council minutes are strangely mute about the new Agricultural Colleges Act of 1944 which was to abolish Council the following year; it was as if Council had been nobbled. And perhaps it was, for Council Chairman Wettenhall retired owing to ill health in mid-1943 to be replaced by a strong Dunstan man, the influential and ambitious Sir John Harris who was Minister for Health and Public Instruction. Harris who had served on Council since 1925 was a Doctor of Medicine with a midwifery practice at Rutherglen. He was also a maker of a range of excellent fortified wines. His appointment completed one of those rare alignments of forces which combine with the spirit of the times to bring about significant and lasting changes. In this case the alignment of reform-minded forces comprised the Premier (Albert Dunstan), the Minister for Agriculture (E. J. Hogan), the Director (Hubert Mullett), Council Chairman (Sir John Harris) and the Principal, Woodgate. Woodgate's excellent standing and contacts at the University and the Department of Education supplemented the effectiveness of the drive for change.

The first mention in the minutes of the proposed Agricultural Colleges Act appears in May 1944, nearly a year after Sir John's appointment as Council Chairman. The minute simply notes that Council 'resolved to await a report from the Minister for

Agriculture as to the government's proposal for reforming the council.' Obviously Sir John as a senior Government member would have been privy to what the Premier and the Minister had in mind for the post-war future of the colleges, yet it was five months before Council met again at a special meeting 'to consider the Bill relating to State Agricultural Colleges.' At that meeting council was presented with its own abolition as a fait accompli and died with a whimper. Council met on routine matters for the remaining six months of its tenure before fizzling out at its last meeting in May 1945, almost exactly 60 years after it was formed under the Chairmanship of Jonas Levien in June 1885. Its last act was to advise that Council 'did not approve the acceptance of Indian students until adequate provision is made for local students'.

If Woodgate was successful in securing Council's demise, he was only partly successful in engineering the structure that replaced it. Instead of the autonomous governing body that Woodgate envisaged, Council was replaced by an 'advisory committee' of six which was under direct Ministerial control. Woodgate thus found himself as Superintendent of Agricultural Education, a position he had sought, but ruled by the Director of Agriculture and not with the direct responsibility to the Minister and Cabinet that he had envisaged. Addressing a Dookie College speech day audience in January 1945, soon after the new Bill was passed, Sir John Harris, said the Council had not only guided and administered the Colleges for the past 60 years, but also 'enormously increased the value of the endowment lands in various parts of the State'. Under the new Act the college lands (those selected by Wallis in the 1870's as possible College sites) were transferred to the Department of Agriculture while the endowment lands reverted to the Crown. All funds held in trust were transferred to the Treasury.

Robert Gordon Menzies told the assembly he regarded education, particularly agricultural education, as a 'number one priority' and an 'absolute essential to our existence'. He said it was a gross reflection on the present system that the shortage of

funds and staff at Dookie threatened to reduce student enrolment. Five years later he was Prime Minister and never returned to Dookie. One of Woodgate's first acts as Superintendent of Agricultural Education was to recommend his successor as Principal at Dookie. He passed over applications from Harold Pittman and two of Pittman's opponents at Dookie, as well as a number of others to give the job to J. L. Provan who succeeded him in early 1946. Provan took over and implemented Woodgate's plans to establish a Rural Training Centre for returned servicemen and in the years up to 1948 put through more than 1,000 men, either as Diploma or short-course students. In the nine years that Woodgate served as Superintendent he raised admission standards to the Colleges to Intermediate certificate level, considerably upgraded the Diploma course and oversaw considerable improvements in the staff, buildings and equipment of the Colleges. He also became a member of the Melbourne University Council, the Faculty of Agriculture and the Council of Public Education.

Women at Dookie

In 1884, two years before Dookie opened its doors as a College, Catherine T. Rickarby, in a letter to 'The Age' drew the Colony's attention to 'the necessity of including agricultural colleges for females'.

'She opined that 'it (a girls' College) would not cost anything like the same amount to start with and keep in order for girls as it would for boys and for every girl educated in this manner now, in the next generation it would count six at least, for the girls of the present day are the mothers of the future and their sons will benefit by their teachings as well as their daughters...' In May 1886 - the year Dookie was established - Council actually appointed a committee...

'to take into consideration the propriety of establishing a farm school for the purpose of educating young women in all the duties appertaining to the dairy, the keeping of farm accounts

and any other duties whereby at a future time they might assist in the agricultural interests of the Colony.'
Fourteen years elapsed before Ms Rickarby's next recorded foray into the field. It was 1898 and with Longerenong closed by depression and the drought, she wrote to the press suggesting the College could be used to provide instruction in agriculture to girls and young women. Council minutes record her name and suggestion as 'acknowledged'. No action was taken. The year after federation, the Women's Progress Leagues Union asked Council if women could be admitted to Dookie. Council formally replied it was 'unable to accede at present...there being no provision for women students.' This early version of the 'no toilets' argument represented, perhaps, some advance; at least the answer was not a flat 'no'. Women do not reappear in the college or Council archives until 13 years later when there was some consternation about one Irene Lowe (refer to Box: Rene Lowe), a third-year Agricultural Science student at Melbourne University, who sought admission to Dookie for her mandatory final year's practical experience.

Australia emerged from the war with a new respect for women and their capabilities as nurses at the front and managers at home. It was in this new

Rene Lowe

Rene Lowe is recorded as the first female student at Dookie College, which s
behind the College kitchen. The Farm Superintendent's daughter, Mrs Barbar
with a belt and did everything there was to be done about the farm'. Dookie d
Lowe's year a Mrs Vial of the Women's League again urged upon Council th
replied that it approved in principle the admission of women students, but no
College had lost most of its students and virtually all its lecturers to the war a

climate that Council, led by Councillors Sinclair and Dowie, instituted the first women's short courses. The nine-day courses which began in 1919, were conducted during end-of-term vacation for the full-time male students. The women's classes

continued until around 1928 when almost certainly lack of interest by women themselves caused the classes to peter out. Council minutes in June 1930 record that 'provisional arrangements' for women's classes that year were dependent on there being 60 or more applicants. In fact there were 78 and the 1930 class was run, but it was the last such class until 1951 when renewed interest, sponsored largely by the Country Women's Association, saw them begin again for a three or four year period.

It was not national emergency nor impassioned campaigning that resulted in Dookie accepting its first full-time female diploma student. It was the simple fact that the then Vice-Principal's daughter wanted to do the course and the old excuse of 'no accommodation' did not apply. Thus it was that Jean Levick, daughter of science master and Vice Principal, G. T. Levick, enrolled in 1947 and became the first female diplomate.

Post war, a number of female university students passed through the College when the University resumed its old system of a practical year at Dookie. They were accommodated in a specially-built flat located next to the matron's residence. When the university decided in 1964 to move its second year students to Derrimut for their practical year, this flat became vacant; a fact quickly seized upon by Mrs Joan Houghton, an agricultural science graduate who had campaigned for many years to have girls admitted to College. Mrs Haughton and others wrote several letters to the press, and the Country Women's Association took up the issue, pointing out the logic of the move and the opportunity to do something about it. Toilets, of course, would have to be installed all over the farm! How had the university girls managed?

The conservatives held out until 1971, when the combined forces of logic, and the new awareness brought about by the women's movement, prevailed. The following year saw Longerenong open its doors officially to full-time female students. Dookie followed in 1973.

Days of Wine and Roses

James Leslie Provan's 23 years as Principal saw Dookie College cast off its 19th Century form and take on the appearance of a modern institution. Pittman aside, he was the first Principal to have been born this side of Federation and he was the first of four (so far) consecutive Melbourne University BAgrSc graduates to hold the post. To most students Provan was a closed man, distant and aloof. His deputy G. T. Levick and Farm Superintendent G. D. Brooke seemed, to the outsider, to administer College and farm respectively with apparently minimal input from Provan. His 23 years at the helm is a record not likely to be broken and his achievements during that time had the whole-hearted admiration of men such as I. S. McMillan who was not known to suffer fools or feeble effort gladly.

When Provan took up duty as Principal at Dookie College in March 1946, the first major task confronting him was an administrative one; how to cope with the enormous influx of returned servicemen expected under the Commonwealth's Rural Reconstruction Training Scheme. It is hard today to visualise the difficulty of getting things done in the immediate post-war era. There were chronic shortages of materials, skilled tradesmen and money. A booming black market meant that goods and material despatched, seldom reached their destination intact. Nevertheless on October 1, 1946, one year after general demobilisation was commenced, the Rural Training Centre at Dookie College opened its doors to 102 returned men embarking upon a Diploma course designed to compress the usual three-years into two.

Simultaneously College accepted back into its normal classes servicemen who had interrupted their Diploma studies to go to war, plus a number of returned men who enrolled as ordinary students. Further, College established a short-course facility for returned men who already had considerable agricultural experience. This provided a concentrated refresher course on

farm management, rural economics, and some scientific aspects of agriculture.

James Leslie Provan

Provan was born in relatively humble circumstances in South Melbourne in 1
Canterbury and attended the local State school, before going on to Melbourn
Burnley School of Primary Agriculture and Horticulture (1922-3) and gradua
with the Horticulture Division of the Department of Agriculture. His employ
growing regions and he put this time to good use studying for his matriculati
of 1925. In 1926 he applied for leave without pay to study agricultural scienc
place, reputedly the first awarded by the Department of Agriculture, and com
Horticulture division at Irymple, Murrabit, Warby Ranges, Harcourt and Don
wine-making, which gave rise to his wine-making hobby. In 1934 he was app

College numbers, excluding the returned men at the Rural Training Centre, exploded post war. In 1945 there were 18 third-year students. The following year there were 46 and the following year, 44. University student numbers grew from 15 to 34 in the same time. In 1947 Dookie College and the Rural Training Centre graduated, between them, 120 Diplomates. Notes provided for the Minister's Speech Day address in January 1951 state that overall 119 ex-servicemen completed the Diploma course and 1035 attended the eight-week short courses in the previous four years.

Soil conservation measures continued apace and in early 1947 between 600 and 700 people attended a soil conservation field day, conducted in conjunction with the Department of Agriculture and the International Harvester Company, which virtually sponsored much of the College's early erosion prevention programme. Geoff Brooke was by now Farm Manager and in charge of the erosion programme. In 1948 he was able to report that erosion prevention measures had been carried out over 1500 acres. This work included 23 miles of contour furrows and grassed waterways constructed, established and fenced.

As the 50's unfolded, the style of student began to change subtly. Fifteen years was still the minimum age of entry, along with the Intermediate certificate, but since the average age of intermediate students was 15 to 16 years and since many students had their leaving or even Matriculation certificates, the average age crept up, as did the education standard. Students arriving in the late 1950's were born outside the depression years and scarcely remembered the war. They were the sons or nephews of soldiers and the fore-runners of the baby boom. Although some of them had known hard times, most of them had not and for many of them Dookie was little more than an extension of high school. They were older but softer, slower-maturing lads from mostly comfortable backgrounds to whom pre-war values were increasingly irrelevant, although most were still from agricultural backgrounds.

Their apparent lethargy baffled and sometimes outraged the older, more traditional staff members. Students from public schools and the better high schools were in turn disappointed and sometimes disheartened by the standard of teaching and the condition of many of the farm branches. Seen through their eyes, Dookie College was a tired, run-down place still largely in the horse and buggy era. Woodgate's revolution, far reaching though it was, meant little to them because it had little impact on the physical side of College or its day-to-day routines. Teachers and instructors who had successfully taught the highly-motivated and adult returned servicemen in the 1940's were by now out of date, under-skilled and under-qualified. The post-war boom, with its fierce competition for development funds, materials and qualified manpower saw Dookie slipping back in comparison with institutions funded by the Department of Education.

As Woodgate's influence waned and he approached retirement the fearsome Einar Beruldsen rose to prominence. Beruldsen was a giant Scandinavian of Scottish birth who was employed by the Ministry in 1945 as Deputy Coordinator of Rural Training. He held a BAgrSc from Edinburgh University and had

pre-war experience with the Department of Agriculture as an irrigation officer. He was employed specifically to organise and expedite the Department's role in training ex-servicemen under the Government's rural reconstruction scheme. He remained as Inspector of Agricultural Education after the servicemen's departure and succeeded Woodgate as Superintendent of Agricultural Education in 1954. Beruldsen was an autocrat who gave orders and expected them to be obeyed. He was capable of acts and kindness and consideration, particularly to returned men and he was genuinely interested in young people in general and the Young Farmer Movement in particular. But he had no direct experience of running an institution such as Dookie College and was determinedly unaware of the administrative and staff relations problems faced by a Principal.

With the superintendent at odds with the Principal, and most of the staff, who resented Beruldsen's magisterial way of doing things, Dookie College lost the capacity to change direction. The effects of being tied to the Minister for funds and to the Public Service Board's classification system for promotion stultified initiative. The fact that all income from the sales of produce went into Consolidated Revenue meant that successful branches were not rewarded. Into this relatively moribund scene sprang a second enfant terrible, complete with BAgrSc and DipEd, science master Ian McMillan. His teaching load was a phenomenal 32 periods a week, including university-standard instruction in genetics and zoology, plus the usual dining room roster and other staff duties. In 1958 McMillan was created Senior Lecturer and proceeded to upgrade his subjects and widen his scope. The fact that he lectured university students enabled him, with Provan's tacit agreement, to re-introduce research projects as a College activity, while Departmental policy still limited staff College activity to teaching.

The Parliamentary Party, now under Premier Bolte, had an active and very powerful Rural Committee and the Party itself had an Agricultural Colleges Committee stacked with influential members. Both bodies were concerned about the direction of the

Colleges. They were worried by the apparent toothlessness of the Advisory Committee and saw the Colleges being left behind in the education explosion fuelled by the fruits of the baby boom. Both committees met with Beruldsen and Professor of Agriculture, Forster in the mid 1950's to formulate policy and by 1957 State Cabinet had approved a building programme for Dookie which included a completely new main building, assembly hall and accommodation block. Working drawings were completed by mid 1958 and tenders were due to be called a month later.

With the increase in inquiry came a corresponding improvement in educational qualifications. In 1959 some 66 per cent of that year's intake had done the Leaving Certificate (not all successfully) despite the fact that the minimum entrance requirement was still the Intermediate Certificate or its equivalent. Well aware of the dramatically improved educational standards of new students, the Advisory Committee was hard at work revising the syllabus in consultation with the University and the Department of Education. While the emphasis was still on producing a graduate farmer, the sciences were upgraded to tertiary standards.

In 1966 - despite a rear-guard action fought by the Old Boys' Association - the entrance standard was raised to Leaving Certificate. The Diploma of Agriculture was upgraded to a Diploma of Agricultural Science. Dookie's former stated aim had been 'to teach the principles and practice of agriculture to the sons of farmers and those who intend to adopt farming as a vocation'. It was then stated as : 'To train agricultural technologists in the basic technical and scientific principles underlying all aspects of agriculture'. Students studied one year at 'secondary level' and two at 'tertiary'.

Einar Beruldsen retired as Superintendent of Agricultural Education in 1967. Despite his image at Dookie and Longerenong as a conservative tyrant with no appreciable educational background, he had presided over the physical and

educational metamorphosis of both Colleges. Beruldsen's contribution extended beyond Dookie College. He was Chairman of the Senior Young Farmers' Advisory Council from 1954 to 1967, a Member of the Melbourne University Council from 1955 to 1967 and Chairman of the University Building Committee from 1957 to 1959. As he left the job he was asked to draft a statement of qualifications which his successor should possess. He wrote,

'... the Chief ... should preferably have some academic qualifications in education. My extensive reading in educational subjects never quite made up for my lack of basic training in teaching ...'

Provan retired in September 1969 after serving a record 23 years and six months as Principal. During his time $1.95 million had been spent on new buildings and equipment at Dookie College. Hugh Pye would have recognised only four structures from his era: the winery, the Principal's residence since demolished, the old science laboratory (now the College museum) and the wool shed. The College's annual budget in this time had gone from around £50,000 under the new Act to $540,000, one quarter of which came from the Commonwealth Government. Student numbers had gone from 108 in 1946 to 234 in 1969 while staff had increased from 68 to 118. More than 20 new residences had been built, the College roads had been sealed, kerbed and channelled, the Hypar piggery established and a new shearing shed. Virtually every drop of rain that fell on the college now soaked into the pastures and cropping lands or was harvested by the scheme of waterways and dams which complement the soil conservation programme.

Thomas Kneen and Ian McMillan

Tom Kneen moved from Longerenong to Dookie in 1969 in the wake of J. L. Provan's retirement and took over as Principal with 'Arch' (Archibald Charles Kidman) Beviss as his Vice.

Thomas Hugh Kneen

Thomas Hugh Kneen, BAgrSc and DipEd (Melbourne) had been principal at the war and had served as a gunner in an artillery regiment in the Middle Eas Kneen's career was spent under Beruldsen's direction, but because of his war servicemen though Burnley in the immediate post-war years. He presided ov technical school' from which diplomates could proceed direct to University. I park administration.

Kneen's arrival came after the peak of the baby boom had passed and inquiry for enrolment was on the decline. While he presided over the largest graduation ceremony of the College proper when 70 lads graduated in 1969, it was the peak of the graph. Three years later enrolments were at their lowest level for 10 years. The University no longer sent its second-year students to Dookie for their practical year; they had moved to their own facility at Mt Derrimut in 1964 (refer to Chapter 12). The loss of the relatively stable and mature university component, the raised entrance qualifications for Diploma students and the greatly-reduced practical work element of the course (barely 20 per cent of students' time was now spent on the farm branches) had changed the style of student attending Dookie as the 1970's loomed.

With a higher entrance requirement and the change in direction from producing a scientific farmer to producing a neo-technologist, fewer and fewer of the new breed of student came from farm backgrounds while only some 25 per cent went on to the land after graduating. Coincident with these changes was a run-down in Department of Agriculture spending on Dookie and the imposition of staff cuts. Subjects as important as animal husbandry, economics, agronomy and plant pathology had no specialist lecturers.

Protest, when it first arrived at Dookie, was orderly enough. In 1969, a visiting Parliamentary delegation was met by students bearing a huge banner stating 'Dookie College Needs lecturers'.

A student spokesman wearing blazer and tie, hand delivered a letter to the Minister listing the student's grievances and an impromptu conversation took place. Surprisingly, the student tactic worked and within months of Kneen's arrival a number of new lecturers had arrived. Among them was Barry Croke BAgrSc, who lectured in animal husbandry and also managed a family farm near Numurkah. He was to become Principal in 1984 in the wake of Ian McMillan. Kneen was a patient man and his approach to student demands was to discuss them, often at great length, on the basis that if something was to be changed, it should be changed for the better.

With more and more students living off-campus, the University contingent gone and enrolments down, the old wooden dormitories near the tennis courts fell into disuse. Short courses at Dookie disappeared during the boom years and were never resumed. Thus it was a departure when Kneen agreed to lend one of the dormitories to accommodate a departmental in-service training group. He was embarrassed, on walking past the dormitory, to notice men of mature years squatting on the steps and in the grass outside during a break in lectures. Obviously they had nowhere to go in their spare time. As the accommodation was upgraded, demand for it grew and within a relatively short time, the College had a lucrative sideline in short-courses; conferences and in-service training groups. What began in a small way under Kneen, continued under McMillan with the establishment of a Short Course Trust Fund which was ploughed back into furnishings, equipment and teaching facilities. The College itself began to initiate short courses which grew, in some cases, to 'certificate' standard. During McMillan's time the fund was to grow to around $500,000.

Further, reforms discussed at Longerenong by Kneen and McMillan were introduced at Dookie by Kneen and followed up by McMillan when he succeeded Kneen. Kneen, by then Chief of Division, was able to facilitate such change. It has been said that Tom Kneen made Ian McMillan possible. McMillan succeeded Kneen at Dookie College in early 1974. At 46, he

was young but was already well respected for his achievements during his early 13-year stint as lecturer and 'experimentalist'. Unlike Kneen, his earlier years had been spent in service at the agricultural (and not horticultural) colleges and his specialty was in the active field of animal production. McMillan exuded competence, was articulate, intellectually rigorous and demanding of those about him.

Ian Semmens McMillan

Ian Semmens McMillan sprang from suburban Camberwell and was brought
School and began his agricultural science course at Melbourne University wi
because Dookie did not have the accommodation. He joined the Division of A
cost, for his DipEd. During this time he travelled widely with the Departmen
establishments in Victoria and South Australia.

Kneen's promotion to Chief of Division, meant that agricultural education in Victoria was headed by a man with experience as Principal, at both Colleges and Burnley as well. With a new go-ahead Minister (Ian Smith), the stage was set for the changes which McMillan Desired.

Ian McMillan remained as Principal at Dookie until December 1983. McMillan became Manager of Educational Services for the Victorian College of Agriculture and Horticulture (VCAH), a position which virtually parallelled that of G. B. Woodgate.

McMillan's achievements in his nine years as Principal were on a par with those of any of the 11 who went before him. Aside from his role in the VCAH revolution (refer to Chapter 11), the upgrading of the Diploma and the introduction of the Certificate in Farming, he did much for the College and its standing in the district. With the disappearance of the short courses under Provan and the later demise of College as a sporting force, Dookie was in danger of losing its local identity. Following Kneen's initiative, McMillan and the Registrar (Derm Kerlin who retired in 1986 after 35 years) developed short courses into a profitable enterprise, which also provided support to local

education programmes such as the farm apprentice scheme. McMillan upgraded and sought increased local participation in the College's annual beef cattle field day; a subsidised event when he returned to Dookie.

Speaking as Manager of Educational Services of VCAH in 1986, the centenary year of Dookie, Ian McMillan said Dookie was 'vastly better off' since the change. Government funding in that year totalled more than $2 million, of which 80 per cent comprised wages and salaries. Gross farm income for 1985 was around $850,000 while residential courses brought in another $500,000. There were 103 people on the payroll. He said staff were now 'only one step remote from their governing Council which determines campus policy and regulates employment'. While philosophy and policy were framed by an Academic Board which comprised a majority of staff-elected members. In the words of Ian McMillan, a midwife to the new Dookie Campus, 'there is an absolute reality about the farm operation which could never be achieved with Government accounting'.

The Recent Years

One hundred years of agricultural education at Dookie was celebrated on 4 October 1986. Tributes were provided by educational institutions from across Australia with the convocational address being delivered by Dr Graham Allen, Victoria's Director of Education at the time.

Barry Croke resigned as principal in 1989 leaving a legacy of a "hands on" approach to all aspects of college operations. The tools in the back of his utility gave a clue to his readiness to tackle any farm crisis at the same time as educational issues. The principal's position passed to Peter Ryan who held a Bachelor of Agricultural Science from the University of Melbourne, a Diploma of Education and a Master of Administration. He had started his career as a chemistry teacher at Colac before moving to McMillan Rural Studies Centre as a Rural Education Officer, then to Gilbert Chandler campus as

Principal.

As well as being the centennial year, 1986 brought approval to offer a degree program at Dookie; the Bachelor of Applied Science (Agriculture). These developments arose out of a review in 1985 by Dr Howard Brown, an agricultural educationist from California. His recommendations led to the development of a three and a half year applied science degree. It included core subjects in the first two years followed by a three semester independent study program, including a semester of industry placement. With the introduction of the degree program the Certificate in Farming was transferred to Longerenong College in 1987.

Discussions were held with Frankston College of TAFE to develop the Advanced Certificate and Associate Diploma of Resource Management for training of Department of Conservation and Environment staff. Subjects were offered on a block timetable until 1993 when the arrangement with the Department ended and the program was then offered to school leavers. This program was replaced with a two-year diploma in 1997. Planning for an agribusiness course was undertaken with the David Syme Business School at Chisholm Institute of Technology in 1987 but it was not until 1991 that the first group of 19 students attended Dookie. By then, Monash University had absorbed the David Syme School and the arrangement was for the students to spend the second year of the three and a half-year Bachelor of Business (Agribusiness) at Dookie where they would be given a "practical" orientation. Monash discontinued the degree in 1993 with the last group of 20 students attending Dookie in 1994.

Nurse education through La Trobe University at Wodonga provided a new positive outlook for staff and students that went with studying and working with people from different backgrounds and with different career aspirations. The nursing course was first mooted in 1987 and closed in 1995 when the program moved solely to Wodonga.

In 1994, Dookie broadened its degree program to include agriculture, agribusiness, production horticulture, natural resource management and food technology. The first intake into these programs occurred in 1996. TAFE programs substantially altered over the last decade, moving from a wide selection of short courses and accredited programs to a limited number of specialised accredited courses. The Diploma of Natural Resource Management, the Certificate in Food Processing (Viticulture) and the Diploma of Rural Business Management now form the basis of Dookie's TAFE offering in 1997.

Until 1986, most staff came from the Department of Agriculture. With the introduction of the degree course came a need to broaden the staff profile to include internationally trained and industry funded persons. The broadening of staff expertise also included the appointment of Greg Brinsmead, a rural geographer, as Deputy Principal in 1992.

Over the decade, management of the college's assets has changed with the establishment of discrete commercial entities. Low commercial viability enterprises, including the vegetable farm, the poultry unit and the butchery were closed down. Academic staff were freed from the day-to-day operation of the units and managers were employed on a bonus basis to manage the commercial operations. Further commercial orientation was achieved with the establishment of an industry liaison committee for each farm branch.

In 1990, support from the National Soil Conservation Project, allowed the establishment of the Dookie Farms 2000 Project which aimed to make the college farms a model of sustainable commercial production. The Dookie Farms 2000 Committee works to attract projects and research linked to sustainable production. Another aspect of sustainable land use has been the development of the protection and management of 200 hectares of Box forest, used over the last century for grazing and fire-wood collection. Landcare and Environment Action Program schemes have involved planting thousands of trees on the

college and surrounding farms.

One notable change over the last ten years has been a shift in the profile of students from the former 'ag' student, to one who is equally at home in the library and in the shearing shed. This transformation has been hastened by the new mix of agriculture students, who now share experiences, attitudes and aspirations with resource managers, agribusiness persons and food technologists.

The period of 1986-1996 has been a period of expansion and improved efficiency. Student numbers have more than doubled, while staff numbers have been reduced. A range of courses have also been developed. Present courses show high rates of employment of graduates. Staff are increasing their expertise through study for higher degrees and taking up research opportunities. Dookie enters the new world of agricultural and natural resource management committed to providing regional coordination and leadership in partnership with regional industries, communities and other research, education and extension providers.

Dookie College Buildings, 1927, with the old chemistry laboratory (now the computer room), left and Swinburne Hall (now the library) far right.

Chapter 4: Longerenong, 1889

Based on extracts from Maunders and Jaggs' "An Asset to the State". © 1986 VCAH.

The Early Years

It was Wallis (refer to Chapter 2) who first drew attention to the Wimmera. In 1877 he recommended that 2,300 acres of the North Brighton run, which had only been partially selected, be set aside for a second experimental and training establishment. A tree nursery and plantation were started to test the almost-treeless Wimmera plain's suitability for timber production, and a dam was constructed near the Darlot swamp. In May 1879 the site was formally reserved for an 'Experimental Farm and for preservation and growth of timber'. A survey was carried out two months later, the size of the reservation was amended to 2,386 acres and it was reproclaimed at the corrected area. A further reason made the Longerenong reserve attractive to Wallis as a future site for training. He believed strongly that the 'attractions of a large town' were drawbacks to students learning practical farming and therefore argued that an agricultural college should be located at some distance from any urban centre. Both Dookie and, to a lesser extent Longerenong, fulfilled this requirement admirably although it became a drawback over time.

By the time the railway reached Horsham in 1879 the Wimmera was well-settled. The next frontier with land available for settlement was the Mallee, 'an abominable wilderness' which nevertheless had the potential 'to blossom like a rose' through the 'splendid dream' of irrigation. In 1880, Hugh McColl was elected to the Legislative Assembly seat of Mandurang almost purely as a protagonist of irrigation. He soon found allies, notably J. L. Dow and entrepreneur J. F. Levien (refer also to

Chapter 2). In 1883 the Dow brothers were sent by their newspapers to study Californian irrigation methods. Their reports convinced David Syme to promote irrigation as well as selection and protection. Alfred Deakin, a rising politician, also became convinced. On being appointed to the Royal Commission into Water Supply in 1884 he too visited California, accompanied by J. L. Dow, journalist Edward Cunningham and J. D. Derry, engineer to the Wimmera United Water Trust. In the United States the party met Canadian irrigation engineers George and William Chaffey, and Deakin offered them extensive inducements to come to Victoria. Despite opposition to what was seen as a virtual monopoly, they were granted 250,000 acres at 17 shillings per acre at Mildura. These events had considerable implications for agricultural education. Since the Wimmera was the nearest settled area to the new frontier, the Longerenong reserve offered a convenient site for local farmers and Mallee pioneers to learn dry-land farming.

Longerenong Agricultural College to 1905

Even before Dookie opened in 1886, Walter Madden, Horsham's local member, raised the issue of preparing the Longerenong reserve for an agricultural college. In the following year Deakin, the Minister for Mines and Water Supply, suggested that part of Longerenong be cultivated under irrigation. The Council of Agricultural Education agreed to demonstrate irrigation if the Water Supply Trust could bring it to the farm.

Demand for places at Dookie was unexpectedly high. When the second session started with 35 students, suggestions were made for expanding it but the Council preferred to keep it small, and to found a second college. Wimmera interests quickly came to the fore. The Wimmera Shire Council pointed to the suitability of the Longerenong reserve; then came a series of letters from Dimboola, Dunmunkle, Stawell and St. Arnaud shires, the

Horsham Water Works Trust and the Murtoa Agricultural Society. Finally, in July 1887, Madden succeeded in getting the Council to agree to use the Longerenong site and to make such preliminary arrangements as funds would allow.

The First Principal: R. Pudney

Preliminary arrangements for starting Longerenong consisted of sending Dookie Principal R. Pudney (refer to Chapter 3) to make a report during the Dookie vacation. This was followed by a visit from the whole Council. Pudney agreed to become principal of Longerenong and was replaced at Dookie by Thompson, the farm manager.

He found Longerenong a virtually undeveloped plain on a...

'deep loam formation with shallow saucer-like depressions called crab holes through which the heavy rains sank to keep alive the deep rooted native grasses. To my astonishment I found evidence of them at a depth of about 10 feet.'
However, there was no surface water, other than a large dam which filled yearly if the Wimmera River overflowed. A four acre tree nursery had been established to provide seedlings of the Aleppo Pine and a 30 acre paddock was planted with rows of Tasmanian Black Wattle. Other than these, there were only 26 trees on the property. Pudney made arrangements for the design of a college building similar to the one at Dookie. It was approved and was put to tender for £3500.

Pudney left shortly after the first students' arrival and was succeeded by the farm manager, William Brown, a man inclined to take an independent line.

William Brown

Brown had been born in Aberdeenshire, Scotland, in 1835. He attended scho
Peace, a railway director, a country commissioner and joined the Masonic Or

England and Scotland and after this worked as a surveyor and estate manage
Invercauld, Braemar, whose estate was one of the largest in Scotland, coverir
published papers on arboriculture and sheep farming and was awarded gold r
Society. In 1871 he emigrated to Canada and bought a farm near Orilla in On
Guelph, and remained until 1888. During this time he gained qualifications a
described him as Farm Superintendent, though Rose's Cyclopaedia refered to
the college.' He was referred to as Professor Brown in the Council of Agricul

When Pudney submitted his resignation from Longerenong, Brown was quick to propose a course of action to the Council. The Council was somewhat taken aback at having an employee set conditions and asked Brown to explain what he meant by 'If the Council and I agree about the Headship.' Brown's temerity paid off. When he suggested that he should take on the principalship and outlined the conditions on which he would stay at Longerenong, the Council appointed him at a salary of £350 per year, with three months notice on either side. Mrs Brown was appointed matron with a salary of £60 per year. The Council also agreed that the Browns could use existing household furniture although any additions were to be provided by themselves. Their household provisions were to be supplied by the Council and further extensions to their accommodation were to be considered. Brown set still more conditions before accepting. These were also agreed to. Brown spent a year as principal at Longerenong before moving to Dookie.

The Minister's Brother: T. K. Dow

Ten applications were received when the vacancy for the principal's position at Longerenong was advertised. None appeared satisfactory so the Education Committee, (consisting of Dr Andrew Plummer, Messrs Graham, J. L. Dow and Martin) agreed to appoint T. K. Dow, one of the Council's foundation members. This somewhat surprising move was endorsed by the Council. It in no way encouraged the Council to relinquish central control. In spite of his experience as a Council member, Dow found himself being reprimanded for purchasing farm

implements without consultation.

Thomas Kirkland Dow could not have been appointed principal at a worse time, for the boom was already fading. The paper foundations of land banks and dubious building societies began to falter in 1888 and land values collapsed in 1889, to the accompaniment of industrial strife. Wool and wheat prices dropped and overseas capital dried up amid crises of confidence in bank security. Dow himself had to inform the Council that he had become insolvent in 1892 (refer to Chapter 2).

Dow may well have seen the writing on the wall for the effects of the depression were being compounded by catastrophic drought. Until the drought hit seriously, his period of office had been marked by steady expansion. One interesting event during his time was Longerenong's part in testing a prototype of Hugh McKay's combine harvester. J. P. Wallace, a student in 1892 and later instructor in Carpentry and Mechanics, (though he did not graduate) acted as assistant mechanic to McKay when he tried out the harvester. It needed four horses to pull it and had to be repaired every 500 yards or so, but its importance cannot be overestimated. The production model Sunshine Harvester was developed from the Longerenong tests.

The Forgotten Principal: Marco Guerin

The Council resolved to advertise for a replacement for Dow, but considered only one application, from Marco Guerin, the science master and appointed him in February 1897. Guerin had been appointed at Longerenong in June 1889, after two years in a similar post at Dookie. He held an MA or MSc and was regarded as a firm disciplinarian. Accounts of Longerenong history other than the Centenary version omit Guerin from the list of principals. He served until February 1898, when the College was closed due to the prolonged drought and the few remaining students were transferred to Dookie. Guerin, like his predecessors, made unsuccessful attempts to get irrigation water and also suggested the cultivation of saltbush, which the

Council refused to countenance. Much more negotiation had to take place before successful irrigation was established. He later lectured at the Lincoln Agricultural College, Canterbury, New Zealand.

Closure: 1898-1905

Longerenong remained closed for teaching between 1898 and 1905. The College buildings were allowed to run down but farm operations continued under the farm manager, Niven, who also undertook some small scale education through visits and meetings of local farmers. During this time the Council made increased efforts to overcome the property's vulnerability to drought and to develop effective dry land farming through improved irrigation. The Wimmera Water Trust was approached to organise the supply of water to 100 acres.

A motion to subdivide Longerenong was defeated. The Longerenong issue was left alone for most of 1904, and towards the end of that year, the Council became involved in a proposal to establish a Faculty of Agriculture at the University. Thomas Bent came to office as premier that year, having spent much of the depression in political exile farming in Port Fairy. When the Council again began to explore the possibility of reopening Longerenong, Bent promised £600 per year towards the cost of instruction. The Council proceeded to appoint a principal, selecting G. A. Sinclair, science master of Dookie and instructing him to draw up a syllabus in consultation with Frank Tate, the Director of Education. Initially, George Swinburne, the Minister of Agriculture, refused to ratify the appointment. An appeal to the premier brought a reversal of the decision but Swinburne disclaimed all responsibility in connection with the reopening of the College. Longerenong reopened on 1 November 1905.

Though the management of the colleges may have left much to be desired, Longerenong's closure was probably due to

circumstances beyond the Council's control. Evidence about student experience and attitude, suggests that Sir Frederick Derham was right when he pointed out that students' interest was not strong enough to survive bad times.

'*As long as the seasons were good and the operations remained interesting, the students remained, but when the long drought came on we could not carry on the place and get good results; the students seemed to get discouraged and the attendance gradually fell away*.'

Gaining Recognition: 1905-44

At the turn of the century, Longerenong had been branded a failure by the Fink Commission. By the end of the Second World War, it had gained the patronage of the State premier and included his son among its alumni.

When the College reopened in November 1905, it no longer offered a parallel course to Dookie's. It was only intended 'to fill in the gap between the state school and Dookie, i.e to take students between the ages of fourteen and sixteen years.'

Fees were kept at £15 per year, with 25 shillings for medical cover and £2 for laundry.

Longerenong offered a certificate of competency after two years study. Its course subsequently became complementary to that of Dookie when Dookie's diploma course was extended from two years to three years in 1910, and its two year course was discontinued in 1915. From 1910, successful Longerenong students could transfer to Dookie for a third year of study and qualify for the diploma. Thus began a long tradition of Longerenong growing slowly in Dookie's shadow. This change was related to two significant developments: the establishment of the Faculty of Agriculture at the University in 1905 and a campaign for the introduction of state secondary education.

The Victorian Yearbook for 1906-7 records the condition of

Longerenong a year and a half after the reopening. At June 1907, there were 35 resident students and 'several' non-residents from local farms. Accommodation for resident students consisted of 20 single bedrooms, a dormitory of twelve beds and a small room with three beds. There were four bedrooms for single staff and visitors and a dining room with seating for at least one hundred. Staff consisted of principal G. A. Sinclair, farm manager J. D. Martin, and two resident masters, Gibson and Baxter. Visiting lecturers dealt with such subjects as wool classing and veterinary science. Houses were available for the principal and farm manager only.

George Sinclair

The new principal had been born in Hobart in 1865 and had trained as a surve
Dookie as English and Mathematics master, where he remained until 1905. G
wethers, and plans were drawn up for new stables, a matter which received c
piano was provided, after Sinclair had publicised the need in the *Farmer and*
fencing and staff salaries were increased. The principal received £350 plus b

The farm property was developed as follows. Seven hundred low lying acres, including the Darlot swamp, were prone to flooding and used only for grazing. The Darlot swamp was not allocated to Longerenong until the 1960s but this Yearbook entry suggests that the College had unofficial use of the area at this time. Irrigation was provided for 28 acres of orchards, 5 acres of phylloxera resistant vines, 30 acres of lucerne and 10 acres of summer fodder. There were 500 acres of crops, wheat, oats and barley. Most paddocks were watered from seven storage tanks, fed by channels supplied from the Wimmera Irrigation Trust's Dooen pump. A further 10 acres were used by the Department of Agriculture for experimental work. Stock included 19 draft horses, 20 dairy cows and an Ayrshire bull, 80 pigs, 800 breeding ewes, 25 steers and farm riding hacks. Plants consisted of wheat silos with 100 tons total capacity, and six 'tanks' (dams) for watering paddocks filled from irrigation channels when there was not enough rain. The original College

building had been 'thoroughly renovated', after deteriorating during the period of closure. Water was supplied by windmill to the kitchen, lavatories and showers and a septic system had been installed.

In 1911, Sinclair resigned to become agricultural editor of the *Australasian*. He was appointed to the Council of Agricultural Education in 1917 and remained involved with agricultural education until his death in 1926. The Council appointed W. D. Wilson to succeed him. Wilson immediately put forward proposals for extra dormitories, but less than four months after his arrival at Longerenong, the students sent an official complaint to the Council about his management. Little is recorded about Wilson. The *Jubilee Souvenir* referred to him as if he was temporarily filling the position which certainly was not the intention when he was appointed. Ivan Tulloh referred to him in similar vein in his memoir of 1964.

The new principal was Albert Drevermann, who had replaced Sinclair as science master at Dookie. Drevermann was offered the position at a salary of £350 per year plus rations, quarters, and the services of a domestic servant. This was slightly more favourable than the conditions offered to Wilson. A bachelor, he lived with his widowed mother and sister who played an active part in providing hospitality for students. During Drevermann's service at Longerenong, the College facilities expanded: a woolshed, dairy and feeding shed, silos and calfhouse, barn, implement and vehicle shed, and stable extensions were constructed, together with residences for the increased number of staff. Twenty more student bedrooms were acquired. Gas and later an electric power plant were added.

Longerenong was closed throughout the period of the Boer War and so missed out on the military fervour it generated. However, following Federation, the need for a Commonwealth defence force rekindled interest in cadets. Just over a year after Longerenong reopened, the Council of Agricultural Education approved a proposal to establish a non-compulsory military

corps.

Many graduates enlisted in World War I. Out of a total of 410 who were eligible to enlist 145 joined the AIF, 25 of whom were killed and 12 decorated. Longerenong, like many other institutions, was proud of its patriotic record although, in fact, its rate of enlistment was slightly less than Victoria's overall rate of 38%. This nevertheless has to be seen in the context of the strategic importance of Australian agriculture and the fact that many farms could not spare their young men. In 1916, Drevermann wrote to the Council on the question of enlistment of himself and his staff. At this time he was approaching 40, but he may have felt that his Germanic ancestry called for a loyal gesture to Australia. The Council declined to express an opinion of the duty of staff to enlist or otherwise, but confirmed that it would keep places open for those who did.

In his report of January 1918, Drevermann recorded that the 'great world shortage of foodstuffs' meant that young lads must be encouraged to farming and fitted for it. Practical work was lauded. In 1918 the College had produced an average of 39.5 bushels of wheat from 270 acres. This amounted to 2,400 bags for the pool and 1,500 for distribution as seed. It had 20 acres of oats, 5 acres of barley, with 436 acres fallowed. The fallow was worked to keep it in good order. It produced 120 tons of hay and 100 tons of silage. The 'ambercane' crop was not as big as usual. Sudan grass was lightly grazed by the dairy herd, and the sheep branch was very profitable, with 675 lambs sold at 23 shillings and 6 pence each. The wool clip produced 27 bales, selling for £16-6-0 each. The cows were satisfactory, but there was only moderate demand for pigs. Dairy, Piggery and Poultry Instructors were added to the staff establishment shortly after. The orchard had many old trees; new ones were being planted. A total of 69,000 phylloxera resistant vine cuttings had been grown for Wahgunyah and Burnley government nurseries.

Sowing wheat with eight horse teams in the 1940s.

The half century after Longerenong's reopening saw little in the way of dramatic innovation, except, to some extent, for the introduction of Field Days. As in other aspects of public sector activity where directions had been established before the Great War, (child welfare and state schools, for example) agricultural education saw a certain number of technical improvements, but few substantial changes. Set up as Longerenong was, on a simple organisational model, serving limited ends and largely starved of funds, it was inevitable that this should be the case, even without the intellectual inertia which characterised Victorian political life in the '20s and the stringency of the '30s depression. As the fiftieth anniversary brochure pointed out in 1939, Longerenong exercised a considerable influence on individuals and farm practice during these years, but their 'chief feature' had been 'the hum drum of everyday life.' Farming methods, the knowledge base, curriculum, and routines of farm life, changed little until the late 1950s.

Although they were unadventurous, the 1920s were a prosperous period for Longerenong. Prices and student enrolments were both high, making it possible to report a profit in 1920. Farm profitability, augmented by a little extra money from the 1919 Act, made it possible for additional places to be allocated, taking the maximum number of students to 45 that year and to 50 in 1923. New poultry yards were built and a Moline tractor was purchased in 1922. Fifteen thousand pounds was allocated to agricultural colleges in the 1922 budget. Longerenong's share was used for sanitary improvements and an electrical system powered by an on-site generator. Electric light was particularly welcome, even though the current was weak, for it made it possible to do away with candles and kerosene lamps, which had been a considerable source of worry in the timber College buildings.

The 1923 Closer Settlement (Amendment) Act made provision for the reservation of twenty blocks of land per year, for those

holding degrees, diplomas or certificates in agriculture, and gave a three year moratorium on the payment of either deposit or interest. Generous repayment options were offered thereafter with an interest rate of 5%. Graduates remained eligible to apply for land open to general selection under the Closer Settlement Act and still had an advantage over other applicants by reason of their qualification, so the limit of twenty blocks was not as restrictive as it might appear. The scheme made no distinction between Longerenong's certificate of competence and Dookie's diploma, and was featured in the Longerenong prospectus for a number of years. In time the block size was increased to reallocate land from unsuccessful soldier settlement.

Three years after the introduction of the graduate settlement scheme, Drevermann left Longerenong for Dookie and George Woodgate was made acting principal, being confirmed in the position in 1928. He had joined the College in June 1917, as science master.

The onset of the depression in 1929-30 and the introduction of the Premiers' Plan (a deflationary program of reduced government expenditure introduced to appease Australia's overseas creditors) resulted in the passage of a Financial Emergency Act which cut the Council's grant from £30,000 to £24,000. In 1933 the Council sent a deputation to the premier to ask for more money, only to be told that nothing could be done while the budget was unbalanced, and that the government was dependent on the good will of the Commonwealth Bank. The Council in turn told principals to make cuts; for example, a reduction in the level of superphosphate. Woodgate was often praised for his success in keeping expenditure down.

The year 1939 saw extensive preparations for jubilee celebrations, scheduled for October, a more convenient time than March, the actual anniversary of the opening. Due to the outbreak of war the celebration was cancelled, though the new sports oval was opened on sports day and premier Dunstan opened the laboratory on the annual field day in December. He

used the occasion to lay stress on the value of rural education and argued that if the College was to succeed in its mission, it needed modern facilities and equipment. Knowing the facts, his government would always supply adequate amounts for agricultural education.

What had Longerenong achieved in its first half century? Woodgate, looking back for the *Jubilee Souvenir* had little hard data to draw on; demands for organisational analysis and evaluation belonged to a later period. Nevertheless, he was certain that the College had done Victoria valuable service by producing trained graduates, research work, extension activities and improved strains of wheat and livestock.

'In every branch of Agriculture, graduates are setting a standard. B. J. Studley of Narrandera, whose farm is well-nigh famous.; F. B. Langlands, a pioneer in irrigation in the Wimmera; K. R. Hood, wheatgrower; G. A. McCracken, dried fruit grower of Irymple; G. Godfree, poultry farmer at Vermont.'
Other graduates were filling 'distinguished' positions in the public sector. Dr W. A. N. Robertson had headed the Commonwealth Division of Veterinary Hygiene, while H. C. Quodling had been Director of Agriculture in Queensland and manager of the Queensland Rural Bank. Research workers included D. B. Adam of the Waite Institute, D. V. Walters of the Merbein Research Station and A. J. Vasey, who was working on animal health and nutrition. C. J. Vasey was principal of the Agricultural College in Fiji.

Veterinarians were 'legion' among the graduates. The 'Commerce of Agriculture' had also 'attracted many graduates, one being H. S. Barrow, Assistant Manager for Victoria of the International Harvester Company.' Other graduates were community leaders, spending 'time and money in valuable community service' such as shire Councils, farmers' organisations and sporting bodies. Some of their public spirit, Woodgate believed, had been inspired by the ideals put before them in their time in College.

Shortly after its jubilee, Longerenong suffered a catastrophe, which might well have resulted in its demise if a less well disposed government had been in office. The official report states that in the early hours of Sunday 14 January 1940, David Thomson, a student, raised the alarm that the old wooden main building was on fire. The main building, student quarters and other buildings were lost completely.

At 9 a.m on the Sunday morning, George Woodgate held a staff conference to discuss ways of carrying on. Decisions were made quickly and acted on with practically no alteration during the remaining weeks of term. Students were allocated clothes from Langlands' store. Junior students were collected or sent home by train; seniors slept in classrooms. A marquee provided by Mr Culliver, the Horsham caterer, served as a dining hall. On the Monday, breakfast was cooked on the stove which had survived when the kitchen was destroyed. By the evening, carpenters had erected a temporary kitchen around it. Examinations were abandoned and awards made on staff recommendation. The seniors worked the remaining weeks getting in one of the largest harvests on record.

Premier Dunstan did not forget his promise to provide for agricultural education. Within a week, cabinet voted £2,300 for the erection of temporary buildings. In the vacation, the government erected temporary dormitories, dining rooms, kitchen and domestic quarters, which enabled the College to carry on. These were ready on 26 March, the day new students arrived. Returning students arrived back two weeks earlier. Temporary buildings were finally completed in April, and full teaching programs were reinstated. Replacement of the permanent building received government approval and the Chief Architect of the Public Works Department visited in May to inspect the site.

Despite prompt action, the fire caused considerable disruption and fourteen students left without completing the course. To add to the difficulties, George Woodgate was appointed principal of

Dookie and left in March 1940. He had showed decisive leadership throughout the fire crisis. Ivan Tulloh was appointed principal of Longerenong, at first on an acting basis and subsequently confirmed. The new building was completed in 1943. Tulloh's responsibilities were increased by a vacation course for land army women (1941) and the relocation of first year students from Dookie in 1942.

Ivan Tulloh

Ivan Tulloh, the ninth principal of Longerenong, first came to the College in
appointed field assistant to the wheat experimentalist J. T. Pridham, and was
served in Gallipoli and France, being wounded twice and receiving a commis
appointed farm manager and served 18 years in this position. He was confirm
sailing and needs to be considered in the context of Woodgate's sudden move

The Council appointed Tulloh from a field of four, although the other three had graduate qualifications, two at master level. One of the unsuccessful candidates was A. R. Hickinbotham, from Roseworthy, who had taught at Longerenong from 1928-30. Tulloh's appointment did not satisfy Minister Hogan, who instructed the Council to...

'readvertise the position widely and invite fresh applications. The principal of an agricultural college should be qualified to teach the subjects being taught at the college as having a knowledge of agriculture and agricultural science.'
This decision embarrassed the Council but it proceeded accordingly. A further 22 applicants were considered and eight interviewed. The Council then requested that the minister himself interview two before a final decision was reached. This time Tulloh was appointed.

The 1944 Act which abolished the Council (refer to Chapter 3) marked the beginning of the end of an era, although the implications were not to be seen until a good many years later. Longerenong had been reopened only as an intermediate farm school and its continued existence had been uncertain at times.

By 1944 it had acquired a secure position, owing in no small part to its connection with the closer settlement movement and Woodgate's skill in using Country Party domination of state politics, as well as the calibre of its training. There can be no doubt that it had gradually gained the recognition and approval of many sections of the community, from politicians, farmers and parents.

From School to Tertiary College: 1945-89

The new three-storey College building housed the principal's office, general office, kitchen, dining room and billiard room on the ground floor. Each of the two upper floors housed 25 students, one floor for each year. They are remembered as comfortable enough, but very noisy because the floors were not covered. Beside it on the south side stood the Dunstan science laboratory. The surrounding grounds had 'vast lawns', dozens of rose bushes and beds of petunias and other bright flowers. A little distance down the drive was a new swimming pool, excavated by student labour in 1944-5, opposite well-maintained tennis courts. Beyond them lay the other sports fields. Adjacent to the orchard and experimental plots, another building housed another set of students. After closing for lack of numbers in 1935, Longerenong Primary School had reopened in 1941.

Three staff still formed the academic core of the College and were to do so for another decade. Ivan Tulloh, 'a real practising farmer who rejoiced in it,' as Ian McMillan described him, was still principal. John Nattrass, BSc, DipEd, a robust and highly competent Englishman who had been at the College since 1929, was science and sports master. Clem Jepson, formerly of Ivanhoe Grammar School, taught English and bookkeeping and kept a finger in every pie through his position as Housemaster. A series of branch instructors taught agricultural subjects. In the office, registrar Ern Vincent and his assistant Col Peterson carried out College administration, dealt with sales of seed

wheat and other produce, and coped with the increasing mass of correspondence which followed the College's transfer to the Department of Agriculture.

Make-do and mend was the order of the day; students were being prepared to operate on low budgets and to be highly self-reliant. Students and staff in the blacksmith's shop, for instance, overhauled a header, binder and hay elevator during the year, made steps for the swimming pool, connected the piping into it, and made 'a special type of copper at the orchard shed for preserving fruit.' Each replacement for outdated equipment, though there were not many, was greeted enthusiastically.

During the next forty years the College passed through three phases. During the first phase its curriculum was extended to provide a three year Diploma in Agriculture but it remained essentially a farm boarding school. In the second phase, which can be dated from the introduction of a Diploma in Agricultural Science in 1966, it acquired some of the characteristics, though not the formal status, of a college of advanced education. In its third phase it associated as an equal partner with Dookie and other State agricultural and horticultural colleges to form the Victorian College of Agriculture and Horticulture.

Inaugural meetings of the Advisory Committee appointed under the 1944 Agricultural Colleges Act, coincided with the presentation of reports of the first comprehensive review of Australian agriculture, carried out by the Commonwealth Rural Reconstruction Commission (refer to box: Reviewing Agriculture).

In June 1949 the *Gazette* carried amended Regulations to the Agricultural Colleges Act 1944. They introduced the three-year diploma program and made a compromise solution to the vexed, and politically sensitive, question of entry requirements. Provision was made for entry at a minimum age of 15 years with Intermediate Certificate. But applicants who completed Leaving Certificate with passes in Chemistry and one other

science subject were to be eligible for direct entry to the second year, provided they had a rudimentary knowledge of farm work or undertook eight weeks practical experience at their college before beginning their course. Other, much older, admission provisions remained. Applicants were required to be 'in sound health and of good physique' and to provide a 'satisfactory testimonial of character.' Once admitted they were on probation for their first term and liable to be asked to leave if they proved 'unfitted for the College life for any cause whatsoever'.

Further longwinded deliberations in the Advisory Committee, resulted in significant revisions to individual units of the curriculum in 1951 but little substantial change took place in other aspects of College life during the next few years.

Other events coincided to usher in a period of expansion. In 1955 Henry Bolte, a farmer from Meredith, began a Liberal caretaker ministry which unexpectedly became the longest in Victoria's history. His Minister of Agriculture was another primary producer, Gilbert Chandler (refer to Chapter 8), who was also destined to be remarkable for political longevity. At departmental level, Woodgate retired from the position of Superintendent of Agricultural Education and Secretary to the Advisory Commission in 1954 and was succeeded by his Senior Inspector of Agricultural Education, Einar Beruldsen. Beruldsen lacked Woodgate's expertise on specifically educational issues, but was an energetic player in political fields. Tulloh retired from Longerenong in the same year. Nattrass acted as principal for a short period before taking Beruldsen's former position as Senior Inspector of Agricultural Education. C. P. (Pym) Cook, a former high school teacher who had lectured in humanities at Dookie before being appointed vice principal of Longerenong in 1955, was appointed principal.

Reviewing Agriculture

One of the most outspoken members of the Commission was Samuel (later S

agricultural education in the State (refer to Chapter 6). In 1946 he spelled out
Principles for Agricultural Development in Australia.' These included:

- allocation of land with regard to soil and water conservation and the needs
- erosion control and maintenance of soil fertility
- modernisation of credit facilities
- phasing out farms which were too small to bear the mechanisation needed f
- an improved wage system for farm workers
- a ladder of progress to allow competent workers to become owners
- avoidance of unwise settlement or subdivision
- realism about tenure systems - freeholds might be superior to leaseholds
- improved rural education and technical extension services
- administrative services and national coordination
- improved health, education, water and electricity in rural areas

Wadham recognised in effect, that the rural sector would have to become inc

On 30 April 1957 the Hon. A. K. Bradbury, member for N. E. Province, used a debate in the Legislative Council to describe Victoria's expenditure on agricultural education as 'lamentable' in the light of the nation's dependence on primary exports. Chandler replied saying that the condition of Longerenong and Dookie reflected previous governments' neglect, but the present government had already set aside funds for further accommodations.

Chandler's assurance had a basis in fact. Funds had already been allocated for buildings, and Nattrass had been instructed to liaise with the Public Works Department on plans for a technical block, and dairy and horticultural building at Longerenong. In October 1957 Chandler told the Council that the government intended to spend £420,000 on buildings and equipment at the two colleges over the next four years. Longerenong was to have a new residential wing at a cost of £80,000. The colleges' combined student body was intended to rise from 240 to 370.

In 1962, Pym Cook reported that the college had a new residential wing, an administrative block, a 'splendid' assembly hall and technical buildings which Nattrass had been working

on. Other advances included new trucks, a large passenger bus, 'exciting' new machinery, better roads and power supplies, a new summer sports oval, a new orchard and vegetable garden, and 'increased and more highly qualified staff', including a vice-principal's position occupied by Barrie May, BSc, DipEd. A photograph in the *Collegian* for that year shows 16 teaching staff, including some of the few 'new Australians' who entered the predominantly Anglo-Saxon College community, such as Hungarian poultry demonstrator Geza Kozak and his wife.

Staff and students accustomed to economic stringency were at once excited and somewhat overawed by the sudden wealth. Cook urged students to remember that Longerenong's success must be gauged from the 'manners, attitudes and achievements' of its members, as much as its physical structure.

Two years later Longerenong celebrated its 75th Anniversary. On 15 May 1964 Bolte, Chandler and 'other dignitaries' formally opened the new buildings before an audience of 500 people. Bolte used the occasion to hammer home the argument for increased technical competence in agriculture. Australian markets would be seriously endangered if farmers were not up to date with production methods.

The Martin Committee on the future of tertiary education, identified a trend towards increasing enrolments in technical colleges and universities and recommended that it be encouraged. Demonstrating that countries which had the highest levels of citizens with post-secondary qualifications also had the highest rates of production, it recommended that government expenditure on higher education should be regarded as an investment in future national prosperity. It further recommended that:

- the number of universities be increased and technical colleges strengthened to enable them to offer vocationally-oriented courses at degree and diploma levels
- costs should be borne by the Commonwealth through block

grants to the States
- institutes of colleges should be established in each State to coordinate non-university institutions and allocate Commonwealth funds to individual bodies

The Martin Report

Referring to agricultural education, the Martin Report pointed out that Austra derived and developed into universities. Further, if they were to make signifi education for farmers and farm-related professionals. Less emphasis should b should be developed for practical farmers who did not want to become techn knowledge in their fields.

The outcome was a three year Diploma in Agricultural Science, with a strong science base in the first year. Foreseeing the possibility that the colleges might still enter the Victoria Institute of Colleges, the admission qualification was raised to Leaving Certificate to bring it into line with VIC diploma requirements. The possibility of raising it to Matriculation in 1969 was given serious consideration and was favoured by the Minister, but was not acted on.

In 1967, Longerenong experienced a turnover of senior positions. Principal Pym Cook went to the head office of the Department as Superintendent of Agricultural Education. Ian McMillan BAgrSc, DipEd, former science master at Dookie and the Department's first officer to be raised to the status of senior lecturer, arrived as vice-principal. Tom Kneen, who held similar qualifications and had been principal at Burnley for 21 years, became principal.

Kneen's two years at Longerenong coincided with a severe drought. Only eight inches of rain, the lowest ever recorded, fell at the College weather station. The wheat crop yielded three bushels to the acre and stock had to be sold or agisted. College water supplies were rationed. By an unforeseeable coincidence, the Works Department was completing the last major building extension, a third floor on the east-west dormitory block. In

1969, seventy-four students were admitted, bringing the overall total to a record 131.

Attracting and retaining staff from outside the Department of Agriculture became increasingly difficult, while existing staff, especially some of the older diplomates, had difficulty in responding to academic and social change. Inadequate teaching accommodation - teaching areas had not been developed to keep pace with increased student capacity - added another level of discomfort. High failure rates gave further cause for concern, with approximately half the first year intake failing in chemistry and English. To some extent this seemed to reflect lack of effort on students' part, but it also suggested that the strong scientific orientation of the course was unsuited to students who did not have Matriculation science before entry.

Kneen left to take up the principal's position at Dookie in September 1969. McMillan acted for a few months before being appointed principal of Longerenong. By that time the agricultural colleges were being assaulted from other directions A massive rural recession reduced agriculture's appeal as a career for practitioners, while openings in the Department of Agriculture were limited by the rapid intake of cadets and other graduates in recent years. In addition, the range of educational options had widened to include three universities (including the La Trobe School of Agriculture) as well as a variety of other institutions, affiliated with the Institute of Colleges and offering awards which had national recognition. Admission numbers began to drop and the morale of staff and students plummeted. Although it was not clear until seen in hindsight, agricultural education had lost its position in the educational hierarchy and the phase of rapid linear progress was over.

In 1974 Ian McMillan moved to Dookie and was succeeded by vice-principal Jim Lonsdale, another graduate of the University of Melbourne. Lonsdale was still in office in the centenary year 15 years later and assured of the title of Longerenong's longest serving principal in its first century. Tom Kneen became Chief

of the Division of Agricultural Education.

In order to achieve objectives of meeting industry needs, agricultural colleges operated on a coordinated basis with the extension services of the Department of Agriculture and with all levels of State education. Colleges developed as multi-level institutions, with increasing emphasis on post-school, non-tertiary education, including short courses, seminars, and day-release courses for apprentices. Their constituencies were increasingly recognised as including farm owner-operators, farm managers, personnel for service industries, teachers and workers in related fields. A new and expanded ministerial advisory committee was created to enable the Minister to receive advice from a wider range of industry and educational authorities than previously and to enhance service coordination. Each college was to be responsible for developing its own courses. These directions were largely accepted. A year later the Agricultural Colleges (Amendment) Act 1975 abolished the existing Advisory Committee and made provision for the Governor in Council to appoint an 18 member Victorian Advisory Council on Agricultural Education, responsible to the Minister. The nexus between Dookie and Longerenong was broken and all colleges were authorised to develop their own curricula.

Much of 1975 was spent in reviewing Longerenong's educational future. In line with concepts of regionalism and coordination the processes involved staff, students, industry representatives and officers of the Departments of Education and Agriculture. On this occasion, the exercise was not dominated by government determination to produce a specific range of public sector employees and it was possible to consider local and State level needs in the light of good educational practice. These processes suggested that young farm operators and farm workers who had limited educational backgrounds needed basic skills training, which could appropriately be delivered through TAFE courses. In response to these considerations the Diploma in Agricultural Science was replaced with a Diploma in Applied Science in Agriculture,

organised by units rather than a yearly basis and laying more stress on management studies and self-directed learning. Forty-eight entrants were admitted in the following year, giving the College a total diploma-level enrolment of 104 students, 17 of them women.

In the meantime, the Victorian Advisory Council for Agricultural Education had appointed a number of sub-committees to examine the various sectors of agricultural education in Victoria, including a colleges' sub-committee under Hugh Beggs. Early in 1978 the sub-committee recommended that the colleges should become a multi-campus system of agricultural education, offering courses ranging from basic skills level to tertiary awards. Administrative control, it recommended, should remain with the Department of Agriculture. This recommendation was largely accepted and Stewart McArthur, Chairman of the Advisory Council, was authorised to discuss the proposal with the Minister, Ian Smith. Smith was attracted to the proposal, particularly when it was suggested that a federated system might receive higher levels of Commonwealth funding through VPSEC and TAFE.

Early in 1982 the matter came to a head, with much lobbying and urgent representations from the Advisory Council. Tom Austin, who had recently replaced Ian Smith as Minister of Agriculture, recognised that substantial questions were still outstanding, but an election was in the offing and a decision had to be made. On 19 March 1982 he opened the McMillan Rural Studies Centre in Gippsland and announced that the multi-campus proposal would go ahead, as an independent college of advanced education under the Minister for Education. His government, however, did not survive to give it a legal existence.

The Victorian College of Agriculture and Horticulture Bill introduced into Parliament in October 1982 repealed the Agricultural Colleges Act 1958 and made provision for the new body to operate on two levels. As a college of advanced

education and as a post-secondary (TAFE) institution (refer to Chapter 11). On 8 March 1983 Longerenong began a new career as a campus of the Victorian College of Agriculture and Horticulture, offering the three-year Diploma and a total of 31 TAFE courses. One hundred full-time and five part-time students were enrolled in the Diploma and over 800 TAFE students undertook TAFE courses during the year.

The establishment of the VCAH exposed Longerenong still further to the turbulence and economic tensions which characterised tertiary and post-secondary education in the 1980s, as well as to changes in knowledge. Both levels of government made demands for planned development, but directions, resource allocations and time lines became increasingly subject to change at short notice. Balances between educational principles, individual campus interests and the pragmatics of survival became harder to negotiate.

In 1986 the opening of a two million dollar TAFE-funded multipurpose teaching complex gave evidence of Longerenong's status as a regional provider. It was then offering a full-time Certificate in Farming (Cropping and Grazing) and an accredited part-time Further Certificate in Farming for practitioners, as well as short courses and apprenticeship courses. The next year, however, it lost the Diploma following a review of VCAH courses. It was replaced by Commonwealth-approved Associate Diplomas in Agricultural Services and Farm Production.

The Changing Student Profile

While less than 200 students passed through Longerenong before it closed in 1898, enough information exists to give a general description of them. The student body was totally male and predominantly between 15 and 16 years of age. Contrary to the founders' intentions, they came overwhelmingly from middle-class urban homes rather than the country. Over 60% came from the greater Melbourne area, particularly Brighton, St.

Kilda, Kew and Hawthorn. Just under 10% came from Geelong and Ballarat. Less than a quarter came from rural communities in western Victoria, an interesting fact in the light of local agitation for a college in the area.

Samuel Clements, writing as Mark Twain, was impressed by the proportion of city lads when he visited Longerenong in 1895.

'There were forty pupils there - a few of them farmers, relearning their trade, the rest young men mainly from the cities - novices. It seemed a strange thing that an agricultural college should have an attraction for city youths, but such is the fact. They are good stuff, too; they are above the agricultural average in intelligence, and they come without any inherited prejudices in favour of hoary ignorances made sacred by long descent.' Except in the case of widows' sons, we can only surmise as to the reasons why city boys outnumbered country boys so spectacularly. It must be remembered that the early 1890s were plagued by depression and drought and that struggling farmers had difficulty meeting even the modest fees which were charged. Large landowners presumably thought it irrelevant technically and socially; they sent their sons to the established private schools and made their own arrangements for them to learn to manage properties. Nevertheless, it is difficult not to conclude that the proponents of agricultural education, had seriously overestimated the extent to which farmers would recognise it as relevant for themselves and their children.

As well as bringing a younger age group to Longerenong, the Second World War brought two unexpected groups to spend time there. In 1943, sixteen first year students and a teacher from Dookie arrived at Longerenong, displaced by students from Melbourne Grammar School who had been sent to Dookie when their premises were requisitioned for military purposes. In 1948, Longerenong accepted 19 second year university students undertaking the practical component of their course. In 1947, the University of Melbourne had accepted a record intake of 42, which was too large for Dookie to accommodate for practical

work. The group included the future principal, Ian McMillan. Many were returned servicemen, much older than the Longerenong students.

Eighty years later, the 1978 *College Educational Profile* reported that the College was still providing: the cropping and grazing certificate course for young farmers and farm workers, short courses for farmers and farmers' wives, and seminars for schools, community groups and industry interests. It was also about to launch into providing unit modules for farm apprentices through TAFE. In 1985, an *Institutional Profile* reported that the College had run 24 short courses with a total of 501 enrolments during the year. By 1988, this had risen to 1,291 enrolments in 43 courses, attracting students as diverse as mohair producers, agricultural apprentices and practising farmers. Twenty-eight students were enrolled in a two year Certificate in Farming also at TAFE level. TAFE courses also reflected contemporary interests and trends with large numbers enrolling in soil structure organic farming and pea marketing.

Women were first admitted to Longerenong as full-time students in 1972. It is surprising that it took so long for this to happen considering the discussion that the issue had received over the previous 80 years. In 1915, applications were received from Alice McCleary of Scotland and a Miss Hooper of South Yarra. The Council approved the acceptance of female students, in principle, but asked Hugh Pye for a report on accommodation. The outcome was that Miss Hooper failed to gain admission. Miss McCleary was apparently not heard from further. Shortly afterwards, an approach was made by the Australian Women's National League. The Council confirmed its decision to admit women to Dookie, though once again it did not eventuate.

In 1919 the YWCA of Great Britain enquired about the possibility of training women for life on farms and the Council of Agricultural Education received a deputation from them on the subject. The following year, Sinclair followed up his

initiative of 1918 and urged that the government appoint a 'trained lady organiser', at a salary of £250 per year, to organise a Branch of Domestic Arts and Hygiene to demonstrate at Dookie, Longerenong and convenient country centres. The Director of Education agreed to a conference on the issue, but nothing eventuated.

One group of women did train at Longerenong during the Second World War. In August 1941 a two week course was provided for members of the Women's Land Army during the College vacation. The initiative came from Mrs A. C. Bennett, Victorian President of the Country Women's Association, who lived at Dimboola. Mrs Woodgate had held office with the local CWA through the 1930s and her vice president was the wife of David Anderson, Longerenong's first dux. Three out of the first five women were awarded the diploma and six out of the nine who started in 1973. This was the same pass rate as men. The admission of women marked one of the final stages of Longerenong's progression from a school to a tertiary college.

The Longerenong Curriculum

Curriculum at Longerenong needs to be considered with respect to three overlapping areas. Firstly there is the formal teaching of agriculture and related subjects, in the classroom and through practical work on the farm and tours of observation. Secondly, there are activities, both formal and informal, consciously offered to develop character and widen students' general education. At various times these included sport, debating, socials, religious activities and the examples offered by staff. Finally there are a host of activities which might be referred to as an informal or hidden curriculum; rituals, and disciplinary procedures administered by staff and by students themselves.

Until the College closed in 1897, its syllabus was much the same as Dookie's. The original syllabus for Dookie, drawn up by Pudney and Council of Agricultural Education secretary

David Martin, was revised in 1890 after the Council determined that 'conformity of timetables and class work be secured in all colleges.' Students were divided into two groups which alternated between classroom and practical farm work. Three days a week were spent on theoretical studies and also some evenings. The theoretical component, largely derived from the Royal Agricultural College, Cirencester, included agriculture, chemistry, botany, entomology and zoology, geology, English, bookkeeping, natural philosophy (physics), surveying, geometry, mensuration (areas and volumes of various figures) and arithmetic. A visiting veterinary surgeon gave monthly lectures. Practical work covered all areas of farm work.

When Longerenong reopened in 1905 it offered a two year course leading to a Certificate of Competency, which gave exemption from the first year of the Dookie course. When the Dookie course was increased to three years in 1910, the Longerenong course gave exemption from the first two years. This curriculum continued to be taught on the day in - day out method, alternating practical work with classroom work. It was not without critics, especially as American colleges had moved from the integrated system to an internship model like law and medicine, with a period of supervised practical experience at the conclusion of the theoretical course.

The curriculum structure adopted in 1905 remained essentially unaltered until a three year diploma was introduced in 1949 but changed from year to year in detail. The system of alternating academic and practical work continued to draw criticism. In 1927, George Woodgate defended it against criticism by Dr Richardson, Director of the Waite Institute. Richardson had written on the agricultural colleges of the United States, where the 'universal opinion is that students' time is too valuable to spend it in acquiring manual dexterity and skill in manipulative farming functions'. Woodgate argued that Richardson, would have 'our institutions. purveyors of scientific knowledge and not in any sense vocational schools.' Woodgate was strongly of the view that the course should remain vocational and should give

equal weight to principles and practice. One of the reasons for the failure of agricultural high schools, he thought, was that they gave the impression that farming was being 'played with.'

There was, in fact, an element of conflict between the educational and profit making aims of the College, although it was solved to some extent in practice, by separating the farm and College accounts. In some years the farm was able to cover College costs: with much pride Woodgate had informed readers in 1922 that the College was paying its way, with a margin of over £500 on farm and College operations. However, profitability was determined by drought and prices, neither of which were within College control. Students took part in every aspect of the work no matter how boring or arduous. They harvested and bagged wheat, filling each 3 bushel bag as tight as a drum. Hay was stacked, silos filled, and the seed wheat was painstakingly 'rogued' by hand. Virtually everything was hauled by horse or human muscle.

The three year Longerenong Diploma introduced in 1949 divided subjects into three broad groups, each of which ran, with variations, in each year. Group A, agriculture and animal husbandry, included general farm practice and management, crops and cropping, soil management, horticulture, fruit-growing, blacksmithing, building, carpentry, land-utilisation, saddlery and farm records. Animal husbandry included cattle management and dairying, pig and sheep husbandry, (including shearing and woolclassing), poultry management and veterinary science. Group B subjects included chemistry, physics, botany, entomology, zoology, plant pathology, and bacteriology. Group C included mathematics and surveying bookkeeping, social studies and rural economics.

A longstanding agreement which restricted formal research to the university continued in force but provision was made for College students to carry out small research-type projects. In 1949, the first group of third year students reported being 'particularly pleased' at being able to examine 'the feeding of

farm animals and birds', rather than merely learning and regurgitating classroom information. English was taught to Matriculation standard, to enable diplomates to enter the School of Agriculture at the University of Melbourne, with exemption in the second year of the course for the Bachelor of Agricultural Science.

Largely in the interests of economy, provision was made for academically advanced applicants to complete the course in two years. They were required to be at least 17 years of age, to have passed the Leaving Certificate in mathematics and at least one science subject, and to spend eight weeks carrying out practical work on the College farm before finally starting the course.

The curriculum of the Diploma of Agricultural Science (1966-75) reflected the policy pressures on its designers. It retained, in updated form, much of the content of the former Diploma, but extended its scientific, engineering and economics base and reduced the amount of farm practice in favour of a more extensive program of tours. Timetables were heavy; first year students were required to undertake 890 fifty minute periods in the classroom over the year; second years were to do 840 and third years 800 periods in the classroom plus 45 periods on project work. Second and third years were also expected to do 50 periods of educational tours. Farm practice was set at three days per fortnight in the first year and two and a half days subsequently. The working week remained at five and a half days.

The curriculum of the new Diploma (1976-86) was designed to provide flexible options for students whose careers could be expected to embrace permutations of private and public sector employment in industry, farm management and agricultural technology. Leaving certificate remained the prerequisite for entry, although most students entered after completing year 12. The aim of the course was to give students an understanding of agriculture as the interrelationship between practical skills and scientific, technical, commercial and sociological factors. It was

also to assist them to develop rational decision-making skills in the light of that understanding and to foster effective communication skills. Students were required to complete 24 semester units of full-time study in four disciplines: Business Management, Plant Production, Animal Production, and Agricultural Engineering. The first year contained a common core, but considerable opportunity to specialise was given by the provision of elective units in years 2 and 3.

During their second and third years, students were required to direct their own learning to some extent, using information systems and staff guidance in much the same way as they should expect to do in their working lives. Farm practice was reduced to three days per month in the first year and two days in the second and third years, with a working week of five days only.

Agricultural education, like other aspects of education, has been increasingly challenged from the mid 1970s onwards by strident and often conflicting demands for relevance, excellence and flexibility within shifting organisational and financial constraints. Consequently, Longerenong has faced the dual problem of maintaining core courses as a State level facility while developing a role as a regional resource through the provision of targeted short courses. In this unsettled environment, curriculum development has ceased to be a matter of deciding on an appropriate body of knowledge, and teaching it by established methods, to a more or less accepting and homogeneous body of students. It has become a complex and continuous process, requiring assessment of state and regional educational needs at widely disparate academic levels, relating them to changing knowledge, developing resources of skill and equipment, and marketing the outcome to appropriate groups.

Once it became a major TAFE provider, Longerenong rapidly developed other certificate courses for part-time students in the region. Horse husbandry and poultry, were added as well as apprenticeship modules. Vocational short courses were offered in such diverse subjects as mohair production, shearing

instruction, hydroponics and farm chemical handling.

The Diploma of Applied Science in Agriculture was discontinued in 1986 and first and second year students in that year were given the opportunity to transfer to a new Bachelor of Applied Science in Agriculture. Fourteen continued with the Diploma and the last student graduated from this course (of VCAH) in the centenary year, 1989. A total of 416 had enrolled in it since 1976 and 246 had graduated. The Diploma was replaced by the Bachelor of Applied Science and two Associate Diplomas commenced.

A Century of Community Life

Like boarding schools, and other closed institutions, Longerenong developed a range of norms and rituals. These were concerned with initiation and discipline but also included such issues as complaints about food which recurred throughout its history. Generation after generation of Longerenong students were preoccupied with food. It is clear that the food supplied to students in the early years of Longerenong left much to be desired.

It is not clear when ceremonies of initiation started at Longerenong, but they were certainly in existence before the Great War. Jack Coles (1918) reported that his intake was not faced with initiation as the juniors were too big and strong for the seniors. The rituals revived soon after. *The Longerenong Collegian* for July 1923 reported an initiation which involved singing four verses of an original song or enduring a cold bath, fully clothed. Discipline, including the question of conflict between students and authority, appeared as an issue of concern in the earliest years.

Besides the students and the senior teaching staff, the Longerenong community also included farm staff and the children of residential staff. Growing up at Longerenong was remembered with pleasure by children from the 1920s to the

1970s. The children of George Woodgate and Ivan Tulloh grew up at Longerenong. The Tullohs comprised Ivo, Norman (later Professor at the Faculty of Agriculture at the University- refer to Chapter 6) and Alex and the Woodgates John (Jack), Margaret and Bartlett. The Woodgates started school at the one room school at Dooen and were driven by the College saddler in a buggy. They were accompanied by Peter Dent, son of the housemaster, who arrived in 1927 at the age of 11, and Jack Byrnes, son of Bill Byrnes the teamster and later tractor driver. Jack Woodgate often rode his bike which eased the crowding for the others. In 1928, the former dairy manager's residence was turned into a school on the Longerenong property and the children went there with a handful from neighbouring farms. The Tullohs, Ivo and Norman, (born 1920 and 1923 respectively) were educated by their mother until the school opened. Farm children, including the neighbouring Bodey families, rode ponies to school and kept them in an adjacent paddock through the day. Margaret Woodgate lived close enough to walk, but she still rode her pony.

The number of staff houses reached a peak of 31 in 1969. Their occupants totalled 120-130, including about 20 children in school, and included all 17 teaching staff. Meat, milk, eggs, vegetables and fruit were still delivered to the door. There was a strong sense of community and nearly everyone who lived on the property made lasting friendships. However, as in many small communities, people were not always totally open, and care had to be taken to avoid misunderstandings. Academic staff usually, though not in every case, maintained some degree of after hours contact with students. Some farm and kitchen staff did likewise. The assumption that most staff would live on the property collapsed in the early 1970s. Higher pay levels enabled most families to afford at least one car, while government policy, at both State and Commonwealth levels, largely did away with the financial advantages of living in employer-owned housing. Most staff took up residence in Horsham. The insularity of the college community, lack of access to

community resources, including cultural activities, had its own impact on staff and the college.

During the 1970s a few houses were rented to students. They found shared housing less expensive than dormitory living, but it was not continued. By 1989, only 16 houses remained on the campus. They accommodated the principal, two farm managers, three lecturers, and some farm staff.

The Recent Years: 1990-97

In 1990, a new principal, Max Coster formerly vice-principal of Glenormiston College was appointed as acting principal; and confirmed as principal in 1991. Jim Lonsdale transferred to the VCAH's commercial services company as general manager.

This period saw a rebuilding of ties with the State Department of Agriculture. This in turn culminated in the establishment, in 1994, of the Joint Centre for Crop Improvement, a venture involving the Department of Agriculture's Victorian Institute for Dryland Agriculture (VIDA), the then Department of Agriculture of the University of Melbourne and Longerenong College. Within two years the Centre had 36 postgraduate students.

The re-establishment of normal working relations with the Department of Agriculture has been productive in other areas, with department staff lecturing at Longerenong and college staff collaborating in joint extension and research projects, such as the work of Rob Norton, deputy principal.

A staunch supporter of Longerenong College has been Heather Mitchell, the first female president of the Victorian Farmers Federation, and Vice-President of the National Farmers Federation. Among other interests, she and her husband Lester ran a rural supply service in the Hopetoun district. To commemorate her husband's keen support for young rural people, Heather initiated a scholarship for students moving from

diploma to degree level studies at Longerenong. This generous donation was in addition to her work as patron for a fund which raised $170,000 for a Visiting Fellow Fund to contribute to the academic life of the college. The Wimmera Rural Training Advisory Committee, under the chairmanship of Tom Harmsworth, helped Longerenong expand its offering of courses into the broader rural community and has been a valuable advocate in the agricultural education committees in Melbourne.

Several long term staff retired in the early 1990s - Deputy Principal Edwards, Peter Grenfell, and Tony Muntz. Colin Edwards was employed as a lecturer in plant science, and was deputy principal through the 1980s to 1992, when Rob Norton took over the role. The number of staff employed on the College farm reduced from around 15 in the 1980s to four in 1996, with all enterprise managers having tertiary qualifications. The piggery, at the point of closure in 1990, was made viable through the lifting of sow numbers from 30 to 110. This established the college as the main TAFE pig training centre for the state - the role it played from the 1930s through to the 1950s.

Cropping on the college farm reflected changes in cropping in the Wimmera, such as minimum tillage, conservation farming systems, and the production of six to eight crops per year, including such crops as chick peas, wheat, barley, field peas, canola, faba beans, lentils and lucerne.

New tenants at the college since 1989 include the Country Fire Authority through its training centre and the Wimmera Institute for TAFE until 1995 when its agriculture program was transferred to Longerenong College. In 1995, the College's neighbour, the Wimmera Machinery Field Days Committee, bought the site on which they had conducted the field days for many years. They have since installed an in-ground irrigation system for the whole of the site, and completed a two-storey administration building, along with other improvements.

Through the 1990s Longerenong has changed its courses to provide a service to students from all ages and backgrounds, while focusing on dryland agriculture and related industries. The two year certificate and diploma courses started in the mid 1980s. They were complemented by a farm trades apprenticeship and one-year traineeship. Part-time courses at off-campus centres were introduced in rural office practice, rural business management, and horticulture. Longerenong trained apprentices have won the VFF farm apprentice of the year award in three of the last ten years. The external study production unit grew from servicing 15 students in 1990 to over 500 in 1997. Post-graduate studies also grew, with the introduction of a post-graduate diploma in agricultural management and extension, a graduate certificate in agricultural extension, and a Masters of Applied Science in agriculture concentrating on research in the areas of farming systems and agronomy.

In 1992 the off-campus centre at Kerang shifted to Birchip, where the agriculture was similar to the dryland farming systems serviced by the college. The Birchip centre with a part-time coordinator has continued to grow steadily and now services over 500 students annually. A major event conducted through this centre has been the North West Womens' Expo which annually attracts 220 women to Birchip and 150 to Walpeup. Another centre was opened at Kyneton to service the production horticulture and dryland grazing industries in the central Victoria regions. The centre has grown steadily and services about 200 students annually.

International students arrived at the college from Sri Lanka, Botswana, East Timor, China, South Africa and United Kingdom and staff have been seconded to work on international projects in the Pacific islands, South Africa, Vietnam, and Indonesia.

The location of Longerenong in the heart of the cropping region has confirmed its role in agricultural education in south-eastern

Australia, and in conjunction with the Joint Centre for Crop Improvement, has seen the further development of research and post-graduate students at Longerenong.

Chapter 5: Burnley Horticultural College, 1891

Based on Extracts from Winzenried "A Centenary History of Horticultural Education at Burnley"

Government Aid: 1891-1910

The early innovations and problems of the Royal Horticultural Society of Victoria (RHSV), which have been introduced in Chapter 2, led to the development of Burnley Horticultural College.

In his address to a fruit growers' convention in 1889, Alfred Deakin said:

'We have agricultural and viticultural colleges or we are about to have them; and as far as we can judge by our experience, the work done by these colleges is good work, the value of which is likely to increase. It seems very desirable that something of the same sort should be done in connection with horticulture.'
In 1891, after the RHSV was declared bankrupt and Burnley Gardens were placed under the control of the Department of

Agriculture, the future of the site was largely in the hands of the Hon. Alfred Deakin, the acting Minister for Agriculture. The school was opened with all the pomp and ceremony of nineteenth-century occasions, even during hard times. Officiating was government horticultural expert Daniel McAlpine, recently appointed as Vegetable Pathologist ,the first such appointment in the British Empire. In the six years before the new administrators appointed a principal, George Neilson was left in charge, having been previously employed as a curator of the gardens by the RHSV.

By March 1900 there were twenty students on the rolls, ten of whom studied full-time; the others were what the new Principal Luffman termed 'occasional students'. Up to the end of 1897, ninety-three students had passed through the school. Teaching included occasional lectures by State Department of Agriculture staff and possibly by some Royal Society notables. The inaugural lecture was given by Government Botanist, Baron von Mueller, on the topic 'Our Indigenous Plants in Relation to Horticulture'.

Students were required to be at least fourteen years of age for enrolment in the three-year Diploma. Regular daily attendance was required, together with satisfactory completion of practical work and lecture notes, and passing grades in all prescribed examinations. Meeting these requirements qualified them for a Certificate of Proficiency after two years and a Diploma after three years. As well as the full-time student body, there were the occasional students who attended lectures as they pleased, although no qualification was available to them. Training at Burnley was essentially practical, with lectures in botany, economic entomology and plant pathology. In the early stages very little Chemistry was taught; although a start was made, it was later discontinued. The new management from 1891 continued the emphasis on orchard training, research and testing of tree varieties. The school offered courses designed for professional orchardists, as well as basic instruction on specific topics especially for city dwellers and rural settlers. The first

few years were an important time for the school, because many inexperienced settlers were placed in the various 'village settlement schemes' initiated by the government in an attempt to offset the problems of the economic depression.

Neilson died in 1897, leaving a vacancy for a new coordinator of the gardens. Considering this problem, the Department of Agriculture decided to appoint a school principal rather than another curator, and chose Charles Bogue Luffman (or Luffmann), who thus became the first principal at Burnley late that same year.

In addition to the extensive formal gardens laid out by the principal, there were the orchards begun under RHSV management and a dairy farm added in 1891. Fruit and vegetable growers came from all parts of the state to observe the methods used at Burnley and to ask advice.

Women were first admitted to the school in 1899, although only for part-time training. In that year seventy-two were enrolled. The following year eleven males were studying full-time, with eighty part-time female students. The minimum age was fourteen for males and sixteen for females. Hours of attendance were 9 a.m. to 5 p.m. Monday to Friday and 9 a.m. to 12 noon on Saturdays. Females who enrolled in part-time courses paid the sum of £1 per annum to attend three afternoons per week from 2 p.m. to 5 p.m. for their course of one to three years.

The residence which Luffman established for himself in 1897 became the focal point of the gardens. Within this residence, though, his private life remains little known. In 1902 Luffman and his wife separated and Lauretta possibly returned to England. Shortly thereafter, another writer of some renown moved into the residence to 'look after the female staff and students at the school'. Elinor Mordaunt refers to her period with Luffman at Burnley in her later book, *Sinabada*, describing Luffman as 'a short, strongly built, very dark man, like a Spaniard . . . jealous, exacting and selfish'. The arrival of Elinor

at Burnley coincided with a time of difficulty for the school, with some sixty women considered to be a source of 'continual trouble'. It was her 'fancy' that 'they fell in love with him [Luffman], for he had an uncommon gift of a speaking voice which would charm a bird off a bough.' When he left Burnley after resigning in January 1908, Luffman returned to Spain to continue research into fruit-growing. Elinor remained in Australia.

Charles Bogue Luffman

Luffman was a man of considerable all-round ability. Born in Cockington, D
a book on travel experiences (*A Vagabond in Spain,* 1895), a roving horticult
involved in the infant dried-fruit industry at Mildura, drawing on his experier
the Royal Commission into Mildura Settlement, advising the growing of figs
by the Minister for Agriculture, Taverner, Luffman acceded to a school enrol
about building up the school and placing upon its his own particular stamp. I
Europe. Together they made their home at Burnley Gardens in the home orig

In 1902 fifty-six lectures and demonstrations of orcharding were given in rural areas to a total of 2,240 people. Eight separate courses, each of ten lectures, were given at the Working Men's College (later to become the Royal Melbourne Institute of Technology). In addition many lectures were given to horticultural societies. About 1000 people visited Burnley seeking advice during 1903, and up to 1,200 letters were sent out in reply to mail inquiries. These time-consuming services were continued until the formation of the Garden Advisory Service in 1980. Luffman reported in 1905 that over the previous seven years some 300 students had received training in fruit, vegetable and ornamental gardening. Classroom instruction was given on vegetable pathology, botany, chemistry, entomology, physical and economic geography and design of orchards, gardens and homesteads.

At that time there were four main divisions at Burnley:

- *Farm* - with cattle, pigs, poultry, horses; pig-sties, stables,

sheds and a milking shed were built.
- *Orchard* - wide range of fruits and cultivations.
- *Gardens* - Luffman established the main features of an English style garden.
- *Vegetables*.

Luffman's resignation from the school left a vacuum: his work had been so wide in scope that he was not easy to replace. John Cronin, an eminently practical horticulturalist, succeeded Luffman as principal, but his term at Burnley was relatively short. In mid-1909, less than two years later, he resigned the principalship in order to assume the role of director of the Melbourne Botanic Gardens.

Women and War: 1911-26

The new principal, E. E. Pescott made several innovations, while continuing the school much as Luffman had shaped it. Under Pescott the curriculum was extended to include a generous agriculture component, following the direction recommended by the 1901 Royal Commission on Technical Education. This resulted in the renaming of the school as the Burnley School of Horticulture and Small Farming around 1914-15. Later again, in 1917, this was altered to the School of Primary Agriculture and Horticulture as the trends begun under Pescott developed.

During 1909 the early (1894) two-year full time course was altered to reflect the changes and in 1911 the first 'modern' Certificate of Competency in Horticulture course was begun. It was to become the standard for the school until well into the 1950s.

An innovation by Pescott during the relatively short period of his principalship was the introduction of free demonstrations. Part-time subjects had been made available by Luffman from about 1903 and perhaps even earlier. Pescott introduced pruning demonstrations and other very popular field demonstrations, commencing some time before 1914.

E. E. Pescott

Born at Geelong in 1872 and the youngest of ten children of English migrant
authorised, or 'licensed' as it was then termed, to teach music in 1893. A cour
lecturer at Burnley), Pescott joined the Department of Agriculture as an orch
respected figure in the field of horticulture in Victoria. He was officially appo
was a Fellow of the Linnean Society, a keen plants man and a naturalist with
writings included histories of roses in Australia (1928), Australian wildflowe

By 1914 Burnley was well known as a centre where females were able to receive full-time tertiary training - a very unusual arrangement in the days when universal suffrage was still a hot political issue. The issue of women in higher education was publicly debated. The early provision for females at Burnley had not gone unchallenged. Luffman had pioneered the move but in doing so had come into direct confrontation with his Board of Advice and even the Minister. The Melbourne *Argus* reported this particular incident in a style typical of the period. It is worth quoting the article in full.

Ostensibly the trouble in the Burnley Gardens, when Mr Luffman, the curator, refused to speak to the members of the Horticultural Board and treated even the Minister of Agriculture with the most distant hauteur, is about questions of pruning and nipping back and the propagation of phylloxera resistant vine cuttings. This is the surface view but in this matter we must put the French motto in practice, and 'Cherchez la Femme'. It is not necessary to search far for there are over 100 lady students in the gardens. That has nothing to do with the trouble, you may tell me to which I reply, Was there any trouble before the girls came? Mr Luffman is doing a noble work, as I shall proceed to show, and I hope the Hort. Board will abandon its base attempt to undermine his influence with the girls. The subject requires lofty and dignified treatment:

"There is a garden, far from city haunts,
Beyond the Richmond quarries, where the din

Of city tumult is not heard, and where
The perfume from the tanneries is lost
In the rich odour which the Yarra yields
To glad the summer air. The river winds
Round three sides of a garden, and the train
Which twice a week to far Glen Iris speeds
Circles the other. In this quiet spot
100 nymphs in a galatea clad
Of lustrous brown, with gloves and hat to match
Imbibe instruction. Here with hoe in hand
They tickle the rude earth until it smiles
Golden tomatoes, and anon it laughs
In huge pie melons. Here the mellow peach
Blushes to find its lustrous sunnyside
Out-bloomed by maiden's cheek. In vine clad bower
Oftimes they sit in lithe and sinuous rows
At Luffman's feet while he holds high discourse
In fluent language bubbling like a font
And purling like a brook - of plum and pear,
Of apple and of peach, while specimens
To illustrate his meaning are discussed
By rows of pearly teeth. He further tells
Of grafting, pruning, budding, of manures,
Of insect pests, which haunt the leafy bower
Of kerosene emulsion, Paris Green,
Of fumigants and sprays
An Eden this
Surpassing Father Adam's, for he had
Only one Eve, while Luffman has five score;
A paradise wherein they without reproof
Eat of the tree of knowledge, and alas,
A paradise wherein the serpent lurks,
The Serpent Board.
The devil takes many shapes,
But never any so insidious
As when, in airy phrase, he dubbed himself
The Horticultural Board, and boldly strode

Through the fair Eden in the pleasing shape
of Harris and of Draper and of Lang,
And others, fitly formed to charm the eye
Of simple garden girls, and to beguile
The maids from useful studies with the lure
Of honeyed speech, but, happily the disguises
Of the arch enemy could not avail
To blind the eyes of Luffman. He espied
The forked tail beneath the Harris coat
The cloven hoof upon the foot of Boyce
And with a flaming sword of bitter speech
He drove them from the place. Alas they are
Old enough to know better. Oh 'tis said
That with the fair seeing speech they should disguise
Their naughty purpose. Serpent-like they crept
into this paradise upon the plea -
the pruning liked them not.
Oh, wicked board
Oh sinuous serpent seeking to beguile
Beware of Burnley, Leave the arcadian nymphs
To their own Luffman, cease to circulate
Your tarradillies, so shall you regain
Your characters and this fair land shall be
A paradise where happy man shall sit
Beneath his vine and fig tree at his ease,
None daring lawfully to make him work,
What time his wife, thereto by Luffman trained,
Do all the garden graft. So may it be."

One of the early students to gain wide recognition was included in the graduation of 1911. Olive Holttum was granted her Certificate of Competency in that year. Born in 1891, Olive Holttum had migrated with her family from Britain around the turn of the century, at a time when Gertrude Jekyll was perhaps at her zenith in England as a leading landscaper. The influence of both Jekyll and English gardening tradition is clear in her later work. She married, and as Olive Mellor was among the first women in Australia to be a professional landscape designer.

The influence of the English gardening tradition can also be seen in the work of two other early women students, Emily Matilda Gibson (nee Grassick, graduated 1914) and Edna Walling (graduated 1916). Both these women were also of migrant families, and they share with Olive Mellor the credit as pioneering females in landscape design in Australia. It was Emily Gibson who set about gaining entrance to King's College at the University of Durham, England, one of the foremost horticultural educational establishments in the world. As the first Burnley graduate to enter the college, she paved the way for a number of later students, both women and men, as they sought higher education in the field of horticulture.

The vocation of gardening in its many forms was at that time a difficult one for an Australian woman to choose. Many of the female students attending the school, even up to the time when Thomas Kneen and Eric Littlejohn were principals, treated Burnley as a form of finishing school. For them horticulture was a respectable additional education. For Walling, Mellor, Gibson and a few others, it was a means of livelihood and the way was difficult. Gardening in early twentieth-century Australia was almost exclusively the right of English-trained professionals. Burnley reflected this: all the garden staff were English, and some, like George Neilson and George Russ, adamantly so. To gain employment with an Australian background was difficult; as an Australian woman, almost impossible. Walling and Mellor made their careers by being self-employed and using every possible means of publicity. Frequent articles in popular magazines such as the *Australian Home Beautiful* helped popularise both their own work and that of other Australians. Emily Gibson worked to provide herself with higher academic qualifications in order to secure her career.

For all the innovation and improvement he carried out, Pescott was a controversial figure with his superiors. Often, it seems, he chose to ignore official direction, going his own way and making his own decisions. This led in 1916 to some unpleasantness that resulted in the appointment of J. P.

McLennan as principal. Pescott resumed his work within the Department of Agriculture as a botanist, becoming government pomologist and seed tester in 1917. He continued to teach botany at Burnley as a part-time lecturer until 1939. As an authority on orchids, he gave weekly radio broadcasts from the 1920s.

J P McLennan

J P McLennan had begun his teaching career with the Victorian Education D subsequently the first principal of the Warragul Agricultural High School. W and move to Burnley, it was in response to the considerable success he and th both as a vocation and as a school subject. He and his wife also brought their accommodate everyone.

Burnley at this time continued to present the appearance of a private garden. Beyond the pavilion, the encircling fence kept undesirables out. The gate was locked in the early evenings. The years after World War I saw little change in the basic direction of horticultural education. The Certificate of Competency became firmly established, and fruit-related studies continued to be an important part of the curriculum despite the introduction of agricultural science. One development around this time was the almost standardised use of Coles Blight Proof Paradise rootstock for a great number of apple and pear varieties. The common stocks allowed considerable economies in propagating plants, despite the wide range of actual fruit types.

World War I had an indirect effect on the school. Following the death of J. P. McLennan in 1921, his place was filled by a war veteran, Frederick E. Rae. Rae had signed up for military service in the early days of the war, but returned from active duty shortly after being seriously injured. He joined the Burnley teaching staff for some years while gradually recovering a measure of health. During this time, in addition to its normal courses, the school became involved in the training of returned soldiers. Six months training in various aspects of horticulture

and poultry was given to twenty ex-servicemen between 1918 and 1921. Rae operated the establishment as best he could despite his own physical problems, but by March 1922 his health was of such concern that Burnley's science master A. W. Jessep (one of the first Master degree graduates of the University of Melbourne's new Faculty of Agriculture and later to be principal of Burnley himself) joined Rae to share the workload of operating the school. Both had received their early training at Dookie Agricultural College and together they had headed for the war zone. Curiously, this period of joint principalship coincided with the two years during which J. L (Les) Provan was a student at the school. He was to become principal himself in 1942.

From its inception in 1923, the Fruit Preserving Branch of the Horticultural Division of the Department of Agriculture was located at Burnley. A short course of lectures and demonstrations in fruit preserving had been part of the Certificate of Competency course since its introduction in 1911. The arrival of a Department of Agriculture branch, catering especially for that aspect of primary agriculture, provided improved facilities for students and a series of resident experts.

Many of the girls came to Burnley from top Melbourne private schools and with excellent academic records. They were often uninterested in horticultural careers, and regarded Burnley as a finishing school. George Russ had his own way of dealing with the girls so as to determine whether or not they would last the course. On their first day in the garden he would often assign them a bed of onions to weed. 'That soon sorted them out!' The boys, on the other hand, were choosing Burnley when their academic results were not sufficient to enter university or other tertiary institutions. Their academic records were frequently, but not always, lower than the girls'. Staff found themselves attempting to get the same material to reach two very different types of student.

Curriculum in the 1920s had changed little from that set out in

1911 for the initial Certificate of Competency course. Improved poultry and fruit-preserving facilities provided greater expertise in these areas but the basic teaching remained unchanged.

In 1925 Frederick Rae left Burnley to become director of the Melbourne Botanic Gardens; which had become vacant through Cronin's death. Alexander W. Jessep, previously the school's science master and joint principal, took over as principal.

Fruit, Floods and Frugality: 1927-41

A. W. Jessep taught botany, physical science and ornamental horticulture to Certificate course students, and agricultural science to Year 12 level. Much of the teaching was still in the hands of part-time lecturers. In both cases subjects included plant pathology, entomology, fruit culture, apiculture and poultry management. Clearly, the basic course had changed little since its inception in 1911.

A. W. Jessep

A. W. Jessep became school principal at a time of stability. Courses in place worked at the school for a number of years and appeared to be ready for a lor

Jessep was born in 1892, just one year after the establishment of the school, a course in agricultural science was interrupted by service in the AIF during W a Master of Agricultural Science. He had earlier taken out a Bachelor of Scie Appointed as science master at Burnley under F. J. Rae around 1922, Jessep was appointed to succeed Rae as director of the Melbourne Botanic Gardens

In 1931, an Agrostology (Pasture) Branch was established at Burnley with offices in the pavilion and an experimental area in the western section of the property. It was here that James Harrison centred his pioneering work on subterranean clover strains, and growing-on trials for seed certification were conducted, along with other pasture and sporting turf investigations. Jim Harrison and his associate Frank Drake taught agricultural science at senior secondary level.

The Biology Branch of the Department of Agriculture had been established as early as 1889. The appointment of Charles French Snr as Government Entomologist in that year was followed by the appointment of Daniel McAlpine as Vegetable Pathologist in 1890. These appointments marked the beginning of invaluable research and advisory work on the control of insect pests and plant diseases. In 1929 the section was transferred to a new building at Burnley and adopted the title of Plant Research Laboratory.

The Plant Research Laboratory was of great benefit to the school. It gave the students all the advantages of a better syllabus in plant diseases and pests and at the same time the biologists and researchers had more space to experiment and carry out their field work than before. For the next few years though, there was pressure on facilities until the research building opened in 1931.

It was in 1929 that another innovation began. With the financial assistance of the Nurseryman's and Seedsmen's Association of Victoria, regular demonstrations of fruit-tree pruning for the public were instituted. Similar demonstrations had been carried out before World War I but by 1920 the practice had been discontinued for some time. Their reintroduction was an immediate success. They were well supported and have continued practically without interruption. The first demonstration took place on Saturday, 1 June 1929, with rose pruning for the first hour and a half followed by fruit-tree pruning.

Throughout this period and certainly into the mid-1930s, the nineteenth-century Royal charter to the HSV continued to be incorporated into official school documents. Report cards, like that of Frank Keenan, for example, bore a laurel wreath logo enclosing the letters 'BSH' (for Burnley School of Horticulture, the official title of the school from 1891 until 1915); below this was the current school name, School of Primary Agriculture and Horticulture and its location, 'at the Royal Horticultural

Gardens, Burnley'. To add to the confusion the entire title was surmounted by 'Department of Agriculture, Victoria' in bold print. Elaine Pearce, a student some six years later than Frank, received her reports on identical cards, indicating that the wording was still in use up to 1936.

During the lean years of 1929-32, a number of classes were operated specifically for those 'boys who were not able to gain employment'. In this way they could be assured of some practical training, perhaps towards a level of self-sufficiency, and something constructive to do while out of work. A number of these students completed their courses only to join the armed forces as war broke out again in 1939. In an attempt to help students, members of the Past Students' Association grouped together to provide work. The association had been inactive for some years up to 1930 but the needs of the time saw it revived and throughout the depression years a large number of students were grateful for its practical help.

One event which stands out in the minds of those at Burnley during the early 1930s was a flood which reached disaster level on the night of 30 November 1934. After several days of steady rainfall the Yarra flooded its banks from well above Fairfield, all the way into the city. Burnley, located as it is on the bend of the river, did not miss out on the excitement. Flood waters at their highest point filled the incinerator and reached to the doorway of the main potting shed. Water dashed through the orchard taking with it a boxthorn hedge, the fence, dozens of fruit trees, the vegetables and the nursery section. It also dislodged a structure known as the bird cage, a wire enclosure in which special plants such as vines and experimental tomatoes were grown.

During 1937 the Royal Horticultural Society started trial plots for dahlias and a number of other floral plants in the school grounds. The students did most of the daily care of these plants, and there was extensive experimentation over the next few years though little of it was ever advertised. This connection with the

RHSV was one which had been maintained off and on over the years since the government take-over in 1891. George Russ, then retired, acted as judge and general supervisor of these trials, together with several society officials.

During the 1930s and 1940s, involvement of local secondary schools in part-time courses at Burnley continued to be popular. A number of schools and colleges sent students to spend time at the school completing courses in agricultural science. By the end of the decade Burnley had changed only a little from what it had been, following the departure of Luffman. Somewhat antiquated in its general appearance and still teaching a basic course which had barely altered since first introduced in 1911, the school in the garden was a friendly sort of place. Student life included extensive practical work and so the gardens themselves remained a focal point for most activities. The indoor teaching was an extension of and a comment on what was discovered outside. In the gardens the strong English gardening tradition, that had begun with the first students training under George Neilson, continued to dominate.

Bricks and Mortar: 1942-58

The onset of World War I brought many changes to Burnley. Principal from commencement of the school year 1942, Provan was later to recall that conditions were difficult for administration. Staff, services and materials were in short supply, but everyone realised a general spirit of helpfulness and cooperation was necessary. Staff members Frank Ellery, Victor Cole and Peter Stratton left Burnley for active duty. By 1944 the depleted staff had been joined by Mrs Bonnie Huhlhan, Mrs McCrea, and Misses Pauline Chancy, Val Mason and Joan Hamberg. These assistants were sought in order to continue the school programme. That they were all women reflects the trend of the war years.

During the war student numbers were just a little lower than during peacetime. In total the horticulture students numbered

between twenty-three and twenty-nine each year. Anything from thirty-four to ninety-seven agricultural science students from local secondary schools joined them at the school. Wartime brought several changes to the school. Vegetable-growing received assistance from RASV members and some American army personnel. Several trial plots of opium poppies were planted for local production when normal morphine supplies were cut off. The Garden Army and Women's Land Army both carried out exercises at Burnley. Staff cooperated with government promotion of home produce by giving radio talks, public lectures and demonstrations, and judging competitions. Several promotional films were also made at the school as part of the war effort.

Despite the limitations, there were opportunities for some physical improvements. Much of the establishment by this time was ageing; the classrooms in particular were well out of date. Several appeals to the Public Works Department resulted in, improved roads around the grounds as an item of defence spending, new paths, kerbs and channel drainage. Water supply was also improved. Perhaps most importantly of all, approval was given for planning to go ahead on a new administration and teaching building, to be built with Commonwealth government funds. Although this was not completed until 1949, its approval improved the morale of staff and students. It continues in use as the main administration building today.

Commencing in 1946, the Department of Agriculture began a programme of retraining which included both reconstruction scheme trainees and a small group who were enrolled in a six-month fruit inspectors' course initiated by the department. The course, conducted by the Horticultural Division, began in April 1946 with an enrolment of fifteen. Although the new administration building was under way at this time, temporary accommodation was required until the work was completed. This was provided for the college in the shape of two standard issue quonset huts which were located in the old bull paddock, presently the staff carpark. One was divided into two teaching

rooms with one room set up as a very spartan science room and the other as a general teaching area. The second hut was divided into three areas to provide administration needs, a small locker room for students, and staff accommodation.

It fell to Les Provan to cooperate with the Public Works Department to design the new administration block. The plans were completed by the close of 1945, when Provan left Burnley to take up a position as principal of Dookie College. Arriving in March 1946 as the new principal of Burnley, Tom Kneen found construction had begun the previous year. Postwar restrictions and shortages of building material extended the project over three years. In order to construct the new building and leave as much garden unspoilt as possible, the old pavilion was partially dismantled to make way for the new structure. Meanwhile the principal was required to cope with a partly demolished pavilion and a long building process with all its attendance inconveniences.

Thomas Hugh Kneen

The new principal, Thomas Hugh Kneen, had completed his bachelor's degre
Division of the Department of Agriculture in May 1936 as an Assistant Horti
Instructor. On the outbreak of war he volunteered for military service and sav
in March 1946 he succeeded J. L. Provan as principal of Burnley. Refer also

A small ceremony took place on 28 August 1946 when the Hon. W. E. McKenzie, MLA, Minister for Agriculture, laid the foundation stone. This event marked commencement of the first major building project undertaken by the Public Works Department since the close of the war. Erection of such a substantial building for a school, at a time when there were a multitude of other urgent needs, was a sensitive issue. The stone-laying ceremony was small with only a few invited guests who partook of afternoon tea at the principal's house.

The Department of Agriculture report of 1951, claimed that 'no fewer than 150 ex-servicemen and women have been given

horticultural training at Burnley Gardens, the majority undertaking the 2 year course for the Certificate of Competency. Others taking courses in dairy technology, fruit inspection and other subjects.' Various aspects of College life must have intrigued the ex-service personnel. Returning from a technology-orientated war scene, they found Burnley very much a horse-powered farm. Hand mowers were the norm, with only one very temperamental power mower. Draft horses, cared for by George Manley the stockman, carried out all the heavier tasks. It was not until the early 1950s that the first tractor appeared at Burnley.

The years 1947-8 were busy ones for the College. Annual College camps to Wilson's Promontory began about this time. Student numbers which had been averaging around twenty-five per year prior to 1946 had risen to 100. To help provide facilities for the additional students, a fruit-tree nursery was established on a portion of the Department's Scoresby Horticultural Research Station. The area of land available for college use had always been limited but as other branches of the Department of Agriculture began to extend their operations it had diminished. Increased student numbers brought about by the influx of returned servicemen had further limited the area available for each student's work. During the last years of the 1940s some 1.25 acres of land was added to the college property. This area lay on the south boundary adjacent to the Heyington railway line. The addition was an important one as it provided a buffer for the new administration building which was otherwise right up against the boundary fence.

Moves toward a new foundation course in horticulture had begun before 1948. In the early months of that year Dr Bowman, Honorary General Secretary of the Australian Institute of Agricultural Science, suggested that a Diploma in Horticulture was needed at Longerenong, Dookie and Burnley. The idea was presented to the principals of these colleges and, following their advice, the superintendent of the Division of Agricultural Education, G. B Woodgate, approved the idea of a

Diploma for Burnley. From 1 February 1949 a Diploma course had operated at Hawkesbury Agricultural College in New South Wales and this raised hopes that a similar course in Victoria would quickly follow.

Details of such a course were prepared at Burnley during 1949 and forwarded to the Department of Agriculture for approval. The carefully worded proposal for a replacement three-year course to Diploma standard was presented to the Director of Agriculture, H. A. Mullett. He was not impressed and responded with the brief reply, 'Try evening classes.' This was followed through by the College with great success. Completion of the new building in 1949, and the ending of the returned servicemen courses shortly after, provided an excellent opportunity to offer part-time courses for adults.

A range of short courses was offered in fruit, flower, vegetable growing, plant propagation, bee-keeping, poultry-keeping and basic sciences related to horticulture (botany, soil science, plant pathology, entomology, weed control), commencing in September 1951. In addition, plans were made to introduce short day courses for home gardeners, who since 1946 had not been accepted in Certificate classes, because of timetable restrictions. Day courses began in 1950, including subjects such as propagation and floral design, each of five Wednesday afternoons twice a term. Replaced In 1951 by evening classes, these courses were filled with the minimum of publicity and have continued to be successful to the present time. A number of additional courses have been added over the years, including greenkeeping and landscape design.

Completion of the administration building presented the college with a massive landscaping challenge. The box-like structure with its flat roof stood at first in stark contrast to the surrounding turn-of-the-century garden. No design had been developed prior to erection of the building to fit it in with the garden and little consideration had been given to its initial placement.

During construction and before she resigned in 1947 to visit South Africa, Hilda Dance prepared a design for landscaping the building and presented it to Tom Kneen for his consideration. It was not until completion of the building work that plans for the landscaping could be finalised and the task was presented to Mrs Emily Gibson, a former student and current teacher highly experienced in landscape design. Together with Grace Fraser who had succeeded Hilda Dance on the staff, and the principal, the matter was discussed with architect Percy Everett. It was as a result of this meeting that a plan was developed by Mrs Gibson and implemented to provide much of the present day layout.

The Burnley Certificate course, established in 1911 with a low standard of entry and limited range of subjects, had little standing in the educational and employment world. Over the years it attracted students with a wide range of ability and background. As we have seen, many girls from well-to-do families regarded it as a form of 'finishing'. Many of these proved to be first-class students and developed lifelong interests in horticulture. Others, often boys, came to the course with poor academic records. Many of them developed skills and real interests to become competent operators. Most with a genuine interest in plants and natural history. Those seeking employment, often in difficult economic times, found they were given little credit for their attainments at Burnley.

By the mid-1950s, change was in the wind. Town planning considerations were beginning to place considerable importance on landscaping, and the gardening and landscaping profession required better local training. A course of study almost unaltered since 1911 was a handicap to the College.

One of the early Australians to become involved in this issue was Frank Keenan, first Cronin Scholar and a Burnley graduate of 1930. Frank was Deputy Director of the Melbourne City Council Parks and Gardens Department by 1954 and had to find suitable people to employ for parks and gardens responsibilities.

Burnley graduates were well trained, but unable to compete on equal terms with more highly qualified people from outside the State, despite better horticultural training in many cases.

Frank Keenan had acquired an unrivalled knowledge of training provisions for horticulture and park administration in Australia, Britain and America. The Institute of Park Administration of Victoria, the precursor of the Royal Australian Institute of Parks and Recreation, shared Frank's concern for the future staffing of municipal parks departments.

Encouraged by the developments at Burnley, the institute on 28 November 1956 submitted to the Minister of Agriculture, the Hon. G. L. Chandler, MLC, a...

'request that consideration be given to the establishment at the Burnley College of Horticulture of a 3-year course leading to a Diploma in Horticulture equivalent in standing to the Diploma in Agriculture issued by Dookie and Longerenong Agricultural Colleges'.

On 13 May the Director recommended to the Minister that the course start in 1958. The Department recognised that Burnley did not have all the necessary facilities for all the practical work desirable and made its Horticultural Research Stations at Tatura, Scoresby and Mildura available for specialised training in commercial fruit production practices. This led to sojourns at Tatura and Mildura of approximately two weeks' duration twice a year for second-and third-year students.

The first intake of Diploma students at Burnley took place in 1958 and the old Certificate course, established in 1911, was terminated that same year. Thus it came about that in 1959 there were no students graduating from the College. Coinciding with this upgraded course came yet another name-change to help lift the image of the College. Burnley became officially known as the Burnley College of Horticulture, later to be renamed Burnley Horticultural College. On 21 February 1961 the Technical

Colleges Board of the University of Melbourne approved the Diploma of the Burnley Horticultural College for the purposes of matriculation, subject to holders also having passed the subject of Matriculation English Expression. On 15 March 1961 Ministerial approval was given for holders of the Diploma of Horticulture to place 'DipHort (Burnley)' after their names.

More Courses: 1958-66

The Diploma of Horticulture introduced in 1958 brought Burnley's qualification into line with the Diplomas of Agriculture awarded by Dookie and Longerenong, allowing Burnley diplomates to compete for technical positions on equal terms. The content of existing science and horticultural subjects was extended and additional subjects - English, mathematics, rural economics, horticultural mechanics and park administration - were added to the curriculum. For the first time all three colleges had much in common in their curricula. The minimum entry standard was raised to completion of Intermediate (Year 10).

Experience gained in fieldwork at Burnley was supplemented by short residential stays at Tatura and Mildura Horticultural Research Stations, a period of training at Scoresby Research Station, and visits to commercial nurseries and municipal parks and gardens departments. These sojourns were introduced to strengthen the commercial horticultural training of Burnley students especially in fruit production. As part of the upgrading there was specialisation in horticulture. The days of Burnley as a centre of small farming, begun just before the time of Pescott's principalship in 1909, were over. The dairy herd, which had never been large, had always been butterfat tested under the Department of Agriculture standard herd test introduced in 1912. Some very satisfactory production results were attained and surplus stock sold readily. But the area available for grazing diminished as land was apportioned to other departmental branches. In 1959 it became necessary to transfer the herds. The

Jersey herd was transferred to Glenormiston on 27 August 1959 and the Friesians to the State Research Farm at Werribee at the same time. The old bull paddock became a carpark for the increasing staff and the stockman's house became the caretaker's cottage.

It was also in 1959 that the evening classes saw a further innovation. During June the first proposals were formulated for a course of training for greenkeepers and curators of golf courses. Concerned parties gathered on 1 June 1960 when representatives of the Victorian Golf Association and the Royal Victorian Bowling Association met with Burnley staff and officers of the Department of Agriculture. Official approval by the Minister for Agriculture was granted the following month and the course began operating at the beginning of 1961.

Providing staff for the course was a problem. College commitments were heavy and, although everyone wanted the project to succeed, few had time to contribute. The solution was found by establishing a teaching panel made up of staff from the Plant Research Laboratory, the college, the State Laboratories and pasture Branch. E. Hammond, a well known expert on golf-course construction, was invited to give the first lecture, and several firms with interests in turf management provided machinery demonstrations at the end of the year.

The building of the canteen was one of many achievements of the hard-working Ladies' Auxiliary. On one occasion when preparations were under way in the hall for annual pruning demonstrations, Dorothy's work was interrupted by the arrival of Sir John Medley, then the Vice-Chancellor of the University of Melbourne. During the ensuing conversation she told him that the ladies' current project was to provide a piano for the college hall. Sir John told Dorothy to contact a friend of his, Paul Fiddian, at the Conservatorium of Music to see if he could suggest anything that might be suitable. Within a matter of days the college was proudly taking delivery of a valuable piano bought for the modest sum of £160.

Principal Kneen and his wife Dorothy followed the example of their predecessors in working as a team for the good of Burnley and its students. Tom was a capable administrator, and he set about placing the college firmly on the industrial scene. In particular, Burnley became a regular venue for meetings of the Australian Institute of Agricultural Science, of which Tom was a founding member. Association with the Institute improved Burnley's profile with agricultural authorities and added to its reputation.

More immediately, college staff worked as a team to have their Diploma course recognised as a standard tertiary qualification, particularly by the University of Melbourne. With increasing numbers of Burnley students choosing to further their studies at the university, it was important to ensure that adequate recognition was given to their work at the college. Students wanted the college to offer course material which was relevant to industry, as well as being of sufficiently high standard to maintain its status among other tertiary courses.

The advent of town planning altered the way industry viewed the Burnley course and its standing in industry. The qualification was labelled as 'undirected' and 'pseudo-academic', and moves were made to see it upgraded once again. Apprenticeships were suggested by industry but not wholeheartedly welcomed by college management. Parks and gardens authorities, on the other hand, saw such a development as providing them with improved trainees and the college with a new impetus for development. Discussion on apprenticeship training proceeded over about ten years. It was not until 1964 that a final decision was made. The Department of Agriculture could not provide the facilities for apprenticeship training and suggested that the Apprenticeship Commission look to other establishments.

In 1967 an era ended when Tom Kneen, principal since 1946, was promoted to the position of principal at Longerenong Agricultural College. The departure of the Kneens was a sad day

for the college who had for so long looked upon Uncle Tom with considerable affection and had relied on Dorothy's meals on wheels for daily sustenance. From October 1967 Eric B. Littlejohn officially became college principal. The new Diploma of Horticultural Science course began in that year. The next few years were to be ones of further change for the college, its staff and its students.

Quiet before the Storm: 1967-77

In the early years of Eric Littlejohn's term as principal, Burnley continued to operate much as it had done for many years. However, there were increasing pressures to modernise courses and educational practices. In response to these pressures, a new technical block and extensions to the ageing chemistry laboratories were prepared in 1968.

Eric Littlejohn

Eric Littlejohn had graduated as a Bachelor of Agricultural Science from the
before taking a temporary job with the Department of Agriculture's Tobacco
science master at Burnley. He became vice-principal in November 1960. Litt
stead as he steered the institution through a series of difficult situations. Time

A new Diploma course was planned during 1965-6 which included more tertiary-orientated content. Introduced at the beginning of Kneen's last year as principal, 1967, the Diploma of Horticultural Science was a three-year course, replacing the Diploma of Horticulture which had begun in secondary education with passes in chemistry and mathematics at fifth form (Year 11). The course provided training in all major areas of horticulture, basic sciences and business methods. It also contained matriculation English, economics, maths and additional chemistry. Completion of the new course was equivalent to matriculation and thus students could move directly into university study.

Important to the academic improvement of the college was an extension of science teaching with increased emphasis on chemistry in particular. The new Chemistry Centre and Plant Production Laboratory was the first of several new buildings to open. The administration building had by now become inadequate as student numbers had grown and the education offered at the college had increased in complexity. The chemistry building was the first of a small number of separate constructions to remedy this problem. Development of the technical block took somewhat longer. The sum of $110,500 was voted for the project in 1968 but it was almost two years before the facility became available for use. Included were a mechanics instruction area, welding and building construction teaching facilities, and a small cool store for fruit.

In the 1960s and 1970s full-time student numbers more than doubled, stretching available resources to the limit. Part-time courses also continued to attract capacity enrolments. In 1969 the ten subjects offered in the evening Certificate course attracted over 1000 enrolments. In 1967 Burnley was approved for Commonwealth financial assistance as a college of advanced education. Ornamental gardening, floriculture and propagation classes continued to be the most popular with students from a wide variety of backgrounds and vocational situations. The year 1970 saw the establishment of the first College Advisory Committee, a group of experts to advise on matters of training and policy. In particular, it was hoped to keep the establishment in closer contact with industry and its needs. The inaugural meeting of this committee was held at the college on 12 August 1970, being attended as well by the Minister, Director and Deputy Director of the Department of Agriculture. On that occasion the committee also officially met the college staff and the Students' Representative Council.

The 1970s was a time of new employment opportunities for horticulture graduates, and the college easily filled its full-time classes. One of the interesting part-time courses associated with Burnley was an Associate Diploma of Landscape Design,

offered by the Royal Melbourne Institute of Technology in conjunction with the College. Commencing in 1965, this post-graduate part-time course was open to students holding a tertiary degree or diploma in architecture, horticulture, engineering or other approved qualification. Credits were given for subjects completed in previous courses. Eric Littlejohn was involved in teaching this course, and several Burnley graduates completed the course to strengthen their landscape qualifications and, incidentally, qualify for membership of the Institute of Landscape Architects.

Around 1968, work had begun on construction of the South-eastern Freeway. Of major significance was the re-routeing of the river. As it had originally flowed, the Yarra ran through a sweeping bend close to the rear of the old principal's house. To prevent the need for bridging the river twice with the new freeway, a deep cut was made adjacent to the river on the Heyington side and the water redirected through it. This produced a new land area at the rear of the college, much of which is today occupied by the City of Richmond sports reserve. However, many of the old river red gums once standing on the river bank were now high and dry in the playing field. Despite efforts to save them, few survived this change in environment.

Pruning demonstrations, twenty-six of them, to more than 2000 people in 1975, continued to be a popular point of contact with the public. However, there were many other areas in which Burnley was influencing and meeting the needs of the community, often well out of proportion to its small staff and physical size. Monthly notes on home gardening prepared by the staff were published in the *Journal of Agriculture* for many decades. Other publicity, and community help, which emanated from Burnley reached more people than did articles in departmental journals.

Commencing in 1958 staff member Jack Plumridge pioneered a successful ABC radio programme aimed at the home gardener, and later, Bill Nicholls did the same for television programmes.

This same programme evolved to today's popular phone-in programme. Among the presenters since that time have been Kevin Heinze, Rod Cantrill, Alan Gardiner, Rosemary Davies and Eric Dalziel, the last four being Burnley graduates. In Canberra another Burnley graduate, Tony Fetherston, developed a strong following for a local version of the programme.

As the nature of Burnley changed, some staff members found that the increasing emphasis on theory as well as practical work, made teaching less rewarding. Formerly students were required to spend at least half of their two years' study intimately acquainting themselves with all aspects of plants in all seasons; by the late 1970s the syllabus included only a fraction of practical work. From more than 50 per cent in the 1930s, practical work had been cut to around 20 per cent - largely because increased academic requirements took up most of the course time. Later in the 1970s, practical work increased to become about one-third of the students' time.

September 1977 marked the close of Eric Littlejohn's time as principal at Burnley. On 30 September, the staff and their guests who gathered to farewell him on his retirement, heard Tom Kneen give a résumé of the long years of dedicated service which he had given to the college. His place as principal was taken by Brian Pell who acted in this position for the remainder of the year, until officially appointed from the beginning of 1978.

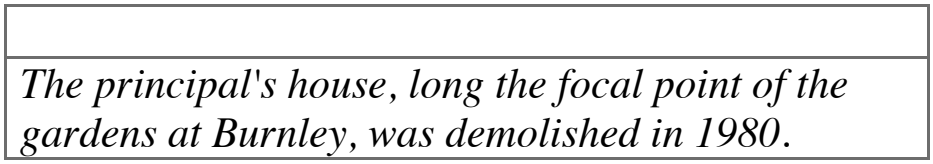
The Old Order Changes: 1978-82

Less than twelve months after Eric retired from Burnley, Tom Kneen retired as Chief of Division of Agricultural Education of the Department of Agriculture. Bob Luff, then principal of Glenormiston Agricultural College, was appointed Chief of Division and later founding director of VCAH.

New rose gardens were designed and laid out over the next two years. Herbaceous borders in several locations were replanted

and by 1980 work began on an Australian native garden. It was redeveloped again in 1987, and was one of the largest new sections of landscaping carried out since construction of the administration building.

For the older generations of Burnley students, and for the garden purists, demolition of the old principal's house was a tragedy for the gardens. Luffman had designed the entire area with his home as its focal point. For eighty years or so, the house and its occupants had been the hub of the gardens and the college. With demolition the heart of his inspired and beautiful gardens, maintained by generations of students and staff, was ripped out. There had not, it seemed to them, been time or adequate consideration given to finding alternate means of financing restoration or alternate land for student training.



The principal's house, long the focal point of the gardens at Burnley, was demolished in 1980.

During 1979, a review of the College by Dr R. N. Rowe was tabled in the Victorian Parliament. Entitled, *Report on the Role of the Victorian Department of Agriculture in Horticultural Education*, it looked particularly at the economy of operating Burnley. Among other things it found that the college had 35 per cent of the Victorian students studying in the field of horticulture but only 13 per cent total budget and 21 per cent of the staff. At the time Burnley was still an 'agricultural college' operating under the Agricultural College Act of 1958. It was directed by the Department of Agriculture through the Division of Agricultural Education which had been established in 1944.

Fundamental to the report was criticism of the long-accepted role of horticulture as being primarily concerned with fruit and vegetable crops. This idea dated back to the Horticultural Society of the 1850s and the importance of food crops since that time. By the 1970s though, a large part of horticulture in Victoria involved the ornamental aspects of amenity horticulture. That part of the industry included nurseries,

domestic garden design and plant supply, industrial landscaping and new town-planning requirements involving horticultural expertise for revegetation programmes.

One significant aspect of the review was that Burnley, alone among tertiary institutions in Australia, was already presenting courses emphasising amenity horticulture. Since the introduction of the Certificate of Competency in 1911, it had been attempting to provide a balanced horticulture, teaching ornamental, utilitarian and general aspects of the study. Many graduates later moved into amenity areas.

Proximity to 70 per cent of the total Victorian population, made Burnley popular for part-time study, with short courses especially designed for suburban gardeners as well as those already employed in the horticultural industry. In this respect Burnley differed from other colleges which were isolated in terms of the larger population and even, to some extent, from their local communities - a particular feature of Dookie, for example.

In order to meet the various demands for more courses and better qualifications, the college applied to the Department of Agriculture for accreditation of three new Diplomas in the year 1979. These were named the Diploma of Applied Science in Amenity Horticulture, Diploma of Applied Science in Nursery Production and Management, and the Diploma of Applied Science in Horticultural Crop Production and Management. However Brian Pell found it difficult to administer the college as part of the public service while at the same time satisfying industry requirements for professional horticultural education. He proposed that the college should be separated from the Department of Agriculture. The Department did not agree and a new position of Principal Planning Officer was created in the Division of Agricultural Education, to which Pell was appointed.

In 1980 with the imminent departure of Pell, Frank Keenan was

appointed the industry representative on a panel to select the new principal. This recognition by the Department of Agriculture that industry should have a say in the appointment, contributed to the selection of James Davis as the new principal. He differed in many ways from those who had preceded him.

Davis was a New Zealander who had completed the bachelor and master degrees in Agricultural Science at Lincoln College, University of Canterbury. He worked in sales for Austral Pacific Fertilisers, as an agronomist at Gympie and as marketing manager for Yates Seeds, Sydney. James Davis arrived at Burnley during July 1980. His appointment was an interesting one as he was the first academically qualified horticulturalist to be principal at Burnley. He had been encouraged to apply for the Burnley position by Bob Luff, the new Chief of Division. Jim had a sound horticultural background and, following a line of zealous agricultural principals, was able to strengthen the horticultural subjects on campus.

Over the next few years a number of major alterations took place in the daily running of the college. The Diplomas of Applied Science were approved and additional horticultural academics were employed to teach the various new courses. Not everyone welcomed the changes, particularly as more academics arrived. Those with lesser academic qualifications began to feel out of place, and a number left. In the longer term this allowed easier establishment of degree and even higher degree courses, but in the process some practical skills were lost.

Numerous short courses for the industry were run. Ivo Dean, previously Principal at Marcus Oldham College and a respected person in agricultural education, with a wealth of experience in course design and industry liaison, was engaged as a specialist consultant to Burnley to prepare and organise a short course program. The programme included farm courses, horse management and even mudbrick building (the gazebo behind the Plant Science Laboratory is the product of one such course). The role of Short Course Coordinator ended in December 1982 when

it was claimed that the college resources were over-stretched and that short courses contributed to this situation. At that time there were no less than forty short courses with a total attendance of around 7,300 students. Whether short courses should have been curtailed at this time remains a subject of conjecture. Short courses were a critical part of maintaining Burnley's public image and then, as now, there may have been the possibility of full cost recovery on short courses.

By 1982, past student Frank Keenan was chairman of the College Advisory Committee which showed some changes in membership. Representation now included Trevor Arthur of the Melbourne and Metropolitan Board of Works; Fred Brown from the Northern Golf Club; Ross James, a nurseryman; Ian Peggie from the Knoxfield Research Station; Les Riley from Safeway Stores; and Geoff Sanderson, a landscape architect. Other members of the committee included James Davis, Peter Wood (nurseryman), Peter Harrison (City of Melbourne Parks and Gardens), Barry Cranston (college registrar) and staff representative, Dr Peter May. Jeff Kennett, advertising executive and member of parliament, now Premier of Victoria, had been a member of the revised College Advisory Committee. He and Les Riley, among others, were encouraged to participate in order to broaden the basis of advice received by the college.

Through these advances, Burnley lost its fruit and vegetable instruction. In the Diploma of Applied Science course, Horticultural Crop Production and Management, there had been a decline in numbers both of students and of industry positions available to graduates. By 1981 it was clear that something major had to be done about the situation. It was decided to close down the fruit and vegetable sections of Burnley, transferring all teaching in that area to Dookie College, as had been recommended by the Rowe Report.

It was the work of the Morton Committee in Victoria which provided the final encouragement for specific course changes. In its report tabled in October 1982 the committee, chaired by I. K.

Morton, then also chairman of the Rural Finance Commission, suggested that Burnley needed a three and a half year degree course, together with associate diplomas and Certificate courses run under TAFE organisation. The Morton Committee's report set in motion, moves which were to further change the nature of Burnley's course profile.

One Hundred Years On: 1983-90

In 1983, the VCAH came into being - six campuses under one council, each with a Head of Campus (refer to Chapter 11). As soon as the VCAH was formed, Burnley staff began to prepare proposals for a postgraduate Diploma, a degree course, an Associate Diploma course and a Certificate course, along the lines proposed by the Morton Committee.

The introduction of the new programs in 1985 heralded the arrival of Burnley and its courses in mainstream Tertiary Education. Teaching the Associate Diploma, Bachelor of Applied Science (Horticulture) and the Graduate Diploma programs placed a considerable burden on the academic and physical resources of the College. Nevertheless, the courses were a success, and attracted large numbers of high calibre students. The cut-off scores for entry in 1985 and 1986 were high for the sector and have remained so ever since.

Once the Higher Education programs had been developed it was only a matter of time before the TAFE courses at Burnley were also accredited and improved. From 1986, the Advanced Certificate in Horticulture proved itself to be a large and successful course with enrolments often exceeding six and seven hundred students. In a similar way the Advanced Certificate in Arboriculture has proved an outstanding program for people specialising in this industry. Other Advanced Certificates and Certificates in Landscape, Nursery and Turf have also received strong student and industry support.

The introduction of the university-equivalent courses marked

another milestone for Burnley. Since the principalship of Tom Kneen, moves had been in progress, both within and outside the College, to have students receive a qualification in horticulture which would be acceptable to employers and a tertiary achievement in its own right.

The Exhibition Buildings and even the Ringwood Community Centre were found to be inadequate sites for Garden Week and the event was moved to Burnley. It was an immediate success. The ideal nature of the campus's garden setting and its proximity to the city, combined with the reputation of the association to produce a record crowd. Since then crowds have increased in most years, with as many as 60,000 visiting in 1990. Benefits have been considerable although the high costs of repairing the gardens, not fully covered by returns, led to some disruption of teaching. The event has given the campus a first-class opportunity to involve itself with the industry and to publicise its own work. For the nursery trade it has provided a venue which allows ideal display of products and plants.

Jim Davis resigned his principalship at the close of the 1987-8 financial year in order to become directly involved with VCAH Services Limited, a company established by VCAH. His position as principal was filled by Dr Greg Moore. In February 1989 a total of 120 new students were enrolled in courses for the Graduate Diploma in Applied Science (Horticulture), Bachelor of Applied Science (Horticulture) and Associate Diploma in Applied Science (Horticulture). During that year 1,750 students were admitted to the various TAFE courses including Recreational Turf Management, Landscape Technology and Horticultural Studies Certificate, and Advanced Certificates in Horticulture and Arboriculture as well as the Horticultural Training programme.

Centenary and Beyond: 1990-97

The celebration of the Burnley College Centenary in 1991 provided a major focus for activities in that year and an

impressive launching pad for a number of developments that would take place over the next few years. The celebrations began with an Open Garden day, an expanded and high quality Garden Week and a Centenary Graduation ceremony that were outstanding successes and attracted significant public attention.

There were other more tangible signals of a new era. The new Plant Materials and Soils Laboratories that occupied the site of the old tennis court were used for the first time in the teaching programs at the beginning of the first semester. The Landscape and Arboriculture Teaching Facilities were also completed during the year and were used for classes in the second semester. The Student Recreation Hall however, could not be completed due to a lack of funds and it was a further eighteen months before it became available for student use.

The Centenary year also saw some major academic and teaching initiatives. The first intake of Masters students occurred in the second semester of the year. This new program expanded the profile of professional level courses available, and saw an increase in research activity at Burnley. The initial intake saw eight students commence their Master programs. All had fine academic records, most were mature age and all were part-time and working within the horticultural industry. Already two of these students have completed their courses in minimum time, the first graduating in 1996 and the second in 1997. It is expected that another four to six students will complete their programs during 1997 and be eligible for graduation in 1998.

The Masters course has expanded to the point where there are now, on average, about fifteen students undertaking research. The research is invariably of an applied nature and directly relevant to the industries that Burnley College serves. This research has already seen an increase in relevant publications from Burnley and this is expected to expand quite dramatically in 1997 and beyond. Given the success of the Masters program it was inevitable that PhD students would soon be supervised for their research projects at Burnley, and 1997 saw the enrolment

of the first three PhD candidates at Burnley.

Among other academic initiatives that occurred in 1991 was an impressive Convocation Ceremony which featured Sir Ninian Stephen as the guest speaker, and which was attended by, in excess of two hundred academic and other dignitaries. The Ceremony was the beginning of a month of celebrations which included a large Alumni dinner hosted in the new recreation facility and which culminated in the Burnley Centenary Conference. *Scientific Management of Plants in the Urban Environment* attracted an international range of outstanding speakers such as Ted Kozlowski, Joe Sabol and Gary Watson from the USA, Peter Thoday and Bill Simpson from the United Kingdom and Ken Milne from New Zealand, all proven leaders in their respective fields. The Conference attracted some 400 participants and the proceedings were subsequently published and circulated widely. For many staff the Centenary Conference marked the beginning of publishing efforts which have continued until today.

The old dairy building which had become something of a possum-infested eyesore at Burnley, and which was on the verge of demolition in the late 1980s, was restored by the beginning of 1990. The transformation allowed for a display of memorabilia, and artefacts were on display for the whole of the Centennial year. Subsequently the building has become well known as the Burnley College Book Shop, while the upper floors house the Burnley College archives and some staff offices.

During 1991 and 1992 the College's need for another tiered lecture theatre was remedied with the construction of a new light frame 120 seat lecture theatre. This theatre with its good acoustics, allowed the College to take larger numbers of first year groups into its Diploma and Degree programs and also allowed the bringing together of large groups of staff and students for special events and joint lectures.

The Centre for Urban Horticulture commenced activity as the consulting and industry liaison arm of Burnley College in 1993. The Centre is housed in its own building which was constructed at the end of the Engineering Building in 1992. The Centre has participated in important horticultural tenders and turnover quadrupled over the period from 1993 to 1995.

The affiliation of the VCAH with the University of Melbourne first mooted in 1988 received strong support from Burnley College staff, although the real impact of affiliation has only been felt with the creation of the new Faculty of Agriculture, Forestry and Horticulture in April 1995. Burnley College has taken the opportunity that this new structure created to build links with colleagues at Parkville and Creswick.

The period 1992 to 1997 has also seen some major activities which affect the Burnley College grounds. The departure of the Department of Agriculture from the Burnley campus and the subsequent sale of their portion of the site, degraded the integrity of the grounds. The College began a major five year project to rejuvenate and restore the gardens in 1995.

The calibre of students entering Burnley College continues to be excellent. Those entering straight from year 12 continued have high TERs for the sector, and the College continues to attract significant numbers of mature age students with outstanding employment records in relevant industries. Graduates from all courses are in demand by industry and employment rates are well above the average. The ability, enthusiasm and dedication of such students augurs well for the future of Australian ornamental horticulture.

College staff have continued a significant program of staff development. Many have upgraded their qualifications and others are making substantial contributions to national and international conferences and relevant industry, technical and scientific journals. The College has continued to see the value in offering high quality programs in the TAFE and Higher

Education sectors. During 1997, the College will trial and deliver modules from the National Horticulture Core Curriculum. As the primary amenity horticulture education facility in the country, Burnley has come a long way from being an agricultural school in a garden setting to become a valued part of the Institute of Melbourne School of Land and Environment.

Chapter 6: Agriculture At The University Of Melbourne, 1905

"Let knowledge grow from more to more, But more of reverence in us dwell;That mind and soul, according well, May make one music as before." - Tennyson

Introduction

The history of the School of Agriculture and Forestry at the University of Melbourne from 1905 to 1984 has been collated by Tulloh (1984); much of the following owes its origins to that paper. Wadham (1951), Dean of the Faculty for some 30 years, traced the origins of agricultural science education in Australia to the stimulus for greater application of science to agriculture in the United Kingdom, which in turn was linked to a desire to stem the further decline in rural prosperity that began around 1870. Within the United Kingdom, this led to increased

investment in ongoing research programmes, at Rothamsted for example, and to the creation of agricultural colleges. At the same time, the development of land grant colleges in the United States through the second half of the nineteenth century further highlighted the benefits of agricultural education. Within Australia, the land grant concept was adopted in a modified form in the State of Victoria and led to the funding and establishment of Dookie, Longerenong and Burnley Colleges in 1886, 1889, and 1891 respectively. Funding from the rents from rural lands tied to agricultural education was reduced substantially during the 1890's depression and from that point probably never fully achieved the expectations for funding of agricultural education. The lands which were rented out to generate income for agricultural education were eventually consolidated into government reserves and the Australian version of the land grant concept of agricultural education disappeared finally around 1945.

The creation of such colleges may have contributed to the relatively slow start and political resistance to university education in agriculture. It was not until the first decade of the twentieth century that funding was made available to universities for agricultural education.

Formation of the Faculty of Agriculture

The Victorian Council of Agricultural Education, which was the body responsible for administration of the agricultural colleges, was approached by a committee of the Council of the University of Melbourne on 1 August 1904, concerning the establishment of a degree or diploma program in agriculture at the university. The Council of Agricultural Education took the attitude that such education, should be restricted to the colleges under its own authority and therefore rejected the university's proposals to enter the field. However, political intervention by the then premier, Thomas Bent, led to some softening of attitudes through Bent's innovative approach to funding which created a

significant incentive for the Council of Agricultural Education to reach an agreement with the University of Melbourne. This agreement, made on 4 May 1905 led to the drafting of regulations for a degree and diploma course later in that year. The primary course, the Bachelor of Agricultural Science, was to use the basic sciences as its foundation before introducing more applied sciences in the final, fourth year. The degree was to be general in nature and include a practical component through a residential period at Dookie College. In addition, further practical experience was to be gained by students through farm work experience during vacation periods and through a post-fourth year period of four months of additional approved field work. The emphasis clearly was on land use and agricultural commodity production.

The creation of the Faculty of Agriculture at the University of Melbourne in 1905 was possibly preceded by developments in South Australia. As noted by Wadham (1951), Roseworthy Agricultural College had become formally associated with the University of Adelaide in 1905 through a mechanism allowing Roseworthy College graduates, who had matriculated, to be permitted to take the Bachelor of Science course at the University after passing some prerequisite subjects. Science students, on the other hand, could engage in two years enrolment at the college as a partial fulfilment towards their degree at the University. The real strength of the University of Adelaide came in 1924 with the foundation of the Waite Agricultural Research Institute and its associated bequest financing.

However the University of Melbourne went a stage further than the University of Adelaide in creating a separate faculty of agriculture. Despite formation of the faculty, it had no dedicated staff until 1911. The original university statute for the creation of the Faculty of Agriculture included the Secretary of the Department of Agriculture, the State Director of Agriculture, and the Principal of Dookie Agricultural College as part of its faculty, in addition to 'the professors and lecturers in the School

of Agriculture' (Scott, 1936).

The initial meeting of the Faculty of Agriculture took place on 15 December 1905 when Professor W. A. Osborne, Professor of Histology and Physiology was elected Dean. This part-time position coordinated minimal activities as the faculty had no staff and was based on teaching carried out by members of staff from other faculties, in particular science, and through part-time lecturers from the State Department of Agriculture, and the Council of Agricultural Education. Second year teaching began in 1907 then in 1911, the first student, Mr N. J. F. Thompson, graduated.

Seven years elapsed before a Professor of Agriculture was appointed during which time Professor Osborne continued to act as Dean of the Faculty. Seven applicants for the advertised position of Professor of Agriculture led to the appointment of Dr Thomas Cherry, previously the State Director of Agriculture (Scott, 1936). Dr Thomas Cherry MD, MS, had been a member of the faculty since its formation. Prior to his appointment as Director of Agriculture for the State of Victoria from 1905 to 1911, he had been a lecturer in Pathology and Bacteriology in the university's medical school. Cherry was succeeded as Director of the State Department of Agriculture by Dr S. S. Cameron DVSC, MRCVS, who was also a member of the Faculty of Agriculture during the period 1911 to 1933, and who also had been instrumental in the creation of the faculty and its early development. Despite apparent good intentions, government withdrew financial support for Cherry after 1916 while he was absent overseas on active military service. Blainey (1957) notes that when the Victorian State Government financed the chair initially it had indicated that the Council should select Dr Cherry. Dr Cherry was the first Australian to be appointed as a professor since 1886, and following his appointment, no professor was imported for another eight years.

When the establishment of a chair of agriculture was first proposed to the University Council, the professors had

stipulated that a model farm and an agricultural museum should first be provided before the creation of a chair. The new chair in agriculture was one of four created between 1904 and 1911, the others being anatomy, botany and veterinary pathology, three of which reflected the university's new emphasis on rural studies (Blainey, 1957).

During the period that Professor Cherry was Dean, 1912-1916, low student numbers were an issue. For example, in 1914 there were only some 20 students in total over the four years of the course. Such low numbers were common; the University of Western Australia had six graduates in agriculture in 1958. Cherry's vision concentrated on research as the way to solve the many problems facing Australian agriculture and to this end he promoted the urgent establishment of a university farm. A 60 hectare site occupied by the Lunacy Department at Yarra Bend was the subject of negotiations to secure title for the Faculty's use, but these were not satisfactorily completed. The fourth year of the Bachelor of Agricultural Science course required students to be exposed to the practical experience of farming at Dookie Agricultural College. This was considered to be less than satisfactory because students were isolated from their university staff and the educational component associated with practical work was seen to be difficult to provide under such circumstances. A revised curriculum for the Bachelor of Agricultural Science course was proposed which required students to spend their second year at Dookie Agricultural College, thus beginning a tradition lasting until recent times of a residential second year on a field station, as a compulsory component of the degree. During this period, the Master of Agricultural Science Degree was created for award to graduates who had successfully completed a final honours examination and gained two years of professional experience. It was not a research degree at that time.

Wadham (1951), in commenting on the inclusion of practical experience in agricultural science degrees at various Australian Universities, noted that no system touches all of the essential

ingredients:

'if students go to a college or farm early they are scarcely sufficiently advanced to appreciate the scientific aspects of farming, and if they go at the end of the course they are liable to be troublesome and superior in attitude at a college'.
As discussed in Chapter 3, the location of university students at Dookie College led to the first female Bachelor of Agricultural Science student, Miss Irene M. Lowe, being accommodated at Dookie, decades in advance of the rural agricultural colleges enrolling female students. Miss Lowe was accepted into the Bachelor of Agricultural Science Course in 1914 and graduated in 1918. Her accommodation at Dookie College required special arrangements to be made by the Principal at that time - Hugh Pye.

It is interesting to contrast the attitudes of university and college students through some of the comments made about the friction between students of different backgrounds at Dookie College. University students complained that their physical workload was between 52 and 58 hours per week whereas the Principal corrected this claim by stating that the average physical work hours required only 46.5 hours per week. University students did not agree with being required to provide personal services to residential members of the Dookie staff such as carting firewood, vegetables, milk and butter or preparing poultry for use in staff kitchens. Tulloh (1984) considered these students brave to complain in an era of 'aggressive administration of the rules of the College', although their actions were vindicated when faculty agreed with their case and resolved that 'work which is not of an educational value ... should not be extracted from the students'.

When Professor Cherry resigned in 1916 to become a medical officer in the first World War the University considered the postponement of further enrolments into the Bachelor of Agricultural Science course. This did not occur. Provision was made for Professor Osborne to return as Dean for the period

1917 to 1918 in the absence of any full-time professor in the Faculty. Professor Osborne was succeeded by Professor A. J. Ewart (Botany) in 1919 and Professor T. H. Laby (Physics) in 1920. Tulloh (1984) surmised that Laby experienced difficulties in his role as Dean and that the Faculty membership was therefore reconstituted during his period. Later in 1920, the first meeting of the new Faculty was chaired by the Chancellor of the day, Sir John McFarland, and led to the appointment of Dr A. E. V. Richardson, then Superintendent of Agriculture and a part-time lecturer in the Faculty, as Dean. Dr Richardson held the position of Dean until the end of 1924, when he accepted the directorship at the Waite Agricultural Research Institute.

The residential second year in the Bachelor of Agricultural Science course, was transferred from Dookie Agricultural College to the Werribee State Research Farm in 1920. In that same year, the Agricultural Education Act was passed - an important Act as it provided substantial funding to the University for agricultural education and guaranteed the employment of graduates from the Faculty in the State Public Service. In fact, the two Acts of 1920 and 1923 provided both a building and an annual endowment. It also empowered the Minister of Agriculture to appoint graduates directly to certain State Departments without reference to the Public Service Board (Wadham 1951). The availability of such funding for the Faculty of Agriculture provided the first fillip in its development and made possible the construction of the building now known as 'Old Agriculture' on the University campus at Parkville. Student hostel accommodation was also constructed at the State Research Farm at Werribee. The new building was completed in 1922 for a total cost of £8,684 comprising £6,934 for construction and £1,750 for equipment and fittings. It was one of several buildings constructed during the period 1905 to 1930 which Scott (1936) estimated to have cost nearly a quarter of a million pounds.

Poynter and Rasmussen (1996) noted that:

'a course in agriculture had been proposed in the first years of the University, but the Faculty of Agriculture was not set up till 1905, an initiative - like veterinary science and the Chair of Botany 1906 - to strengthen the University's involvement in primary industry, then still of central importance to the economy of the State. There was a course but only briefly a Professor, and by 1919 there were only two students enrolled'.
They also observed that the loose precinct concept which led to the agriculture building of 1922 and the Botany building of 1929 being located on either side of the System Garden, while being logical also created a barrier across otherwise integrally related disciplines.

From a position of strength with a new building and government commitment in 1921, the Faculty of Agriculture proposed to Council the creation of a degree course in animal husbandry. The Faculty of Veterinary Science had concurred, although the course itself was never approved. Tulloh (1984) noted with interest that one of the subjects proposed at that time was "livestock judging", reflecting the orientation to animal selection of the day.

Regulations governing the Master of Agricultural Science degree were modified during Richardson's tenure as Dean. The new regulations required the submission of a dissertation for examination, thus marking the beginning of modern-day masters by research programs.

The Deanship was assumed once again by Professor Osborne in 1925 and 1926, during which time the second full-time Professor of Agriculture was sought and appointed. Professor Samuel McMahon Wadham arrived in Melbourne in 1926 and became Dean in 1927, a position which he held until his retirement 30 years later. The Faculty which Professor Wadham took over had a basis for expansion which, for its development required an energetic and capable personality to develop. Professor Wadham proved to be such a person. The Faculty had recovered from the period which Blainey (1957) describes in the

following terms:

'The new schools of agriculture and veterinary science which the government had founded in its utilitarian enthusiasm before the First World War were languishing by the early nineteen twenties. The veterinary school suffered from competition with the veterinary school in Sydney, but it collapsed primarily because there was not enough paying employment for veterinary scientists in Victoria. When in 1927 Professor Woodruff was left with one student, the undergraduate course was closed. Woodruff became Director of Bacteriology and later the first Professor of Bacteriology (1935-44), and his School of Veterinary Science became the Veterinary Research Institute. While the Veterinary School was left with a building, a professor, and no students, the School of Agriculture was left after 1916 with a few students but no professor and no building. However, the Agricultural Education Act of 1920 provided for a School of Agriculture and the government continued to allow its Superintendent of Agriculture, Dr A. E. V. Richardson, to teach classes on two days a week. When Richardson resigned in 1924, the University decided to fill the Chair of Agriculture that had become vacant for eight years.'
The 1920s saw the separation of the Faculty's identity from that of the School of Agriculture. With a building and academic staff, the School of Agriculture developed its own identity in terms of staff, students and physical resources operating within the Faculty. The Faculty itself was distinguished as the Committee chaired by the Dean and responsible for administration of academic matters.

The arrival of Professor Wadham in the Faculty of Agriculture deserves its own book. The impact of one person on the development of the Faculty is clearly indicated from the range of histories and biographies concerning the Faculty and Wadham himself. Tulloh (1984) divided the development of the Faculty since Wadham's appointment into four periods of: 1927-56, 1957-68, 1969-81 and 1982 onwards. These periods represent different external influences, such as changing policies

in University education and terms of trade for agricultural products, but mainly relate to the internal influences within the Faculty of different staff personalities and leadership of the Faculty.

Professor S. M. Wadham introduced an unconventional and active approach to the development of his Faculty. Blainey (1957) attributes this to Wadham's arrival fresh from the reform movement at Cambridge University, to work in an environment in which it was common to drive hard bargains and minimise risks. Wadham observed outstanding professors and a high academic standard at the University of Melbourne coupled with a 'slipshod and cavalier' approach to examination and such minimal involvement in community activities that the University was justifiably known as 'the shop'. Students and staff interacted only through teaching, and collegiate activity among staff was minimal. Blainey (1956) describes *The Arrival of Samuel Wadham*.

The Wadham Era: 1927-56

Blainey (1956) introduces his short biography of Wadham with the following words. 'I, Samuel McMahon Wadham, wish to apply for the above Professorship'. So began the letter which introduced to the University of Melbourne a scholar who was to become one of the most influential men in Australia's rural history, and one of the most lovable personalities in Australian academic life.

The Arrival of Samuel Wadham

In 1925, in his thirty fourth year, Wadham was one of Cambridge's best bota
which changed the pattern of his life; the University of Melbourne wanted a
North America, South Africa, India and Great Britain attracted twenty one a
Council - the Honourable G. S. Swinburne and Sir John McFarland (the Cha
recommendation of Professor Biffen of Cambridge, Swinburne visited Wadha
Wadham was now restless in Cambridge; the staid atmosphere did not alway

academics who were lost in the past. At the same time he was only mildly inte
Swinburne thought he was likely to receive the appointment and fill it with sa
Sir John McFarland; his description of the interview suggested that he questi
that Wadham himself doubted whether he could work a plough. He reported
this out to Wadham and received a jocular reply, "Oh, that is hard work." Sw
McFarland visited Cambridge, a few minutes conversation was enough to co

Some members of the University Council were not initially in favour of Wadham's appointment. It seemed to them that he was a laboratory person rather than one who could mix with the farming community. As Tulloh (1984) observed 'how wrong they were!'

Wadham did not conform to the Australian popular view of a professor. Blainey (1956) notes an example from one country newspaper which introduced Wadham through the headline:

'Bad example from Melbourne University'. ... 'he does not look like a professor, nor does he behave like one ... He is slangy and flippant, and surely no professor should be either slangy or flippant'.
Wadham adapted to this criticism easily, having been exposed to it from his first weeks in Australia when he was maligned in a political journal for being from England and rebuked in an agricultural journal for his apparent jokes about an insect plague. Whether he modified his style or not, he became a dearly loved person within and outside the University.

Despite Wadham's stature within the University as a young professor and his wide popularity amongst the agricultural fraternity of Victoria, he resigned in 1931. His initial appointment to the Chair was for five years and at the time that this term was due to expire he had approached the University Council for a tenured appointment. The Council refused this request on the grounds that the source of funds for the position was uncertain, being in the hands of the government to renew the Agricultural Education Act which was due for renewal and modification in 1939. Wadham was dissatisfied with the

insecurity of the five year tenure and with the University Council which had refused to provide him with the privileges offered to other professors. Blainey (1956) records that Wadham went directly to the post office and telephoned Cambridge. Upon receiving an offer of an attractive position, he wrote a terse note of resignation to take effect at the end of that year, 1931. Spontaneous protests inundated the university from Victorian agricultural organisations indicating how Wadham had won the hearts of the rural community. These letters strongly criticised the lack of awareness of the University Council which in turn still required some months to resolve the issue, not budgeting sufficient funds for a life tenure for Wadham until his passage to England was booked. Wadham was able to secure his release from his commitment to the new appointment at Cambridge and stayed in Melbourne.

The Faculty of which Wadham assumed control had only 31 undergraduates and was soon to face difficult financial problems related to the depression. Wadham began the implementation of his philosophy through the introduction of economics in third year as a subject in the Bachelor of Agricultural Science course in 1929. He eliminated the final honours examination and introduced specialisation as the primary focus of Master degree education. Wadham resisted specialisation in the undergraduate course although reluctantly, in 1930, some specialisation was allowed in response to severe pressures; Faculty approved limited specialisation in minor subjects in the fourth year.

The philosophy espoused by Wadham had a major influence on the undergraduate courses at Melbourne and in other Australian institutions. His perception of the evolution of the course during his period as Dean is recorded from one of his many and famous radio talks on the ABC (Wadham, 1953).

'The one general trend which is common to all university courses is a tendency to increased specialisation. ... In the Agricultural Faculty we have firmly set our faces against anything of this sort. Our students come to us for four years, and

for 30 years they have had to take practically the same course which, I admit, covers a multitude of subjects. I believe it is right to run the course on these lines because I think that one of the chief curses of the modern scientific world is over-specialisation. ... Let me make this quite clear: The broad outlines of this course were largely drawn up by two very wise men, Dr S. S. Cameron, ... and Dr A. E. V. Richardson in 1923. All I have done is to get the Faculty to put in some economics and to touch up odd points here and there. I am far too conservative by nature to have done anything that was really new.'

Modest or tongue in cheek, Wadham was downplaying his role in developing and protecting the course from outside forces. Wadham wanted students to have a general training in agriculture and science, but saw no point in science and the methods of agriculture being taught to students who remained ignorant of the wider economic context in which agriculture was practised (Blainey 1956).

Three full time members of staff were appointed by Wadham in 1931. Miss Janet Raff, as lecturer in entomology and Mr R. R. Blackwood (later to become Sir Robert Blackwood and Chancellor of Monash University), as lecturer in Agricultural Engineering set the initial scene for Wadham's faculty. Mr Geoffrey W. Leeper was appointed in 1934 as lecturer in Agricultural Chemistry and in the same year Mr Gilbert H. Vasey replaced Blackwood. Both Leeper and Vasey remained with the faculty until their retirement in 1968 and 1971, respectively. Together with Wadham, these two were seen as the key figures in the School of Agriculture for the next 30 years. In 1945, Wadham made his next appointment, Miss Yvonne Aitken as lecturer in agriculture. Aitken had been a Master of Agricultural Science candidate with Wadham and had worked as a Research Assistant after her graduation in 1936. She remains a researcher and familiar and respected figure in the corridors today.

Developments in the School of Agriculture in the 1930s

reflected the general conservatism of the Country Party Government and its attitudes to the spreading of scientific methods of agriculture (Blainey, 1956). Immediately before the war, the government refused to provide funds for animal studies at the University while at the same time restricting the employment of agricultural graduates in the Public Service. After the war, facilities were over-extended when 150 students, half of whom were ex-servicemen, enrolled in the Bachelor of Agricultural Science course. An extension to the original building in the same red brick did not occur until 1956 and even then was only possible through the gift of £10,000 from Wadham's friend, Mr V. Y. Kimpton.

The late 1930s and the years of World War II called Wadham to provide services to the Commonwealth Government, requiring absences from the School of Agriculture for significant periods. During the years 1939, 1944 and 1945, Geoffrey Leeper acted as Dean of the Faculty. During this busy period, Wadham produced his influential book *Land Utilisation in Australia* jointly with G. L. Wood of the Faculty of Commerce, published by Melbourne University Press in 1939. Poynter and Rasmussen (1996) have noted the effect of World War II on the University with mathematicians shifting their focus to military matters and geologists to the problems of dust in war machinery. Agriculture played its own part through involvement in strategic mapping and associated techniques while biochemists worked on war related drugs and chemotherapy.

In 1943, it was decided that students in the Bachelor of Agricultural Science course should once again spend a practical year at Dookie rather than Werribee for 'staff and institutional' reasons. After the end of the war, the Faculty recommended that Dookie become the permanent practical site for second year students. The additional pressure of large numbers of returned servicemen entering the course, was also felt in terms of this practical residential period. For example in 1947, 71 enrolments in first year led to 45 proceeding to second year for which accommodation at Dookie was to be provided. However, as only

25 could be accommodated, the balance was sent to Longerenong College. Additional accommodation was created at Dookie in 1949 which led to University students no longer being assigned to Longerenong College.

Demand for graduates of Agricultural Science in the late 1940s increased above that of the previous decade. A new Agricultural Education Act introduced in 1949 provided funds to extend the main building, albeit belatedly, and to introduce research and teaching in animal studies. New senior lectureships were created in 1950 and filled by Dr T. J. Robinson in animal physiology and Dr F. J. R. Hird in Agricultural Biochemistry.

Students had generally accepted the course and services provided to them. However, in 1953, the Agricultural Students Society sent a memorandum to the Dean asking for modifications to the Bachelor of Agricultural Science course. The Society was dissatisfied with the course in physics, argued for an increase in statistics courses and a revision of methods of assessment. They also suggested a reduction in the overlaps between subjects and improved integration across the course. Tulloh (1984) observed that this was 'heady stuff in those days when students tended to be seen and not heard', although similar questions were being raised in the Sydney and Western Australian courses. The students' complaints were considered by Faculty which introduced changes in the curriculum and examination procedures. However a further 21 years were to pass before the role of students in advising Faculty was formalised in a 1974 regulation which made provision for an annual election to Faculty of two undergraduate and two post-graduate representatives.

First year enrolments were limited to 70 in 1956, a quota which was to remain in place until 1983 when it was reduced to 65. The reduction was made in order to create additional places for post-graduate students. Also in 1956, Dr Derek Tribe was appointed Reader in Animal Physiology to replace Robinson who had been appointed as the inaugural Professor of Animal

Husbandry at the University of Sydney. However, unlike Robinson, who had always been located in Professor R. G. Wrights Department of Physiology, from the time of his arrival from the United Kingdom (January 1956), Tribe was based in the School of Agriculture. This represented a major change in Faculty policy and heralded the developments which were to take place during the Forster Era.

The era was undoubtedly Wadhams. Poynter and Rasmussen (1996) describe Wadham as a powerful and benign force in numerous rural and other matters. He had acted as Vice-Chancellor of the University during a difficult period in 1942 and nearing retirement received the rare distinction of an Honorary LLD while still in the University's employ. Blainey (1956) identifies Wadham's insistence that an important function of a University is 'to provide when called on, an unbiased opinion on matters of public interest, especially in the technical field'. He did this regularly through hundreds of speeches and broadcasts, written articles and other mechanisms (refer to box: Agricultural Outreach). According to Blainey (1956), these alone could have justified his position in the University even if he had not taught students. Blainey observed that:

'perhaps no other person in the history of the University had so enlarged the influence of his Chair and formed such close associations with the particular community he represented'. Wadham had seen his efforts lead to the school's growth from less than 40 students in 1926 to around 180 by 1956. The previous argument that Victoria or Australia could not support more than a small number of agricultural graduates had been refuted by the high levels of employment in State Agricultural Departments, Universities, CSIRO, and agri-industry companies. During Wadham's 30 years at the University, more than 400 students graduated in agricultural science, most of whom absorbed some of the ideals of Wadham, the personification of the School of Agriculture.

Wadham was knighted in 1956 for his services to agriculture

and retired early in 1957. His legacy was the imparting of a broad minded approach to agriculture and the designing of an agricultural science course which produced broad minded and employable graduates. His own breadth of perspective and personality combined to instil a similar attitude in most of his students and to create enquiring minds which could then be applied to seeking answers to questions of significance in agriculture. It is of interest today that these achievements by a great agricultural scientist in the University of Melbourne were achieved by one not intimately involved in technically oriented research. Wadham encouraged surveys on a regional basis covering industries, soils, land use, sociology, economics and related activities. Information from them was used as input into his academic work and into his contribution to the various government commissions on which he served. Such commissions included:

- The Commonwealth Dairy Committee, 1928-1930
- The Royal Commission on Wheat, Bread and Flour Industries, 1934-36
- The Commonwealth Nutrition Commission, 1937-40
- The Rural Reconstruction Commission 1943-46
- The Immigration and Planning Council 1949-59.

After retirement Sir Samuel was active through the Martin Committee on Tertiary Education in Australia (1961-64) and as Chairman of the Council of International House at the University. Tulloh (1984) observed that:

'the growth of goodwill towards the University at the time of his retirement among the public, especially the farming public, owed much to his influence and personal reputation.'

Agricultural Outreach

Believing that the University should inform the public on vital issues, Wadha
Sunday morning talks he has become one of the best known broadcasters in A
happy gift of giving advice on rural problems in a manner which ostensibly s
technical subjects with humour; his description in a recent BBC broadcast o

which permeates his broadcast. "If these cows" he said in his concluding sen
conceited".

To Professor Wadham, agriculture is not just a technical problem; it is prima
life. In his visit to thousands of farms where he was interested, above all, in t
that interested them; in the paddocks he yarned to the farmers about themsel
academic scientists who were interested mainly in the pastures or the cattle c
constituted the daily life of the farmer. His honesty, his wisdom, and his unde
made him a force in the community. (Blainey, 1956)

The Forster Era: 1957-68

The Assistant Executive Officer of CSIRO, Howard Carlisle Forster, succeeded Wadham as Dean in 1957 and held the position until 1968. Carlisle Forster has been described as a somewhat dour, tough, firm, yet kindly man, an excellent organiser, very well connected, and prominent in the war effort. He had completed a PhD in the United States. He also owned farming land and was active in its management. Forster's period as Dean coincided with major changes in Australian Tertiary education. These occurred as a consequence of two apparently unrelated developments, neither of which were specifically to do with agriculture. The first was the decision of Australian universities to introduce PhD degrees and the second to encourage research. It had previously been the practice for Australian scholars to undertake doctoral studies overseas, usually in the United Kingdom or the United States. Universities also recruited many of their academic staff from these countries.

Regulations governing PhD courses in Australian universities were first introduced in 1949. However tradition, combined with the shortage of funds and facilities, greatly limited the growth of post-graduate training in Australia during the next ten years. Then, in December 1956, the Murray Committee was asked to advise the Commonwealth on university development. Among several far-reaching recommendations accepted by the Menzies' Government, were calls for increased funding for post-graduate

studies. Shortly afterwards the CSIRO increased substantially the number of scholarships it awarded annually for PhD study in Australia. At the same time high commodity prices meant that industry funds for wool and wheat research, and the resources available for research from the Reserve Bank's Rural Credits Fund, were all increasing.

The combined effect of these various developments was that conditions were ideal for a decade or more of substantial expansion of research and post-graduate training in the School of Agriculture. During the Forster Era the University sanctioned new appointments to the academic staff: Norman Tulloh, the late Geoff Pearce, Rolf Beilharz and the late Tony Dunkin joined Derek Tribe in what started as Animal Husbandry and ended as Animal Production. Other appointments included: Jack Wilson, Gerald Halloran, Albert Pugsley and David Smith, who joined Yvonne Aitken in Plant Production; Alan Lloyd, joined later by Al Watson, started an Agricultural Economics Unit; and Don Williams, with the late Hartley Presser, the late Jack Potter and joined later by Stuart Hawkins, introduced post-graduate training in Agricultural Extension.

The Faculty of Agriculture soon established itself as one of the leading two or three centres in the University for PhD training and its graduates soon established themselves in leading positions in CSIRO, state agencies, and universities throughout Australia.

Continuing the Wadham tradition, the staff maintained close links with farming industries, and were frequently to be found speaking at farming field days, dinners or conferences. Because the Faculty lacked its own facilities for field research, staff and post-graduate students were dependent, for many years, upon the goodwill and cooperation of individual farmers and graziers, the Victorian Department of Agriculture, the Melbourne and Metropolitan Board of Works and CSIRO, for the physical resources they needed to undertake their research. Experimental work was undertaken throughout Victoria, and extended into

parts of New South Wales and Queensland.

Staff and students remember those busy and exciting years which resulted not only in higher degrees, research papers and books, but also in close and lasting friendships between students, between staff, and between students and staff. These years also witnessed the emergence of the Faculty's international influence. Several staff accepted invitations to act as consultants in agricultural education, research and development to various national and international agencies. These activities provided staff with experience of agriculture in many parts of Africa, Asia and Latin America. Thus, as the Faculty became better known internationally, a steady and increasing stream of overseas students started to head for Melbourne. At the time (1965-1975) some in the University regarded these developments with jaundiced eyes. Surely, they argued, staff were paid to work in Melbourne, and the arrival of overseas students could only 'lower academic standards'. Fortunately more enlightened views prevailed and the foundations were laid for the Faculty's continued growth as an internationally recognised centre for agricultural education and research.

In 1964 the practical residential component of the course was shifted from Dookie to Mount Derrimut. This began with the academic staff appointed through the 1930s identifying the need for a field station. In its absence, these staff depended on the goodwill of landowners and government authorities to carry out their research. Leeper's soil surveys were carried out on farms near Winchelsea and Berwick, while Tribe developed programs concerning prime lamb production with the support of the Mornington Peninsula Prime Lamb Producers Association. Tribe also demonstrated an innovative approach to joint activities with the State Department of Agriculture through the use of their State Research Farm at Werribee where he developed a 24 hectare research site. In 1964 that site became the University's veterinary clinical centre. Tulloh's early work on beef cattle was conducted at the Metropolitan Board of Works Farm at Werribee, even though they were to an extent

restricted in design by commercial considerations and the limitations of working on a field station controlled by a separate entity (Tulloh, 1984).

In 1963 negotiations began with ICI Australia Limited for a site at Deer Park known as Mount Derrimut. Mr Wischart, then Chairman of ICI (and later a Chancellor of the University) played a key role in assisting the sale. The 250 hectare site 22 kilometres west of Melbourne was initially leased, although parts of the property were subsequently purchased with funds from the Brumley Bequest and other University sources. The residential year of the course from 1964 onwards was spent at Mount Derrimut, thereby breaking a long and productive association between the University and Dookie College while facilitating teaching inputs from University staff in this practical environment.

The University had been committed to trying to make the practical year work, and David Smith was appointed in 1958 to teach one large subject (called Agriculture 1) and manage the overall teaching of the year to higher standards. Dookie staff rose to the occasion, Melbourne staff continued their support and second year changed greatly. This meant that when the opportunity to move to Mount Derrrimut arose it was as a going concern. Essential features were substantial field projects, usually of an experimental nature, in groups of four students, fortnightly whole-day excursions to significant farms, research centres and industries, specialist lectures, and strengthened library resources. A research unit in pasture ecology was also established. A major effort, strongly supported with Melbourne staff, was an intensive learning week as a field excursion in October. At Mount Derrimut, David Smith was warden, farm director and senior lecturer in agriculture. Mount Derrimut House had been developed by ICI as a staff training facility by adding wings of bedrooms to the old homestead, which provided pleasant lounges and a dining room. Though sharing bedrooms, this was comfortable accommodation. Nearby staff quarters were modified to provide a self-contained unit for

female students. A small overflow of students was accommodated in another training building some two kilometres away until additional rooms were added to Mount Derrimut House to allow for up to 60 students. Funds from the W. H. Lord bequest allowed a lecture theatre to be constructed and additional capital provided through the University and other sources led to other teaching facilities being provided. Mount Derrimut Farm was used by the School of Agriculture and related organisations until 1996.

The objectives of Mount Derrimut Field Station were listed as (Halloran, 1976):

- Providing an environment for undergraduate students of agriculture and forest sciences to undertake practical work.
- Operating a farm to support teaching and research requirements.
- Supporting teaching activities by providing lecture facilities, laboratories and practical classrooms.
- Offering experimental facilities for research on soils, plants animals and agricultural engineering.

History of Mount Derrimut

In 1850, Septimus and Richard Morton, Shorthorn cattle breeders from the E
selected land near a small volcanic hill, then called Diarmid's Hill, a few kilo
from local studs and importations from the family stud in England, the Morto
Shorthorn imports, is the ancestor of up to 80 per cent of Australia's pure-bre
large auction of pedigree cattle of world standard to be held in Australia. At
brought prices between $1,000 and $2,000 each. The property was brought b
the north eastern slopes of the hill. It remained a pastoral property until sold
brought the property and enlarged and remodelled the homestead for use as
1954 but discontinued it in 1960. In 1963 ICI Australia Limited leased the pr
the University purchased 24 hectare of the property on which the main teach

Teaching facilities included a laboratory for plant production and soils, and an animal production teaching and demonstration centre, the W. H. Lord Lecture Theatre and a demonstration

laboratory in the H. V. Mackay Agricultural Engineering Centre. Research was supported through the units of Animal Production Research Centre, the Brumley Plant Sciences Research Centre, the Agricultural Engineering Section and the Meteorological Centre. The farm was well equipped with implements and machinery for cereal growing and pasture production with facilities for sheep, poultry, beef and dairy cattle. Farm buildings included a shearing shed, sheep yards, poultry units, a small dairy, grain storage facilities, a hayshed and machinery sheds. The field facility for both student practical education and staff research was a boon to the school in this period of its growth. It overcame the problems of working on properties owned by others where compromises, particularly in the research field, were often called for. It allowed a greater educational input to practical assignments for students than had the Dookie residential period because of the proximity of Mount Derrimut to Parkville. Minor problems such as those mentioned by Tulloh (1984) included attacks by marauding dogs on the field station flock despite the high wire fences of the farm, and grass fires which rushed across the basalt plains threatening the pastures and facilities of Mount Derrimut.

Research and post-graduate training expanded with a further extension to the main building in Parkville in 1962, the acquisition of Mount Derrimut and the expansion of academic staff. Capital development funds became available through industry research organisations together with operating funds for a wide range of research programs. Developments at both Parkville and Mount Derrimut led to an important profile developing for the school particularly in the plant and animal sciences. The Pig Research and Training Centre at Mount Derrimut, led by the late Tony Dunkin, was developed through a public appeal for funding launched by the Premier, Sir Henry Bolte. Sir Robert Menzies opened the centre in 1969 as Chancellor of the University of Melbourne.

The Premier of Victoria, the Hon. Sir Henry Bolte, MLA, opens an appeal for funds to establish a Pig Research and Training Centre at the Mt Derrimut Field Station by presenting a cheque to the Chancellor of the University of Melbourne, the Right Hon. Sir Robert Menzies, 19 May 1967.

During 1966, a post-graduate Diploma in Agricultural Extension was introduced, initially funded by a grant from the Victorian Wheat Industry Research Committee. It was developed by Dr D. B. Williams who was appointed on a secondment from CSIRO and as a visiting professor, and by Jack Potter, formerly an agricultural extension specialist with the NSW Department of Agriculture. The course was subsequently led by Dr H. S. Hawkins and provided a leading service in the field of agricultural extension in Australia for more than a decade.

The year 1968 was an important one for the University and agriculture within it. The Education Act passed by the Victorian Government in 1920 and subsequently amended and renewed at approximately 10 year intervals, expired. The Act was theoretically no longer necessary as University funds came directly from the Federal Government, but it had been of major significance in the establishment and development of the School through the provision of capital for buildings and equipment, and funds for key staff and research activities. It had also provided the School with an element of financial independence within the University.

The same year also saw the retirements of Dean Carl Forster and Geoffrey Leeper. Gilbert Vasey retired in 1971, thus ending associations in the School with people who personally knew the leading figures of the Faculty from its formation.

During his period as Dean, Forster had maintained diverse interests and connections with the farming community. He was in high demand, in common with his predecessor Wadham, by government for major investigations. He was Chairman of the Committee to Appoint and Advise the Commonwealth

Government on Prospects for Agriculture in the Northern Territory in 1960. On his retirement, he became the first Academic Director (1970-77) of the Australian Asian Universities Cooperation Scheme and travelled widely, becoming a trusted adviser to many senior academics and administrators in Indonesia, Malaysia and Singapore.

Geoffrey Leeper, who had begun as a Research Fellow in the school in 1929 working on manganese deficiency in soils with Wadham, had progressed to conduct major soil surveys classifying soils according to their properties rather than according to their history, the method used by his contemporaries. A man of high intellect and integrity he continues to be remembered through the Australian Soil Science Society Leeper Memorial Lecture which is held annually.

A Time of Change: 1969-81

Wadham and Forster had been selected as leaders to assume the position of Dean in the School. While their appointments were annual, renewal appears to have been a formality. After the retirement of Forster, Derek Tribe became Dean, and in 1969, proposed that regulations change to allow a Dean to be appointed for a period of up to three years, and for the position of Dean to be held by any permanent staff member of the rank of senior lecturer or above. Tribe was then appointed for three years (1970-72) and subsequently the only Dean to hold the position for more than three years was Adrian Egan (1991-94) until the termination of the old Faculty in 1995.

Dr Lionel Stubbs was appointed to the Chair of plant production and was Dean for a period after Forster in 1969. He was a plant pathologist from the Victorian Department of Agriculture at the Plant Research Institute in Burnley (Parbery and Greber, 1996). Mr Alan Lloyd, an agricultural economist who had been a staff member since 1958, accepted a Chair in Agricultural Economics which replaced Leeper's Chair in Agricultural Chemistry. The structure of the School changed from the three departments

relating to soils, plants and animals to one based on a single department with five sections; agricultural economics, agricultural extension, animal production, plant sciences, and soil sciences. These sections were led by Professor Alan Lloyd, Dr Stuart Hawkins, Professor Derek Tribe, Professor Lionel Stubbs and Dr Lyle Douglas, respectively.

Tulloh (1984) lists Deans after Forster and until 1984 as: Professor D. E. Tribe, Professor L. L. Stubbs, Professor N. M. Tulloh , Mr J. H. Chinner, Dr D. G. Parbery, and Dr R. G. Beilharz. During the Deanship of Stubbs, the Department of Forestry, which had been part of the Faculty of Science since 1948, was transferred to the School of Agriculture to form a new Faculty of Agriculture and Forestry. The Head of the Forestry Department since its formation, Mr John Chinner, was Dean of the combined faculty from 1979 to 1980. The history of Forestry at the University of Melbourne is discussed in more detail in Chapter 7.

The 1970s saw the development of a new north wing adjoining the Old Agriculture building at Parkville. This included three floors and an underground carpark with the ground floor containing three undergraduate teaching laboratories and associated facilities. Such teaching facilities were oriented primarily to fourth year students. Tulloh (1984) commented that it had taken over 50 years to provide these essential resources. Offices and research laboratories on the first and second floors supported academic staff and post-graduate students in the fields of animal production, plant sciences and soil sciences. With the completion of the new wing in 1975, it was possible to accommodate Forestry in the old agriculture building.

A plant sciences research laboratory and an animal nutrition laboratory were built at Mount Derrimut with support from the Brumley Bequest. Undergraduate teaching facilities were extended with University funding support to improve the facilities and the environment at Mount Derrimut, especially in terms of internal roads, drainage, water supply, fire protection,

plantations and landscaping.

The undergraduate course was reviewed during Tribe's Deanship. The outcome of the review confirmed the long term focus on producing generalists but introduced an increased ability for final year students to specialise by selecting four subjects from a suite of 11. In addition, a new subject, Resource Use and Conservation, was introduced as a compulsory subject for fourth year students. A feature of the elective subjects was the inclusion of one as a project based on experimentation.

Around this time, investigations concerning agricultural engineering led to the conclusion that while there was a general need for such a course, the University of Melbourne would not be the primary provider (Poynter and Rasmussen, 1976). Fortunately, the cycles that affect education and research led to retention of expertise in the Faculty of Engineering. The expertise developed through agricultural engineering courses over decades was also well represented at Longerenong, Burnley and Dookie Colleges. With the formation of the new Faculty of Agriculture, Forestry and Horticulture, agricultural engineering was once more recognised as a supporting activity, if not a primary focus.

Post-graduate Training and Research

The growth in post-graduate training and research experienced up to the early seventies, tapered off in the late seventies. Australian students saw post-graduate stipends as inadequate and the slow growing economy prompted them to take professional employment at the first, opportunity rather than chance a better job as postgraduates. Tulloh (1984) presents comparisons of Australian and overseas post-graduate students in the Faculty in 1972 and 1983 which indicates a significant rise in overseas students as a proportion of the total, rising from six in a total of 58 in 1972, to 31 in a total of 70 in 1983.

Students from developing countries had been a long term focus

of the School of Agriculture. A few students entered the undergraduate courses but it was with the development of post-graduate research facilities and activities during the 1960s that the School became increasingly involved with international post-graduate students. Most students came from Indonesia, Malaysia, Thailand, and the Philippines while some came from elsewhere in Asia, or from Africa, the Indian subcontinent and Central and South America. Student numbers grew substantially after the formation of the Australian-Asian Universities Cooperation Scheme (the pre-cursor of the Australian Universities International Development Program, now known as IDP Limited) which began in 1969. That program led to most academic staff in the school being involved with the development of research activities and/or teaching in South-East Asian universities and with the higher degree training of academic staff from institutions in these countries. It is of interest to note that the School of Agriculture provided the first three academic directors of AAUCS - Carl Forster was the first, succeeded by Norman Tulloh as a part time appointment. When a full time appointment based in Canberra was needed, Derek Tribe was appointed.

This association with particular needs of students from South-East Asian nations at the early phases of their economic development, produced a challenge in designing of learning environments and courses which met the diverse needs of students from different backgrounds. The existing research-based Masters and PhD programs were predicated by students having uniform backgrounds and an understanding of Australian agriculture. The challenge was met by staff at the School of Agriculture developing a new degree, the Master of Agricultural Studies which consisted of 50 per cent course work, 40 per cent research and 10 per cent field study. The course, which was limited to animal production topics in the first instance, was underwritten by the Australian aid program through the Australian Development Assistance Bureau (now AusAID) with the first intake of students arriving in 1981. It was a useful

course and increased the profile of the University and, in particular, the School of Agriculture throughout South-East Asia. The program accepted between five and seven students per year for the two-year program and developed into programs attracting some 28 fee-paying post-graduate students.

The success of the Master of Agricultural Studies specialising in animal production, led to the development of a scheme for the same qualification in agricultural extension. In this case, the course was oriented to Australian students and replaced the previous post-graduate Diploma in Agricultural Extension which was phased out at the end of 1982. Students, who were commonly sponsored by their employers, usually the State Departments of Agriculture, completed the course in 12 to 15 months.

Another early international activity involving the School of Agriculture was the South-East Asian Fibrous Agricultural Residues Research Network. The Network was developed by the Animal Production Section during 1980 with initial support from the Australian aid program and subsequently by IDP. Linkages between 10 selected scientists in Universities and Institutes in Sri Lanka, Thailand, Malaysia, Indonesia and the Philippines aimed to improve the utilisation of agricultural crop residues as feed for ruminants. The School of Agriculture coordinated the program which by 1990 had developed to the stage that an information network was the only continuing need. These programs prospered and grew and were linked to ACIAR projects during the mid 1980s and early 1990s.

No historical comment on the School of Agriculture would be complete without a statement on the Strathfieldsaye Estate, bequeathed in 1976 by Dr H. C. Disher to the University of Melbourne. The bequest included a requirement that an institute for teaching and research in agriculture and allied sciences should be developed. The historic homestead situated on the north eastern shore of Lake Wellington was associated with a property of 1,845 hectares which at that time carried 7,000

sheep and 100 Hereford cattle. After a period of accumulating some debt, partly related to improvement of the productive asset base and declining wool prices, new management strategies were devised. These were based on management inputs from the faculties of Agriculture and Veterinary Science and have demonstrated the residual property's viability under appropriate conditions of management. Intensive research programs at Strathfieldsaye were not developed to a significant extent, due to its distance from Melbourne, although those not requiring intensive activity were carried out by staff and students from several University departments including Agriculture, Forestry, Botany, Electrical Engineering, Environmental Planning, History and Zoology. One example was Dr Richard Simpson's soil research at Strathfieldsaye which provided a basis for teaching and extension to local farms.

1982-84

Tribe began his new appointment as the Director of the Australian-Asian Cooperative Program in April 1980. Stubbs retired at the end of 1981. Both had established research facilities and post-graduate training activities which had contributed substantially to the strength of the animal production and plant sciences sections of the School of Agriculture. The Chairs vacated by Tribe and Stubbs were replaced, after some time, by the appointment of Professor Adrian Egan from the Waite Agricultural Research Institute in January 1983 and by Professor David Connor from the School of Agriculture at La Trobe University also in 1983.

In 1984, a review of the Bachelor of Agricultural Science and the Bachelor of Forest Science Degree courses was undertaken. In the case of the Bachelor of Agricultural Science, course objectives were reviewed in the light of changing opportunities for the employment of graduates from the course. Graduates were primarily equipped for positions in research, extension, teaching, and administration within the Victorian State

Government Departments and in particular the Department of Agriculture. In 1984 the objective of the course was stated in the Faculty Handbook as being, the training of graduates with 'a broad understanding of environmental and biological science with special reference to agriculture and the economic use of resources consistent with accepted principles of conservation'. Such an objective confirms the long-standing focus on the production of generalists from the course. It was based on the continued assumption that specialist training is best obtained through in-service activities or post-graduate studies.

Discussions over the balance between pure and applied sciences within the course, the ability to teach all of the material felt to be required within the limited time available, and the functions of basic chemistry, physics and geology were debated again as they had been in the past and were to be in the future. The roles of biochemistry, economics, extension and engineering were confirmed although over time these shifted in emphasis. The weighting between plant, animal, soils and social science subjects was also a matter of debate through the early 1980s with outcomes apparently related at least partially to negotiations between sections within the school. Such a debate did not occur during the very early days of the School of Agriculture as it had no staff of its own; it became relevant with the appointment of full-time academics within the school and in particular during the Forster era and with Forestry joining the School.

The debate on course content also focused on the amount of practical experience which could be included in the course and its relative benefits. It seemed to have been agreed that graduates could not attain a full suite of farming skills in which they were highly competent and would rather gain more from work experience in rural environments to appreciate the application of science to agriculture. The objective was to sensitise student perspectives to the viewpoints of farmers. At this stage, practical experience was predominantly focused on the farm production sector with little reference to agribusiness,

processing and marketing of food and agricultural commodities, although the concept of 'industry attachment' was developed from 1990.

Tulloh (1984) argued that it is inappropriate for universities to offer practical farmwork experience during an undergraduate course. The cost of delivering such a service is expensive, although it appears to be assumed that such costs would be borne by the University rather than any collaboration with industry. Second year residential requirements, complemented by 12 weeks of approved vacation work during the course, provided a basis for instilling the appreciation and practical experience thought necessary for the course. However, the residential year was to be dropped by the school in 1984 for reasons academic, social and financial.

The course review concluded that:

- The course should produce generalists.
- The residential requirement at Mount Derrimut should be eliminated.
- A balance between social and natural sciences should be maintained.
- Use and appreciation of computers should be included in all years and subjects.
- Plant and animal production systems should be compulsory in fourth year.

These changes were implemented primarily by reducing the input of basic science and through the development of special programs in agricultural experimentation, for second year students at Mount Derrimut, on a non-residential basis. It also represented the beginning of a shift back towards the applied science aspects of agriculture and a recognition of Wadham's focus on the human side of agriculture.

Research

Research was not a focus of staff in the School of Agriculture

before the 1950s, any more than it was in other parts of the University of Melbourne or other universities at that time. Its progressive development, arising from the curiosity of staff and the increased focus on research-based universities as institutions of the highest learning, led to the development of research activities in the School of Agriculture. By 1983, research grants totalled approximately $1.5 million associated with the 27 lecturing staff, 5 Research Fellows, 8 Tutors and 70 post-graduate students plus technical staff. Cooperative research activities between the School of Agriculture and other organisations, including the State Government and CSIRO, continued to be a feature for major research initiatives. Such research teams were necessary to tackle the integration problems common to agriculture and have produced several major outcomes. By 1994, annual research grants had grown to some $4 million.

The School and Society

Tulloh (1984) notes that the impact of the School on the community has been significant. He states that:

'graduates from the Melbourne Faculty of Agriculture and Forestry are spread widely throughout the community, featuring in science, education, agricultural extension, business, private practice, journalism, farming, politics and the bureaucracy. A significant proportion is involved with international agencies and working in developing countries. Although the statistics of the school tell of the achievements of our graduates only partially, at least they measure a level of activity of the School throughout its history. The numbers of degrees and post-graduate diplomas awarded reflect the numbers and types of professional people trained by the school. An indication of the scientific activity in the school by the academic staff and their post-graduate students is shown by the number of publications. Many of these have appeared in journals with an international circulation and in this context the influence of the School is

acknowledged across the world. Within Australia, the results of the work of the School have been translated into farming practice through the extension services and have thus made a significant impact on farmers.

Most staff members contribute to the news media, through radio, television and the press and directly at the meetings of the learned societies and in the rural community at field days, conferences and lunches. Over the years academic staff has served (and still serve) the community on State and Commonwealth Committees and Commissions and as University representatives on national research committees. Being neither public servants nor business people, they have academic freedom to make independent comments about issues of importance to society. Of course such comments are not always well received because they may challenge conventional wisdom - but it is one of the responsibilities of the University to discover and extend new knowledge.'

Tulloh was writing in 1984. If he was writing today, he may well offer a similar comment and extend the range of involvement of graduates and staff to areas relating to international development, agribusiness, food processing industries, banking, insurance and international and domestic marketing.

The Final Decade: 1985-95

In 1986, the position of Dean of the single department Faculty passed from Dr Rolf Beilharz to Professor (of Forestry) Ian Ferguson. In 1990, Professor Egan assumed the Deanship for the traditional three years and was requested to extend by one year to the end of 1993. By this time, a number of the changes were being planned for the Faculty by the University administration and Professor Robert White took up the position of Acting Dean in 1994 with two newly created departments- the Department of Agriculture and the Department of Forestry. He continued in this role until 3 April 1995 when a new Faculty

was formed (refer to Chapter 12).

The mid 1980s saw changes in the Faculty of Agriculture and Forestry, particularly the curriculum of the agricultural science course. The fixed course, with the modifications to allow some controlled selection of electives in fourth year and with the second year spent at Mount Derrimut, continued during the major review of the course conducted in 1984. The subsequent restructure of the curriculum led to major changes, especially in fourth year with an increased number of electives, and the use of computer programs throughout the course, introduced a specific subject *Computers in Agriculture*. The old curriculum and indeed the Faculty had been seen by some as being backward in comparison to that of the competing La Trobe course in terms of computing skills of staff and students. From that position, the Faculty became a university leader with consequent spin-offs in improved teaching and the development of computer-aided learning packages.

At the same time, the review of the viability of Mount Derrimut as a student learning and accommodation centre, highlighted drawbacks of the Mount Derrimut location in the new curriculum. By 1987, no second year students were resident at Mount Derrimut and the agricultural science course was again reviewed. The site was seen as being inadequate for research and teaching in terms of soil types and the limited range of agricultural enterprises representative of south-eastern Australia. The withdrawal also led to some savings convenient in a tightening fiscal climate and hence no real consideration was given to a return, under newly defined arrangements, to Dookie or Longerenong. The new course consequently included excursions as major components in lieu of residential periods.

A proposal to link with La Trobe University and VCAH, drawing on the Scottish system as a model, was somewhat overtaken by initiatives of the then Federal Minister for Education, Employment and Training (refer to Chapter 12). Around the same time, in 1990, the McColl Review of

Agriculture and Related Education called for submissions and produced their first draft in 1991. That draft proposed that the University of Melbourne be the recognised provider in Victoria for agriculture and related education. However, such recognition failed to survive the final editing and was modified to a more general recommendation that a State review take place which allowed one recognised provider to emerge.

Wider University interest in the Faculty and the agricultural science course in particular, introduced tensions between the Faculty and the University administration from 1992. A review commissioned by the Vice-Chancellor led to Professor Dennis Greenland of the United Kingdom, reporting on the Faculty and agricultural and related education in Victoria, albeit from a University of Melbourne perspective. One of Greenland's recommendations led to the separation of the Faculty into two Departments, a Department of Agriculture and a Department of Forestry, headed by Professors White and Ferguson respectively.

The period of discussion between the Faculty and the University administration was described by many staff as 'a period of uncertainty and a time of waiting' in which Faculty-wide activities could not occur. A 1993 recommendation to the University's Academic Board proposed a combined Science and Agricultural Science course, with cessation of intake into the first year of Agricultural Science and a second year entrance level from Science. This proposal was not adopted.

Throughout the decade, a steady increase in research activity was evident. The establishment in 1993 of the Joint Centre for Crop Improvement (an initiative of Egan followed by Connor), as a linkage between the State Department of Agriculture, the then separate Longerenong College, and the Faculty, widened the pool of expertise, provided an industry focus and contributed to a focus within the Faculty for disciplines which supported the cropping industries. The establishment of a joint centre with La Trobe University assisted the introduction of post-graduate soil

science courses, while another centre, the Centre for Farm Planning and Land Management (Ferguson) promoted rural-based land management activities and to an extent involved the colleges of VCAH in research activities. In more recent times, joint activities and investment with the State Department led to the establishment of the Food Animal Research Centre at Werribee (Egan) through a major ($1.5 million) infrastructure investment, and to enhanced joint operations in support of the pig industry. This paralleled the work of Rolf Beilharz in genetics, with applications as diverse as racehorses, sniffer dogs, seeing-eye dogs and cattle. Simulation models for cropping (Connor) and the registering of patents from plant breeding programs (Halloran) were outputs during this period. Two large Meat Research Corporation grants, one of which was a core grant for fundamental, physiological research over five years and others of which modelled grazing livestock, especially sheep, provided an ongoing focus for animal production staff of the faculty. Through the decade, the rise in graduate student enrolments and grants attracted to the Faculty contributed to the development of the research culture of the Faculty. Internationally, 1984 to 1990 was a period of major involvement through the first of the large Australian Centre for International Agriculture Research (ACIAR) projects for the utilisation of crop residues.

Mention should also be made of the Meat Research Council's Temperature Pastures Sustainability Key Program which was coordinated from the University of Melbourne. This program led to the nation-wide Sustainable Grazing Systems Key Program, as well as the first of the ARC Large Grants to come to the Faculty, and participation in the multi-million dollar Phosphorus for Dairy Farms program with Agriculture Victoria, the Dairy Research and Development Corporation, Pivot Fertilisers and La Trobe University (White, Douglas and Chalk).

The decade, and the tradition it imbued through to today, also saw the production of several significant texts; Van den Ban and Hawkins, *Agricultural Extension* (in seven languages), Barr and

Cary *Greening a Brown Land: The Australian Search for Sustainable Land Use,* Loomis and Connor *Crop Ecology: Productivity and Management in Agricultural Systems,* Malcolm and Makeham *The Farming Game,* Malcolm, Sale and Egan *Agriculture in Australia,* Connor and Smith *Agriculture in Victoria*, White *Introduction to the Principles and Practise of Soil Science*, and Falvey *Food Environment Education: Agricultural Education in Natural Resource Management*.

The late 1980s to early 1990s was a period of high staff turnover associated with retirements, One to retire early was Dr Michael Dalling who subsequently established the genetic engineering company, Calgene Pacific Pty Ltd. This provided an opportunity for the Faculty to reorient itself through strategic new appointments. Young staff in various fields were appointed and the field of soil science, seen to have been under-represented for many years, was supported by the appointment in 1992 of a Professorial Fellow, Robert White (subsequently Foundation Professor of Soil Science from 1995). White introduced the postgraduate soils courses with Victorian Education Foundation support and coordinated the soil research and teaching activities of the Faculty to become a significant component in natural resource management aspects. In addition to retirements, some key younger staff moved to greener pastures, perhaps indicating that the rate of change in the Faculty was not as fast as some wished.

Activity in the social sciences increased. Rural sociology expanded from one to two subjects and scientific communication was added as a client-oriented approach to social sciences supporting agriculture. International trade economics was developed through the appointment of Dr Donald McLaren. In the late 1980s John Cary led an extended research program concerned with understanding landholders' responses to regional and local land degradation problems, including irrigated and dryland soil salinisation, and problems of soil structure and soil acidification. Alan Lloyd conducted an extensive agricultural policy review for the Victorian

Government in 1986 and Bill Malcolm expanded his farm management courses and research through the period.

Agriculture at Melbourne through this 90-year period, developed from an unfunded but clear aim in 1905 through periods of great vision, tenacity, strategic management and, at times, uncertainty. The Agricultural Science course continued throughout and students in Victoria and far beyond said, as they continue to say with pride, that they *did Ag Science at Melbourne*. The course has changed significantly over the years and will continue to change. With affiliation and now complete integration with the applied science activities of the colleges of VCAH, the science orientation of the old Faculty will blend with the practical orientation of the colleges - a circumstance reminiscent of the recurring themes of Wadham's own insights in the 1930s. Perhaps the single most important indication of the wide understanding of agriculture within the University of Melbourne was the change in the Faculty Department of Agriculture's title to be the Department of Agriculture and Resource Management. The recognition of this linkage and the implication that food and fibre production should be conceived as a component of natural resource management is consistent with the themes reiterated through the past nine decades.

The 'old' Faculty of Agriculture, which by then had become the Faculty of Agriculture and Forestry (refer to Chapter 7), ceased to exist with the creation of its successor, the Faculty of Agriculture, Forestry and Horticulture, on 3rd April 1995. The two Departments of the "old" Faculty created in 1995 became components of this new Faculty with the higher education activities of the VCAH colleges; the story of which forms Chapter 12.

Chapter 7: Forestry At Creswick And The University, 1910

I. S. Ferguson and R. Youl

The Creswick School: 1910-51

The Forests Act, 1907 established the State Forests Department in Victoria. It also prescribed an examination system for the training of professional foresters. By 1910, this had led to the purchase of the residence of Dr John Tremearne at Creswick for the establishment of the Victorian School of Forestry. Sir Alexander Peacock, the local Member of Parliament and later Premier of Victoria, was a driving force in the establishment of the School.

To quote a 1977 University of Melbourne citation:

'Creswick is a unique town. On a population basis it has probably produced more distinguished Australians than any other town in Australia. It was the birthplace of Sir Alexander Peacock, Premier of Victoria; of Sir John Northcote, soldier and Governor of New South Wales; of John Curtin, Prime Minister of Australia; of the Lindsay family, painters and writers. The Holy Ground of Trade Unionism, it produced W.G. Spence, founder of the Amalgamated Miners' Association and David Temple, co-founder with Spence of the Shearers' Union. Creswick is in the heartland of the great Ballarat Mining District, was world famous for deep-lead gold mines such as Madam Berry; the greatest mining disaster in Australia's history occurred at Creswick's Australasian mine in 1882.'

The first six students arrived in 1910. Their teachers were from the Ballarat School of Mines. Their Board of Examiners was led by Professor Alfred Ewart of the University of Melbourne, the

leading Victorian botanist of his time.

By 1912 the adjacent Goldfields Hospital (established in 1856) had also been purchased and a long tradition of forestry education at Creswick had begun. Early trainees included Reg Lindsay (of the Lindsay family) who was killed in action in World War 1.

Successive Principals of the School contributed to the progressive development of high standards of professionalism during these early years. They included in order : T.S. Hart, Charlie Carter, Karl Ferguson, and Dr. Ted Semmens - all people of considerable character. The story is still recounted in pathology circles of Charlie Carter's practical tests which often included a grey human hair or a shark's tooth, in the guise of fungal hyphae or fruiting bodies, for the unsuspecting innocents to identify and classify.

Edwin James Semmens

Edwin James Semmens was born in 1886. His early education was at the Ma
of Science from the University of Melbourne, with Exhibitions in Botany an
Linnaean Society. Ted Semmens began his career as a teacher in the Educati
the Principal of the Victorian School of Forestry. The appointment was seen
outstanding progress in the next 24 years is indicative of his leadership and i
an accomplished field botanist and historian, and active in community affairs
the community, particularly to local government. His historical collection wa
collections for historical research. He was awarded the honorary degree of D

Creswick's intake of students was about four to eight annually from 1910 until the mid 1940's. The three year course undertaken by the students leading to an Associate Diploma of Forestry. This qualification equitably mixed theory and practice, a tradition that has continued. Entrance was by competitive examination. The training was robust and the conditions spartan. Students worked in the classrooms and laboratories and in the school grounds, at the State Nursery and in the surrounding forest. The forestry profession was automatically considered a

male preserve in those days even to the extent that the advertising brochure used for many years described the Creswick diploma as 'The Gateway to a Man's Career'.

During the late 1920's, the Commonwealth Government also established a forestry training academy, the Australian Forestry School (now part of the Australian National University), at Yarralumla and there was considerable tension between the Commonwealth and Victorian Governments about forestry education. Leading foresters in the rest of the country wanted all forestry training at Canberra. Charlie Carter supported this thrust and transferred to the employ of the Canberra school. The Institute of Foresters of Australia was reluctant to grant membership to holders of the Creswick diploma, causing strains within the Institute that did not ease until the 1960's. More importantly, the argument resulted in other State forest services employing predominantly Canberra graduates until the 1980's, while Victorian graduates were more confined to Victoria, at least in the early years of their employment.

During these early years, the Forests Commission obtained most of its professional forestry staff though cadetships at the School and established a practice of sending the best diplomates to finish a Science Degree at the University of Melbourne.

The Melbourne School: 1943-77

Following representations by the Forests Commission and the Victorian Government, the University of Melbourne established a Bachelor of Science in Forestry course in 1943. Competition between the two forestry schools has continued to this day with undoubted benefits in promoting both excellence and a diversity of emphasis. Karl Ferguson and later Frank Moulds of the Forests Commission were seconded temporarily to undertake the duties of the Senior Lecturer in Forestry.

The University of Melbourne course was initially restricted to Creswick graduates who completed their degree by undertaking

two additional years of study at the University. The first intake of three students, Eric Ellwood, Geoff Dyer (now deceased) and Bill McKenzie completed their studies at the end of 1944. All three had careers of distinction. Professor Ellwood culminating as Dean of the School of Forestry, North Carolina State University and as a distinguished wood scientist; Dyer as a successful sawmiller; and McKenzie as another distinguished wood scientist with CSIRO Division of Forest products.

John Chinner took up his appointment as Senior Lecturer in charge of Forestry in the Faculty of Science in 1945. He successfully pursued research grants and support for lectureships from industry and government agencies. Many of his postgraduates went on to lead the development of forestry research in government agencies, industry and universities in Australia and internationally. The names of postgraduates to 1979 include: Drs Peter Attiwill, Leon Bren, Murray Cunningham, Dick Curtin, Fred Craig, Bob Ellis, Eric Ellwood, David Flinn, Peter Greig, Ron Grose, John Kininmonth, Alf Leslie, Jack Opie, Leon Pederick, Tony Rudra, Ross Squire, Ken Shepherd, Ray Spencer and Messrs Robin Cromer, Barrie Dexter, Alec Floyd, Mike Hall, Bill Incoll, John Jack, Bill McKenzie, Joe Mack, Malcolm Mann, George Peet, Ken Rowe, and Arthur Webb, and they continue to be cited widely in forestry research literature. At various times, Drs Peter Greig and Tony Rudra went on to serve for periods as members of academic staff, while Associate Professor Peter Attiwill has had a distinguished career with the School of Botany, and Drs Leon Bren and Ray Spencer with the School of Forestry. National and international contributions of John Chinner, Alf Leslie and Eric Ellwood were recognised by the University by the award of honorary Doctor of Forest Science degrees in 1993, on the occasion of the fiftieth anniversary of the founding of the University school.

John Harding Chinner

John Harding Chinner graduated from the School of Forestry, Creswick in 19
University of Melbourne in 1938. He was awarded the Rhodes Scholarship ir
rising to the rank of Lieutenant-Colonel. He took up the Rhodes Scholarship
and forest ecology. Returning from Oxford in 1947, he was appointed Senior
He was promoted to Reader-in-charge in 1956. He was Dean of the Faculty o
Foresters of Australia in 1974 and was awarded the N. W. Jolly Medal by tha
especially in the development of postgraduate research, through which he laic
services.

John Chinner was assisted by first class staff such as John Howard, who went on to have a distinguished career in international forestry; Bailey Carrodus, who is now a leading Victorian vigneron; and Alf Leslie who is a leading and much respected figure in international forestry.

Alfred John Leslie

Alfred John Leslie graduated from the School of Forestry, Creswick in 1941.
1949. He then served with the Forests Commission and APM Forests Pty Ltd
He was promoted to Senior Lecturer in 1962 and graduated to a Master of Sc
the School of Forestry, University of Canterbury, from 1974-77. He served w
become Director of the Forest Industries Division at the time of his so-called
the International Union of Societies of Foresters. He has continued to be activ
of Australian forestry throughout the world.

The Melbourne-Creswick Nexus:1951-80

In the immediate post-war period, the Victorian School of Forestry at Creswick flourished as the Forests Commission increased its intake to about 12 students per year. It further developed its professional and academic standing, under the succession of able Principals who followed Ted Semmens: Dr. Frank Moulds, Bill Litster, Alan Eddy, Dr. Jim Edgar, Bob Orr and Dr. Ross Squire. Five of the six were graduates of the University of Melbourne. All were strong personalities and worked hard to maintain the professional standing of the Creswick School, as well as meeting the academic requirements

for those students proceeding on to University. Dr. Frank Moulds rose to become Chairman of the Forests Commission. During and after his term as Principal, he and John Chinner were widely seen to be politely but intensely competitive in advocating the professional versus academic (or practitioner versus scientific) virtues of their respective schools. In practice, the two systems were well matched to the age and background of the students and complementary in developing both excellent professional foresters and research scientists, as the record shows.

Francis Robert Moulds

Francis Robert Moulds graduated from the Victorian School of Forestry at Cr
Melbourne. After several years as a field forester, he was awarded a Sterling
Forestry degree and, in 1950, to the degree of Doctor of Philosophy. Frank M
culminating in his appointment as Commissioner of Forests and subsequently
his period as Chairman, notably in research, silviculture, plantation establishr
the Institute of Foresters of Australia and awarded the Imperial Service Orde

Financial pressures encouraged the Forests Commission to accept Commonwealth funding for the Creswick school through the then Victorian Institute of Colleges. The numbers of students increased still further to about twenty per year. Once Creswick became financially dependent on external funding, a succession of attempts were unleashed to attach the Creswick school to the School of Mines at Ballarat, the Ballarat College of Advanced Education, or the University of Melbourne.

In 1970, the University established a new four-year Bachelor of Science in Forestry course, providing direct entry into first year studies. Creswick diplomates continued to be granted status for the first two years of the course. This change underscored a lively decade of debate as to the future of the Creswick and the Melbourne courses and the possibilities of amalgamation, in which the Victorian Division of the Institute of Foresters of Australia played an important role. These strains were mirrored

in the students, among whom the Creswick diplomates had assured employment with the Forests Commission, while others were on the open market in an environment in other States not entirely welcoming to Melbourne graduates.

In 1973, the School of Forestry amalgamated with the Faculty of Agriculture forming a new Faculty of Agriculture and Forestry. The former School of Forestry became a Forestry Section within this then single department Faculty but retained close links in teaching and research with the School of Botany in the Faculty of Science. The integration proved successful because of common interests and complementarities in teaching and research. Some would argue that having forestry students undertake a second year in residence on the dry stony soils of Mt Derrimut was pushing integration too far; others that it was better to have a field year rather than no field year.

John Chinner worked towards an accommodation between the Creswick and Melbourne courses. Despite many setbacks, an agreement was reached between the University and the Forests Commission in 1977. This also reflected the far-sighted support of the Commission and its then Chairman, Mr Alan Threader, for the future of forestry education and research. John Chinner was appointed as Dean of the Faculty in 1979 and 1980 and therefore had the satisfaction of putting the amalgamation he had sought into effect.

The agreement between the two parties required that the University conduct at least two years of its Bachelor of Forest Science course in residence at Creswick and that the Forests Commission cease its diploma course. That agreement has stood the test of time and the spirit of the agreement has been carried forward in later developments. Reflecting the relationship between the two organisations and the continuing support of the successive heads of the government agency, notwithstanding changes in the name of the agency and its scope. John Chinner retired in 1980, having seen his vision and persistence result in the commencement of a single tertiary course in forestry and the

establishment of a Foundation Chair of Forest Science, moves that heralded a new era in forestry education and research in Victoria.

Integration of Creswick and Melbourne Schools: 1981-94

Professor Ian Ferguson was appointed to the Foundation Chair of Forest Science in 1981. The Bachelor of Forest Science course was re-designed to take better advantage of the period in residence at Creswick, such that students now undertake the Second and Third Years of the course there, the First and Fourth being undertaken at Parkville. Academic staff were recruited progressively to take over teaching from staff of the Forest Commission, although many of the professional and vocational aspects of training still rely on teaching by practitioners. Dr. Roger Sands was appointed Reader and Director of University Studies at Creswick in 1982, a position he filled with distinction before taking up the Chair in Forestry at the University of Canterbury in 1995. Numbers of students were initially modest (about 20 per year) but rose progressively to a level of about 45 per year by 1997 (half of whom are female).

The impact of women graduates on the profession deserves special mention in view of the reservations inherent in the masculine slogan alluded to earlier. Women foresters and forest scientists are now working in almost every sector of forestry and greatly to its benefit. As with men, most are attracted to forestry by a liking or concern for the forest environment and a desire to pursue a course and a career that has a substantial field component, at least in the early stages. The Bachelor of Forest Science course provides a blend of science and field work with a vocational emphasis that is both different from other science courses and leads to employment. For this reason, it continues to attract students of high academic ability and with a commitment to the profession.

In 1983, the Forestry Section was recognised as one of the two national institutes of higher education in forestry by the Standing Committee on Forestry of the Australian Forestry Council. This marked an important turning point because it signalled that forestry organisations in other states would recognise and employ Melbourne graduates where previously they had supported the Australian National University almost exclusively. Melbourne graduates now find employment in every State and Territory, and in New Zealand.

In 1984 and 1985, Professor Ian Ferguson served as Chairperson and sole Member of a Board of Inquiry into the Timber Industry in Victoria. The far-reaching recommendations of that inquiry led to the introduction of a Timber Industry Strategy by the Victorian Government, an iniative later emulated in other states and the Commonwealth.

The Forestry Section progressively expanded with the assistance of competitively awarded grants and research contracts. The University provided funds for a major extension to the Science building. Under the leadership of Associate Professor Roger Sands at Creswick, the Forestry Section gained a major role in a newly formed Co-operative Research Centre for Hardwood Fibre and Paper Science, together with CSIRO Division of Forest Products, the Australian Pulp and Paper Institute at Monash University, and the Pulp and Paper Manufacturers Federation of Australia. This Commonwealth sponsored centre of excellence has provided a major boost to postgraduate and staff research. Similarly, membership of the Co-operative Research Centre for Catchment Hydrology, involving a number of water authorities and research institutions, has boosted catchment research. Another major collaborative project with the Western Australian Department of Conservation and Land Management developed new and more efficient methods of inventory to assist strategic planning in native forests. The Trees for Profit Research Centre, a collaboration in research to grow profitable tree crops that will also ameliorate salinity, is yet another addition to this array. This Centre includes staff from

CSIRO, Victorian Department of Natural Resources and Environment, State Forests of NSW, and Treecorp Pty Ltd.

In 1990, the Forestry Section received a major endowment from the Julia Hale Bequest. Julia Hale was a sawmiller and businesswoman. This endowment was therefore used to initiate postgraduate research and training specifically directed towards the forest industries. Professor Peter Vinden was appointed Professorial Fellow in Forest Industries in 1992 and has been highly successful in obtaining industry support for research and training initiatives in collaboration with the Victorian Timber Industry Training Centre (adjacent to the Creswick School) and the University of Ballarat. The Master of Wood Science degree by research and the Postgraduate Diploma in Forest Industries were introduced in 1993 as part of this program. Another recent complement to the Forest Industries Program is the Forest Technology Program, a collaborative research and teaching endeavor with the CSIRO Division of Forestry and the Australian Logging Council, which commenced in 1995.

The School of Forestry and Resource Conservation: 1994-97

Following the recommendation of a University review of Agriculture and Related Disciplines by Professor Dennis Greenland of the Commonwealth Agricultural Bureau, a separate School of Forestry was established within the Faculty of Agriculture and Forestry in 1994, preparatory to other changes consequent on the amalgamation of the Victorian College of Agriculture and Horticulture with the University and the expanding size and scope of activities in forestry research and education. Professor Ferguson was appointed Head of the School of Forestry, which became the School of Forestry and Resource Conservation in 1996.

In addition to the research activities outlined earlier, the School continues to pursue research and teaching in other aspects of

forestry, notably in park and reserve management, conservation biology, recreation and land care. In doing so, it utilises the native forest and plantations at its back door to good purpose. It has received major research grants from the Australian National Parks and Wildlife Service for research on recreation in the national parks of the Latrobe Valley region, the 'Save the Bush' program, and the evaluation of community revegetation projects; and grants from the Victorian Department of Conservation and Natural Resources to conduct research on the orange-bellied parrot, Leadbeater's possum and helmeted honey-eater.

Five-year combined Bachelor of Forest Science/Bachelor of Science and Bachelor of Commerce/Bachelor of Forest Science courses were introduced in 1994 and 1995 to cater for students wishing to pursue more specialised areas of science or commerce that complement the Forest Science course. These have proved popular for students with high academic levels of achievement, and have attracted some 40 per cent of the new admissions in 1997.

Professor Peter Vinden was appointed Director of University Studies at Creswick, following Professor Sands' departure to take up the Chair at Canterbury. In March, 1997, Professor Vinden was appointed to the Foundation Chair of Forest Industries, the creation of which signalled the importance the University placed on this area of teaching and research.

In addition to new frontiers in forest industries, the School is expanding its work in molecular biology and tree breeding through the CRC in Hardwood Fibre and Paper Science, and in the collaborative Xylonova Program project with ForBio Ltd, the Centre for Forest Tree Technology, State Forests of NSW, and Treecorp Pty Ltd, among others. In 1996, it established an Information Technology for Forest Management Program to develop software and improved biometrical functions for use in forest planning. Staff are now working on a major development in this area with Auspine Ltd, CSR Timber Pty Ltd and Primary

Industries South Australia (Forestry).

New postgraduate coursework programs have been established, especially in the Forest Industries and Farm Forestry. These now cater for about 65 students annually. In 1994, the Farm Forestry Program established a postgraduate course that is taught on a block release basis throughout Australia at centres including Albany, Busselton, Mt Gambier, Launceston, Creswick, Tumut, Canberra, Lismore, Gympie and Atherton. It achieved great success and support from the Commonwealth Farm Forestry Program. The Myer Foundation is also funding a new 'Master Tree Grower' short-course for farmers that will also be offered at many locations. Negotiations are also in train for the formation of a collaborative Centre for Park Management Research and Education, involving Burnley College of Horticulture, the Department of Leisure and Recreation Studies of Victoria University of Technology, Parks Victoria, and the City of Melbourne.

In 1994, the University and the (then) Department of Conservation and Natural Resources formed a jointly owned company, limited by guarantee, to carry forward the management of the Creswick School site. Peter Shepherd was appointed Chief Executive Officer and Senior Lecturer in 1995. The company is responsible for the management of the Creswick School site and for teaching a new two-year Diploma of Forestry course for people who wish to pursue careers as technical supervisors in the forestry and forest industries. This is a more vocationally oriented course with some innovative aspects to the course design, including the teaching of subjects other than Work Experience on a block basis, over one or two weeks, with long periods of supervised Work Experience in the field between the blocks. This arrangement caters well for both school-leavers studying full-time, and for people in employment studying part time on block release. Some 40 students are now undertaking the course, almost half on a part-time basis, with the support of their employers.

In the last decade, staff of the School have undertaken numerous assignments for international and national agencies in other countries, most recently for the Food and Agriculture Organisation of the United Nations in India as Chief Technical Advisers to the Indian Council for Forestry Research and Education. In 1997, one third of the postgraduate research students in residence came from overseas. Several postgraduate students will present papers at international conferences and several collaborative research projects are underway with overseas colleagues. In 1997, some eight undergraduate students will spend at least a semester overseas, variously in the United States, Germany and Thailand, as part of their formal studies. These developments underscore the growing international as well as national role of the School.

Staff of the School contribute to the Australian community through service on and in some cases leadership of the Boards or Councils of Central Highlands Water, the Forest and Wood Products Research and Development Corporation, the Timber Promotions Council, Institute of Foresters of Australia, Victorian Forest Industries Accreditation Board. Their contributions are also felt through membership of scientific societies and associations; and through research for, advice to, or consulting for a wide array of individuals, companies and agencies. The school continues to strive to be a first class school of forestry of international repute.

By July 1997, some 669 persons had graduated to the degree of Bachelor of Forest Science or the earlier Bachelor of Science in Forestry degree, 93 to the degree of Master of Forest Science or its predecessor, three to the degree of Master of Wood Science and 11 to the degree of Doctor of Forest Science of whom seven were awarded their degrees *honoris causa*. Some 37 students in forestry had been admitted to the degree of Doctor of Philosophy by the University.

The School of Forestry at Creswick, 1994.

Chapter 8: Gilbert Chandler College, 1939

Competition for resources

From its foundation as the School of Dairy Technology and Dairy Research Laboratories in 1939, today's Gilbert Chandler College has experienced a common theme - the competition for resources between education, research and quality control. The history of the College is a fascinating study into industry relationships, review and restructuring, and the battle for resources.

When the School of Dairy Technology and Dairy Research Laboratory was established in 1939, its aim was 'primarily the advancement of dairy produce manufacture and preservation (improvement) of quality'. It was hoped to achieve this by two methods - 'skilled instruction to dairy factory operatives in factory practice and in dairy technology', and 'research work into some of the many problems facing this section of the Dairying Industry' (Department of Agriculture, 1968). These aims were felt to be just as relevant in 1968 when major building improvements were made as they had been in 1939. It is doubtful whether sufficient resources to fully achieve both

these aims were ever made available to the Werribee campus.

Early days

The role of the college in dairy education was planned in light of its defined aims,. In 1939 a two-year course modelled on a Massey University program was established. Students achieved a Certificate of Competency in Dairy Manufacture with an elected option of either Buttermaking or Cheesemaking. This course was suspended from 1942 to 1947 due to World War II. In 1948, instruction in dairy products other than butter and cheese was included when courses recommenced. The existing course was revised in 1959, and all students undertook both butter- and cheesemaking theory and practice.

The former School of Dairy Technology comprised a lecture room, two student laboratories, two small research laboratories, offices and a 'model' butter and cheese factory - in 1939 butter and cheese were by far the most significant dairy products made in Victoria. Facilities quickly became stretched, and there was a need for residential accommodation for students, many of whom came from country areas. Then, as now, the provision of adequate laboratory space proved to be a problem.

From 1952 industry underwrote the attendance of staff at the Institute's courses, with a voluntary levy in place supported by most dairy companies.

Plans were made in 1960 for an expansion to the institution, including modern teaching and research laboratories and a 'highly versatile dairy factory with intricate mechanical and electrical services.' It took several years for these plans to become reality. During 1964 and 1965 funds were provided for student hostels and catering, thereby greatly improving the availability of courses to those currently employed in the manufacturing sector of the dairy industry, but introducing challenges for the management of the campus in establishing their financial viability.

In 1965-66, when funds were at last made available for the main extensions, it was decided to rename the School of Dairy Technology the Gilbert Chandler Institute of Dairy Technology. This was in recognition of the contribution of the then Minister of Agriculture, the Hon Gilbert Chandler, to the dairying and agricultural industries. The cost of extensions was over $1.5 million. By 1968, facilities comprised:

- lecture rooms, laboratories, locker rooms, and hostels for an 18 student annual intake
- a pilot dairy factory with facilities for milk and cream receival, milk pasteurising and bottling, cheesemaking, buttermaking, milk concentrating and drying, with casein and laboratory sections
- a research wing with four large and two special laboratories
- a library for staff and students
- a conference hall
- administrative offices

Courses were halted during 1967 to allow building to take place.

Starting in 1968 a two-year course leading to the Certificate in Dairy Manufacturing was established, with a third year leading to the Diploma in Dairy Technology - entry to the latter course was restricted to students with required Leaving subject certificates, and with average or better results in the Certificate. Then as now, in response to analysis of industry needs, teaching years were kept short, and courses were held at times when factory production was at a low level.

By 1968, 190 dairy factory operatives had been awarded the Certificate of Competency in Dairy Manufacture, with another 36 attending part or all of the course but not graduating. At the end of 1967, an employment survey showed that 29% of graduates were in factory management, 16% in production control, 12% in quality control, 9% were State or Federal Government Officers, 22% had other positions in factories, 9% were no longer in the industry, and 3% were deceased. The report (Department of Agriculture 1968) points out that in 1968

more than 80% of the Certificate holders had graduated since 1949, and so were relatively young - the importance of the School of Dairy Technology to the industry was therefore very great. The potential value was even greater.

Whilst it may be tempting to think of them as a recent innovation, short courses were already important by 1968. By the standards of the time there was a wide range - milk and cream grading, milk and cream testing, buttermaking and cheesemaking courses for factory operatives; milk quality and testing for Dairy Supervisors in the Department of Agriculture; and special short courses on milk pasteurising and bottling and milk quality testing. Technical field days for University students in Agriculture and Veterinary Science courses were held, as well as for technical organisations in the dairy industry.

For the next decade or so, the Gilbert Chandler Institute of Dairy Technology continued to provide Certificate and Diploma programs and short courses. During this period, both the on farm and the dairy manufacturing sectors were undergoing major change, and it became clear that the Institute had to take stock of the situation.

The Mullaney Report

The first of the more recent reviews of the activities of the Gilbert Chandler campus was that conducted by the late Dr Peter Mullaney. This review is frank, concise and incisive and provided constructive recommendations - features too infrequently found in institutional reviews.

Noting the dissatisfaction of industry with the programs of the Gilbert Chandler Institute of Dairy Technology, an Advisory Committee with strong industry representation was appointed in 1978. In 1980 it reported to the Chief of the Division of Dairying in a document entitled *The Role and Function of the Gilbert Chandler Institute of Dairy Technology to assist the Dairy Industry*. This report said 'the prime role of the Institute is

to provide education, training and extension opportunities for the Industry'. It asked the State Department of Agriculture to take action to improve provision of programs by the institute. The Committee felt that 'emphasis on the educational role of the Institute has been lost in the rapid changes which have been recently felt at the Institute' and that 'it is urgent that action be taken... for the appointment of one or more additional staff with special responsibility for working closely with Industry to develop and implement new educational courses.'

The Director General decided on a review of the whole educational role of the Gilbert Chandler Institute, and arranged for Dr Peter Mullaney to undertake it. Peter Mullaney was seconded to the position of Principal of the Gilbert Chandler Institute of Dairy Technology for the two years of the review.

The Director-General asked Dr Peter Mullaney to report on wide terms of reference:

- to define the needs for dairy technology in Victoria;
- to look at ways of meeting these needs and how to identify the nature and magnitude of unfulfilled needs;
- to look at Departmental resources which could be directed to dairy technology education; and
- to identify limitations affecting fulfilment of the identified needs and how to overcome them.

The dairy manufacturing sector was very different in 1981 from that in 1997. At that time, the average factory employed only 84 persons, and more than fifty percent of factories employed less than fifty people.

Before the Mullaney report was handed down, a separate College of Dairy Technology was formed in January 1981 within the Gilbert Chandler Institute. In a crucial change of administration, the responsibility for the College was passed from the Chief, Division of Dairying to the Chief, Division of Agricultural Education, and several staff were transferred as a result. The Governor-in-Council in 1981 proclaimed that the

College of Dairy Technology was designated as an Agricultural College under the provisions of the Agricultural Colleges Act 1958. Thus the College of Dairy Technology became a sister college to Dookie, Longerenong, Burnley, Glenormiston and McMillan, with Mullaney being appointed as Principal.

In October 1981 Peter Mullaney presented his report to the Director-General. Mullaney concluded, *inter alia*, that whilst the dairy industry would continue to be a major income earner for the state, both locally and overseas, total production was likely to continue to decline and product utilisation to move toward liquid milk. Subsequent developments have defied these particular predictions, but Mullaney also correctly assessed that there would be rationalisation within the industry to larger manufacturing units, and that the advent of new technology would profoundly change the focus of dairy technology education.

Mullaney's analysis was that the principal need of the dairy manufacturing sector was for short courses to update or supplement knowledge and skills of those in the industry. Courses should not only be conducted at Gilbert Chandler, but should also include provision by correspondence. In contrast to the practice of only taking students from industry, he advocated taking students straight from school into at least the Certificate Course.

Mullaney drew attention to the high annual cost per student of about $12,600 at that time, including a 'hidden' subsidy of $1,100 per student for accommodation (the difference between cost of provision and fees collected from students). Student intake in 1978 was only five and there were only 26 EFTS at the Institute in 1980-81.

In a section of the report which must surely have aroused strong feelings amongst the teaching staff of the time, Mullaney described the standard of teaching as unacceptably low - staff were not trained as educators, they were poorly motivated, and

they were distracted by research. Expanding on the lack of educational qualifications and training of staff, Mullaney saw little evidence of planning to overcome problems -'in many cases subjects have been taught by either the first volunteer or more likely the first conscript.' Part time lecturers were poorly briefed so that integration with other subject matter was lacking. Reducing student numbers made staff feel that the industry did not support the College's courses. Dairy training was very inbred, in Mullaney's estimation, and students needed to be involved in other education programs and with other students. Only the factory seemed to provide a justification for courses at Werribee to continue, Mullaney advised, since other educational institutions could better provide the academic programs. He said that the teaching program would certainly benefit if it could be integrated with another College program, and that two to three staff members could be saved by integration of the academic program at the TAFE level. Mullaney recommended the transfer of academic training to another Departmental college, with technical, or factory training, to remain at Werribee. Under these arrangements, there would be no need for a Principal. The Director of the Gilbert Chandler Institute of Dairy Technology would have overall responsibility, with a college Course Coordinator taking responsibility for educational matters.

Mullaney's recommendation was that it would be best if the other college was within the agricultural college system rather than in the wider TAFE system, because Werribee would lose all identity if it were transferred out of the State Department of Agriculture, and because of problems of integration between separately administered bodies. He considered that the then current Certificate and Diploma courses didn't differ sufficiently to warrant them both continuing - they should be combined into a single Certificate course. He said that the pilot factory was grossly under utilised and poorly regarded by industry, and this needed to be addressed by a new factory manager.

Sparing no one, Mullaney also was critical of industry. A survey showed a lack of commitment to the training of staff, with many

respondents in an industry survey having no idea of what to expect of students after their return from Werribee. They were also unaware of the key quality assurance role of the Gilbert Chandler Institute.

With respect to education and training activities, Mullaney advised that the College of Dairy Technology should continue to be involved in education for the dairy processing industry. It should provide education at three levels for a fully integrated program:

- special industry courses (about 20 days' duration) to help people to update or supplement their knowledge and skills;
- formal education at TAFE middle level certificate equivalent with some 30 semester units, and a pre-requisite of Year 11 leading to the Certificate of Applied Science (Dairy Technology); and
- an integrated correspondence course scheme to allow people to attain product making skills at an operator certificate level.

This structure was seen as providing Level 1 training for operators, Level 2 training for supervisors, and Level 3 training for management.

It seems apparent that the mixture of education, research and quality improvement under the one Institute management was not working when Mullaney undertook his review. Whilst quality control was providing an increasingly important service to industry, and the research component was expanding, the educational role was at the best moribund. Educational leadership was lacking, or the problems identified by Mullaney would not have existed. Serious doubts as to the continuation of the educational function were entertained within the State Department of Agriculture, and industry leaders must have been questioning whether the College could adequately fulfil the role defined for it at its establishment in 1939, and the new objectives outlined by Mullaney.

Mullaney's report had thus set the scene for major changes at the College, but debate was to continue about the nature of its courses. The separation of the College from the Institute, whilst aiming to overcome the lack of educational leadership, was to lead to management problems concerning the sharing of scarce resources - and these problems were exacerbated when the College was removed from the State Department of Agriculture in 1983.

Changes in administration and programs - the College in the VCAH

In March 1983 Gilbert Chandler became part of the newly established Victorian College of Agriculture and Horticulture and responsibility for administration passed to the Victorian College of Agriculture and Horticulture Council. An agreement between the Minister of Agriculture and the Minister of Education established a basis for the sharing of the facilities at Werribee, but did not put in place a mechanism to resolve disputes. Factory staff members were transferred to the College, and in return the College was expected to support the use of the factory by the Institute for its research purposes.

Enrolments in courses at Werribee were not encouraging for the future of the college when the VCAH took over its administration. The number of Certificate students had varied between eighteen and twenty-five in the years 1978 to 1982, and the number of Diploma students from zero to ten in the same period. Even attendance at short courses was on the decline. The number of Equivalent Full Time Students (EFTS) was in the mid- to high twenties. By 1985, under the new management, this had risen to 72.

Peter Ryan, later to become Principal of Dookie College replaced the initial Principal of the College, Ian Stevens, in May 1984. Reviews of academic programs were already well under way.

During 1984, the Certificate of Applied Science (Dairy Technology) was accredited by TAFE. This replaced the Certificate of Dairy Manufacture. The first group of students graduated in 1984. There were plans to make available by correspondence the theory sections of Cheese Maker and Evaporative and Spray Drying courses. Thirteen short courses were conducted, with over 330 participants. On the resource front, a relocatable teaching laboratory and short course centre was added and a factory upgrade was planned for 1985. A submission was made to TAFE to upgrade the cheesemaking equipment, to develop an ice cream and frozen products manufacturing capacity, and to install some electronic control equipment.

It is significant that in the first Annual Report of the College, presented in 1984, Peter Ryan thanked the Director and staff of the Gilbert Chandler Institute of Dairy Technology for help with teaching and for the sharing of facilities. Fourteen Gilbert Chandler Institute staff contributed to programs of the College, including several who were later to become members of staff - Ms Joy Manners, Dr Malcolm Hickey (both later Principals) and Dr Hubert Roginski (later a Senior Lecturer). The contribution by staff of the Institute and its successors was to decline in later years, both because of the demands made on staff in their research activities, and because of philosophical differences with Gilbert Chandler College staff about the role of research scientists in lecturing to factory staff.

From 1985, the Vegetable Growing Farming Trades Apprenticeship course was conducted at Gilbert Chandler. In the same year, the Diploma of Dairy Technology was reintroduced. It was already clear that industry support was on the rise, with full enrolment expected in 1986 for the first time since 1976. A further demonstration of support was the fact that 20 short courses were conducted, with over 730 enrolments.

The Agreement between the Victorian College of Agriculture and Horticulture Gilbert Chandler Campus and Gilbert Chandler

Institute of Dairy Technology was renegotiated in 1985. The earlier Minister to Minister agreement had been that where programs of the Victorian College of Agriculture and Horticulture and the State Department of Agriculture had common aims, staff would mutually support each other's activities without money changing hands. Cracks in the agreement were appearing because of the pressure for increased research activity by Institute staff and for increased program delivery by Gilbert Chandler Campus staff.

Peter Ryan visited the United Kingdom, the USA and Denmark on a study tour, and made several recommendations for the future course the College should take:

- Gilbert Chandler should continue to offer specialised programs for the dairy industry, in spite of world-wide trends to move toward more general food science and technology courses.
- Gilbert Chandler should encourage existing employees as well as new entrants to upgrade levels of training through operator level courses, Certificate and Diploma courses and short courses designed to meet specific industry needs - skill training in all these courses should be important components.
- Gilbert Chandler should become involved in graduate level training. This should be based on technology training rather than science training, and should be for careers not principles - other institutions should meet the need for science training.
- The range of equipment in the pilot factory must be continually updated and expanded.
- Staff skills and experience should also be upgraded, and new staff recruited with the necessary background to teach in a rapidly developing industry.
- The provision of short courses should be expanded.
- Contact with overseas institutions should be strengthened, encouraging overseas staff to take sabbatical leave at Gilbert Chandler.

These recommendations have underpinned much of the later development at the campus - the dairy focus has continued, with strong industry support. Upgrading of qualifications is a major focus. A Graduate Diploma and a Graduate Certificate are now in place. Short courses continue. And there has been a succession of overseas scholars in residence at the campus.

A time of growth and review

By 1986 there was a full capacity intake into the Certificate of Applied Science (Dairy Technology). The Associate Diploma of Dairy Technology was also reintroduced with a full intake, including students from all States of the Commonwealth. EFTS rose to 119, with significant rises in the apprenticeship, the Certificate and short course enrolments. A course on the Principles of Milk Powder Production was developed and offered by external study. The Dairy Operatives external study course was launched in July. An external studies course for operators in the confectionery industry was conducted jointly with the Confectionery Manufacturers Association. The campus continued work on its Dairy Industry Quality Assurance Regulatory courses including in-house courses at factory locations and courses developed to meet the needs of individual companies. Professor John Parsons from South Dakota State University, USA was a visiting staff member for six months. Over a five year period the Daniel Scott Fellowship provided for visits by Professor Walter Dunkley, UC Davis, Mr Frank O'Connor, Moorepark Research Institute, Ireland, and Professor John Parsons. Special programs were designed and delivered for overseas students who came from Indonesia, Korea and Denmark.

On the resource front, a new library was added and demonstration facilities for the Vegetable Growing Apprenticeship were completed. In the factory, a shop and product preparation area was completed, as well as renovations to the factory laboratory. To broaden the range of courses which

could be provided and to update equipment, an ice cream freezer was purchased, and the market milk pasteuriser and other equipment were upgraded.

The decision was now made to develop a Graduate Diploma in Dairy Technology, the first Higher Education program for the Campus. The course was to be provided on a part time, block basis with four two-week blocks on campus and other assignment work to be done away from Gilbert Chandler. The program began in 1991 with an intake of sixteen students. The first group of thirteen graduated in 1990. The Associate Diploma in Dairy Technology and the Advanced Certificate in Dairy Technology received accreditation, replacing the Certificate of Applied Science (Dairy Technology) course. The campus was involved in the first development of a Traineeship course for dairy manufacturing, which began in 1989. These were the first traineeships in the food industry in Australia.

At this time the Council of the VCAH was considering its response to the Dawkins proposals for rationalisation of higher education institutions. The Dairy Industry Course Advisory Committee supported the Victorian College of Agriculture and Horticulture Council's decision that the College should remain a multi-campus specialist provider of agriculture, horticulture and dairy technology programs, but sought a broadening of the education base at the Gilbert Chandler Campus. It also stated that the Advisory Committee should maintain its involvement in advice to the College, and that there should be no changes to the structures in dairy education without consultation with industry.

During 1987, the Gilbert Chandler Institute of Dairy Technology became the Food Research Institute, recognising the shift toward a broader focus for the activities of the Institute. This development further emphasised the divergence of interests between the Institute and the College.

The College celebrated its fiftieth anniversary in 1989, and the year brought many changes. Peter Ryan was appointed Principal

at Dookie, and Joy Manners, who had come to Gilbert Chandler from the Institute in 1986, became the first woman appointed as Principal of a Victorian agricultural college. Joy Manners brought considerable expertise in dairy manufacturing and management to the College, and played a major role in award restructuring in the industry generally. She conducted a study of current skill levels in the industry, an occupational profile, and an assessment of future skills requirements to cater for the needs of all Australian States. Her involvement in these broader industry issues added a heavy load to the already onerous position of Principal, but she quickly established a national reputation in all areas of her work.

In her first annual report, Joy Manners mentioned several challenges for the Campus. There was a need to develop new courses and rearrange existing ones to meet outcomes of award restructuring and to provide the industry with an integrated program. It was becoming essential to incorporate the competency-based approach into courses to satisfy the demands of industry and of the State Training System. The College sought the development of formal credit transfer between courses, both those of the Victorian College of Agriculture and Horticulture and of other institutions. There was a continuing need to gain access to funds to improve facilities and to develop contacts in the Asia and Pacific regions. These represented considerable challenges for a small campus and a new Principal.

On top of all this, the Course Advisory Committee again expressed its concern about the lack of facilities, commenting on the growing operations of Gilbert Chandler and the FRI as 'severely stretching the physical resources of the main building [and] placing great strain on the working relationship between both organisations.' By 1990, only two guest lecturers out of a total of fifty-six who provided their expertise for College courses came from the FRI. And the affiliation of the VCAH with the University of Melbourne raised further concerns about the future of the College. This seemed an appropriate time for a review of relationships between the FRI and the College.

Relationships between the Food Research Institute and VCAH-Gilbert Chandler

During 1989, at the request of the Director-General of the Department of Agriculture and Rural Affairs, Jeff Wright, and the Director of VCAH, Bob Luff, Dr R. A. S. Lawson of the Department and Dr Barrie Bardsley of the VCAH reviewed the relationship between the College and the Institute. It had become clear to all concerned, including industry, that all was not well at Werribee.

The reviewers interviewed staff at both institutions, and recommended that joint occupation of the site should continue with a new draft agreement on tenancy and joint financial and physical arrangements, under a new Joint Management Committee. Industry supported this joint occupation. It was further recommended that the Joint Management Committee have representatives of the two organisations and of industry. Any matters unable to be resolved would be referred to the two Ministers with the relevant portfolios. An attempt was being made to overcome problems experienced under the previous agreements, which did not ensure industry's role in helping to make decisions on resource use, and which had provided no mechanism for dispute resolution.

Industry representatives expressed clear reasons for retaining joint occupancy. These included economy in resource use; the need for a national identity for dairy research and education; the need to maintain a viable group of scientists and educators; and the need to maintain the capacity to generate funds from several sources, which neither organisation could achieve alone.

The reviewers recommended that whilst in the short term certain resources would still need to be shared, in the longer term, the FRI and VCAH-Gilbert Chandler should have separate and independent office and laboratory accommodation. In the meantime, FRI and VCAH-Gilbert Chandler should have more

clearly separated office accommodation. New laboratory arrangements would need to be made. Because resources were limiting, local management should provide statements of intent on future programs to encourage cooperation and avoid duplication. VCAH should be the lead agency in education and industry training, FRI in research and development - but importantly, neither party should be precluded from sharing in these activities subject to consultation. DARA and the VCAH should work to establish a Centre of Excellence for research and education first in dairy technology, later in food technology.

The Report pointed out that:

'by the early 1980s there was an approximately equal allocation of priority and resources to the three functions of research, quality assurance and education.'
However, student intake in 1978 was only five. The 1982 decision to separate the College, hence research from education, was considered a wise one- this...

'has been demonstrated by the remarkable growth in both research and education at the site, and it is this success which has largely contributed to the competition for resources and the current tensions.'
It had not proved possible to define areas for sole use by each of the parties. The Crown retained ownership of the site and the buildings. The factory was then a key resource for both; VCAH had the management responsibility because education was the primary role, and because the college could raise revenue for its improvement.

It is not surprising that accommodation was proving such an issue. The 1968 building was designed for a staff of 40. In 1988-89 the FRI had a staff of 72, and VCAH-Gilbert Chandler a staff of 26. Student numbers in the same period grew from 29 EFTS to over 200 EFTS. Both groups made significant capital investments - the VCAH $1.55m and the Department $2.3m. FRI was then planning a $4.9m expansion.

Five basic causes of friction were identified - inadequate definition and understanding of roles; inadequate communication at all levels; failure of local management to develop and maintain formal and informal processes for liaison, planning and dispute settlement; competition for space; and ongoing uncertainty of tenure by the VCAH.

Philosophically, the FRI staff saw few benefits from involvement in educational programs at the skills level, and expressed concern about maintaining confidentiality in research projects if students had access to areas where the research was being conducted. VCAH staff held different views on both these issues, pointing out the benefits to industry of close contact with research workers and that it was feasible to arrange for confidentiality. There were also developments within each of the groups which led to dispute - the FRI's involvement in information transfer and the VCAH's in research were seen as mutually threatening by both parties. The Working Party considered other options to reduce the problems in relationships - the removal of either VCAH-Gilbert Chandler or the FRI to another location, and expansion into other State Research Farm buildings. These were considered unviable, in the case of the College because of the need for students to be able to alternate quickly between classroom and factory.

The Australian Dairy Products Federation (ADPF) said in a letter that whilst they could get research support from other institutions, only the VCAH was providing the necessary educational and training programs. They therefore sought arrangements for optimum use of resources, and said that in their view...

'many of the current problems experienced by both organisations could be obviated if there was established an independent mechanism for allocating resources and arbitrating on the matter of factory access.'
The United Dairyfarmers of Victoria (UDV) agreed on the need for an industry 'mediator group' to help to overcome problems.

In reviewing the impact of the report, it is doubtful whether it made much difference to events at Werribee. The steering group may have met a few times, but friction continued until the time of the move by the FRI from the shared building to the new FRI/AFISC facilities. In times of expansion of organisations with such divergent interests, arrangements of the kind recommended by the review team could only be cosmetic. When the new facilities were established, the competition for space was largely overcome, but interests remained divergent and even today, relationships between Gilbert Chandler and the management of AFISC remain less than cordial.

Developments in the 1990s

Although reviews came and went, campus staff maintained a clear focus on trying to meet industry needs, and tackled the challenge of further course development. A Certificate in Dairy Technology was accredited, aiming to provide access for senior management people who did not have the qualifications to enter the Advanced Certificate or Associate Diploma courses to upgrade their knowledge and skills. The Certificate was to be delivered in a number of modes, with recognition of prior learning and credit to enter Advanced Certificate and Associate Diploma courses. By 1991 it had attracted 110 enrolments, well above the anticipated fifty.

Joy Manners set out to prepare plans for an integrated program for education and training for the dairy manufacturing sector, but it was clear that there would need to be a considerable input of money to achieve this aim within a realistic time frame. The Victorian Education Foundation in 1990 provided a major grant of $895,000 to undertake this project. The dairy technology program received the money to provide salary for three additional positions, upgrading of computer facilities, development of a process engineering and control laboratory and purchase of new equipment for the pilot factory. Five organisations (DRDC, Bonlac, Murray Goulburn, Nestlé and

Kraft) provided a further $200,000 to assist the program. $200,000 also went from the VEF to McMillan for the Milk Harvesting project. In May 1991, Gilbert Chandler and McMillan received a joint Award for Innovative Education Programs from the VEF.

The dairy technology program at Gilbert Chandler was to include a number of elements:

- development of training resource packages to assist in-house training,
- development of external study material to support the Certificate and the Advanced Certificate,
- reorganisation of the existing programs to ensure courses at all levels provided the knowledge and skills for workers in the broad skill levels, and
- introduction of a course work Masters to increase the number of people available for research and development positions.

Key factors in providing the funds were the provision of flexible delivery, recognition of prior learning (RPL) for both on the job and off the job experience, elimination of barriers to study and making course content directly relevant to a defined skill level. The 'integrated program' was planned to include the full range of Gilbert Chandler programs. Joy Manners commented in her 1991 Annual Report that the Campus then had programs across the entire range of post secondary education, from Traineeship, through short courses, Certificate, Advanced Certificate, Associate Diploma, Bachelor, Graduate Diploma, and Masters to Doctorate - all with a staff of only eleven full-time and two part-time academics, plus visitors. Four new lecturers appointed during the year were included in this number. In retrospect, this was an extraordinarily ambitious project for a campus of this size and nature!

The campus continued to show a pioneering approach in its application of new communication technology. The State Training Board provided funds to put computers in factories,

enabling students to undertake assignments at the workplace. This approach gradually expanded and later broadened to the use of video-lecturing for remote delivery of courses to other States. The campus is now developing multimedia packages and investigating the use of the Internet to provide more flexible courses to a wider range of participants.

Course planning was a priority during 1991. In fact, three new courses were designed during the year - the Advanced Certificate in Dairy Technology, the Associate Diploma of Applied Science (Dairy Technology), revised as a two-year full-time course, and a Bachelor of Applied Science (Dairy Foods) for introduction in 1992. Graduates in the Associate Diploma could articulate into the final year of the degree program. EFTS hit a record 250 during the year. The first small group of three students enrolled in the degree course in 1992. A Graduate Trainee Industry Orientation Program sponsored by the DRDC was introduced in 1993. This aimed to introduce new graduates to dairy science and technology and to the manufacturing and processing aspects of the industry. Seven chemical engineering graduates participated, from five companies.

All this change was not without its problems. Apart from the considerable burden on staff who were required to both teach and develop the new courses, and in some cases to undertake research and industry consultation, the Course Advisory Committee expressed concern about the poor academic performance by some commencing students. One factor raised by students in discussion with the Committee was in fact the problem of introduction of new courses and the demands this made on staff.

In spite of efforts to promote the course, the new degree program was having problems in attracting students through the VTAC system, although there was a demand for conversion from the Associate Diploma.

A further complication in the life of the campus came about

when toward the end of 1993 Joy Manners resigned to take up a position with Bonlac. Dr Greg Moore, Principal of VCAH-Burnley, was asked by the Director to take on the Principal's job at Gilbert Chandler as well.

Greg Moore came to the campus with excellent credentials in academic leadership and management at a time of further change. The University of Melbourne had established a Centre of Food Science and Engineering, with which it was hoped that Gilbert Chandler would develop a complementary role, still to be clarified. A development causing more concern at the campus was the introduction by Dookie of a food technology stream in the degree program. The full implications for Gilbert Chandler had yet to become apparent. For the first time for several years, enrolments showed a slight decline, thought to be due to industry restructuring, or in the new jargon of the times, downsizing.

By 1994, Greg Moore was able to report that a budget deficit at Gilbert Chandler had been turned into a sizeable surplus. But on the academic front, the campus was yet again involved in a review of its programs, this time instigated by the University and industry.

A further review around this time suggested the need to thoroughly investigate Gilbert Chandler's courses and the relationship of the College with industry. In 1993 Dr Don McMahon from Utah State University reviewed Gilbert Chandler courses in relation to the needs of the Australian dairy industry, with special emphasis on middle management in technical and production areas. This review was requested by the DRDC. Management of the College and of the VCAH, senior staff at the University and the DRDC agreed that a thorough rethink was called for.

The Wettenhall Report

As the VCAH moved into its relationship with the University,

there was a series of discussions on educational directions, and a series of reviews. In November 1993 the Dairy Research and Development Corporation (DRDC) convened a meeting attended by representatives of the VCAH, the University, the DRDC and industry, to discuss the current courses of Gilbert Chandler and to help the DRDC to formulate a policy on education and training for the industry. The Corporation suggested to the University that a review of the campus's academic programs would be appropriate, and with the concurrence of those involved (the VCAH, the University and the DRDC) a joint review was put in place.

The review was chaired by Professor Dick Wettenhall, with Helen Dornom from the Australian Dairy Products Federation, John Landy as a consultant representing the DRDC, Bill McGinness from Bonlac Foods, Alan Morgan, Deputy Principal of VCAH-Gilbert Chandler, and Associate Professor David Wood, Head of the Department of Chemical Engineering at the University forming the panel.

Terms of reference for the review included the provision of advice on the appropriateness of current courses at Gilbert Chandler in relation to the needs of industry, advice on future courses, consideration of the way courses might be developed and funded, and advice on the development of advanced level reaching and research at the college, together with the relationship between these advanced level programs and related activities at the University, at the then Australian Food Research Institute, CSIRO and other relevant institutions.

The review endorsed the dairy technology focus of Gilbert Chandler, but saw problems in the current image of the campus and the resources available to it. At the outset, the panel identified one crucial issue. This concerned the appointment of a new Principal, who should have...

'specialist expertise in dairy technology with a commitment to both TAFE and higher education, as well as the capacity for

research leadership directed toward achieving a realistic role for the Gilbert Chandler in dairy industry-targeted research and development.'
Whilst agreeing on the importance of this matter, the panel was divided on how the position of Head of Campus should be considered. Some felt there was a need for an appointment at professorial level to enhance the academic profile of the campus, and to attract money for research and students of high quality. Others felt that the current educational structure did not warrant such a level of appointment unless resources could be made available to bring about a major redevelopment of the campus. This group also felt that a professorial appointment might lead to a lack of attention to TAFE level courses.

The panel was critical of the degree program conducted at the campus, and did not see that it had a future in its current form. The degree course was not well liked by industry, the ADPF or the DRDC - they saw little chance of it succeeding in its current format. They favoured a more flexible program. They did not support a broadening into food technology, since there were plenty of courses already available. The current degree course was failing to attract students, and in spite of the campus' view that this could be overcome by stronger promotion, the panel regarded the proposed Generic Applied Science Degree as a better option. The VCAH was at that time setting in place a generic degree structure through the academic processes of the University, and dairy technology was one of the proposed streams.

On the other hand, the panel endorsed the TAFE level programs and the Graduate Diploma as courses which were meeting industry needs and were in high demand. The review noted that 85% of the student load was in TAFE, and the move to competency based training and to presentation of the new National Certificate in Food Processing program placed heavy demands on staff. The view expressed to the panel by industry was that the Associate Diploma would replace the Certificate/Advanced Certificate as the minimum basic

qualification for entry into employment. The Graduate Diploma should be strengthened, particularly in the project work component, and broadened into other areas of food technology.

Short courses at the campus were highly regarded, and should be structured to provide stepping stones toward the completion of the Associate Diploma. However, these too placed heavy demands on staff, and it would be necessary to rationalise their delivery if Gilbert Chandler was to diversify into other areas of TAFE and higher education.

During 1994, Professor Peter Jooste from Orange Free State University provided advice on research at the campus, identifying membrane technology and improvement of plant efficiency as two areas on which the campus could build its current strengths. Research at the campus was another problem in the minds of the review panel members. Current research activities at the campus were described as 'minimal', and the involvement of campus staff in research depended, amongst other things, on the feasibility of appointing and resourcing a research leader with a proven track record in acquiring funds in a competitive environment.

Overall, the review made 38 recommendations to the management of the VCAH and the University. A key recommendation was that a detailed and effective business plan should be developed. The close links with industry were recognised by the panel.

Accepting the main thrust of the findings of the Wettenhall review, the College Director of the time, Dr Barrie Bardsley, was faced with a decision which would have a profound impact on the future of the campus. He decided that it was essential to support the development of Gilbert Chandler, and to appoint a strong academic leader for its programs. He sought funding from the DRDC to support a professorial level appointment, considering that the only way to bring Gilbert Chandler to the necessary level of performance, and to demonstrate commitment

to its development, was through such an appointment. The DRDC declined to provide the funds, but said they would support the development of a business plan.

The question then arose as to whether the appointment of a principal should await the findings of the business plan, or should precede its development. The Director's view was that the principal should be appointed first, so that he or she could be part of the business planning process. He maintained that to expect a new appointee to pick up and run with a plan in which he or she had had no involvement was inadvisable. The University and the DRDC regarded this decision with some concern, but it received Council support and Dr Malcolm Hickey was appointed as Head of Campus. He immediately took up the running with the business plan, and the campus has benefited from his leadership. The Wettenhall Review recommendations have been taken into account in the preparation of the business plan, and TAFE and Graduate Diploma courses have been strengthened, in-house delivery of programs is under way, and there is an increasing emphasis on research.

Business Plan 1995-2000

With DRDC funding, a steering committee was established to work to produce a business plan for the campus. Members of the committee were Dr Paul Donnelly, Managing Director of the DRDC; Dr Keith Steele, Chief Scientist of the Department of Agriculture Energy and Minerals; Ms Helen Dornom of the Australian Dairy Products Federation; Professor Barrie Bardsley, Deputy Dean of the Faculty of Agriculture; Forestry and Horticulture, Dr Wayne Sanderson, Executive Director Research and Development/Technical Services from Murray Goulburn Cooperative and Professor Lindsay Falvey, Dean of the newly created Faculty of Agriculture, Forestry and Horticulture (refer to Chapter 12). The Project Manager was Ms Miriam O'Brien, of Miriam O'Brien Consulting, and two further

consultants, Mr Robert Hood Managing Director of Australian Continuous Improvement Group, and Dr Michael Heppel, an Associate of the same company, were retained to assist the planning process.

The planning process was an extensive and intensive one. Staff and students of the campus, as well as industry representatives, were involved. The mission of the Gilbert Chandler campus was defined as:

'To provide the dairy food science and technology educational needs of the Australian food industry and its suppliers, in a customer focused and cost effective manner.'
The plan envisaged:

- Continuance of Gilbert Chandler offering both TAFE and higher education programs including a specialised degree and participation in the generic degree.
- More degree student enrolments stemming from a significant effort to market the specialised degree.
- Leadership of the National Certificate of Food Processing for the dairy industry and an increase in TAFE contact hours.
- A change in course delivery methods to make the training products more easily accessible to the industry.
- Reduction in the range of educational products being offered.
- A drive to acquire more research work to build the reputation of the College.
- Greater use of strategic alliances to deliver educational services and monitor needs.
- An improved quality and financial outcome through more teaching volume, changed delivery methods and price increases for designated fee for service courses.
- More direct relationship with the University of Melbourne through the new Faculty of Agriculture, Forestry and Horticulture, and Centres of Excellence.

The business plan goes on to a detailed analysis of strengths, weakness, opportunities and threats, defining alternative strategies aimed at helping to achieve its objectives. It defines

key performance indicators in measures including TAFE student contact hours and higher education student numbers, value of research grants, and financial indicators. It sets out detailed action plans for marketing, for the range of products to be provided, for strategic alliances, for governance, personnel, resources and management systems.

Gilbert Chandler College, 1997.

Whilst it is relatively early in the process of application of the plan, the outcomes so far are encouraging. The College is cementing its place nationally as a provider of excellence in its field, and its enrolments and its financial performance are encouraging. Whilst for many years there have been industry-dominated course advisory committees, the formal process of producing a business plan has led to a more common understanding of the scope and purpose of Gilbert Chandler's programs and activities. Staff have enthusiastically accepted the challenge of making the plan work - after a long period of uncertainty about the future, there is a sense of optimism that Gilbert Chandler can play an increasingly important part in helping the industry it serves to achieve growth and greater efficiency. This sense of optimism has been strengthened by the graduation of not only the College's, but the VCAH's, first Masters and PhD students, confirming the important role that Gilbert Chandler can play in education and training.

The Future

Gilbert Chandler College moves into its next period of development with many strengths, and as a key component of the new Institute of Melbourne School of Land and Environment. Its association with the wider University and its capacity to provide programs at a distance nationally and internationally using new communication technology are important attributes.

There remain several challenges - to generate sufficient resources to provide modern equipment for the programs of the College; to strengthen the research base, and to rationalise courses. The sense of purpose and of closeness to industry which a visitor experiences at the campus provide a high degree of optimism that these challenges will be met and overcome.

Chapter 9: Glenormiston College - A Confluence Of Circumstance - 1971

Introduction

Several crucial elements came together in the late 1960s to achieve the establishment of Glenormiston Agricultural College. With hindsight, had any one of them been absent it is likely that the College would never have been developed, or that at the very least it would have taken a different form.

The Glenormiston Estate had been purchased by the State Department of Agriculture as long ago as 1949. Once a much bigger Western District property, owned by the Black family, the estate acquired by the Department comprised 693 acres (281 hectare), and cost the Crown £64 per acre. At the time of purchase, the intention was to commit the land to the provision of research, extension and education, with an emphasis on

serving the needs of the dairy industry. Funds were limited - all available money was then being applied to renovation at Dookie and Longerenong - and for several years the only activity was in research on pastures, plant breeding, beef and vegetable production. Noel Young was appointed Farm Supervisor in 1953, and in later years Departmental staff including Rod Kefford, Gerry Vivian and Kevin Reed led the research effort. It was not until 1967 that the decision was made to establish a college at Glenormiston.

The setting and history of the property have had a strong influence on its later development. A visitor to the Campus today sees the mansion with its fine woodcarvings by Robert Prenzel, a historic garden; and well-established educational, residential and recreational facilities. Staff and students are enthusiastic about what they are doing. The confluence of circumstance which led to Glenormiston's establishment, and the subsequent strong focus on meeting industry needs, provide the basis for this enthusiasm.

What were the main elements in this 'confluence of circumstance'?

The property

McKillop and Smith took on a run which they named Strathdownie in 1839. The appointed manager, Taylor, apparently perpetrated outrages against local aborigines and was keen to leave. The property was put on the market and bought by Niel Black.

Niel Black

Niel Black was the son of a Scots farmer, and came from Argyll. Sailing fron
with a letter of introduction to Governor Gipps, who greeted him with a shak

He did not like Sydneysiders - 'In this country you believe nobody. There wa
dined during his time in Sydney, and whilst appalled at the high prices bough

Melbourne. Whilst he found Melbourne superior to Sydney (although housin

In December 1839 he set off to find a run in the Western District. He was enc
December. He spent his first Christmas in 'foreign lands' eventfully, witnessi
at the end of the month and made arrangements to take over Glenormiston, e

Whilst Black had problems with squatters and needed to constantly move sto
properties as well. The beginnings of the present mansion were made in the 1
bluestone, white stuccoed building later to become an important centre for ag

Following the death of Niel Black, his property was divided into three sections - Mount Noorat, the area including the original Glenormiston mansion, and Dalvui. His three sons, Archibald John, Stuart Gladstone and Niel Walter each inherited one of the sections. The Mount Noorat property is still in the hands of the Black family; Dalvui was sold to the Palmer family. The portion of the Glenormiston property not sold by Stuart Gladstone became the property purchased by the Department of Agriculture in 1949.

The Political Climate in the Western District

The Western District today comprises a mixture of extensive grazing properties and intensive dairying properties, with areas of cropping becoming more prevalent. The grazing properties reflect the squatter history of the region, whilst dairying is frequently the principal enterprise on farms established on Soldier Settlement or Closer Settlement blocks after World War II and into the 1960s.

Politically, at the time of the first moves to establish Glenormiston as an agricultural college, the Western District was conservative and agriculture was the most important source of the region's wealth. The rural lobby was powerful. The Premier in the late 1960s, Sir Henry Bolte, represented a Western District seat. Ian Smith, later Minister of Agriculture, was and remains a Western District representative. Bolte and Smith were both graziers, and well understood the needs of the

farming community. At various times, both had Glenormiston within their electorates. Agriculture enjoyed political favour from the end of the war until the early 1970s, partly because of its importance to the State's economy, and partly because of the status and influence of Sir Gilbert Chandler, Minister of Agriculture for many years. The then Director of the State Department of Agriculture, Dr David Wishart, was a popular and strong leader, with an excellent relationship with the Minister. It may be true to say that agriculture never had it so good, nor has it since.

The community, led by a local dairyfarmer, Jack Scott, and a prominent Terang medico, Dr Les Westacott, provided strong support for the establishment of an agricultural college in the southwest of the State. Longerenong and Dookie were not readily accessible, and both were in regions very different climatically from the high-rainfall pasture zone of the Western District. In addition, the courses at the two established colleges had developed a stronger emphasis on science rather than practical farming, and Western District farmers believed that this had created a gap which a new college might fill. As an aside, it might be noted that this sort of occurrence is not new in agricultural education and training, where 'academic creep' can gradually alter the nature of courses. There is an analogy with the 18hp Ferguson tractor - tractors grew and grew until someone had to invent another '18hp Fergie'. The philosophy behind Glenormiston was to educate and train farm managers, whilst at the other colleges over time it had become more to educate and train people for support roles in the industries serving agriculture.

The original intention to develop a college with an emphasis on dairying underwent a change. Farmers recognised the need for management training, whatever enterprise was to be undertaken. Marcus Oldham Agricultural College at Geelong, a privately endowed institution, had demonstrated that a farm management course could attract students and provide them with an alternative to the jackaroo system. Thus in 1967 the decision to

go ahead with the development of Glenormiston Agricultural College was announced by Sir Henry Bolte. It was to provide farm management training for both men and women, and became the State's first college established specifically with a coeducational remit.

The property was there, the political backing was there, now all that remained was to appoint a leader and a team to make it all happen. The next important element in the confluence was now to be put in place.

Leadership and development

Once it had been decided that Glenormiston was to proceed, and funds were made available for staff and buildings, it was essential that there be rapid progress under a capable leader. In 1969, Bob Luff was appointed as foundation Principal of the College. The opportunity was enormous, and Bob Luff proceeded to make the most of it. The confluence of circumstance continued, with several appointments which got the college off to a good start.

Academically, the challenge was to establish a course in farm management in keeping with the objectives of industry and government. Bob Luff, Chris Wicks, John Young and Ken Lyons put in place a Diploma in Farm Management with four streams: plant and animal management, agricultural engineering and farm business management. Ken Sevenson, Dick Wigan, Wes Obst, Alan Jones and Jeff Lawes (the latter still a member of staff in 1997) added further strength to the programs and the life of the college in general. The courses used an experiential approach, with an emphasis on analysis of practical issues facing farm managers. The local community was not forgotten, and the first Advisory Committee was appointed in 1971. Jack Scott continued his strong influence, along with Stewart McArthur, later to become MHR for Corangamite. The Advisory Committee exerted real influence on the direction of courses.

Bob Luff

Bob Luff was quite young (31) when he became Principal at Glenormiston. H
Science and a Diploma of Education at Melbourne University. He began wor
BAgrSc to be appointed full-time to the staff of Longerenong College, and in
system) and Senior Lecturer.

In 1969 Luff accepted the challenge of establishing the new Glenormiston Ag
before becoming Chief of Division of Agricultural Education in 1978, and lat

Administratively, the Principal had an excellent team under Norm Haynes, who had come to the college from Longerenong. Noel Young continued to manage the farm activities and to liaise with the builders as the construction work at the college progressed. In these early days, with so much happening, a strong administration was essential.

From the point of view of the provision of *physical resources*, it must have been an exciting time to be at Glenormiston. The mansion in itself was a major resource, even if the roof did leak from time to time. However, the next few years saw the staff at the college making the best possible use of the political support which it enjoyed. Briefly:

- 1969 saw the farm building complex built and roadworks in place for some $70,000
- 1970 saw the mansion renovated and houses bought - $170,000.
- Stage I of building, including a laboratory and teaching block, two dormitories, amenities and the Principal's residence, came about in 1970-71 at a cost of over $920,000.
- 1971-72 saw Stage II, with two more dormitories, a sports pavilion and roads at a cost of $615,000.
- In 1972 a multi-purpose hall and laboratories together with equipment cost a further $500,000.
- The period 1974-76 saw a demonstration dairy, squash court, and further improvements costing around $110,000.

Over these seven years alone, more than $2.5 million

transformed the site into a coeducational residential college. Des Bloink of the Public Works Department worked closely with Bob Luff and Norm Haynes and was given every support to produce buildings of quality. Two anecdotes flesh out the statistical information and show both the Departmental and the political support for the project (refer to box: John Natrass).

John Nattrass

John Nattrass, Chief of the Division of Agricultural Education, decided in 19
the Principal was appointed in 1969 he gave him almost full responsibility, ir
Department, but insisted on one particular aspect of design. During a visit to
approach to residential accommodation for students. Whereas Dookie and Lo
accommodation, Myerscough had built new residential facilities on a modula
those accommodated in the module. At Glenormiston, modules of five reside
lounge was modified to become a sixth bedroom). This system proved much
heated), and also provided flexibility for coeducational residence. In the 199(
Glenormiston's establishment, this was an important issue to parents as well a

Work on the multi-purpose hall seemed likely to be delayed due to the lack o
District came across Henry Bolte whose car had broken down on the Princes
problem at Glenormiston. Sir Henry said 'leave it with me' and a few days lat

Support continued under the new Premier, Dick Hamer, who opened the College in April 1973. By then, it was a substantial institution, both physically and in terms of human resources.

Everything came together - the funding, the people and the leadership. Truly a happy confluence, and one on which we may look back with some envy as the political power of agriculture and the public funding for education become more problematic.

Course developments

The foundation Diploma in Farm Management course had its first intake of fifty-six students in March 1971. The course provided entry to both sexes with 'satisfactory secondary education' and 'preferably two years of continuous farm

experience.' The Principal at Glenormiston interviewed all applicants, and selection was 'influenced by the quality of farm experience, maturity of outlook, motivation toward practical farming and the standard of educational preparation.' In the event, most students had passed at the Form five level and had two years of farm experience, so that their average age was twenty.

From the beginning, the college encouraged participation by the wider community. State Department of Agriculture staff were deeply involved, as were representatives of agribusiness. Students established a discussion group and played a major role in identifying and inviting guest speakers. Visits to commercial properties were a key part of the program, as were attendances at field days, conferences and seminars. The first report of the college, in 1972, noted that during the year 63 people had spoken to the students. While half came from the State Department of Agriculture, there were also farmers, representatives of political groups and farmer organisations and of commercial firms. Final year students in 1972 organised their own special interest tours. A major farm management project, conducted by all students, was an important part of the process of preparation for managerial positions on farms.

In 1972 the college began to present short courses for farmers, working in conjunction with the regional extension services of the State Department of Agriculture. The first such course, held in May and again in July, was entitled 'Decisions in Beef Management'. Bob Carraill, at the time Senior Beef Industry Officer in the Department, helped to establish the format for successful courses for farmers. The establishment of a short course account facility enabled a far wider range of courses to be developed and presented, to the benefit of industry.

A conversation in the Noorat Hotel between Matt Boland of the Department and Ken Lyons led to the innovation of the 'forty week' course, first for dairy farmers and later for other enterprises. The format was designed to encourage farm

managers and their partners to attend the program one day a week over some forty weeks, at a time and place to suit their needs. They learnt a wide range of aspects of farm management, using examples from their own properties and tackling assignments between sessions. The format was so successful and flexible that it became central to the establishment of McMillan Rural Studies Centre, and was adopted by other colleges. Later the course was accredited, and adaptations of it now provide an avenue for farmers to build up qualifications through topics arranged in modules from which they can select to meet their individual needs.

In 1974 Glenormiston's responsiveness to local needs was demonstrated, with three new enterprises.

With assistance from local dairy farmers, the forty-day course was established as a Dairy Certificate Course. The Certificate was a practical course aimed at young dairy farm employees, who were not attending the Diploma Course ostensibly because of time commitments to milking cows. The course aimed to provide them with the basis of a formal training program, management training, practical training and a qualification. Departmentat policy meant that Glenormiston did not press for involvement in the apprenticeship scheme at the time. Senior Departmental staff considered that the Certificate would provide greater flexibility for the farmer, and also had some concern about the overall quality of teaching in the Farming Trades Apprenticeship course.

The Certificate Course was in two stages - Stage I, Skills Training, lasted three years and covered 12 subjects, centred on on-farm training with annual three-week residential courses timed to fit farm commitments. Stage II, Farm Management, shifted the emphasis from skills to management training. It lasted over two 20-week semesters, half a day per week. At the end the award of Dairying Certificate was given. By 1976, the course was provided at Colac and Cobden as well as at the college.

The college developed a close link initially with Mortlake High School through a Day Release course, later expanded to include the Catholic Regional College at Camperdown, and Noorat, Terang and Camperdown High Schools. Students were transported by bus to Glenormiston one day a week, and were involved in the academic and practical programs of the college. Demand was such that numbers had to be limited.

The third innovation, and one with the most lasting consequences for the college, was the introduction of a pilot correspondence course. Whilst modest in objectives at the beginning, the correspondence program gradually expanded, until in 1981 the core program, then the Associate Diploma in Farm Management, became available by home study.

It was also around this time that Glenormiston began to emphasise providing programs for women. Short courses for countrywomen included farm office management and bookkeeping, taxation and the primary producer, and calf rearing. This may have been a modest beginning, but in later years the college was the principal focal point for the development of Women in Agriculture programs and the establishment of a Rural Women's Development Network for southwestern Victoria. In 1994 the campus hosted the Fifth Annual Women on Farms Gathering, with 340 women in attendance. In 1995, analysis showed that one-third of the women enrolled in the Rural Women's programs went on to further study in accredited courses. Women now comprise more than half of the total college enrolments.

During 1977 the next important development occurred at the college - not without controversy.

Horses at Glenormiston

It is true to say that agricultural scientists, especially those involved with pastures, have a somewhat ambivalent attitude toward the horse. Horses are very close grazers and can make

pasture management difficult. At Glenormiston as elsewhere this ambivalence led to discussions about whether horses should be completely removed from the campus, with reliance on motorcycles instead. However, as luck would have it, Bob Luff in 1976 had visited Canada and England and seen that courses in horse management were becoming a major part of the profile at several agricultural colleges. On his return, he commissioned a review of the horse industry in Victoria, and found that it was indeed an important enterprise, employing many people in many capacities. There was a well-documented need for people to undertake a management role in the industry. Because most horse breeding in Victoria takes place on farms, there was considered to be an overriding need for farm management training.

Staff at the college set about designing a course in horse management, building on the existing farm management course but designing additional units specifically aimed at the horse industry. It was decided not to provide programs for jockeys, since they were being done at other locations. A proposal was submitted to the Division of Agricultural Education.

All hell broke loose. The Principal was summoned to a meeting with the Director, Dr Wishart, and other senior staff including the Chief of the Division of Veterinary Services, Dr Dan Flynn. The view was strongly expressed by Dr Flynn that horse courses were not appropriate for the Department to be conducting, and if there was to be any instruction about horses, it was the province of veterinarians, not agricultural scientists or diplomates.

Some key members of industry, who in the usual Glenormiston fashion had been deeply involved in the design of the course, heard of this discussion. Ken Cox, Principal of Stockwell Stud, was one who made representations to the Premier, the Minister and the Department about the need for the course. The upshot was that the Principal was once again summoned to Head Office, this time to be told that the course could proceed as long as any veterinary matters were dealt with by Departmental vets,

rather than college staff. To this the Principal happily acceded. The old bluestone farm buildings were restored to be used as teaching and demonstration rooms for the horse program.

The Associate Diploma in Horse Management enrolled its first students in 1978, and has been a central part of the activities of the campus ever since. As with the agricultural program, an industry dominated Course Advisory Committee has guided and monitored the design and delivery of the Associate Diploma since its inception, with important benefits for the college. By 1988, the Associate Diploma in Horse Management was available in the external study mode, thus providing access to students nationally and internationally.

Today, Glenormiston is well equipped to serve the equine industries. As well as being a centre for standard-bred artificial insemination, it also has a full Olympic-size indoor equestrian centre. This provides a resource for teaching of students in horse courses, and also for the community generally - riding for the disabled is one activity for which it is extensively used.

It may be confidently stated that the decision not to remove horses from the college was a wise one.

A new era, a new Principal

Community support for Glenormiston was again demonstrated when the Rotary Club of Terang supported an exchange between Bill Simpson, then Vice-Principal of Merrist Wood Agricultural College in England, and Val Pollard who was then lecturer in farm business management. This exchange, and others like it, stimulated ideas for course development, and provided a wider perspective for the staff involved.

Brian Pell, who had been Vice-Principal under Bob Luff and a valued member of staff, was appointed as Acting Principal at Burnley in 1977, and in 1978 Val Pollard took on the role of Vice-Principal at Glenormiston. He had been a member of staff

since 1973. This was not to be his position for very long - Bob Luff was promoted to Chief of the Division of Agricultural Education late in 1978, and in April 1979 he appointed Val Pollard as Principal.

Val Pollard

Val Pollard , who had graduated from Massey University with a specialisatio Agriculture, expanded the programs of the college, particularly in the TAFE Advanced Diploma level. He also played a key role in the introduction of arti retained the focus on farm management, whilst at the same time strengthenin in agriculture.

The principal form of official documentation at Glenormiston dealing with change and development, and with staff movements, is the Annual Report, traditionally made available at the graduation ceremony at the end of the year. One searches in vain for a farewell summary of the contribution of Bob Luff to the college, or a welcoming message to, and a background about, the new Principal, Val Pollard. In fact, the only mention of the departure of Bob Luff is in the 1979 Annual Report where it notes Val Pollard's appointment 'vice R. G. Luff'. *Sic transit gloria mundi*. The same section of the report notes the appointment of Max Coster as Vice-Principal. Max Coster had a similar background in to Val Pollard, bringing two specialists in farm management to the most senior positions on the Campus.

The Glenormiston Foundation was established during 1979. Its aims were:

'To provide Fellowships and Scholarships to allow individuals engaged in farm management and farmer education to further their knowledge in these fields.'

From the beginning, Glenormiston took its responsibility to the regional community, as well as to agriculture, very seriously. The campus was made available for all sorts of community groups. Val Pollard in 1978 defined the role of the college in

terms which made a commitment to this wider purpose:

'the role of Glenormiston Agricultural College is to provide facilities, services and educational programs, both State-wide and regionally, for members of the rural community, as well as for employees within various Government Departments....The objective of the College, with respect to its educational program, is to develop a multi-level institution providing a flexible range of educational opportunities.'
The commitment to 'multi-level' courses was crucial. Val Pollard went on to say that integration and cooperation with other Divisions of the State Department of Agriculture and with TAFE...

'has enabled a wider range and coverage of programs to be offered, and has facilitated a growing acceptance by farmers of the concept of life-long education. That is, education that is freely accessible to all people and that provides increased options in length of course, age of participation, formal and informal learning situations. This is considered to be particularly important in agriculture, as a high proportion of the farm operators and workers enter this field without vocational training.'
The Luff Report (1976) looked at the broader role of the colleges, and amongst other things suggested that they could be valuable community resource centres, for example providing library and printing services. Glenormiston began to report formally on the community resource centre aspect of its activities in 1979, but it is clear that this had been one of its roles from the earliest days.

The Farm Account and other issues

A thorn in the side of all three agricultural colleges in Victoria with farms (Dookie, Longerenong and Glenormiston) was the way in which the farm accounts were dealt with as part of the overall college accounts. This made it impossible to treat the farm as a commercial enterprise. Furthermore, money flowing

from the farm enterprise went into the State's Consolidated Revenue, which not only caused annoyance but also took away incentive to improve productivity. A similar situation had applied to short courses until a few years earlier, when the introduction of a Short Course Account provided more flexibility for the conduct of that crucial aspect of the college's program.

Constant pressure from the Glenormiston College Advisory Committee finally paid off in 1980, when a separate Farm Account was established. This not only solved the problems of lack of commercialism; now the college farm enterprises were much more useful as a teaching resource because they could be analysed in a way similar to that applied to other commercial properties.

A mail survey of the employment and attitudes of ex-students provided staff with morale-boosting feedback in 1980. With a 90 percent response rate, high for such a survey, it was found that 90 percent of graduates were employed in agriculture, and 89 percent were satisfied with their employment prospects.

The Associate Diploma in Farm Management became available in the external mode during 1981. The college gradually developed a sophisticated support system for students studying at a distance, and this mode of study has become increasingly popular. Many students who enrol in external studies are mature-age students who have a strong commitment to completing the course, and their academic results are often outstanding. The dux of the college has on more than one occasion come from their number.

A $200,000 grant from TAFE in 1982 enabled the college to convert the previous teaching block into a resource centre, incorporating several functions - the library, audio-visual support, computing, printing, typing, information and publicity, student counselling and external study administration, providing all with much better-equipped resources. Students both on- and

off-campus benefited from this building project. The Glenormiston commitment to external study has since seen further improvement to the resources involved in production and distribution of external study materials, and to assignment tracking. The campus is now part of a Faculty-wide video-conferencing network, and in 1997 will conduct a trial in the use of the Internet, email and CD-ROM in external course delivery.

Glenormiston was the first campus to establish a computer facility in the early 1970s, and by the mid-1970s had on-line access to the Warrnambool Institute of Advanced Education, enabling students to use farm management simulations. A campus profile produced in 1985 lists the computing equipment then available. This included ten Apple IIe microcomputers with monitors, three Apple IIe disk drives, seven dot matrix printers and a Corvus 18 Megabyte fixed disk. Software included VisiCalc and Calcstar electronic spreadsheets and Scripsit and Wordstar word processors, together with some agricultural software. How much has changed since 1985!

Glenormiston within the Victorian College of Agriculture and Horticulture

If one were to judge from the Annual Report for 1983, the change of organisational structure went unremarked at the campus. Perhaps that is how it ought to be. The only reference to the new College was a listing of the Office of Director staff and Council members, and the busy life of Glenormiston otherwise proceeded as normal.

The campus introduced further courses over the next few years. The Certificate of Business Studies (Agricultural Secretary) course, in cooperation with the Warrnambool College of TAFE began in 1983. The course was similar, in principal, to agricultural secretary programs in Britain, with the intention of training people to take on a support role in the preparation and analysis of farm accounts. The course evolved over time into the

Associate Diploma in Rural Business Administration, and by 1996 the Advanced Diploma in Rural Business Management was in place. In 1985 Glenormiston built on its equine program, becoming the Victorian centre for the Farriery Apprenticeship, and in the following year for the first time, took on the conduct of the Farming Trades Apprenticeship at Cobden.

These developments were occurring in TAFE. The higher education component of the college's profile was also undergoing change.

A concern to staff at Glenormiston was the lack of opportunity for those completing their Associate Diploma at the campus to go on to the Bachelor of Applied Science course. This course was introduced in 1987. It had been designed to start at Dookie, and then in the final stages to permit students to undertake studies at other locations. Glenormiston's concern was that the program required of their graduates to complete the Degree was not an appropriate continuation of their studies. The feeling was that there was too much concentration on science subjects rather than building on the farm management content of the Glenormiston courses. The identification of an articulation package in 1991 helped to some degree, but problems remained. The issue was only resolved when streams were introduced into the Degree program, enabling students to tailor their final stages of study more to their proposed career path. Nevertheless, students in the degree program did undertake the final stage of their course at Glenormiston, and the proportion of students completing a degree there has gradually increased.

The farm management emphasis of Glenormiston implies a close connection with agribusiness. The campus developed a Postgraduate Diploma in Agribusiness, conducted jointly with what was then the Chisholm Institute of Technology (later to be subsumed into Monash University). Campus staff delivered units in this course, at residential schools conducted at Glenormiston. This course continues, now from Longerenong, whilst a degree program in agribusiness conducted jointly by

Monash and Dookie has ceased to exist. The demand for places in business studies at Monash is high, and the lower tertiary entrance scores achieved by those students entering the degree in agribusiness when compared with other business students, was an important factor in Monash's decision to discontinue the program.

Glenormiston cooperated with Longerenong in another Postgraduate Diploma, this time in Agricultural Management and Extension. This course aims to provide a strong theoretical backing for people who provide information services to the rural community, whether in the public or the private sector.

Courses for Koories and in land use and the environment

One section of the community in the region with which Glenormiston had had little contact was the Koorie community. In 1993, funds were provided for the introduction of the Aboriginal and Torres Strait Islander program (now called the Indigenous Rural Education Program). A Statewide advisory committee was established, and Brett Westblade was appointed to Glenormiston to coordinate the program. The demands on him are heavy, but he has managed to develop contact with Koorie communities around the State, and to conduct successful courses in several locations. During 1995, modules from the TAFE-accredited Advanced Certificate in Farming selected as most appropriate to meet the needs of Koorie communities were being provided. The program is entitled 'Mullebar', and it strives to be responsive to the needs of participants, to be flexible, and to use appropriate Aboriginal role models and to incorporate relevant aspects of Aboriginal culture. By early 1997 a Resource Centre was completed, designed with the Koorie culture in mind, and built with Koorie involvement. Koories also are provided with the Advanced Certificate in Nursery and Garden Centre Operation as an extension to the Mullebar program.

By the late 1980s the concept of care for the environment and managing agricultural systems in a sustainable way had been explicitly recognised. Landcare groups were booming around the State in the wake of the previous catchment approach to soil reclamation which had been led by the Soil Conservation Authority. The Potter Foundation established a program of land use planning, involving the use of aerial mapping and the establishment of a development plan for the farm based on soil type, topography and vegetation. Glenormiston enthusiastically took up the delivery of land use planning courses, and appointed Margaret Jansen to coordinate them. These courses continue to play an important part in the transformation of the landscape, throughout Victoria.

Another aspect of land use in the wider community is the application of the principles of amenity horticulture to public and private land use. Municipalities have an interest in beautification of streets, parks and gardens, and gardening is an interest for a large proportion of the population, whether urban or rural. Glenormiston now has an extensive program in amenity horticulture, providing the Advanced Certificate in Horticulture, as well as a wide range of short courses.

In the wider field of horticulture, Glenormiston has, from 1997, assumed responsibility for vegetable industry education and training in Western Victoria.

1997 and beyond

The historic place of the Glenormiston mansion in the Western District has been further enhanced. Val Pollard advises that:

'The koala, lizards and possum carved on the panels at the Glenormiston Homestead staircase have "come home", after an absence of over 40 years. The panels, carved by the Prussian woodcarver, Robert Prenzel, were installed in 1909. They depict a range of Australian animals and plants, showing meticulous attention to detail. They were taken to the United Kingdom

when the homestead was sold at the end of the war due to the uncertain future of the building.

The Black family, the previous owners of Glenormiston, have generously returned the panels, giving them to the University of Melbourne Art Collection, with the proviso that they be held at Glenormiston College. Before being installed at the College the panels formed part of an exhibition of the work of Robert Prenzel staged at the National Gallery of Victoria in 1994'

The grandeur of the restored mansion and its gardens, combined with the art collection and the Prenzel carvings, mean that the College is not simply a place of learning, but a place where aesthetic values are also cultivated.

Glenormiston College, 1997.

The resources for agricultural education and training at Glenormiston are considerable in terms of a committed staff, buildings and facilities. Community support remains strong. The dairy industry would like to see an even greater contribution to the training and education of present and future dairy farmers. A new 40-unit turnstile rotary dairy will permit an increase in the number of cows which can be carried in the dairy herd and increase the importance of the dairy farm as a teaching resource.

There are some issues for management, as in any educational institution. Students increasingly vote with their feet to live off-campus, providing a constant challenge for the residential services manager to balance the books. The location of the campus is not ideal for parents with children entering tertiary education. And the constant pressure for 'productivity increases' hits hard on a country campus with a focused group of courses.

Perhaps the greatest challenge at the moment is in being part of a large University which places a great deal of emphasis on the tertiary entrance ranking of those who enter its courses. There is no doubt in the minds of those at the campus that agriculture

needs increasingly skilled people to manage and to work on farms, in industry and in rural communities generally. The campus staff believe, with justification, that those who graduate from its courses improve the prospects for better management of rural properties and rural enterprises of many kinds, whatever was their tertiary entrance ranking at the time of starting their studies. Like everyone else, they seek students of the highest possible calibre, and consider a range of factors in selection. Being part of the new Institute of Melbourne School of Land and Environment, and of the prestigious University of Melbourne should help to attract students who are committed to a career in one of the fields served by Glenormiston. The external courses of the campus will be crucial in providing lifelong education and training for those who otherwise may not have access.

From the very beginning, Glenormiston has been concerned with improving the knowledge of the principles and practises of farm business management amongst those who undertake its programs. The first courses were designed with this aim in mind. With the increasingly complex environment facing farm managers, this aim has become even more important. The need for farmers to achieve credentials is increasingly accepted, and was recently highlighted by Val Pollard at the May 1997 graduation of Vegetable Growing Apprentices in Werribee. Pollard said to those who had completed the course:

'We look forward to observing the impact our graduates today will have on the vegetable industry. We know this impact will occur, not just because we are aware of the very fine qualities of the individuals concerned, but because we have quantitative evidence that training leads to increased productivity.

This important link between education and training and productivity has been highlighted in research commissioned and published last year by the National Farmers Federation. This research demonstrated that farmers with qualifications are more aware of new management strategies and practices, and are

more likely to adopt improved practices.

Those businesses whose operators have agricultural qualifications are more profitable - and furthermore farmers with qualifications are more responsive to higher education, which enhances their capacity to be flexible, adaptable and responsive to change....

We know from our contacts with leading farmers that they want their skills in managing large farming enterprises and directing their cooperatives recognised - they want to sit down around a table with suppliers, bankers, company executives and other professionals and feel equals - and so, they also want professional qualifications'

This commitment to education and training underpins the programs of Glenormiston. The demonstrated capacity for the campus to innovate, to adapt to and lead change, and to educate and train others to undertake the same challenges, may be its most important attributes as it enters the new era of an integrated Institute of Melbourne School of Land and Environment.

Chapter 10: McMillan College, 1976

The Preparations

Through the convergence of several influences, the provision of agricultural education in Gippsland became an issue of political importance in the early 1970s.

Gippsland farmers, and dairy farmers in particular, had

developed a keen interest in improving management skills. Discussion groups coordinated by the Department of Agriculture had whetted the appetite of many leading farmers for improved access to technical information and improved farm business management practices. The influence of highly respected Departmental advisors, including Frank Drake at Bairnsdale, Ian Norman at Maffra, Jack Hosking and Harry Edgoose at Warragul, Don Bissett at Leongatha, and Jack Green with a State-wide remit, had created a demand for both individual and group access to information through years of active extension work. The Department was increasingly hard pressed to meet the demand for advice and group activities. In addition, the success of the privately-endowed agricultural college, Marcus Oldham, and of the Department's own Glenormiston in delivering farm management courses had established the relevance and importance of such programs for both future and current farm managers.

In the other three regions of the State Department of Agriculture services included not only research and extension, but also education and training. In the south-west there was Glenormiston Agricultural College (refer to Chapter 9), in the north-west Longerenong (refer to Chapter 4), and in the north-east Dookie (refer to Chapter 3). Under these circumstances, it is perhaps not surprising that strong pressure began to be exerted by farmer groups and local government for the establishment of an agricultural college in Gippsland. Influential producers, including Rosemary Hug, Perc Blandford and Col Murray from East Gippsland and Bill Pyle, Ian Armour, Gil Silby and Tony Landy from West and South Gippsland, were active both individually and collectively (through farmer organisations and local government), aiming to establish a College in the region. Local government support from several Shires ensured that not only would the State Government feel the pressure for such a move, but also that that the parliamentarians would have to face the problem of choice of location if a College was to be established.

The Shire of Warragul appointed an Investigating Committee on Farm Management Training to prepare a submission for presentation to the Minister of Agriculture, Ian Smith. The Committee, chaired by Bill Pyle, carefully analysed the needs of the farming community and recommended an innovative approach very different from that of the existing agricultural colleges. Access for adults who were already farmers was a key recommendation, together with the provision of courses which suited farmer needs in content, presentation and timing. Other groups also presented recommendations on how access to agricultural education and training in the region might be improved.

Founding Fathers

The Shire of Warragul in November 1993 presented to the Minister a series c
Warragul. Bill Pyle, a prominent dairy farmer and later President of the Unite
in preparing his recommendations. Kevin and Chas Dale of Drouin, Max Car
Road (all dairyfarmers), Tom O'Connor, a beef producer of Warragul and An
Warragul District Centre Department of Agriculture staff helped them. The C

'to improve the knowledge and skills of people with farm management respor
and the quality of life of farm people in Gippsland'

The Committee listed the types of post-school education which should be offered, including a range of types of agricultural production, management skills including general economics, farm management economics and agricultural economics, marketing, agricultural and mercantile law, management philosophies, human relationships, and environmental issues. The members also advocated flexibility in delivery as a keynote issue. They envisaged an apprenticeship or cadetship approach, and said that a training centre should provide courses not only for farmers, but also for those who provide services to farmers and to non-farming people, including Gippsland industries. The Committee said that the Department of Agriculture should administer the training centre, but that it should have a Board of

Directors which would be responsible for staff selection and to identify local needs for programs. An important issue was the advice that the farm management training centre should not have its own farm; however, it should have full residential facilities for men and women.

In January 1975 the Minister, after considering the recommendations, appointed an Interim Advisory Committee for an Agricultural College in Gippsland (refer to box: Interim Advisory Committee), chaired by Barrie Bardsley, then Assistant Chief of the Division of Extension Services in the State Department of Agriculture. This Committee was asked to investigate and make recommendations on:

- The overall needs, objectives and priority for courses and training relevant to the current and future requirements of agriculture in the Gippsland area.
- The most appropriate site, organisation and title for the proposed new facilities for agricultural education to be located at Warragul and plans for their development.

It should be noted that the Minister had already decided on a location for the College, removing what could have been a potentially difficult question for the Interim Committee to deal with. The problems which would have been associated with a college linked closely to either East or West Gippsland were to a large extent overcome by the Interim Committee's recommendation on the structure of the new college.

Apart from an unwillingness to provide a Council with the responsibilities the Interim Committee had sought, particularly with reference to staffing, the Minister acted promptly and positively on these recommendations.

Establishment of a Centre

The title McMillan Rural Studies Centre was not chosen lightly. Angus McMillan was an early explorer in the Region, and the use of his name was an attempt to avoid the parochialism which

might have been associated with the use of the name of a locality. A 'Rural Studies Centre' was considered to be less forbidding than a 'College' for practising farmers, who were expected to be the principal participants in the Centre's programs.

Interim Advisory Committee

The Interim Advisory Committee comprised 18 members from the entire Gip representatives from the Technical School system, a representative of higher local government and four representatives from the Department of Agricultu things, it recommended that:

- the facility should be called the McMillan Rural Studies Centre;
- the overall objective should be '*to improve the skills, competence, knowledg by providing appropriate educational programs*';
- there should be a central, full-time accredited course based on farm manage practical experience. There should be a wide selection of elective units, be available at several localities;
- the normal entry requirement should be two years of job or equivalent expe
- there should be a range of short courses, and that the provision of the centra
- a 12-member Council should be appointed to administer staffing, recurrent capital and maintenance;
- the main campus should be at Warragul, with others at Bairnsdale, Leongat
- district staff of the Department of Agriculture should be located on the sam

By November 1976 Brian Clarke had been appointed as the foundation Principal of McMillan. Teaching staff were in place shortly thereafter, and support staff at Warragul by mid-1977 Four centres were established at Bairnsdale, Maffra, Leongatha and Warragul, with Warragul providing the headquarters for the Centre. The first courses were offered in May 1977. The first year of operation saw nearly nine hundred people attending courses - the fact that the total number of student days of teaching was around 1,300 demonstrates the emphasis on short courses, in line with the charter of the College. The first Annual Report by Clarke at the end of 1977 makes a plea for additional resources; a not uncommon request in the annals of most

organisations, but one perhaps more justified in the early days of establishment of this pioneering venture.

McMillan was and in 1997 to a large extent remains clearly different from other agricultural colleges in the nation in its approach to education and training. It began as a multi-campus operation, operating initially from Department of Agriculture offices except at Warragul where a shopfront centre was established. Following the purchase of land in Warragul and negotiations for locations at the other centres, planning began for the construction of college buildings. Grants for these major works came through the State TAFE system. Even in the building program, the emphasis was different from that at other agricultural colleges - the Public Works Department designed the buildings specifically for adult learning. The PWD later received an award for excellence for the McMillan complex. In 1982, the college moved to its own purpose-built centres.

In several important ways McMillan's activities have been both innovative and something of a thorn in the side of the bureaucracies surrounding education and training. In an early address Brian Clarke re-emphasised the two basic rules for the operation of McMillan - 'education has to be relevant, and it has to be available'. McMillan's emphasis on meeting the needs of practising farmers rather than a youthful student body, and on access, both changed the nature of courses and made demands on staff different from those associated with existing institutions:

- 'meeting the needs of practising farmers' meant that there had to be a strong input by industry to course development and delivery - course advisory committees could not be tokenistic;
- there had to be changes in course content to meet the specific needs of industries and of the varying knowledge and skills levels of farmers attending courses;
- courses had to be seen to be relevant if farmers were to attend, and there had to be a good deal of effective promotion of

the benefits of attending, in the early days of the campus in particular before word-of-mouth could help to ensure participation;

- courses had to be delivered at times and in ways which suited the needs of farmers - evenings and weekends as well as weekdays had to be utilised, and staff needed to be professional and flexible enough to cope with these demands;
- the emphasis on accessibility led to the development of home study (or distance learning) courses which required both skill in the technologies being delivered and in educational design; and
- staff also needed to have or quickly develop the contacts which would let them organise specialist input in fields which farmers required but in which staff members themselves were not competent

Problems of Pioneering

The innovative charter and direction of McMillan in providing opportunities for the rural community to pursue adult learning in a flexible manner did not fit existing educational models at the time. As a result, there were both real and potential problems with the organisations which McMillan had to deal with.

First there was the fact that the new college had a remit which overlapped with the activities and responsibilities of Departmental extension staff. This was much more the case with McMillan than with any of the other colleges, because extension staff too saw their prime audience as practising farmers. The fact that over time there came to be a synergistic relationship between the two sections of the Department is a tribute to the management of the new entity and the capacity of the staff of both groups.

Second, there was an overlap between McMillan's objectives and those of what became the Technical and Further Education (TAFE) sector. This was particularly an issue with the

establishment of the East Gippsland Community College of TAFE, some time after McMillan, whose remit was extremely broad and included agricultural training programs. This proved to be a much more serious issue than any internal Department of Agriculture conflict, and is discussed later.

Third, there was a problem with the nature of courses. Accrediting bodies were uncomfortable with courses which were so flexible, being much more accustomed to pre-defined content and yearly enrolment. Whilst McMillan remained part of the Department of Agriculture it was to some extent protected from the pressure for formalising courses, since that Department had extensive experience in continuing education through its extension services, and in particular in the delivery of short courses. Although the separation of the Colleges from the Department, through the formation in 1983 of the Victorian College of Agriculture and Horticulture (refer to Chapter 11) provided many advantages, by bringing agricultural education into mainstream education, it also presented some problems, of which loss of flexibility was to become one of the most important. As the VCAH became more closely integrated into the wider TAFE sector, the conflicts associated with flexibility and a broadly-defined rather than a specific curriculum, led to challenges in adjustment for the management of McMillan and for the VCAH generally.

Fourth, and in some ways most importantly, McMillan and VCAH short courses generally came from a Department of Agriculture rather than a State Department of Education or TAFE administrative background. McMillan, and the VCAH at first applied a course fee structure which did not match the practices in other parts of the TAFE system, charging fees on the basis of what the proposed participants might be able to afford and looking toward only partial cost recovery. This proved to be an unacceptable approach once the VCAH began to provide accredited courses, which had a carefully-defined and legislated fee structure. Courses had to be either accredited and fully funded by the State, or else unaccredited and based on full

cost recovery. It was clear that if farmer short courses were to be delivered on a full cost recovery basis, they would be too expensive to attract high levels of participation. Consequently, the decision was made to move toward accreditation of these courses. This had some benefits, because farmers could now undertake short courses under an umbrella structure which allowed them to work toward qualification, because there was a degree of quality control across the entire TAFE system, and because there could be national acceptance of qualifications. However, with these benefits came a degree of inflexibility difficult to reconcile with the objectives which McMillan brought to the field of agricultural education and training at its inception. Recent moves to allow 'customisation' of courses to meet local needs go some way to overcoming this problem.

The VCAH generally has faced one further problem in its relationship with TAFE, one consequence of which has had an impact on McMillan's development. This is the problem of lack of access to capital works funds. TAFE management has held that since the relationship between the VCAH and the Minister of Education is different from that between the TAFE colleges and the Minister, the TAFE system has less control over the VCAH's capital assets than over those of the TAFE colleges. The VCAH therefore has not been permitted to be part of the major capital works programs conducted in TAFE over the last few years. The impact on McMillan has been a delay to the establishment of the residential facilities foreseen by the earliest advice provided on the new college's operation. Eventually, new residential facilities were provided and opened in 1996, through a combination of internal funding and philanthropic gifts, particularly from the Andrews Foundation.

Problems notwithstanding, McMillan's profile and enrolment continued to rise. In 1996, the college provided educational and training programs for some 3,500 people in around one hundred courses at fifty locations. The college has been faithful to the vision of those who established it, with a solid core of farm management programs for a wide range of industries and for

participants with a wide range of levels of experience, from beginner to specialist.

Recent Innovations

From the earliest days, McMillan has placed great emphasis on the crucial role of women in agriculture. Brian Clarke convened a conference in 1979 entitled 'The Women of Country Australia Look Ahead'. This proved to be the first meeting of what later became Women in Agriculture Inc. Course delivery has consistently encouraged the attendance of both men and women by providing discounted fees for the second partner to enrol. Special courses for women on farm skills have been very popular. Women members of staff and part-time or contract women teachers have been an important part of the McMillan approach.

In 1986, the campus strengthened its emphasis on distance education by providing additional expertise in the design and use of distance education techniques. The importance of distance education to the campus and to the VCAH in general was felt to merit such a development. At McMillan, the proportion of enrolments and student contact hours made up from people studying in the distance mode has risen steadily until it is now over 40 percent of the total delivery of the campus.

There were two important events in 1987 which expanded McMillan's scope of activities - the campus's involvement in Farming Trades Apprenticeship courses and in the final stages of the Bachelor of Applied Science (Agriculture) course.

Farming Trades Apprenticeships had not previously been delivered by either the Department of Agriculture or the VCAH. The TAFE system regarded the Department as being antagonistic to the course, since during its development Departmental representatives on the working party had expressed concerns about quality of teaching within the

Technical School system which at that time was responsible for apprenticeship programs. When TAFE was removed from schools in the mid-1980s, agricultural and horticultural apprenticeships moved to the TAFE Colleges along with other apprenticeship programs.

During 1986 a case was made by the Principal of the time, Barrie Bardsley, to the Regional Committee in Gippsland that the logical place to deliver, for example, farming trades apprenticeship courses was McMillan, just as the logical place to deliver electrical apprenticeship programs was the Yallourn College of TAFE. The Regional Committee did not accept this point of view, but the Director of TAFE at the time, Ian Predl, was convinced and McMillan took on farming trades apprenticeship courses from 1987, in partnership with Yallourn COT, which provided specialist skills such as welding and motor mechanics. The picture was somewhat different in the eastern end of McMillan's operations, however, where the East Gippsland Community College of TAFE provided the Farming Trades Apprenticeship course. This difference in delivery was to have an impact on later decisions about management of the sub-campuses of the College.

McMillan's delivery of the Farming Trades Apprenticeship course exacerbated problems which had begun to emerge at Leongatha, where the sub-campus was on land under the control of the Leongatha Technical School. There was some competition for teaching resources in the trades portions of the program, and the Principal of the Technical College at the time, Irving Stephens, made it clear that the needs of his students came first. He denied access to the cafeteria facilities at the Technical School for the Farming Trades Apprentices, and relationships became strained. Meetings convened by senior staff of the Department of Education failed to resolve access problems for some time. As at Gilbert Chandler College, competition for scarce resources between two growing institutions sharing the same location proved to be a recipe for friction, and to require constant arbitration by senior

management of the two organisations involved.

Other campuses of the VCAH also began to deliver farming trades apprenticeship courses, and today the Institute of Melbourne School of Land and Environment is one of the State's biggest providers. Bob Gray, who took over as Principal in 1987, had the task of integrating the apprenticeship program into the profile of the campus.

The advent of the farming trades' apprenticeship brought in staff with differing expertise, either seconded from or re-employed from the TAFE sector in many cases. It also brought the VCAH more into contact with the TAFE sector, and its accountability more into line with that sector. Although this may have been seen in the first instance as a handicap, the marked expansion of McMillan's and the VCAH's delivery in agricultural education and training could not have been achieved without the support of the TAFE sector, since there has been little scope for expansion in higher education courses. TAFE delivery is now an integral, and integrated, part of *Land and Food's* suite of offerings.

The other 1987 development, involvement with the Bachelor of Applied Science (Agriculture) course, had a smaller but still marked impact on McMillan. Students in the final year of their degree course, which commenced at Dookie, could elect to complete a major study at another campus where expertise available suggested that this would be to their advantage. Staff at McMillan thus had the chance to be involved in course development for a degree-level program, and to support the work of students in research and course work. One outcome of the degree course that was hoped for was a closer integration of staff and programs of the VCAH across all campuses, and to an extent this has been realised. *Land and Food's* new structure is expected to further develop this cooperation and coordination.

McMillan staff have played a major role in several other programs. Two such are the Farm Chemical Users Course,

which provides chemical users with the knowledge and skills necessary to enable them to be licensed to purchase and use agricultural chemicals, and the Certificate of Rural Office Practice, a program which introduces the principles of farm secretarial work and farm financial control. In the Farm Chemical Users Course, McMillan has developed the State-wide support system for the delivery of the Course, and 22,000 people have undertaken the course since 1989. The campus has also expanded its scope of operations to include amenity horticulture courses. It has links with other countries through its distance education delivery and through delivery of programs in Taiwan, and is currently investigating provision in China.

In 1993 McMillan became the home for the National Milk Harvesting Training Centre. This Centre provides training and consultancy programs for the industry, and in association with the State Department of Natural Resources and Energy's Ellinbank Dairy Research Institute, provides an important service at the critical stage where milk must be removed from the cow in such a way as to provide the best possible quality for the next stages of processing.

McMillan's role in rural industries has enabled it to make a major contribution to the organisation and conduct of several important events. The announcement of the Government's intention to form what was to become the VCAH was made by the Minister for Education, Tom Austin, at the opening of the buildings in 1982. In 1985 the campus helped to organise the dairy industry conference 'The Challenge: Efficient Dairy Production' (a joint Australian Society of Animal Production and New Zealand Society of Animal Production conference), which was conducted in Albury. In 1986 the campus hosted an Agricultural Education Conference, with representatives from New Zealand, the United Kingdom and the United States as well as all States of Australia. The Prime Minister, Bob Hawke, launched the policy paper on Rural and Regional Australia at the Warragul campus in December 1989. The Principal, Bob Gray, played a major role when the campus hosted the Australian

Potato Conference in June 1990 with an attendance of over four hundred.

The Impact of Politics and Challenges for the Future

McMillan, a relatively small campus serving the rural industries in a region where there were two TAFE colleges with broad profiles, continued to be under pressure for its very existence. The TAFE system undertook a number of reviews of TAFE delivery in Gippsland. The first was that conducted by Graham Beanland, former Director of the Newport College of TAFE. The results of this review were never disclosed to McMillan's management, or to the VCAH generally. Later, Fran Thorn and John Hird from the Office of the State Training Board undertook a further review, which recommended that the East Gippsland Community College of TAFE should take over from McMillan the delivery of agricultural programs at that end of the region. Yallourn College of TAFE raised the question as to whether it should be the provider for West and South Gippsland at around this time. Although neither of these outcomes immediately came to pass, they did leave issues unresolved in the region, and opened the way for further reviews. Not surprisingly, they left a sense of uncertainty in the minds of McMillan's staff.

In 1991 McMillan, along with Longerenong, became the focus of attention of the Selway Review. Michael Selway was commissioned by the State Training Board to review the TAFE provision of agricultural education, and delivered a comprehensive report which supported the affiliation of the VCAH with the University of Melbourne. He also agreed with a University proposition to establish an over-arching Institute of Agricultural Education to ensure coordination and cooperation across the State. Selway made the comment that:

'It should be noted that I do not support a proposal which

divides Agricultural Education and Training in the region between two autonomous TAFE colleges of West and East Gippsland.'

By now, however, the bureaucratic tensions referred to earlier had come to a head, particularly in East Gippsland where the Community College of TAFE had been established with a small population to serve and an overlapping profile with McMillan. Following the Selway Review and a later report from Peter Hill of the Ministry of Education, the Minister decided to excise the Bairnsdale and Sale campuses of McMillan and annexe them to the East Gippsland CCOT. This decision, which could be seen as contrary to the outcome envisaged by Selway, was welcomed by the Council of the East Gippsland Community College of TAFE. However, the protestations made by some representatives of the farming community that such a move would lead to the downgrading of delivery of agricultural education and training in East Gippsland have been seen by many to be well-founded. They would have been even more accurate had not arrangements been made for McMillan to deliver agricultural and related programs in East Gippsland, and to retain a presence in Sale, neither of which were supported by the reviews which led to the changes.

Today, McMillan faces another watershed. New residential facilities, opened in 1996, provide further flexibility for people to attend courses. Installation of new technology to provide for video-lecturing, and connection to the Internet, open up opportunities for the College. The new relationships and synergies which can arise from McMillan's role as part of the Institute of Melbourne School of Land and Environment also mean that the College can broaden its scope of operations.

But there are some major challenges to face. Continuing demands for productivity increase have put staff members under great pressure, arguably greater than those which would affect a larger campus with a greater proportion of longer courses. The overwhelming emphasis on TAFE courses at McMillan means

that there was, in the minds of legislators and senior managers in the TAFE system, a question as to the appropriate management structure for the College - would it be better to annexe it to a TAFE College? With the commitment by the University of Melbourne to a major role in TAFE for agricultural education, perhaps this question has now been put to rest.

The final outcome of these tensions will be greatly influenced by the way in which this expressed commitment is put into practice in the management of the Faculty and of McMillan, and by the capacity of the campus itself to further develop its own specialist niche in agricultural education and training.

The affiliation of the VCAH with the University of Melbourne brought with it the first involvement of the University in the delivery of TAFE programs. In view of the lack of sympathy for the competency-based approach to education and training which underpins TAFE accreditation expressed by most universities in Australia. The embracing of TAFE in this sector by the University of Melbourne is a major advance.

As the College with the highest proportion of TAFE courses, McMillan is a central part of the operation of the Institute of Melbourne School of Land and Environment. The College provides a major focus in TAFE for innovation and adaptation. It maintains a strong commitment both to TAFE programs and to the industries these programs serve, thus helping to ensure that a strong focus on agricultural education and training continues in the Region, as well as nationally and internationally. McMillan's role therefore is complementary to that of the other campuses of *Land and Food*.

McMillan College, 1997.

Chapter 11: Victorian College of

Agriculture & Horticulture, 1983

Conservatism discards Prescription, shrinks from Principles, disavows Progress, having rejected all respect for antiquity, it offers no redress for the present, and makes no preparation for the future." - Benjamin Disraeli

Introduction

The VCAH as it became universally known was formed in 1983 and was incorporated as a company limited by guarantee in 1991. It provided a coordinated framework for the five colleges of Burnley, Dookie, Gilbert Chandler, Glenormiston and Longerenong, and the McMillan Rural Studies Centre to form a single institution. Separation from the Department of Agriculture had been a dream for decades and in becoming a reality created an innovative and flexible institution which enlivened Victorian agriculture and related education, creating real competition with the two university providers. With its subsumation into the University of Melbourne in 1997, fourteen years of determination can be seen to have yielded true dividends. In a hostile period, VCAH has proven an essential component to the preservation of practically oriented education for the primary industries sector. A thorn in the side of other institutions, it provided the reminder of the need for relevance and the strength of industry as a partner. Such resilience should not have surprised the universities or the Department of Agriculture, for it was an institution conceived in conflict and born strong after a difficult birth.

The Agricultural Colleges before the VCAH

To understand the origin and importance of the Victorian College of Agriculture and Horticulture, it is essential to

understand where it came from and how it came into being.

The agricultural colleges in Victoria were never independent entities. In the early days, a Council of Agricultural Education governed Dookie and Longerenong, and operating costs were funded not by an appropriation from government, but by monies gained from the leasing of Crown Land. An annually negotiated grant from government was provided for capital works. The colleges came closely under the control of the Minister of Agriculture, who had to see and sign all Council Meeting minutes, and who ultimately controlled funding. The Minister could take exception to decisions of Council and change them if he felt so inclined. The colleges were caught up in a bureaucratic web, with decision-making often far removed from the college lands. College Principals could not sell livestock without Council approval, and Council was Melbourne-based. This situation continued until 1945, at which time the government of the day decided that Dookie and Longerenong should join Burnley and Gilbert Chandler in the Department of Agriculture, and that the control of and revenue from Crown Lands should be removed to the Department of Crown Lands and Survey. Council considered these decisions, and conveyed its position that whilst they were prepared for the Crown Lands to be taken back, they would like to remain in control of the colleges.

The Minister stuck to his guns, supported by the Principal of Dookie, G.B. Woodgate. The colleges were then placed in the Division of Agricultural Education within the Department of Agriculture. Now all funds came from a government appropriation to the Department, within which the Director decided upon allocations between Divisions. This public service model was to continue to dog the agricultural colleges for decades to come.

No academic structures were ever established in the Division of Agricultural Education. Approval of any courses, buildings or finance required the approval of the Chief of Division, the

Director of the Department, and frequently the Minister. At last the colleges had a livestock trading account and a small student amenities account, but no farm account. All monies raised outside these accounts were returned to Consolidated Revenue, providing no incentive for innovation or initiative.

In the 1960s and early 1970s, the Commonwealth Government made money available to Advanced Education. The Agricultural Colleges were out of the mainstream of education, but had by that time established a Year 11 (Leaving) entry level. After some negotiation Commonwealth funds were made available for the last two years of the three-year courses, but not for capital works. Very shortly, in all other States agricultural courses at the tertiary level became fully Advanced Education funded, and became competitive employers of academic staff. In Victoria, the public service structure and the lesser level of Commonwealth funding made it difficult to attract staff, and to retain staff of high quality in an inflexible system.

The VCAH traces its origins to the mid 1970s. The Advisory Committees at Dookie, Longerenong and Burnley in 1974 put to State Cabinet a proposal that their courses should become fully Advanced Education courses. Cabinet rejected the proposal. Early in the same year the Department of Agriculture convened a meeting of senior officers, the Principals and Chief of the Division of Agricultural Education Tom Kneen to develop a 'Proposed Future Role of the State Agricultural and Horticultural Colleges'. Peter Hyland, the Assistant Director of the Department who was responsible for agricultural education, chaired the meeting. It made two major recommendations: that the courses be re-designed and that a State-wide council be established to advise the Minister on the state of agricultural education, its administration, effectiveness, and how and why it should be modified.

The Minister, Ian Smith, acted quickly on the recommendation for a State-wide Advisory Council. In 1975 he introduced an amended Agricultural Colleges Act which established the

Victorian Advisory Council on Agricultural Education which met for the first time in late 1976.

The Council included representatives from the Graziers' Association, the Victorian Farmers' Union, the Victorian Dairy Farmers' Association, the Young Farmer Movement, the Fruit and Vegetable Growers' Association, the Departments of Labour and Industry, Education, Agriculture and the University. Stewart McArthur (a Western District grazier and Liberal Party member, later MHR, and a member of the Glenormiston Advisory Committee), chaired the Council, and its breadth of representation ensured that its views would be widely respected. The provision of a full time secretary meant it would ensure continuity between meetings. The Act defined that the Chief of the Division of Agricultural Education was to be the Executive Officer of the Council, a crucial clause in view of later events. Tom Kneen was Executive Officer from 1976 to 1978, Bob Luff from 1978 to 1983. Council created a number of sub-committees, one of which was instructed to 'investigate the role of the agricultural colleges and report on its findings'. In June 1978 this committee reported that:

- The Colleges should become a system of agricultural education and be operated as a multi-campus institute.
- The components of the institute should develop as multi-level institutions offering courses ranging from in-service education and short courses to courses offering accredited qualifications at technologist level.

As Council discussed implementation of such a scheme it became clear that funding and expenditure control would be key elements of the envisaged multi-campus institute. Ideally the funds would be Federal and the ability to spend them would be untrammelled by Ministerial or Departmental regulation. That is, maximum flexibility to meet changes in the dynamic field of education was required. The opportunity for such funding arose under the Whitlam Government's agglomeration of the Technical and Further Education (TAFE) sector. Council initially recommended that control of its proposed institute

remain under the Minister of Agriculture, but called for re-assessment if and when TAFE sponsorship became feasible. It was becoming clear to Council that its envisaged institute would have to come closer to the recognised State body responsible for post-secondary education, the Victorian Post-Secondary Education Commission. Graham Allen, who was to play an important part in later developments, chaired the Commission.

By this time, the colleges were receiving some Federal funds through the Commonwealth Tertiary Education Commission (CTEC). Technical colleges, however, were receiving considerable Federal funding as components of TAFE. The agricultural colleges again had difficulties in gaining access to these funds, which flowed through the Ministry of Education, not Agriculture.

Notified that Council's investigations were beginning to take shape, Ian Smith sought a formal report on what Council proposed and its firm recommendations on strategy. Council obliged in mid-1978 with a firm proposal for an independent Victorian Institute of Agricultural and Horticultural Education run by a Council (an interesting parallel with 1885- refer to Chapter 2) with the minister represented by his Director General. The proposal was principally the work of Max Hopper, Director of the Gippsland Institute of Advanced Education, a person with a wide knowledge of tertiary education, its administration and funding. The proposed legislation aimed to preserve the institute's close working relationship with the Department of Agriculture while allowing it to relate to the Victorian Post Secondary Education Commission in the same way as other independent post secondary institutions. Under its Act, VPSEC covered all tertiary education institutions in Victoria and therefore all Colleges of Advanced Education (CAEs). VPSEC controlled universities for course approval and funding, but the universities were able to accredit their own courses once approved, an arrangement which did not apply to the Colleges of Advanced Education. To accredit their courses, VPSEC established the Victorian Post-Secondary Education

Accreditation Board, which for a time dealt with both CAE and TAFE programs. Later, the State TAFE Board was set up to manage TAFE.

The proposed institute would be granted the power to 'allow it to allocate resources in a responsible manner in order to respond to the changing needs for agricultural education'. That is, by putting itself under VPSEC it would gain the funds and freedoms accorded to an advanced education college and at the same time be freed of the red tape and procedures imposed by the Public Service Board. The Minister indicated agreement in principle with the proposals and advised Council to discuss the matter with VPSEC, whose co-operation would be required not only to establish its educational credentials and career paths for lecturers but also to win full Commonwealth funding.

Despite considerable lobbying and fine tuning of the proposals to suit requirements, VPSEC found itself unable to assure Council that the Commonwealth would accept full responsibility for funding. Although the Minister had indicated his commitment to the idea of an independent Council, VPSEC's inability to guarantee sponsorship threw him back on his own Department. After consultation with Treasury and the Public Service Board he informed Council he believed that problems within the existing College system could be solved whilst the colleges remained under Department of Agriculture administration. A closing remark in the Minister's letter gave Council hope. It said: 'In the event of satisfactory arrangement not being obtained, then I plan to proceed with your committee's recommendations'.

A Cabinet re-shuffle in February 1981 found Council introducing a new Minister, Tom Austin, to its special world. The Department of Agriculture for various reasons did not want to relinguish control of the Colleges and attempted to pursuade the new Minister against it. Fortunately, Council Chairman McArthur was a personal friend of the Minister. Meanwhile Tom Kneen had retired as Chief of Division of Agricultural

Education (1978) and been replaced by Bob Luff, a former senior lecturer at Longerenong under Kneen and McMillan and later founding Principal at Glenormiston Agricultural College in 1970. Glenormiston's proximity to the farms of Stewart McArthur and former Minister, Ian Smith, meant both these men knew Luff and thus further lines of communication were opened by Luff as the new Chief of Division. It will be remembered that as well as being Chief of the Division of Agricultural Education, Luff was also Executive Officer to Council under the 1975 Act. These roles increasingly conflicted as the views on the future of the college held by the Council and the Department diverged.

During the above period of committees, recommendations and promotions, the Colleges continued to function under the existing system, growing increasingly restive about restricted funding, lack of decision-making power and the dead hand of the Public Service Board on the promotion and classification of College staff. Around this time, the situation became somewhat more complex as the Gilbert Chandler College and the Garden Advisory Service were brought into the Division of Agricultural Education. Frustration within both Council and the Colleges led to a meeting between McArthur and the College Principals and executive staffs in May 1981. This meeting discussed and delineated the difficulties under which the Colleges functioned and the results were conveyed direct to the Minister.

In August 1981 the newly-formed TAFE Board, of which McArthur was a member, notified Council, of which McArthur was Chairman, that it would support a re-drafted institute proposal. The news was conveyed to the Minister, who expressed surprise, saying he thought the institute proposal was 'dead'. The following month the VPSEC accepted the revised proposal and sent letters of confirmation to Ministers of Agriculture, and Education, Employment and Training. Intense lobbying by Council's component groups continued, with the Press being used adroitly by both sides. In particular, Jim Saunders, President of the United Dairyfarmers of Victoria, and

an executive member of the Victorian Farmers Federation, was an outstanding proponent of change. He went on to become the first President of Council, and was followed in that role by Peter Wood, who had also lobbied strongly for change on behalf of the horticultural industry. The Department, however, was now openly campaigning against the proposed changes.

The debate over the formation of what was to become VCAH went for eight pages in Hansard. By early 1982 the Department of Agriculture raised objections based on the difficulties of partitioning functions of a proposed institute from itself, and threatened to withdraw Departmental cooperation in conducting short courses with any proposed institute.

In March 1982, Council Chairman McArthur wrote to the Minister pointing out that in the 30 months since the firm proposal for an institute was first put to his predecessor, support had been expressed by the TAFE Board, VPSEC, the Minister for Education, all College Principals, the Victorian Farmers' and Graziers Association Education Committee, and several other bodies. A further fillip was the Opposition leader John Cain's notification that he had included the institute proposals in his election platform.

Three days later, on March 19 1982, the Minister opened the McMillan Centre for Rural Studies at Warragul. After some introductory remarks on the difficulties of administering the State's agricultural education system he said:

'You will be aware of the discussions on proposals for changing the administration of the Agricultural Colleges. The issue is a very complex one. There is a strong desire to free colleges from the restraints imposed by the Public Service Board and the State Treasury.

Some people consider than an independent college will fit in better with a system of independent regional colleges of technical and further education and advanced education.

However, others see this as possibly more costly and more able to wander away from the purpose... of serving farmers.

...the Government believes that there is some logic in the advanced education and middle-level certificate areas of TAFE conducted by the Agricultural Colleges coming under the administration of the TAFE Board and VPSEC.

However, as these systems are the responsibility of the Minister for Education, the same logic seems to suggest that the new organisation should be responsible to the Minister for Education rather than the Minister for Agriculture. I will be discussing this with my colleague, the Minister for Education.'

He continued: 'There will be an institute. I will set up a consultative council to advise upon the details.' The die was cast.

By March 30, 1982, the Minister had named the members of this consultative committee which was to define the relationship between the Department of Agriculture and the new Institute, which Cabinet had agreed should be responsible to the Minister of Education, not the Minister of Agriculture. The consultative committee was chaired by the Director General of Agriculture, Dr David Smith - a previously strong opponent of the Institute proposal. The Minister directed the Committee to report by May 30.

In the interim, John Cain, whose father's demise as Premier had marked a new deal for Dookie in 1955, became Premier and the new system was created. The new Minister for Agriculture was Eric Kent, an East Gippsland farmer with family roots which went back some 120 years to the Wimmera.

The Minister of Agriculture was Robert Fordham. He set up a Working Party to establish the VCAH, now decided upon as the Institute's name. The Working Party comprised the Chairman of VPSEC, Graham Allen, the Chairman of the Victorian Advisory

Committee on Agricultural Education, Stewart McArthur, the Assistant Director of the Department of Agriculture, Peter Hyland, with Luff as Executive Officer. The Working Party quickly went into action and had all the details of the establishment of the new College agreed upon by October 1982.

Development of the VCAH

The Victorian College of Agriculture and Horticulture was a multi-sector, mu
technology. The College became operational on 8 March 1983 under the Vict
framework for the six existing colleges of agriculture, horticulture and dairy t
was incorporated by the Victorian Post-Secondary Education Commission un

The College was managed and controlled by a Council set up as a body corpo
the Council approved the Heads of Agreement between VCAH and the Unive
anticipation of the affiliation with the University of Melbourne, the College w
Victorian College of Agriculture and Horticulture Limited. In July 1992, afte
Melbourne.

The objectives and operating rules of the College were laid out in the Memor
Directors who were appointed or elected and were responsible for the busines

The institute was formally created by the Victorian College of Agriculture and Horticulture Act of December 1982. The Act was proclaimed on March 8, 1983. The VCAH as was known, comprised Dookie and Longerenong Agricultural Colleges, Burnley Horticulture College, Glenormiston Agricultural College, the Gilbert Chandler College of Dairy Technology, and the McMillan Rural Studies Centre, together with the Head Office of the Division of Agricultural Education. The Garden Advisory Service, a relatively recent addition to the Division, was excised and stayed with the Department.

The new Act abolished the old Act and thus the advisory Council chaired by McArthur which had laboured so long and hard to bring VCAH into being. It placed VCAH under the control of the Minister of Education and established a governing Council to run it. The new 21-member Council was widely

representative of the industries and communities served by VCAH. The VCAH Council became a corporate body with financial responsibility for its own administration. Each component of VCAH was called a campus. Luff became the foundation Director, and all College Principals became Heads of Campus but retained the title 'Principal'.

1983-97

When the VCAH entered the mainstream of education, it did it wholeheartedly. For the first time, the administration of the College was established along the lines of educational institutions rather than public service institutions. Managers of Educational Services, Administrative Services and Finance were appointed; management of the College was to be based on these functions.

The most important development was the establishment of an Academic Board. This gave explicit recognition to the fact that education was the paramount activity of the VCAH, and was the central force for coordination and improvement. The Academic Board was represented on the College Council, and on key Committees of Council. It ensured that all courses were reviewed and accredited through the appropriate bodies - initially the VPSEAB, later the TAFE Board and the University. Academic programs were modified to provide greater flexibility, and overseas expertise was brought in to advise on direction. Bill Simpson and Tony Harris from the UK and Howard Brown and Joe Sabol from the USA helped to raise the quality of provision. Meg Probyn, first as Academic Registrar and later as Assistant Director, played a crucial role in all the academic administration of the College, codifying and documenting developments and negotiating change within the VCAH and with the accrediting bodies. She played a major role in the development of a generic degree structure, which permitted better use of college resources between campuses, provided greater flexibility for students, and eased negotiations on course

structures with the University. John Hoffmann undertook the major task of helping to bring the College's TAFE activities into the mainstream of that sector, and helped to achieve the VCAH's lead role in TAFE in the management of curriculum in agricultural and horticultural courses.

The VCAH continued to make good use of industry representation on its course advisory committees, which reported directly to Council and could therefore strongly influence the direction of change. All courses had these committees, which by VCAH legislation must have majority external membership.

On the financial front, Nigel Wood finally achieved what had been thought to be impossible by gaining full Commonwealth funding for the Higher Education programs of the College. Later he was able to negotiate major funding totalling more than $1 million from Commonwealth and University sources to establish video-conferencing resources at all campuses and in the Office of Director. The VCAH Foundation provided a focus to help gain philanthropic funding, and VCAH Services Ltd, the College company, provided the opportunity to venture into areas which would otherwise have been risky.

There is some irony in the fact that just before the Federal Minister for Education, Employment and Training, John Dawkins, began his pressure for amalgamations it appeared that the VCAH as a multi-level provider had at last found a home in the education system. CTEC had recognised cross-sectoral Institutes of Tertiary Education and the VCAH fitted the model well. As soon as Dawkins' guidelines were made known, it became clear that the College would need to seek a partner - but who should it be? The prospective partner would need to provide not only recognition of the College's courses, but also to permit a separate TAFE administration since the TAFE Board would not agree to their programs being directly administered by a Higher Education institution.

Luff advised Council that a consultant should be employed - and who better than Graham Allen, who had already played a key role in the development of the VCAH and understood its situation. Allen interviewed the Vice-Chancellors of all the Victorian Universities and reported that the company structure proposed by the University of Melbourne retained the key aspects of the College's activities. Council agreed with Allen's recommendation and moved to develop a Heads of Agreement with the University. After lengthy and sometimes difficult negotiation between the VCAH, the University and the Government, Minister Haddon Storey led through legislation the University of Melbourne (VCAH) Act, which brought about affiliation and established VCAH Ltd with its own Board (entitled the College Council).

As we have seen, the agricultural colleges were to a large extent shackled by public service structures and mentality before the formation of the VCAH. In the move to the new Faculty of Agriculture, Forestry and Horticulture, it should be remembered that the new College brought agricultural education from a fragmented collection of courses to a structure and to quality control mechanisms which matched those of the established educational institutions. The University commissioned reports by Jubb, by Caro and by Greenland, all of which found a good deal of merit in the College's courses and educational and financial management, and all of which encouraged the University to believe that through amalgamation it was acquiring an asset of value. That is one of the reasons why we are so confident of the future of this exciting new Institute of Melbourne School of Land and Environment.

Chapter 12: Faculty Of Agriculture, Forestry And Horticulture, 1995

Introduction

The Faculty of Agriculture, Forestry and Horticulture came into being as an entity responsible for the combined higher education activities of the old Faculty of Agriculture and Forestry and the Victorian College of Agriculture and Horticulture in 1995. It provided a mechanism for the progressive integration of the VCAH and the old Faculty into a single organisation, which occurred on 1 July 1997 (refer to Chapter 13). The events leading to this unification include policy directions from the Commonwealth Minister for Education Employment and Training, a review of agricultural and related education in Australia, reviews commissioned by the University of Melbourne, and internal management decisions over a period of five years.

Dawkins' Reforms

The Dawkins report, *Higher Education - A Policy Statement* of July 1988 confirmed the government of the day's commitment to achieving far-reaching reforms in the organisation and practices of higher education institutions. Couched in the rhetoric of preserving the best of inherited traditions including freedom of enquiry and expression, intellectual rigour, a broad spectrum of teaching and research, and the preservation and development of Australian culture and identity, the report focused on the development of a Unified National System (UNS) while enhancing growth and equity.

The UNS formed a major focus for reform, and while the report implied that not all institutions need join the UNS, it implied that the liberalised resourcing arrangements which would flow could severely disadvantage non-participating institutions. The UNS aimed to introduce greater flexibility in the determination

of course offerings and research areas, improved control over resources and revenue raising activities, and guaranteed triennial funding aligned with agreed priorities and performance. Institutions with a student load of less than 2000 equivalent full time student units (EFTSU) were deemed ineligible unless they merged or established formal relations with a larger institution.

In creating fewer and larger institutions, Dawkins' reforms claimed advantages in terms of improved depth and breadth of course offerings, increased options for staff career advancement, economies of scale and a stronger foundation for institutional growth. In addition to the minimum size of 2000 EFTSU the report further encouraged institutions with student loads below 5000 EFTSU to consider seriously their future as independent institutions. Comprehensive teaching and research was not seen to be sustainable in such institutions and it was suggested that a minimum of 5000 EFTSU was necessary before an institution could be considered to be a comprehensive teaching and research institution. A level of 8000 EFTSU was considered a realistic basis for a wide range of programs and a comprehensive infrastructure to be supported. Tying funding to these statements provided an imperative for the merging of small with larger institutions. During the process, the Government also advised that it would not support merger proposals which diminished services in rural areas. Subsequent Ministers have not sought to change the central thrust of the policies, except with respect to funding arrangements.

The Victorian College of Agriculture and Horticulture, which had been in existence for less than a decade, was faced with seeking a merger partner. The existing Faculty of Agriculture and Forestry at the University of Melbourne, while no larger than similar faculties in Australia, was part of the larger university, and thus unaffected by Dawkins' reforms.

McColl Review

A team lead by Jim McColl reviewed agriculture and related

education in 1990. The review examined the provision of agriculture and related education, its effectiveness, and considering likely future demand, made recommendations on development of the sector. At that time there were 35 institutions of which 24 provided awards relevant to higher education for agriculture and related areas. Enrolments varied from less than 400 for 15 institutions to more than 800 for five of the institutions. Enrolments had increased across the country at an annual average rate of seven percent to a total of some 11,000 students in 1990.

In recommending means to improve the effectiveness of education and training, the review noted the need for:

- improved integration of disciplines
- improved integration with research organisations and industries
- greater flexibility to respond to changing community demands
- improved capacity for staff development
- widening diversity of offerings
- improved support for staff, both academic and technical
- improved postgraduate training including the possibility of a graduate school
- improved management of service teaching from other faculties
- improved scope for articulation between programs

The review introduced a concept of Recognised Providers for agriculture and related education and defined these proposed Providers as:

- offering courses in at least three of the eight major categories of study
- having a student load of at least 450 EFTSU
- offering courses from TAFE level to higher Doctorates
- being part of large institutions with strengths in support faculties

In the light of these recommendations and those of the Dawkins' Reforms, the implications for the providers in Victoria were clear. The University of Melbourne met the recommended

minimum size while Latrobe University, the second provider of university education in agriculture in Victoria, fell well below. VCAH was recognised in terms of its size and need for continuing development (refer to box: Rationalising Agricultural Education).

The Affiliation Period: 1992-95

The University of Melbourne and the Victorian College of Agriculture and Horticulture signed a formal agreement in 1989 to seek affiliation. The process was delayed by the Review of Agricultural and Related Education of the McColl Committee. The amalgamation (affiliation) of the VCAH and the University of Melbourne took place on 1 July 1992. A series of reports and reviews ensued, two of which bear some further discussion. The first, in terms of reporting date (October 1992), was conducted by Capp and Caro on behalf of the University of Melbourne and took the form of an administrative review of VCAH. The ten day review included all campuses of VCAH and key personnel. In terms of interaction with the University, the report noted that:

'the University has much to gain from the amalgamation with VCAH and it is hoped that University staff will take an interest in the College and make use of its facilities. Co-operative arrangements for research could be very attractive. The College also offers a gateway to the farming community. The College too has much to gain from the amalgamation, apart from the necessity to become part of the Unified National System. Access to University expertise and facilities will be important in the development of the College. Links between individual College and University staff members will benefit both institutions.'

Rationalising Agricultural Education

In Victoria, the institutions of interest are Latrobe University (which is amalg
of Melbourne and the Victorian College of Agriculture and Horticulture. Me
minimum number while those at Latrobe are well below. Both institutions on

faculty is limited. On the other hand, the VCAH has substantial enrolments a
only just being developed. Discussions are underway concerning the amalga
should be broadened to encompass Latrobe's agricultural and related educat
consideration of the details of such a reorganisation needs to be undertaken j
Victoria situation will be a decision on where responsibility for TAFE course

The second, and more far-reaching review, was conducted by Professor Dennis Greenland of the United Kingdom on behalf of the University of Melbourne. He examined the needs of agriculture and related education consequent upon the affiliation of the VCAH and the University. The review tackled some difficult issues relating to integration of the organisations and produced a series of recommendations which, while not totally accepted at that time, have proven to be durable in their logic in most cases. The context in which the recommendations of the report were made, noted the rapid advances in agricultural science and availability of scientific knowledge and technologies. It also noted the overall need for improved educational standards in the general community and in particular the agricultural sector, and the importance to Australia and Victoria of improving efficiencies in agricultural production systems and international markets. The need for greater attention to be paid to environmental issues and resource conservation in agriculture and related activities, and the rising importance of the Asian region as a market with consequent needs for Australians to be better informed about Asia, also formed part of the external environment against which recommendations were framed.

Recommendations of the Greenland Review included the need for greater flexibility in current courses, the introduction of electives relating to Asia, greater use of combined degrees, raising the profile of food and dairy science, maintaining the applied science focus consequent on integration of VCAH and University staff for postgraduate supervision, development of teleconferencing facilities, maintenance of strong TAFE offerings, development of research in the Colleges, improved

linkages with the State Department of Agriculture and the Faculty of Veterinary Science, establishing linkages with Latrobe University, and some general recommendations concerning management and governance of the combined Faculty. It is of significance in looking back from 1997, that many of these recommendations have been implemented and others are in the process of being modified for implementation.

The University of Melbourne then established a working party convened by Professor Boris Schedvin to consider the Greenland Report. The party recognised that the combined resources of the then present Faculty of Agriculture and Forestry and the VCAH provided a unique opportunity for the University of Melbourne to build a strong and diverse Faculty, with sufficient resources to provide services to agriculture and related industries. The need for a Faculty-wide overview of research, higher degree, undergraduate, applied science and TAFE programs and for articulation between the educational programs was recognised. A significant principle espoused by the working group was...

'the establishment of a system of agricultural and related education and research built on collaboration and strategic alliances. The Faculty of Agriculture, Forestry and Horticulture should operate on the model of the Land Grant Colleges in the United States, and provide education, appropriately articulated, from short courses, through TAFE programs, and award courses at the applied and more fundamental levels. Research should be conducted in collaboration, as appropriate, with the Victorian Departments of Agriculture and Conservation and Natural Resources, and with other research agencies such as CSIRO.' During the currency of the working party, a series of recommendations were adopted by the University Council including:

- a combined BSc and BAgrSc, BAgrSc and BCom and BForSc and BCom and the development of an information kit concerning the new structure for use in schools

- the creation of a Department of Agriculture and a Department of Forestry within the Faculty of Agriculture and Forestry
- the creation of a new Chair of Agriculture linked to the position of Dean of the new Faculty of Agriculture, Forestry and Horticulture
- formation of a Joint Centre for Crop Improvement
- formation of a Centre for Food Science and Engineering
- establishment of Chair of Agriculture in Soil Science
- formation of the new Faculty of Agriculture, Forestry and Horticulture from a date to be determined in 1995

With the approval of the University Council for the formation of the Faculty of Agriculture, Forestry and Horticulture at its meeting on 5th December 1994, it was agreed that the Faculty would include a Department of Agriculture, a Department of Forestry, and the School of VCAH. It was recognised that this new Faculty would be the largest provider of agriculture and related education in Victoria and possibly Australia, operating from nine locations across the State with many of the characteristics of a US Land Grant College. The need for emphasis, on pasture science with particular reference to the dairy industry, an emphasis on crop production and improvement, and on natural resource management, were recognised within the overlapping agricultural provisions of the University and VCAH Colleges.

The recommendations of the December 1994 report of the working party included:

- approval of the Victorian Pig Research and Training Centre jointly with the State Government
- approval of membership by the University of the Australian Food Industry Science Centre
- dis-establishment of the VCAH Programs Committee
- a new composition for the Board of the new Faculty of Agriculture, Forestry and Horticulture
- adoption by the new Faculty of objectives based on the University's strategic plan and the needs of agricultural industries

- maintenance of TER scores and enrolment of BSc undergraduates into BAgrSc with advance standing
- establishment of the Chair of Pasture Science
- development of a research management plan involving VCAH
- dis-establishment of the Chair of Agricultural Economics
- a review of programs in agricultural education
- development of both amenity and production horticulture plans in conjunction with the Horticulture Research and Development Corporation
- review of the future of the Centre for Farm Planning and Land Management
- review of the Centre for Renewable Natural Resources for three years

The creation of the new Faculty was delayed while the search for a new Dean was conducted. With the appointment of Professor Lindsay Falvey in 1995, the Faculty of Agriculture, Forestry and Horticulture officially came into existence on April 3 1995, the first day of his presence at the University.

1995-97

Throughout the affiliation period, there had been some reservations as to the implications of integration. The VCAH was concerned that it would disappear in the large University, and that its core values of service to industry would be lost. Some sectors of industry shared these concerns. Members of the University Faculty feared that amalgamation with the larger VCAH would threaten the academic standards of the University and dilute its research efforts. At times these concerns developed to a level which retarded progress despite the review and consultative processes engaged in by both parties.

With the creation of the new Faculty in 1995, a new approach to integration was possible. This approach sought all parties to consider working as if a full integration had occurred. The goodwill which progressively developed through greater understanding and respect of the practical focus of the Colleges

and their links with industry on the one hand, and of the international research and staff base of the Departments of Agriculture and Forestry on the other produced an environment in which productive planning for legislative change could proceed.

Throughout 1995 and 1996, activities were planned on a joint basis wherever possible. Faculty Management moved from one based on a bifurcated approach between policy and management to a single Faculty Management Group comprised of Heads of Colleges, Heads of Departments and Associate Deans. Utilising the Faculty Management Group as a single clearing house and decision-making body for plans and budget, led to further integration and confidence in the ultimate merger.

Towards the end of 1996 and through 1997, details concerning changes in State legislation to make the University of Melbourne the successor in law of the Victorian College of Agriculture and Horticulture, and the creation of a new University Statute to reflect the special nature of the new combined entity, proceeded smoothly.

The outcome of these deliberations is now clear. A single entity, the Institute of Melbourne School of Land and Environment, came into being on 1 July 1997 with a specific focus on meeting the needs in the medium and long term, of stakeholders defined as industries and related parties. The new organisation is described in the following final chapter.

Chapter 13: Institute Of Melbourne School of Land and Environment, 1997

The Institute of Melbourne School of Land and Environment

came into being on 1 July 1997, upon the successful merging of the Victorian College of Agriculture and Horticulture, with the University's departments relating to Agriculture and Forestry (refer to diagram *Coalescing the Forces*). With its creation, the Faculty of Agriculture, Forestry and Horticulture which had been created to allow the full merger to take place, disappeared through the passing of new University regulations under the relevant statute by the University Council on 5 May 1997. The Victorian State Parliament passed legislation during April 1997 with an effectivity date of 1 July 1997. The intensive discussions and planning surrounding the merging of institutions, and the involvement of stakeholders in determining an appropriate means of governance in the food and related environmental areas of the University, had been productive and catalytic in allowing the full merger to occur. At the same time as creating the mechanisms for full partnership with stakeholders, the University Council approved a change in name for the entity reflecting its changed charter and special nature. The new name is **Institute of Melbourne School of Land and Environment**.

Stakeholder Ownership

The link between users of knowledge in agricultural education has long been a subject of interest to industry and other stakeholders. Regular suggestions of greater levels of *ownership* by industry and others have been expressed as a means of promoting contact, enhancing the flow of information between users of knowledge, and information and those which created or imparted knowledge, and in terms of joint activities in research and educational fields. In recent times, the external environment in which universities operate in Australia has changed significantly as part of the general changes in society's understanding of government investment in services. As a consequence of these shifts in attitude, there has been a growing feeling that there should be increased levels of communication between all stakeholders in agriculture and related

environmental areas of education which in many cases would lead to joint funding of agreed activities.

Table: Coalescing The Forces

Through the period leading to the full merger, the University's strategy with respect to agriculture and related industries had been clear, as described in Chapter 12. The University sought to strengthen its offerings in these fields and to enhance services through the merger with the six colleges of the VCAH in a period of major changes in fiscal arrangements for education and training. This strategy appears to have been prescient, because it anticipated changes in government policy, acknowledged rising interest in industry and other sectors in closer working relationships, and acknowledged the applied nature of agriculture and related education and research. The need for common goals and values in a partnership was recognised in the new University regulation which provided stakeholder ownership of the Institute of Melbourne School of Land and Environment. This was seen to meet the expressed needs of those who recalled the days when industry suggested that University activities were not relevant unless they were practical and immediately able to be applied, and some academics who claimed that industry was not well enough informed to comment on their work. The partnership aims to increase stakeholder knowledge of the University's activities in these sectors and to so increase understanding about the relevance of science, education and research, and to similarly inform academics as to the needs and perceptions of stakeholders. In taking this path, the University also acknowledged that agriculture and related education represented an area of the application of natural and social sciences, as distinct from an area of *pure* scientific investigation which could otherwise take place in a Faculty of Science.

The University has created a Board to oversee the Institute of

Melbourne School of Land and Environment comprised of nine external stakeholders, a University Council representative and the Dean of the Faculty. Stakeholder representatives are selected on the basis of:

'persons who together possess outstanding expertise in the fields serviced by the Institute including food and agriculture, agribusiness, forestry, resource management and conservation, horticulture, education, training and research and corporate governance'.
Within the new regulation the Dean also assumes the role of Chief Executive Officer reporting to the Board. The Board accepts the responsibility for establishing policy and monitoring management. The Dean is responsible for carrying forward that policy through agreed plans.

Also included is the creation of a position of Deputy Dean (Vocational Training) to ensure that the importance of vocational education and training within the Institute of Melbourne School of Land and Environment is continually recognised.

The suite of offerings of the Institute of Melbourne School of Land and Environment is the widest offered in Australia and incorporates the ethos that education and training should be made available in the form appropriate for those persons wishing to improve their knowledge base. Accordingly, strong higher education and research activities, including research degrees, are complemented by vocational certificates and diplomas, short courses and outreach activities. Outreach activities include some aspects of what has otherwise been termed extension in agricultural fields, consulting services, community services and support to the professions served by the organisation. The Institute of Melbourne School of Land and Environment similarly links closely with other offerings of the University, accessing them for the benefit of agricultural, food, natural resource management, forestry, horticultural and related education. Important faculties of the University contributing to

these sectors include: Education; Economics and Commerce; Medicine, Dentistry and Health Sciences; Engineering; and Veterinary Science.

Structure

With the formation of the Institute of Melbourne School of Land and Environment, it was important to consider an appropriate structure to reflect the future functions of the organisation. These had been determined from a corporate planning process involving stakeholders, staff and others over a period of more than one year. It was therefore logical to propose that departmental structures reflect the strengths which were agreed through the corporate planning process. This represents some shifts in current offerings and structure. The new structure to be introduced in 1998 reduces duplication common in the merging of institutions, accommodates changes in the nature of courses, and highlights critical areas of food and fibre production, including animal and plant sciences, forestry and amenity horticultural industries, natural resource management, dairy foods and agribusiness.

The important regional responsibilities of rural colleges will also be highlighted in the structure while the two-city based colleges will integrate more closely with the main University campus.

The Name

The Institute of Melbourne School of Land and Environment was named in recognition of the descriptive inadequacy of the long title of Faculty of Agriculture, Forestry and Horticulture, and to symbolise the significant shifts in governance arrangements for the new organisation. In considering the services which the organisation would provide, it was clear that these related to the agricultural industries and their strong association with the land for food production as well as natural

resource management.

The name of the Institute of Melbourne School of Land and Environment was arrived at after lengthy discussions involving staff, student representatives, persons outside what is now the Institute of Melbourne School of Land and Environment including in the University and elsewhere, industry and others. The Steering Committee formed to oversee the integration of systems of VCAH and the University invited the VCAH Council to suggest some names through it to the University Council. The VCAH Council determined that there were a number of key principles including:

- the need to acknowledge the importance of farmers and other producers on the land especially at a time of an increased urban focus in Australian society;
- the name should be short and embrace the diverse fields in which the organisation operates;
- it would probably be impossible to describe each industry and discipline represented in the services of the diverse organisation;
- a name other than *Faculty* would be preferable to indicate the changes from a traditional University approach to offering agricultural and related education;
- if possible, to include reference to the agribusiness chain of production, processing and marketing, as well as to the over-arching field of natural resource management.

After considering various titles based around functions, popular words and other options, the name, **Institute of Melbourne School of Land and Environment,** was selected. It was titled an **Institute** rather than a Faculty in keeping with the advice of the VCAH Council and with the support of the University. The word **Land** was seen to be important in meeting the requirements for those on the land which, in Australia, has a special meaning wider than the word *agriculture*. It also embraces the concept of landcare relating as an aspect of natural resource management, as well as implying the whole biota supported by soil and water. Land management similarly was

seen to represent an important aspect of the management stream of courses. Land was also seen by foresters and horticulturists as being the uniting resource on which their practices were based. **Food** was seen to embrace food production, processing and marketing, and to have an appeal beyond rural areas. This was considered important as both small and large food agribusiness companies reside in south-eastern Australia, and urban dwellers increasingly understand the importance of food safety and quality. Food was also seen as one of the primary outputs of land based activities. **Resources** was included in preference to science as it included a natural resource connotation while also referring to other resources which contribute to food and other products from the land. Resources was seen to embrace both science and management approaches to land and food education and research, and to thereby be an accurate descriptor of the activities of the Institute of Melbourne School of Land and Environment.

The Future

With more than 400 staff, nine locations around the State, more than 6,500 ha of land under its management and courses in the informal, vocational and higher education sectors, **Land and Food** is a major asset of the University of Melbourne and is the largest such entity in Australia. Its corporate objectives are to provide international leadership of relevance to the local industries especially dairying, grains and oil seeds, forest industries, food production horticulture and ornamental horticulture. In so doing, it takes a strong focus on the business of agriculture, forestry, food and horticulture within an integrating and over-arching emphasis on natural resource management and conservation.

References

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

A*DEC (1996) A*DEC and Virtual Universities: Toward Common Vision and Action. http://www.ces.ncsu.vdu/adec/

AAGA (1987) The First Italian School of Agriculture in Meleto, Tuscany, Institut National de Recherches et d'applications Pedagogiques (France). Published by Michel Boulet, 1986. Annals d'Histoire des Enseignement Agricoles 2 (1987: 43-49).

Abdalla, A. (1995) The FAO Study on Promoting the Role of Universities in the National Agricultural Research Systems of Five Near East Countries. In Strengthening the Role on Universities in the National Agricultural Reesearch Systems in Sub- Saharan Africa: Developement and Validation of a Methodological Framework. Proceddings of the Synthesis Workshop, September 11 - 15, 1995. International Service for National Agricultural Research, The Hague, The Netherlands.

ABS (1994) Education Statistics. Australian Bureau of Statistics, Canberra.

ADB (1991). Technical and Vocational Education and Training: Proceedings of the Regional Seminar on Technical and Vocational Education and Training held in Manila, Philippines. January 1990, Asian Development Bank in coorperation with the World Bank. Asian Development Bank, Manila Philippines, pp695.

Ahmed, S.E. and Booth, R.H. (1990). Current and Potential Roles of Agricultural Universities in Strengthening National Agricultural Research Systems in West Asia and North Africa. Paper prepared for International Centre for Agricultural Research in the Dry Area, Eleppo, Syria.

Ahmed, S.E., Ibrahim, H., Moneiem, A.A. and Ketata, H. (1984). The Role of ICARDA in Strengthening Agricultural Research Programs in West Asia and North Africa. Paper

presented at the First National Conference on Applied Agricultural Research. State Board for Applied Agricultural Research, Baghdad, Iraq, November 24-27, 1984.

Albrecht, D.A. and Ziderman, A.Z. (1994) Funding Mechanisms for Higher Education: Financing for Stability, Efficiency and Responsiveness. World Bank Discussion Paper 153, Washington DC

Alverson, D. L. and Larkin, P. A. (1993) Century 21. Proceedings of a Conference on Fisheries: Fisheries Sciecne and Management. Royal Society of Canada, Vancouver

Andarawewa, A.B. (1971). Agricultural Development in Ceylon. In Weitz, R. and Landau, Y.E. in Rural Development in a Changing World. MIT Press, Cambridge, Massachusetts.

Anderson, J R and Thampapillia, J (1990) Soil Conservation in Developing Countries: Project and Policy Intervention. Policy and Research Series World Bank Washington DC.

Anderson, J. R. and de Haan, C (1992) Private and Public Roles in Agricultural Development: Proceedings of the 12th Agricultural Sector Symposium. World Bank Washington DC.

Anderson, R. (1994) Science, Technology and Education - The Challenge to Education. Agricultural Science 8(2):37-40

Angkasith, P. (1994) Integration of Environmental and Sustainable Developemnt into Agricultural Education Programe Journal of Agriculture (Faculty of Agriculture, Chiang Mai University) 10(1): 26-49

Annis, S. (1990) Toward a Pro-Poor Information Agenda at the World Bank. Development 1990: A Journal of FID, The World Bank, Washington D.C.

Arrhenius, E and Waltz, T U (1990) The Greenhouse Effect:

Implications for Economic Development. World Bank Discussion Papers, World Bank, Washington DC, 18pp.

Arter, V.G. and Dale, T. 1974. Top Soil and Cultivation University of Oklahoma Press, Norman Oklahoma.

Atlas, V. and Giam, C.S. 1988. Ambient Concentrations and Precipitation Scavenging of Atmospherical Organic Pollutants. Water, Air, Soil Pollution, 38:19-36.

Avery, D T (1995) Saving the Planet with Pesticides and Plastic. Hudson Institute, Indianapolis, 432 pp.

Avery, D T (1995) The Safest Least Cost and Most Sustainable Farming in History. Paper of the Hudson Institute, Indianapolis, U.S.A., 15 pp.

B

Barr, N. and Cary, J. (1992) Greening a Brown Land: The Australian Search for Sustainable Land Use. MacMillan, Melbourne, Australia

Becker, G.S. (1964) Human Capital: A Theoretical and Imperical Analysis, with special reference to education. General Series 30 New York: Colombia University Press

Benahnia, K. (1995) African Association of Faculties of Agriculture's Past and On-going Projects in Strengthening the Agricultural Research Performance of African Universities. In Strengthening the Role on Universities in the National Agricultural Reesearch Systems in Sub-Saharan Africa: Developement and Validation of a Methodological Framework. Proceddings of the Synthesis Workshop, September 11 - 15, 1995. International Service for National Agricultural Research, The Hague, The Netherlands.

Bennett, W.S. Jr. (1967). Educational Change and Economic Development. Sociology of Education (Spring):101-114.

Benor, D., Harrison, J.Q. and Baxter, M. (1984) Agricultural Extension: The Training and Visit System. World Bank, Washington, D.C.. 85pp

Bernard van Leer Foundation (1995) Participatory Learning for Empowerment. Bernard van Leer Foundation Newsletter no.79 (July, 1995)

Bessant, B. (1978) A Critical Look at the Functions of Australian Universities since 1939.

Beveridge, J.L. (1991) The Scottish System of Agricultural Education Research and Advisory Work. Agricultural Progress 66:93-98.

Bhowon, R and Chinapah, V. (1993) Reform of Basic Education in Mauritius: The Process of Information Gathering, Consultation and Decision Making. In Chapman D.W. and Malck L.O. Eds. Information Systems in Educational Planning: From Data to Action. International Institute for Educational Planning UNESCO, Paris.

Bianchi, P., Carnoy, M. and Castel, M. (1988) Economic Modernisation and Technology Transfer in the Peoples Republic of China. Stanford University, CERAS, Stanford, California

Bishop, J. (1989). Occupational Training in High School: When Does It Pay Off? Economics of Education Review 8:1-15.

Bon Braun, J, McComb, J, Fred-Mensah, B, Pandya-Lorch, R. (1993). Urban Food Security and Malnutrition in Developing Regions. International Food Policy Research Institute, Washington D.C.

Bonte-Friedheim, C. (1995) Opening Remarks. In Strengthening

the Role on Universities in the National Agricultural Reesearch Systems in Sub-Saharan Africa: Developement and Validation of a Methodological Framework. Proceddings of the Synthesis Workshop, September 11 - 15, 1995. International Service for National Agricultural Research, The Hague, The Netherlands.

Borlaug, N E (1982) Using Plants to meet World Food Needs. pp 101-182 in Future Dimensions of World Food and Population. Edited by R G Woods. Westview Press.

Bourlaug, N. (1995) in Annual Report 1994-1995 of the Consultative Group for International Agricultural Research, Washington, D.C.

Brien, J.P. (1977) Challenge and Change in Colleges of Agriculture in American Universities. The Journal of the Australian Institute of Agricultural Science September 43(34/4):128-130.

Brown, L R (1982) The Worldwide Loss of Cropland, pp57-98 in Future Dimensions of World Food and Population. Edited by R G Woods. Westview Press.

Brown, L.R. (1990). The Illusion of Progress in State of the World, 1990. A World Watch Institute Report on Progress Toward a Sustained Society. W.W. Naughton and Co,. New York.

Bultena, G.L., Hoberg, E.O., Korsching, P.F., Padgitt, S.C. and Malia, J.E.(1990) Siltation of the Red Rock Reservoir : Farmers Perspective's on Causes and Solutions. Sociology Report No.161, Iowa State University, Ames, U.S.A

Busch L. (1988) Universities for Development: Report of the Joint Indo-US Impact Evaluation of Indian Agricultural Universities. USAID Project Impact Evaluation No.68. US Agency French National Development, Washington DC. 100pp

Byrnes, F.C. and Byrnes, K.J. (1971). Agricultural Extension and Education in Developing Countries. In Weitz and Landau (Eds), Rural Development in a Changing World. Mit Press, Cambridge, Massachusetts.

C

Campbell, K. (1983) Educational Institutions. Chapter 18 in Australian Agriculture.

Campus Review (1996) UWA Academic Joints UN Board. Article by Maureen Delaharpe in Campus Review Weekly, Australia

Capra, F (1991) The Tao of Physics: An Exploration of the Parallels between Modern Physics and Eastern Mysticism. Flemingo, Harper Collins Publishers, U.K., 337pp.

Carson, R. L. (1962) Silent Spring. Riverside Press, Cambridge, Massachusetts.

Carter, V.G. and Dale, T. (1974)Topsoil and Civilization. University of Oklahoma Press, Norman, Oklahoma

Cary, J. (1995) Privatisation of Extension: Institutional Change in Australia and New Zealand. Invited Paper for a Workshop on Privatisation of Technology and Information Transfer in U.S. Agriculture: Research and Policy Implications. University of Wisconsin-Madison, October 25-26, 1995

CASDC (1996) Report of December 13, 1995 Meeting with World Bank President James Wolfensohn. Committee on Agricultural Sutainability for Developing Countries, Washington D.C.

Castells, M, (1986) High technology, economic policies and

world development. Round Table on the International Economy, University of California, Berkley

Castells, M. (1993) the Uinversity System: Engine of Developemnt in the New World Economy in Ransom, A., Khoo, S. M., and Selvaratnam, V. (1993) Improving Higher Educaiton in Developing Countires. Econoic Developemnt Institute, World bank, Washington DC

Castles, I. (1992). Australia's Environment - Issues and Facts. Australian Bureau of Statistics Catalogue No.4140.0. Australian Government Publishing Service, Canberra.

CGIAR (1994) International Centres Week; Summary of Proceedings and Decisions. Consultative Group on International Agricultural Research, Washington DC.

CGIAR (1995a) Consultative Group on International Agricultural Research Annual Report 1994-1995.

CGIAR (1995b) Renewal of the CGIAR: the Final Milestone - Criteria and Framework for CGIAR Priority Setting. International Centres Week 23 October to 3 November 1995. Consultative Group for International Agricultural Research Washington DC.

CGIAR (1995c). Renewal of the CGIAR: The Final Milestone. Agenda Item 4 at International Centres Week 1995, October 30 to November 3 1995. Washington D.C.

CGIAR (1995d).Renewal of the CGIAR: The Final Milestone - Priorities and Strategies for Soil and Water Aspects of Natural Resource Management Research in the CGIAR. Agenda Item 4 at International Centres Week 1995, October 30 to November 3, 1995 Washington DC.

CGIAR (1996a) Priorities and Strategies for Soil and Water Aspects of Natural Resource Managemnt Research in the

CGIAR. Mid-Term Meeting 1996, May 20 - 24, 1996, Jakata, Indonesia. CGIAR, Washington, DC

CGIAR (1996b) A Synthesis of Current Activities in Soil and Water Research in the CGIAR. Mid-Term Meeting 1996, May 20 - 24, 1996, Jakata, Indonesia. CGIAR, Washington, DC

CGIAR (1996c) Persectives on Policy and Management Research in the CGIAR. Mid-Term Meeting 1996, May 20 - 24, 1996, Jakata, Indonesia. CGIAR, Washington, DC

CGIAR (1996d) The Future Role of CGIAR in the Developemnt of National Agricultural Resarch Systems: A Strategic Study of Institutional Strenghening Research and Services. Mid-Term Meeting 1996, May 20 - 24, 1996, Jakata, Indonesia. CGIAR, Washington, DC

CGIAR (1996e) Priorities and Strategies for Policy, Public Managemnt and Institution Strenthening Research and Service in the CGIAR. Mid-Term Meeting 1996, May 20 - 24, 1996, Jakata, Indonesia. CGIAR, Washington, DC

CGIAR, (1995). Consultative Group on International Agricultural Research Annual Report 1994 to 1995 xxpp.

CGIAR, (1995). International Centres Week: Summary of Proceedings and Decisions. Consultative Group on International Agricultural Research, Washington, D.C.

CGIAR, (1995). Renewal of the CGIAR: The Final Milestone. Priorities and Strategies for Soil and Water Aspects of Natural Resource Management Research in the CGIAR - Criteria and Framework for CGIAR Priority Setting. Consultative Group for International Agricultural Research, International Centres Week, October 30 - November 3, 1995. Washington, D.C.

Chaudhry, M. A. and Al-Haj, F. M. (1985) Acritical Analysis of Agricultural Educaiton and Extension in Developeing Countires.

Agricultural Administration 20:169-186

Chaudhry, M.A. and Al - Haj, F.M, (1984) A Critical Analysis of Agricultural Education and Extension in Developing Countries, Agricultural Administration. 20:169 - 186.

CIFOR (1995) A Strategy for Collaborative Forest Research. Centre for International Forestry Research, Bogor, Indonesia 90pp.

CIFOR (1995) A Strategy for Collaborative Forest Research. Centre for International Forestry Research, Bogor, Indonesia 90pp.

Clark, R.W. (1971) Einstein: The Life and Times. Avon Books, New York.

Clark, W.C. (1981) Witches, Floods and Wonder Drugs: Historical Prospectives on Risk Management (RR-81-3). International Institute for Applied Systems Analysis, Laxenburg, Austria.

Clarke, (1991) Water: The International Crisis. EarthScan Publications Limited, London

Conway, G. (1994) Tomorrow's World: Trends in Science. Presentation at International Centres' Week 1994. Consultative Group on International Agricultural Research, Washington D.C.

Cornwall, A., Guirt, I and Wellborne, A. (1994) Agriculture and Human Values, Spring/Summer edition.

Cramer, D. I. (1993) Chaos and Order: The Comlex Structure of Living Systems. VCH, Weinheim, Federal Republic of Germany

Crawford, M., Eisemon, T. and Holm-Neilsen, L. (1995). Interactive Technology and Electronic Networks in Higher Education and Research: Issues and Innovations. Human Capital

Development and Operations Policy, ACO Working Paper 62, United Nations Development Programme, New York.

Crawley, T.J. and Nowlin, W.D. (1995) Benefits of Improved Climate Prediction. A White Paper for the National Association of State Universities and Land Grant Colleges. Texas Centre for Climate Studies, Technical Report No.2, 31pp.

Creasey, J.S. (1995) Personal Communication with the Librarian Information Officer of the Institute of Agricultural History and Museum of English Rural Life, University of Reading, Whiteknights, Reading, United Kingdom

Crosson, P. (1986) Erosion and Policy Issues. In T Phipps, P Crosson, and K Price, (Eds)., Agriculture and the Environment. Resources for the Future. Washington DC.

Crosson, P. (1991) Global Food: Resources and Prospects. Draft Background Report for the World Development Report 1992. Department of Agriculture and Rural Development, The World Bank Washington DC.

Crosson, P. and Anderson, J.R. (1992) Resources and Global Food Prospects: Supply and Demand for Cereals to 2030. World Bank Technical Paper No.184 World Bank Washington DC, 122pp.

Crosson, P. and Anderson, J.R. (1995) Achieving a Sustainable Agricultural System in Sub- Saharan Africa. Paper No.2, Building Blocks for Africa - 2025. Environmentally Sustainable Development Division World Bank Washington DC.

Curtis, F (1985) Demand and Supply Considerations for Evaluating a New Distance Education Programme in Natural Resources Planning and Management in North America. The Environmentalists 5(2):129-135.

D

DAAC (1992) Being a Farmer in Denmark: Organisation Advice and Education- the Danish Model. The Danish Agricultural Advisory Centre, Skejby, Denmark

De Bono, E. (1995) Parallel Thinking: From Socratic Thinking to de Bono Thinking, Penguin Books.

Delbecq, A.L., Van de Ven, A.H. and Gustafson, D.H. (1975) Group Techniques for Program Planning: A Guide to Normal Group and Delphi Processes. Scott, Foresman and Company, Glenview, Illinois pp83-87

Derera, N., Martin, P. and Cadman, A. (1994) Reform of University Education in Agriculture. Agricultural Science 8(2):30-32.

Dhanini, S. (1993). Indonesian Manufacturing Employment and Training Volume 1. Major Findings of the 1992 West Java Enterprise Survey, Technical Report No.2 Bappenas Bureau of Manpower Regional Manpower Planning and Training Project Report, Jakarta, Indonesia.

DITAC (1994) The Innovation Framework: Recent Findings. Discussion of Science and Innovation: An Occasional Paper in a Series on Research and Technology, and their Utilisation in Australia. Department of Industry, Technology and Commerce, Canberra.

Dostoyevsky, F. (1982) The Brothers Karamazov (translated by David Magarshack) Penguin Edition pp.913.

Dougherty, C. (1991). Education and Skills Development: Planning Issues in Technical and Vocational Education and Training: Proceedings of the Regional Seminar on Technical and Vocational Education and Training, held in Manila, Philippines. January 1990, Asian Development Bank in

coorperation with the World Bank. Asian Development Bank, Manila Philippines, pp695.

DOVE, (1995) Discussion Paper on the Development of the National Strategic Plan for DOVE. Agricultural Colleges Version 2. Management of DOVE Agricultural Colleges, MDAC Projects, Department of Vocational Education, Bangkok Thailand and DANIDA - Unofficial Working Document.

Dror, Y. (1993) The New Rule School in Upper Galilee (Eretz Israel) at the Beginning of the 20th Centure. Journal of Research in Rural Education, Winter 1993, 9(3):179- 190.

Dwyer, D.D. (1981) Innovations in Academic Curricula for International Education. Proceedings of the XIV International Grassland Congress, June 15-24, 1981 p.815-818 Lexington, Kentucky.

E

EarthWatch 1992. Global Environment Monitoring System. The Potential Socio-economic Effects of Climate Change in South East Asia. M.L. Parry, M. Blantran, D Rozari, A.L. Chong and S. Panich (Eds). United Nations Environment Program, Nairobi.

Easter, K.W,, Bisaliah, S. and Dunbar, J.O. (1989) After 25 Years of Institutional Building, the State Agricultural Universities In India Face New Challenges. Institutional Development in Third World Countries: The Case of Agricultural Education and Research. American Agricultural Economics Association

Eddy, E.D. (1956) Colleges of our Land and Time. Harper & Brothers, New York, pp.269.

EDI (1993) Improving Higher Education in Developing

Countries, Economic Development Institute of the World Bank, Washington DC

Edwards-Jones, G. (1994). Information Needs for Natural Resource Management Research in Report of a Workshop, December 7-9 1994: Research Policies and Management for Agricultural Growth and Sustainable Use of Natural Resources. The International Service for National Agricultural Research, the Hague.

Egan, A. and Connor, D. (1994) Productivity and Sustainability of Agricultural land. In Cosgrove, L., Evans, D. G. and Yencken, D (Eds) Environemntal Values, Knowledge and Action. Melbourne University Press, Melbourne

Egan, A.R. and Wilson, A.D. (1995) Sustainability of Stocking and Grazing in Southern Australia. Australian Academy of Technological Sciences and Engineering - Focus 88:2-7.

Ellyard, P. (1996) Presentation at the University of Melbourne For Uni Life 1996. Dr Peter Ellyard, Executive Director of Preferred Futures, Melbourne, Australia.

Evenson, R.E. and Rosegrant, M.W. (1993). Determinants of Productivity Growth in Asian Agriculture: Past and Future. Paper presented at the 1993 American Agricultural Economics Association International Pre-Conference on Post-Green Revolution Agricultural Development Strategies in the Third World; What Next? Orlando, Florida.

F

Falvey L, (1993) International Consulting: Providing Your Services to International Agencies. Institute for International Development, Melbourne Australia. 185pp.

Falvey, J.L. and Leake, J.E. (1993) Sustainable Management for Livestock: Mongolia. Volume 1, First Plenary Session, World Confereence on Animal Production held in Edmonton, Canada. University of Alberta, Edmonton

Falvey, L, Sadder, H., Falvey, P., Rice, R., Hawkins, S. and Pearman, G. (1991) Technology Transfer Opportunities for Reducing Greenhouse Gas Emissions: Number 9 in a series of Greenhouse Studies. Department of the Arts, Sport, the Environment, Tourism and Territories, Canberra, pp. 200

Falvey, L. (1993). Funding Agricultural Research: A Comparison of Selected OECD Centres and India. Report to the World Bank. Washington DC

Falvey, L. (1995) International Internet Conference on Food Security forming part of the 50th Anniversary celebrations of FAO Food and Agriculture Organisation, Rome, in conjunction with Laval University, Quebec.

Falvey, L. (1995) Land Grant Universities of the U.S.A.: Report of Visit. University of Melbourne, Australia

Falvey, L. (1996) Food or/and Environment. Inaugural Professorial Lecture on the First Anniversary of the Merged Faculty of Agriculture Forestry and Horticulture, 3rd April 1996, University of Melbourne, Australia.

Falvey, L. and Forno, D.A. (1995) Institutiional Arrangements in Agricultural Knowledge Systems. Paper prepared for the World bank, Washington DC

Falvey, L. and Maguire, C.. (1996) The Emerging Role for Agricultural Education in Future Researchers (in preparation)

Fan S. and Pardey P. (1995) Centralisation versus Decentralisation: Reforms of the Chinese Agricultural Research and Extension System in Agriculture in Liberalising Economies:

Changing Roles for Governments. Edited by Umali-Deininger D and Maguire C, proceedings of the 14th Agricultural Sector Symposium. World Bank, Washington DC. 455pp.

FAO (1985). Training for Agriculture and Rural Development. Food and Agricultural Organisation, Rome.

FAO (1989) National Agricultural Research: Report of a Joint Evaluation Study in Selected Countries In conjunction with UNDP, New York. Food and Agricultural Organisation, Rome

FAO (1993) The Role of Universities in National Agricultural Research Systems (NARS): Report of the FAO Expert Consultation on the Role of Universities and National Agricultural Research Systems, held 10-22 March 1991 at FAO Rome

FAO (1995) International Internet Conference on Food Security forming part of the 50th Anniversary celebrations of FAO Food and Agriculture Organisation, Rome, in conjunction with Laval University, Quebec.

FAO, (1981). Agriculture: Towards 2000. Food and Agriculture Organisation, Rome.

FAO, (1991). Production Year Book Volume 45, Food and Agriculture Organisation, Rome.

FAO, (1992). Guidelines for Land Use Planning. Prepared by the Inter-Departmental Working Group on Land Use Planning. Soils Bulletin 66. Food and Agriculture Organisation, Rome.

FAO, (1992). Guidelines for Land Use Planning. Prepared by the Inter-departmental Working Group on Land Use Planning. Soils Bulletin 66, Food and Agriculture Organisation, Rome.

Fisher, M.J. Raoi, M, Ayarza, M.A., Lascano, C.E., Sanz, J.I., Thomas, J. and Vera, R. (1995) Carbon Storage Deep in the Soil

by Introduced Pastures in the South American Savanas. Nature, September 16th, 1995.

Fite, G.C. (1981) American Farmers: The New Minority. Indiana University Press, Bloomington.

Fleming, I.J. and Robertson, N.F.(1990) Britain's First Chair of Agriculture at the University of Edinburgh 1790 to 1990. East of Scotland College of Agriculture.

Fuller, A. M. and Waldorn, M.W. (1989) Outreach in Agriculture and Rural Development. In Vandenbor, W., Sute, J.C.M. and Moore, J.A.B.(Eds.) South-North Partnership in Strengthening Higher Education in Agriculture. Pericock, Wagenigen, the Netherlands

G

Gibbs, M.J. and Lewis, L. (1989) Reducing Methane Emissions from Livestock: Opportunities and Issues. Office of Air and Radiation, U.S. Environmental Protection Agency, Washington D.C.

Gnaegy, S. and Anderson, J.R. (1981) Agricultural Technology in Sub -Saharan Africa:- A Workshop on Research Issues. World Bank Discussion Paper 126. World Bank, Washington D.C.

Gore, A. (1992). Earth in the Balance. Haughton Mifflin Co. New York.

Gregersen, H., Oram, P. and Spears, J. (1992) Priorities of Forestry and Agrofroestry Ploicy Research. International Food Poicy Research Institute Workshop, Washingotn DC

Gutmang, (1995) Speeches at a Workshop for 2020 Vision,

International Food Policy Research Institute, Washington, D.C.

H

Haddad, W.D., Carnoy, M., Rinaldi, R. and Regel, O. (1990) Education and Development: Evidence for New Priorities. World Bank Discussion Paper No.95. The World Bank, Washington, D.C.

Hall, J.S. (1972) Developments in Formal Agricultural Education: A Selective Review. Agricultural Progress 47:9-16.

Harbison, F.H. and Myers C.A. (1964) Education, Manpower and Economic Growth. McGraw-Hill, New York.

Harper, F. (1990) The Future for Trained Agriculturists in the United Kingdom Agricultural Progress 65:1-11.

Hatfield, J L and Karlen, D L (1993) Sustainable Agricultural Systems. Louis Publishers, Boca Raton, Florida,, 307 pp.

Hayward, J. (1989) Agricultural Extension; the World Bank Experience and Approaches. Presented at the Global Consultation on Agricultural Extension. Food and Agricultural Organisation, Rome

Hillel, D.J. (1991) Out of the Earth: Civilisation and the Life of the Soil. Free Press, New York.

Hostage O.S.T., Michelsen C.H., Nouwakppo H.F., Olugubemi L.B. and Zuidema L.W, (1995) A Framework to Strengthen the Role of Universities in National Agricultural Research Systems. Briefing Paper No.24, International Service for National Agricultural Research

Hoste, C. (1995) Future of the Project. In Strengthening the

Role on Universities in the National Agricultural Reesearch Systems in Sub-Saharan Africa: Developement and Validation of a Methodological Framework. Proceddings of the Synthesis Workshop, September 11 - 15, 1995. International Service for National Agricultural Research, The Hague, The Netherlands.

Hoste, C.H., Michelsen, H., Nouwakpo,L.B., Olugbemi, L.B. and Zuidema, L.W. (1995) A Framework to Strengthen the Role of Universities in National Agricultural Research Systems. Briefing Paper 24. International Service for National Agricultural Research, The Hague, The Netherlands.

House of Commons (1983) First Report of the Agriculture Committee of the House of Commons, Parliament of the United Kingdom, London.

Huber, P W (1993) Galileo's Revenge: Junk Science in the Court Room. Harper Collins Publishers, New York.

Huber, P. 1992. Biodiversity Versus Bio-engineering. Forbes 150(10):266.

Hulse, J H (1992) True Knowledge Is Itself Power. Food Research International (Canada): 25:237 to 245.

I

IBIS (1995). Agricultural New Age. IBIS Business Information Pty Ltd. Melbourne, Australia.

IFAP (1991) Sustainable Farming and the Role of Farmers' Organisations. International Federation of Agricultural Producers World Farmers Times 1:91.

IFPRI (1994) Annual Report - International Food Policy Research Institute, Washington DC.

IFPRI (1995) A 2020 Vision for Food, Agriculture and the Environment: The Vision, Challenge and Recommended Action. International Food Policy Research Institute, Washington DC, 50pp.

IFPRI (1995) A 2020 Vision for Food, Agriculture and the Environment: Speeches made at an International Conference - 2020 Vision. International Food Policy Research Institute and the National Geographic Society, Washington DC.

IPGRI (1993) Diversity for Development. The Strategy of the International Plant Genetic Resources Institute, Rome

IPGRI (1994) in Tribe, D. (1994) Feeding and Greening the World: The Role of International Agricultural Research. The Crawford Fund for International Agricultural Research and CAB International Fund page83.

IRRI 1995, Water: The Looming Crisis. The International Rice Research Institute, Los Banos, Philippines.

ISNAR (1992) Service Through Partnership: ISNAR Startegy for the !990's. Internnational Service for National Agricultural Resrach, The Hague, The Netherlands

ISNAR (1994) Report of the Workshop: Research Policies and Management for Agricultural Growth and Sustainable Use of Natural Resources. The International Service for National Agricultural Research, The Hague.

J

Jacks, G.V. and Whyte, R.O. (1939) Rape of the Earth - A World Survey of Soil Erosion. Faber, London.

Jacoby, E.H. (1971) Agrarian Reform: Planning,

Implementation an Evaluation. in Weitz, R. and Landau, Y.H. Rural Developemnt in a Changing World. MIT Press, Cambridge, Massechusetts

Jain B. (1991) Returns to Education: Further Analysis of Cross Country Data. Economics of Education Review 10(3):253-258

Johnson G.L. and Okigbo B.N. (1989) Institution Building: Lessons from USAID Agricultural Faculty Development Projects in Nigeria. After 25 Years of Institutional Building, the State Agricultural Universities In India Face New Challenges. Institutional Development in Third World Countries: The Case of Agricultural Education and Research. American Agricultural Economics Association, pp111-1217

Johnson, G.L. (1988) The Urgency of Institutional Changes for Agriculture in Less Developed Countries, Newly Industrial Countries and Developed Countries in Food, Hunger and Agricultural Issues. Edited by Club V D and Ligon P C. Proceedings of a Colloquium on Future U.S. Development Assistance held at Winrock International Conference Centre, February 17-19, 1988, Winrock International Institute for Agriculture, Arkansas U.S.A

K

Keeney, D.R. and Deluca, T.H. (1993) Desmoines River Nitrate in Relation to Watershed Agriculture Practices: 1945 Versus 1980s. 22:101-105.

Kellog Foundation (1995) Food Systems Professions Education Initiative. Battle Creek, Michigan

Kennedy, E. and Bouis, H. (1992) Agriculture/Nutrition Linkages: Implications for Policy and Research. Paper presented at the FAO-WHO Internaitonal Cond=ference on Nutrition held

at the Internation Food Po,icy Research Institute, Washi8ngton DC

Kenney, D. and Vorley, W. (1995) Can Privatisation of Information Meet the Goals of a Sustainable Agriculture? Paper presented at Workshop, Privatisation of Technology and Information Transfer in U.S. Agriculture: Research and Policy Implications. University of Wisconsin-Madison, October 25-26, 1995

Keynes J.M. (1936) The General Theory of Employment, Interest and Money. Harcourt, Brace, New York.

Kilpatrick S. (1996) Future Training Directions in Australian Agriculture: A Survey of Key Stakeholders, University of Tasmania Survey. Agriculture Science (in press)

Knudtson, P. and Suzuki D. (1992). Wisdom of the Elders Allen and Unwin 232 pp.

Kuenen, D.J. (1986) Background Paper in UNESCO's Universities and Environmental Education. United Nations Economic Social and Cultural Organisation and the International Association of Universities, pp.127.

L

Lal, R. (1986) Surface Soil Management in the Tropics for Intensive Land Use and High and Sustained Production Advances in Soil Sciences 5:1-109.

Lauglo, J. (1991). Vocational Training Policy: International Issues in Technical and Vocational Education and Training: Proceedings of the Regional Seminar on Technical and Vocational Education and Training held in Manila, Philippines. January 1990, Asian Development Bank in coorperation with

the World Bank, Asian Development Bank, Manila Philippines, pp695.

Lele, U. (1995) Building on the NARS - CGIAR Partnerships for a Doubly Green Revolution: A Framework for the IFAD Led Initiative. Paper for the Meeting of Strengthening NARS - CGIAR Partnerships: NARS Outline Action Plan. October 28, 1995 Washington DC

Lloyd, A. and Harris, M. (1990). How High are the Returns to Applied Agricultural Research? Agricultural Science March 1990: 36-39.

Lloyd, A., Harris, H. and Tribe, D. (1990). Australian Agricultural Research: Some Policy Issues. The Crawford Fund for International Agricultural Research, Melbourne Australia.

LMTF (1995) Managing the Future. Report of the Land Management Task Force, Commonwealth of Australia, Canberra.

Lockheed, M., Jamison, D. and Lau, L. (1980) Farmer Educaiton and Fram Efficeincy: A Survey. Economic Developement and Cultural Change 29(1): 36-76

Lockheed, M.E., Middleton J. and Nettleton, G.S. (1991) Education Technology: Sustainable and Effective Use Phree Background Paper 91/32 World Bank, Education and Social Policy Department, Washington DC

Loquet, A. (1996) Focus Group Analysis of Incoming Students of Agriculture and Forestry Courses at the University of Melbourne - Faculty of Agriculture Report to Faculty of Agriculture, Forestry and Horticulture, University of Melbourne, Australia.

Lucas, I.A.M. (1986) The Current Situation of Agricultural Education and Research in Universities. Agricultural Progress

61:82-88

Lyonberger, H.F. and Chang, H.C. (1968) Communication and Use of Scientific Farming Information by Farmers into Taiwan Agricultural Villagers. Research Bulletin 940, University of Missouri, Agricultural Experiment Station, Missouri

M

Malone, T F (1994) Sustainable Human Development: A Paradigm for the 21st Century - Challenge and Opportunity for Higher Education. A White Paper for the National Association of State Universities and Land Grant Colleges; Commission on Food, Environment and Renewal Resources, Washington DC.

McColl J., Robson, A.D. and Chudleigh, J.W. (1991) Report of the Review of Agricultural and Related Education. Department of Employment, Education and Training and Department of Primary Industries and Energy. Volumes 1 and 2. Australian Government Publishing Service, Canberra.

McMahon, W.W., Jung, J.H. and Boediono, B. (1992). Vocational and Technical Education in Development: Theoretical Analysis of Strategic Effects on Rates of Return. Economics of Education Review 11(3):181-194.

Merrill-Sands, D. and Collion, M.H. (1994). Farmers and Researchers: The Road to Partnership. Journal of Agricultural, Human Values 11(2,3).

Metcalf, D. (1985). The Economics of Vocational Training, Past Evidence and Future Considerations. World Bank Staff Working Paper No.713. The World Bank, Washington D.C.

Meyer, J. H. (1995) Transforming the Land Grant College of Agriculture for the Twenty-first Century. University of

California, Davis

Meyer, J.H. (1992) Rethinking the Outlook of Colleges Whose Roots have Been in Agriculture. University of California, Davis

Meyer, J.H. (1993) The Stalemate in Food and Agricultural Research, Teaching, and Extension. Science 260:881-1007.

Middleton, J., Ziderman, A. and Vanadams, A. (1993). Skills for productivity: Vocational Education and Training in Developing Countries. Published for the World Bank by Oxford University Press, New York.

Mincer, J. (1989) Human Capital and the Labour Market: A Review of Current Research Educational Researcher, May: 27-34

Mitchel, D. (1991) International Economics Department World Bank, Washington D.C., as reported in Oram 1993. Global Perspectives on Population Resources and Agricultural Production Keynote Paper 7th Annual Agronomy Conference, Australia.

Mitchel, D.O. and Ingco, M.D. (1993). The World Food Outlook. International Economics Department, World Bank, Washington DC 256pp.

Mody, B. (1992) Energising the Communication Component in Extension: A Case for New Pilot Projects. In Anderson, J.R. and De Haan, C. (Eds) Public and Private Roles in Agricultural Development: Proceedings of the 12th Agricultural Sector Symposium. World Bank, Washington D.C.

Moock, P.R. and Addou, H. (1993) Agricultural Productivity and Education in Agricultural and Rural Development: 244-254.

Murugasu, V. (1991). Technical and Vocational Education and Training: An Overview, p89- 290. Technical and Vocational

Education and Training: Proceedings of the Regional Seminar on Technical and Vocational Training held in January 1990 in Manila.. Asian Development Bank in co-operation with the World Bank, Asian Development Bank, Manila, Philippines, pp695.

N

NASULGC (1993) Organisational Structures of Agricultural Experiment Stations and Cooperative Extension Services. R.E. Young and C.H. St. John. National Association of State Universities and Land Grant Colleges, Washington DC

NASULGC (1995) Benefits of Improved Climate Prediction. A White Paper for the National Association of State Universities and Land Grant Colleges. Texas Centre for Climate studies, Technical Report No.2, 31pp.

National Research Council (1992) Towards Sustainablility: An Addendum on Integrated Pest Management as a Component of Sustainability Research. Board on Science and Technology for International Development. National Academy Press, Washington, D.C.

Nations, B. K. and Hallberg, G. R. (1992) Pesticides in Iowa Precipitation. Journal of Environmental Quality 21:486-492

NBEET (1995) Employment Education and Training Act 1988: Research for Ecologically Sustainable Development: Advice of the National Board of Employment Education and Training and its Agricultural Research Council, May 1995, Canberra.

Nouwakpo, H. F. (1995) The Case for Benin. In Strengthening the Role on Universities in the National Agricultural Reesearch Systems in Sub-Saharan Africa: Developement and Validation of a Methodological Framework. Proceddings of the Synthesis

Workshop, September 11 - 15, 1995. International Service for National Agricultural Research, The Hague, The Netherlands.

NRC (1989) Alternative Agriculture National Academy Press, National, Research Council, Washington D.C.

NZNHF (1995) - Environmental Responsibility: An Agenda for Tertiary Education- Guide for Environmental Action. Massey University, New Zealand.

O

OECD (1993) Education at a Glance, OECD Indicators, OECD Paris.

OECD (1994) The Markets for Learning and Education Services, Paris OECD, Centre for Educational Research and Innovation

Oldeman, L.R., Hakkeling, R.T.A. and Sombroek, W.G. (1991) World Map of the Status of Human Induced Soil Degradation: An Explanatory Note. Second Edition. Wageningen: International Soil Reference and Information Centre. United Environment Program, Nairobi.

Olugbemi, L. B. (1995) The Case for Nigeria. In Strengthening the Role on Universities in the National Agricultural Reesearch Systems in Sub-Saharan Africa: Developement and Validation of a Methodological Framework. Proceddings of the Synthesis Workshop, September 11 - 15, 1995. International Service for National Agricultural Research, The Hague, The Netherlands.

Oram, P. A. (1994) Global Perspective on Population Resources and Agricultural Production. Keynote paper to the 7th Australian Agronomy Conference.

Oram, P.A. (1991) Institutions and Technological Change in Agricultural Sustainability, Growth and Poverty Alleviations: Issues and Policies. Bos T.S., Ardonte, D and Bon Urff, W. International Food Policy Research Institute and the German Foundation for International Development, Feldafing Germany: 245-265.

Oram, P.A. (1992) Building Institutional Capacity for Sustainable Agriculture in Developing Countries. Quarterly Journal of International Agriculture, 31(4):397 - 421

Oram, P.A. (1993). Building Institutional Capacity for Sustainable Agriculture in Developing Countries. Quarterly Journal of the International Agriculture, 31(4):397 to 421.

Orr, D W (1992) Ecological Literacy: Education and Transition to a Post Modern World. State University of New York Press, New York.

Orr, D.W. (1994) Earth in Mind: On Education, Environment, and the Human Prospect. Island Press, Washington D.C.

P

Paarlberg, D. (1978) Agriculture Looses its Uniqueness. American Journal of Agricultural Economics 59:769-772

Paarlberg, D. (1995) In Annual Report 1994-1995 of the Consultative Group for International Agricultural Research, Washington D.C.

Padgitt, S. and Petzelka, P. (1994) Making Sustainable Agriculture the New Conventional Agriculture: Social Change and Sustainability. In Hatfield, J.L. and Karlen, D.N. (eds) Sustainable Agricultural Systems. Lewis Publishers , Bocaraton, U.S.A

Pagiola, S (1995) Environmental and Natural Resource Degradation in Intensive Agriculture in ??. Environment Economic series No. 15, World Bank, Washington DC.

Parkin, D. R. (1994) Theory, Concepts and Practical Applications: Integrating Environmental Education and Natural Resource Management. Environmental Education and Information 13(1):51-68

Peeples, K A (1994) Agriculture's Challenge to Develop a Vision for the Future, Weed Technology 8:372-375.

Penders, J.M.A. (1971) Rural Extension in Advanced Countries pp.311-325 in Weitz R. and Landauyh (Eds), Rural Development in a Changing World. M.I.T. Press. Cambridge Massachusetts.

Peterson, J.B. and Frazier, R.D. (1964) Plant Agriculture in the Emerging Nations. Agricultural Science for Developing Nations, Washington DC. American Association for the Advancement of Science: 33 - 50

Pimentel, D., Harvey, C., Resosudarmop, C., Sinclair, K., Kurz, D., McNair, M., Crist, S., Shpritz, L., Fitton, L., Saffour, I. and Blair R (1995) Environmental and Economic Costs of Soil Erosion and Conservation Benefits Science, 267:1117 to 1123.

Pinstrup-Andersen, P. (1995) IRPRI's 2020 Vision for Food, Agriculture and Environment: Implications for the CGIAR, Paper Presented at International Centres Week of the Consultative Group on International Agricultural Research, October 31 1995. Washington, D.C.

Pinstrup-Andersen, P. (1995). IFPRI's Research Agenda on Natural Resources Management. Speech prepared for the Centre's Forum, held at the International Centres Week, October 30, 1995.

Pinstrup-Andersen, P. and Bon Braun, J. (1992) International Food Policy Research Institute Bulletin No.1, Washington D.C.

Pinstrup-Andersen, P. and Pandya-Lorch, R. (1994) Enough Food for Future Generations? Choices Third Quarter 1994 - 13-16.

Pinstrup-Andersen, P. and Pandya-Lorch, R. (1994). The Global Food System for the 21st Century: Policy Issues and Challenges. Paper prepared for W.K. Kellogg Foundation Sponsored Foods Systems Professions Education Initiative, Denver, Colorado, June 12, 1994.

Pittock, A.B. (1989). Environmental Changes and Their Affects on Natural Hazards. Proceedings of the Sterling Re-Insurance Natural Disasters Seminar held in Sydney, September 1989, Sydney, Australia.

Pollard, V.J. and Bardsley, J.B. (1993). Integrating Adult Education and Extension in Changing Times. Paper presented to the Australian Pacific Extension Conference "Extension: Securing the Future". October 1993, Gold Coast, Australia.

Pomerantz, G.A. (1991) Evaluation of Natural Resource Education Materials: Implications for Resource Management. Journal of Environmental Education 22(2):16-23.

Ponnamperuma, P. (1994) Summary of International Centres Week, Consultative Group for International Agricultural Research, Washington D.C.

Ponting, C. (1991) A Green History of the World. Sinclair Stevenson Limited, United Kingdom.

Portes, A. and Kincaid, A.D, (1990) Editors Teorias Del Desarrollo Nacional San Jose, Costa Rica: Editorial Universitaria Centro Americana

Pritchard, A.J. (1990) . Lending by the World Bank for Agricultural Research: A Review of the Years 1981-1987. Technical paper 118, World Bank, Washington D.C.

Psacharapoulos, G. (1994) - Returns to Investment in Education: A Global Update. World Development 22(9):1325-1343.

Psacharopoulos, G. (1989) Time Trends of the Returns to Education: Cross-National Evidence. Economics of Educaiton Review 8(3):225-264

R

Rama, G.W. (1984) Educacion, Participacion Y Estilos de Desarrollo en America Latina. Buenos Aires, Argentina: CEPAL, KAPELUSZ.

Ransom, A., Khoo, S. M., and Selvaratnam, V. (1993) Improving Higher Educaiton in Developing Countires. Econoic Developemnt Institute, World bank, Washington DC

Ravenborg, H. (1992) The CGIAR in Transition. Agricultural Administration Research and Extension Network Paper 31. Center for Development resrach and Overseas Developemnt Administration, Copenhagen and London

Ravnborg, H.M.(1992) The CGIAR in Transition: Implications for the Poor, Sustainability, and the National Research Systems. Agricultural Administration Network Paper No.31. Center for Development Research and Overseas Development Administration, Copenhagen

Reeve, I. (1992) Sustainable Agriculture: Problems, Prospects and Policies. in Lawrence, G., Vanclay, F. and Furze, B. (Eds) Agriculture, Environemnt and Society: Contermpory Issues for Australia. MacMillan, Melbourne, Australia

Reeve, I.J., Patrison R.A. and Lees J.W. (1988) Land Resources: Training Towards 2000. The Rural Development Centre TRDC Publication No.160, University of New England, Australia.

Reilly, J., Hohmann, N. and Kane, S. (1993) Climate Change and Agriculture. Global and Economic Effects Using and Economic Model of International Trade. Paper contributed to the NATO Advanced Study Workshop on Climate Change and World Food Security. University of Oxford.

Rimmington, G. (1996) Agricultural Science Education on the Internet. Agricultural Science 9(3): 36-40

Roberts, B (1995) The Quest for Sustainable Agriculture and Land Use. University of New South Wales Press, Sydney 237 pp.

Roberts, B.R. (1965) Applied Plant Ecology in Land Use Planning of Catchments. South African Journal of Science 61:111-117.

Rosenberg, N. and Scott, M. (1993) Implications of Policies to Prevent Climate Change for Future Food Security. NATO Advanced Study Workshop. Oxford University Environmental Conference, University of Oxford.

Rosenberg, N.J. (1987) Climate Change: A Primer. Resources for the Future Inc. Washington D.C.

Rosenzweig, M.R (1995) Why Are There Returns to Schooling. American Economic Review 85 (2:153-158)

Ross, K.N. and Mahlck, L, (1990) Planing the Quality of Education: The Collection and Use of Data for Informed Decision Making. UNESCO Paris

Rostow, W. W. (1987) On Ending the Cold War. Foreign Affairs 65(4):831-851

Rowe, A.P. (1960) If the Gown Fits. Melbourne University Press, Melbourne pp.227.

Ryan, (1993) P F - Academic Institution Accreditation Study: State Agricultural Universities in India. Consultants' Report to the World Bank, Washington DC.

S

Saguiguit, G C (1987) Higher Agricultural Education and Rural Development in Developing Countries in Asia and the Pacific. UNESCO Regional Office for Education in Asia and the Pacific, Bangkok, Thailand

Saito, K. A. and Spurling, D. (1992) Developeing Agricultural Extension for Women Farmers. World bank Discussion Paper 157, World bank, Washington DC

Salmi J, (1991) "The Higher Education Crisis in Developing Countries". World Bank, Washington DC.

Sancehez, P. (1991) Alternatives to Slash and Burn: A Pragmatic Approach to Mitigate Tropical Deforestation in J R Anderson (Ed)., Agricultural Technology: Policy Issues for the International Community. Airlie House/World Bank Conference Proceedings, October 1991, AGRAP Washington DC.

Sanders, J.H., Meyer, R.L., Fox, R.W. and Peres, F.C. (1989) Agricultural University Institution Building in Brazil: Successes, Problems and Lessons for Other Countries. American Jounal of Agricultural Economics, Delaware, pp 207-1210

Schroder, B. and Pollard, V.(1989) The Concept of Agribusiness. Agricultural Science. (November) 1989:13-17

Schultz, T. (1964) Transforming Traditional Agriculture. Yale University Press. New Haven.

Schultz, T.P. (1993) Investments in Schooling and Health of Women and Men: Quantities and Return. Journal of Human Resources 28(4):294-734,

Sedjo, R. (1983) Resource for the Future: The Comparitive Econoics of Plantation Forests: A Global Future. Johns Hopkins Press, Baltimore

Sedjor, S. (1995) Resources for the Future, quoted in Avery, (1995) Saving the Planet with Pesticides and Plastic. Hudson Institute, Indianapolis, Indiana. 434 pp.

Seegers, S. and Kaimoovitz, D. (1989) Relations Between Agricultural Researchers and Extension Workers: The Survey Evidence. Internaitonal Service for National Agricultural Resaech, The Hague

Serageldin, I. (1995). Nurturing Development, Aid and Co-Operation in Today's Changing World. Directions in Development. World Bank, Washington D.C.

Serageldin, I. (1995). Renewal of the CGIAR: The Final Milestone and Beyond. Consultative Group on International Agricultural Research. International Centres Week, October 31, 1995. Washington D.C.

Sherman, M.A.B, (1990) - The University of Modern Africa. Journal of Higher Education. 61(4).

Shute, J.C.M. (1989) Toward a Renewed Role for Higher Agricultural Education, Chapter 19 in Van den Bor, Shut J.C.M. and Moore G.A.B. (Eds) South-North Partnerships: Strengthening Higher Education in Agriculture. Centre for Agricultural Publishing and Documentation, Wageningen, the Netherlands pp.332.

SmartStates (1996) Goals and Vision for a Virtual University: Design Plan and Work Plan for a Virtual University. http://www.wiche.edu/telecom/telecom.htm

Solari, A (1988) Sentido Y Funcion de la Universidad, Revista de la CEPAL (35).

Sombroek, W. (1992) Land Use Planning and Productive Capacity Assessment. In J.R. Anderson and de Haan, C. (Eds). Public and Private Roles in Agricultural Development: Proceedings of the 12th Agricultural Sector Symposium, the World Bank Washington D.C.

Sorensen, T. and Epps, R. (1993) Prospects and Policies for Rural Australia. Longman Cheshire, Melbourne, Australia

Srivastava, J., Smith, N J H and Forno, D.(1995) Biodiversity and Agriculture: Implications for Conservation and Development. Agriculture and Natural Resources Department, The World Bank, Washington DC.

Stewart, L.R., Lal, R. and El-Swaify, S. (1991) In R. Lal and F. Pierce (Eds) Soil Management for Sustainability 125-144 Soil and Water Conservation Society Ankeng, Iowa, U.S.A.

Stocking, M., (1984) Erosion and Soil Productivity: A Review. Food and Agriculture Organisation, Rome.

Subbarao, K,, Raney L, Dunbar, H. and Haworth, J. (1995) Women in Higher Education: Progress, Constraints and Promising Initiatives, World Bank Discussion Paper 244. World Bank, Washington DC

Swanson, B., Farmer, B.J., Bahal, R. (1990) The Current Status of Agricultural Extension World Wide. In Report of the Global Consultation on Agricultural Extension. Food and Agriculture Organisation, Rome pp 43-76

Swanson, B.E., Sands, C.M., and Peterson, W.E. (1988). Analysing Agricultural Technology Systems: Some Methodological Tools. INTERPAKS, University of Illinios at Urbana-Champaign Office of International Agriculture, Illinios.

T

Tan, J.P. (1991) Thailand's Education Sector at a Cross Roads: Selected Issues in Decision and Change in Thailand: 3 Studies in Support of the Seventh Plan, Asia Country Department 2 World Bank, Washington DC

Thompson,L. and Scoones, S. (1994) Agriculture and Human Value, Spring/Summer edition.

Thrupp, L A and Hynes, R (1994) From the Editors: Special Issue on Participation and Empowerment in Sustainable Rural Development. Journal of Agriculture and Human Values. Spring/Summer 1994: 1-3.

Tilak, J.B.G, (1989) Education and its Relation to Economic Growth, Poverty, and in Income Distribution: Past Evidence and Further Analysis. World Bank Discussion Paper 46; World Bank, Washington DC.

Toenniessen, G. H. (1995) The Rockefeller Foundation's International Program on Rice Biotechnology. Chapter 14 in Plant Biotechnology Transfer to Developing Countries (Altman, D.W. and Watanabe, K.N. Eds) R.G. Landes Company

Tribe, D. (1994) Feeding and Greening the World: The Role of International Agricultural Research. The Crawford Fund for International Agricultural Research in conjunction with CAB International.

Tribe, D. E. and Peel, L. J. (1989) Innovation, Science and the

Farmer. Technology in Australia, 1788-1988, pp 1-70,

Tribus, J. (1978) The Engineer and Public Policy Making. IEE Spectrum, April:p.48-51.

True, A. C. (1929) A History of Agricultural Education in the United States 1785 - 1925. US Department of Agriculture, Miscellanious Publication No. 36. Washington DC

Tweeten, T. (1989) The Economic Degradation Process. American Journal of Agricultural Economics. 79

Twigg, C.A. (1995) The Need for a National Learning Infrastructure. Educom Interuniversity Communications Council Incorporated, Washington DC

U

Umali, D.L. and Schwarz, L. (1994) Public and Private Agricultural Extension: Beyond Traditional Frontiers. World Bank Discussion Paper No.236. World Bank, Washington D.C..

Umans, L. (1993) A Discourse on Forestry Science. Agriculture and Human Values 10(4):26- 40

UNCSD (1995) Chapter 10 of the United Nations Commission on Sustainable Development, New York

UNCSTD (1979) Australian National Paper for the United Nations Conference on Science and Technology for Development: Australian Steering Committee. Australian Government Publishing Service, Canberra.

UNESCO (1986) Universities and Environmental Education. United Nations Economic Social and Cultural Organisation and the International Association of Universities pp.127.

University of Florida (1995) Global Research on the Environmental and Agricultural Nexus for the 21st Century: A proposal for collaborative research among U.S. Universities, CGIAR Centres and Developing Country Institutions. Report of the Task Force on Research Innovations for Productivity and Sustainability. University of Florida in conjunction with Cornell University 160pp.

V

Van Schilfaarde, J. (1992) :Irrigation: A Blessing or a Curse? The Able Wolman Distinguished Lecture National Research Council, Washington D.C.

Vanden Bor, W. Shute, J.C.M. and Moore, G.A.B. (1989) (Eds) South-North Partnership in Strengthening Higher Education in Agriculture, Centre for Agricultural and Documentation, Wageningen, The Netherlands.

W

Wadham, S.M. (1951) Education in Agricultural Science in Australian Universities, Journal of the Australian Institute of Agricultural Science 17:99-100.

Wallace, H.N., Smith, D.K and Hagan, J.W. (1994) Agribusiness Programs in Non-Land- Grant Schools of Agriculture: Requirements for Success. American Journal of Agricultural Economics 76:1199-1204

Weijenberg, J. Dagg, M., Kampen, J., Kalunda, M., Mailuam Ketemas, Navarro, L. and Upti Abdi Noor, M. (1995). Strengthening Agricultural Research Systems in Eastern and Central Africa: A Framework for Action. World Bank Technical

Paper No.290 World Bank, Washington, D.C.139 pp.

Weitz, R and Landau, Y.H. (1971) Rural Development in the Changing World. MIT Press, Massachusetts,

Welch, F. (1978) The Role of Investments in Human Capital in Agriculture in Schultz, T.W. (Ed) Distortions of Agricultural Incentives. Indiana University Press, Bloomington, Indiana.

Wilken, G.C. (1991) Sustainable Agriculture is the Solution, But What Is The Problem? Occasional Paper No.14 April 1991. Board for International Food and Agricultural Development and Economic Co-Operation, United States Agency for International Development, Washington D.C.

Williams, A. (1989) A Collegiate System for Agriculture in Scotland. Report of the Enquiry into the Future of Scottish Agriculutral Colleges appointed by the Secretary of State for Scotland and the Chairman of the Scottish Agriculutral Colleges under the Chairmanship of Sir Alwyn Williams. Her Majesty's Stationery Offiec, Edinburgh pp141

Wofsey, (1995) Article entitled "Queries Raised Over Validity of Many Environmental Studies." In Campus Review (Australia) January 18-24 1995.

Woods, R G (1982) Future Dimensions of World Food and Population. Westview Press.

Wooley, J. (1936).. In Ponting,C. (1991) A Green History of the World. Sinclair Stevenson Ltd. London. 432pp.

World Bank (1991) Vocational and Tchnical Education and Training. Policy Paper 83pp. World Bank, Washington DC

World Bank (1991) World Development Report 1991: The Challenge of Development. Oxford University Press, New York

World Bank (1992) World Development Report: Development

and the Environment Oxford University Press.

World Bank (1994) Education in Sub-Saharan Africa: Policies for Adjustment, Revitalisation and Expansion, a World Bank Policy Study, World Bank, Washington DC

World Bank (1994) Learning from the Past, Embracing the Future. The World Bank, Washington DC.

World Bank (1994). Information Technology and Rural Development: Agriculture Technology Note. The Agriculture Technology and Services Division (AGRTN), World Bank, Washington, D.C.

World Bank (1995) Mainstreaming the Environment: Bank Group and the Environment Since the Rio Earth Summit, World Bank, Washington DC

World Bank (1995) Development in Practice: Priorities and Strategies for Education. The World Bank, Washington DC

World Bank (1995) Priorities and Strategies for Educations: A World Bank Sectoral Review Washington DC. Education and Social Policy Department

World Resources Institute (1995) World Resources Oxford University Press, New York.

Y

Yabsley, G. (1982) Reflections on Agricultural Extension in New South Wales. Journal of Adult Education 28(2):3-8.

Young, M.D. (1992) Sustainable Investment and Resource Use: Environmental Integrity and Economic Efficiency. UNESCO Paris.

Young, M.D. (1993) For Children's Children: Some Practical Implications of Inter- Generational Equity and the Precautionary Principle. Resource Assessment Commission, Occasional Publication No.6 November 1993.

Yudelman, M. and Hillel, D. (1988) In J. Unger, T. Sneed, W. Jordan and R. Jensen (Eds) Proceedings of the International Conference on Dryland Farming, Texas Agricultural Experiment Station, Amarillo - Bushland:591-597.

Z

Zarraga, J.C. and Green, G.D. (1985). Skills Training Program with Particular Reference to Rural Youth in Training for Agriculture and Rural Development. 1984, Food and Agriculture Organization, Rome.

Zijp, W. (1991) From Extension to Agricultural Information Management: Issues and Recommendations from World Bank Experience in the Middle East and North Africa. World Bank, Washington D.C..

Zijp, W. (1992). From Agricultural Extension to Rural Information Management. In Anderson, J.R. and De Haan, C., (Eds) Public and Private Roles in Agricultural Development: Proceedings of the 12th Agricultural Sector Symposium. World Bank, Washington D.C.

Zijp, W.(1994) Romania:The Agricultural Knowledge and Information System. World Bank, Washington D.C.

Zijp, W.(1995) Improving the Transfer and Use of Agricultural Information: A Guide to Information Technology. World Bank Discussion Paper 247. The World Bank, Washington DC

Zijp,W. (1996) Extension Workshop at the World Bank:

Alternative Mechanisms for Funding and Delivering Extension. June 18 - 19, 1996. World Bank, Washington D.C..

Zuidema, L. (1995) Comments on the Country Studies. In Strengthening the Role on Universities in the National Agricultural Reesearch Systems in Sub-Saharan Africa: Developement and Validation of a Methodological Framework. Proceddings of the Synthesis Workshop, September 11 - 15, 1995. International Service for National Agricultural Research, The Hague, The Netherlands.

Zuurbier, P.J.P. (1994) De Besturimg En Organisatie van ve Landbouwvoorlichgingsdienst. Doctoral Dissertation. Wageningen University , The Netherlands (English Summary)

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