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## FARM MANAGEMENT IN AUSTRALIA AS AN ACADEMIC DISCIPLINE \*

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### 1. INTRODUCTION

Like most catchphrases, farm management means different things to different people. To some, it simply connotes the day-to-day running of a farm. To others, it is the business management of a farm. To agricultural scientists, as often as not, it implies choosing a set of technically efficient production techniques, keeping farm accounts, and getting yes or no answers as to whether or not particular techniques of production are profitable. All these, however, are inadequate concepts of farm management.

In fact, the management of a farm involves two functions. First, there is the decision-making function of evaluating and choosing between alternative strategies. Second, there is the consequent tradesman-like function of applying routine technical skills to the implementation of whatever strategies have been chosen. My concern is not with these routine technical skills of farm management. Despite the whimsy of the recent Martin Report<sup>1</sup> on this point, these skills are too lacking in analytical character to constitute an academic or professional discipline. Rather, my concern is with the strategy-choice function of management. For sure, this does involve more than enough analytical problems to constitute a professional discipline.

In this address, therefore, I am concerned with this decision-making or analytical side of farm management, which, hereafter I will simply call farm management. In sequence, without getting overly technical I propose to outline the development of farm management as a professional and academic discipline in Australia, to look at some of the methodological problems

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<sup>1</sup> *Tertiary Education in Australia: Report of the Committee on the Future of Tertiary Education in Australia to the Australian Universities Commission* (Commonwealth of Australia, Canberra, August, 1964), Ch. 9.

involved in farm management, and to sketch the likely course of future developments. Such a sketch is not without difficulties. The development of farm management is inextricably mixed with the development of agricultural economics. To some extent it is impossible to distinguish what were developments in farm management *per se* and what were developments in agricultural economics that merely laid the seed-bed for farm management. In what follows, such difficulties are evident whenever I refer to "farm economics" rather than "farm management" or "agricultural economics". Too, there are strong differences of opinion among those who have participated in or endeavoured to assess the development of Australian farm economics. When faced with these alternative assessments, I shall try to follow a central course.

## 2. HISTORICAL DEVELOPMENT

Looking at the historical development of farm management as a professional discipline in Australia, there have been two stages, with—so far as one can tell—a third stage of development just getting underway. Deferring consideration of this third stage until later, because it involves issues of methodological direction that we can perhaps influence, I will first consider the two stages of development to date.

### THE FORERUNNERS

The earlier stage, running from the turn of the century to the early 1940's, was characterized by the lack of any specific institutional framework for farm management research and teaching; by a number of unsuccessful attempts to obtain some suitable institutional framework; and by a variety of farm management research contributions, some of a substantial nature but, in the main, reflecting the absence of any analytical principles or orientation to farm management problem-solving as we now understand it.

In overlapping sequence, the major personalities involved during this period were A. J. Perkins, Elwood Mead, A. E. V. Richardson and E. R. Hudson. To do full justice to the work of these pioneers is a task far beyond what I have been able to undertake for this occasion. All that I can hope to do is sketch the broad outlines of their published work as it relates to farm management, speculate on their motivations, provide a summary assessment and, as is only fitting in this inaugural lecture, record my homage to them as the Forerunners of farm management in Australia. Certainly, so far, nobody has paid them the respect nor made the appraisal of their work which is their due. Indeed, I would guess that these four names of Perkins, Mead, Richardson, and Hudson mean nothing to most of those interested in the discipline of farm management in Australia today.

Perkins, by far the most outstanding of the four judged from his published work and perhaps our greatest agricultural economist to date, was a Tunisian. Trained in viticulture in France, and fully fluent in English, French, Arabic and Greek with speaking ability in German, Italian and Spanish, he joined the staff of the Roseworthy Agricultural College in South Australia in 1892, served as Principal from 1904 to 1914, and then became Director of the South Australian Department of Agriculture, retiring

in 1936.<sup>2</sup> Over this period, as well as making a sizeable array of technical agricultural contributions and meeting his administrative duties, Perkins managed to write some 60-odd substantive articles of an economic nature. By far the majority of these were concerned with the problems of farm management in South Australia.

Given that he had no formal training in economics or accounting, special mention must be made of two of Perkins' larger studies. Most impressive, though it has lain unappreciated in the *Journal* of the South Australian Department of Agriculture for thirty-six years, is his estimation and analysis of the capital invested in South Australian wheat farms over the pre-depression years.<sup>3</sup> Also a classic of Australian farm management research is the sequence of annual financial reports that he published upon the operations of Turretfield Demonstration Farm.<sup>4</sup> These reports are models of farm accounts analysis. They lose little in comparison with the work of the farm accounting experts of today.

At the same time, Perkins was well aware of the need for assessing agricultural policies in terms of their effects both within and beyond the farm gate.<sup>5</sup> Nor, through this early period can there have been any more indefatigable arguer by word and example for the establishment of facilities for professional training and research in farm economics. Perkins' despair at not seeing things moving in this regard is well shown by his 1927 Presidential plea to Section K of ANZAAS.<sup>6</sup>

Elwood Mead, our second Forerunner and, like Perkins, a giant in any company, was an 1880 graduate in agricultural science and engineering of Iowa State University. From 1907 to 1914 he served as the first Chairman of the State Rivers and Water Supply Commission of Victoria, prior to which—among other things—he taught in agriculture at the Universities of Colorado and California.<sup>7</sup> Subsequent to working in Australia he returned to California as Professor of Rural Institutions and played a major role in Californian irrigation development. Following his appointment as U.S. Commissioner for Reclamation in 1925, he achieved worldwide fame as the architect of Boulder (now Hoover) Dam whose lake commemorates his name.

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<sup>2</sup> Anon., "Professor A. J. Perkins Retires from Department of Agriculture", *Journal of Agriculture of South Australia*, Vol. 39, No. 10 (May, 1936), pp. 1195-1196; Anon., "A Great Loss to Australian Agriculture", *ibid.*, Vol. 47, No. 12 (July, 1944), pp. 546-547.

<sup>3</sup> A. J. Perkins, "An Enquiry into Present-day Value of Capital Invested in South Australian Wheat Farming, and Its Influence upon Current Costs of Production", *ibid.*, Vol. 33, No. 9 (April, 1930), pp. 772-800.

<sup>4</sup> For example, see: A. J. Perkins, "Tenth and Concluding Report on the Turretfield Demonstration Farm (1921-32), including Detailed Analysis of Mean Farming Costs over the Same Period", *ibid.*, Vol. 36, Nos 5, 6, 7 (December, 1932; January, February, 1933), pp. 530-545, 623-644, 744-763. These reports were based on an initial assumption of 100 per cent borrowed funds.

<sup>5</sup> For example, see: A. J. Perkins, "National Aspects of a Guaranteed Price for Wheat, and Suggested Basis for Its Equitable Determination", *ibid.*, Vol. 22, No. 3 (October, 1918), pp. 194-211.

<sup>6</sup> A. J. Perkins, "A Plea for Nation-wide Research into the Economic Position of Our Various Rural Industries", *ibid.*, Vol. 31, Nos 6, 7 (January, February, 1928), pp. 590-601, 686-694.

<sup>7</sup> Anon., "Dr Elwood Mead, Irrigation Expert", *Aqua*, Vol. 15, No. 6 (February, 1964), pp. 123-126.

Facing intense resentment and opposition from civil servants and farmers as a "Yankee professor" on his initial appointment, Mead worked tirelessly and successfully to place irrigation in Victoria on a sound footing. So much so that when California bid for his services in 1912, farmer meetings were organized imploring him to stay and the New South Wales Government, for whom he had also worked as a consultant, agreed with a Victorian suggestion that the two States combine to pay Mead any salary he wanted. In fact, he elected to stay in Victoria but returned to the United States when World War I curtailed Australian irrigation development. Without doubt Mead had a tremendous impact on irrigation development in eastern Australia through his perception of successful irrigation development as a problem in farm management.<sup>8</sup> Indeed, if Perkins was the father of farm accounting in Australia, Mead was the father of budgeting. Nor was he averse to stressing the need for the establishment of academic training in farm management.<sup>9</sup>

Based in part on his Australian experience, Mead published a book on the role of the State in assisting land settlement.<sup>10</sup> He also presented a comparison of Australian and U.S. land settlement procedures to the American Economic Association,<sup>11</sup> thereby establishing what was probably the first direct link between Australian farm management and professional economics, if we ignore Jevons' very marginal interest in farm management.<sup>12</sup>

The only Australian among our four pioneers was A. E. V. Richardson, a science graduate from the University of Adelaide. Not the least of his claims to fame is a 958-page University of Melbourne D.Sc. thesis on the role of scientific education in agricultural development.<sup>13</sup> From 1911 to 1924, Richardson was Superintendent of Agriculture in Victoria and from 1919 to 1924, Dean of the Faculty of Agriculture at Melbourne. He then became Professor of Agriculture and Director of the Waite Agricultural Research Institute at the University of Adelaide, resigning in 1939 to become

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<sup>8</sup> See: *ibid.*; E. Mead, "Harvesting Lucerne for Seed and Hay", *Journal of Agriculture of Victoria*, Vol. 7, No. 6 (June, 1909), pp. 337-346; E. Mead, "Conservation of Water in Australia", *Report of the Australian Association for the Advancement of Science*, Vol. 13 (1913), pp. 617-621; E. Mead, "Report on Murrumbidgee Scheme and Advice re Use of River Murray Water", *N.S.W. Parliamentary Papers*, Vol. 3 of 1923, pp. 1101-1118.

<sup>9</sup> See: E. Mead, "The Place of Agriculture in the University", *Proceedings of the First Pan-Pacific Science Congress*, Vol. 1 (Government Printer, Melbourne, 1923), pp. 80-83.

<sup>10</sup> E. Mead, *Helping Men Own Farms: A Practical Discussion of Government Aid in Land Settlement* (Macmillan, New York, 1920).

<sup>11</sup> E. Mead, "Government Aid and Direction in Land Settlement", *Proceedings of the American Economic Association*, Vol. 8 (December, 1918), pp. 72-98, with discussion by R. T. Ely, pp. 99-105.

<sup>12</sup> See: W. S. Jevons, "Comparison of the Land and Railway Policy of N.S.W.", *Empire* (Sydney), April 8, 1857; W. S. Jevons, "The Public Lands of N.S.W.", *ibid.*, June 24, 1857; W. S. Jevons, "Some Data Concerning the Climate of Australia and New Zealand", *Australian Almanac for the Year 1859* (Waugh, Sydney, 1859), pp. 47-98.

<sup>13</sup> A. E. V. Richardson, "Agricultural Education and Agricultural Development" (unpublished D.Sc. thesis, School of Agriculture, University of Melbourne, 1924).

Deputy and then Chief Executive Officer of the Council for Scientific and Industrial Research on whose Executive he had served since 1927, retiring in 1949.<sup>14</sup>

As Director of the Waite Institute, Richardson perhaps came closest of our four Forerunners to establishing a viable programme of farm management research. Admittedly this was in the narrow field of the economics of crop response to fertilizer. None the less, it did involve a team of researchers working over a span of some 10 years with a not-insignificant orientation to the economic implications for farmers of the law of diminishing returns.<sup>15</sup> As one of the outcomes of this work, Prescott's 1928 article in the *Economic Record* on the law of diminishing returns stands not only as the first substantial entry of farm management into the *Record's* pages but also as one of the pioneering classics in modern farm management research around the world.<sup>16</sup> As an example of the work of Richardson's group, it typifies an analytical orientation that was not to appear again in our recorded farm management research until nearly two decades later. Nor, in taking on this farm management-oriented work, were Richardson's group following an easy path. There was not too much to guide them in the way of received principles for the statistical and economic analysis of crop-fertilizer response data; they had no audience of professional farm management workers; and judging from the literature of the period, their professional colleagues in agricultural science showed little appreciation of their work. It is not surprising that the group's research interests shifted back to the more technical aspects of plant-soil relationships and the chance for take-off into sustained analytical farm management research was lost.

Richardson himself, from 1915 to the late 'thirties seems to have had quite a wide interest in farm management and the economic efficiency of production.<sup>17</sup> Along with Perkins, he was one of the prime movers during the late 'twenties in an unsuccessful attempt to gain approval for a Federal farm economic service.<sup>18</sup> However, over the latter period of his working life when he was more fully associated with C.S.I.R., Richardson seems to have lost interest in any advocacy of farm management. Why this should have been so remains a mystery.

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<sup>14</sup> Anon., "Professor A. E. V. Richardson's New Appointment", *Journal of the Australian Institute of Agricultural Science*, Vol. 4, No. 1 (March, 1938), pp. 53-54.

<sup>15</sup> For some results of this work, see: *Report of the Waite Agricultural Research Institute 1925-32* (University of Adelaide, 1933), pp. 13-22; *ibid.*, 1933-36 (University of Adelaide, 1937), pp. 12-17; J. A. Prescott, "The Law of Diminishing Returns in Agricultural Experiment", *Economic Record*, Vol. 4, No. 6 (June, 1928), pp. 85-89; A. E. V. Richardson and E. F. Fricke, "Effect of Nitrogenous Fertilizers on the Growth and Yield of Wheat and Barley", *Journal of Agriculture of South Australia*, Vol. 35, No. 1 (August, 1931), pp. 57-86; A. E. V. Richardson and H. C. Gurney, "Nitrogen in Relation to Cereal Culture", *ibid.*, Vol. 38, No. 8 (March, 1935), pp. 954-971.

<sup>16</sup> Prescott, *loc. cit.*

<sup>17</sup> See: A. E. V. Richardson, "The Necessity for Increased Efficiency in Wheat Production", *Journal of Agriculture of South Australia*, Vol. 33, No. 4 (November, 1929), pp. 297-316.

<sup>18</sup> See: A. E. V. Richardson, "The Application of Economic Research to the Agricultural Industries", *Economic Record*, Vol. 4, No. 7 (November, 1928), pp. 249-259.

The last of our Forerunners was E. R. Hudson, a Science and Agriculture graduate from New Zealand. He served as Superintendent of Extension Services in the Tasmanian Department of Agriculture from 1928 to 1936 when he returned to New Zealand as Director of Canterbury Agricultural College.<sup>19</sup> Though his Australian writings on farm management consist of only two items—a study of the role of rural relief in depression and a suggested scheme for adjusting farm rentals—they show an outstanding appreciation of economic considerations.<sup>20</sup> Like Perkins and Richardson, he was also an active protagonist in the quest to give farm management formal recognition. Indeed, though I have refrained from quoting Perkins or Richardson on the need for farm management training and research at the academic level, I must quote Hudson's words of 1935 because he so well says what must still be said today:<sup>21</sup>

"[The present situation] has focused attention upon a rather serious shortcoming in the training provided in our agricultural colleges and universities. It is recognized that there are difficulties associated with any expansion of the course of study, but for some years it has been apparent that too little stress has been laid upon the business or economic aspect of agriculture and sufficient importance has not been attached to the systematic study of farm management. Attention has been directed to the study of basal sciences and to various phases of agriculture such as animal nutrition, stock breeding, agronomy, etc., treated as somewhat unrelated subjects, but in general there has been no adequate attempt to weld these into a unified mass for their practical application."

Although he was unsuccessful in directly influencing the development of such academic training, Hudson did have a significant institutional impact on the organization of farm management services in Tasmania. Through his role as Superintendent of Tasmania's extension services, Hudson brought into being the administrative arrangements whereby farm loans from the Agricultural Bank of Tasmania are appraised and supervised by Departmental Extension Officers. Of necessity, this brought these agricultural officers into direct contact with the problem of, and the need for, farm management. Though this system, established in the early 'thirties, has remained unique to Tasmania, it has been favourably assessed in the only comprehensive comparative study so far made of our farm extension services.<sup>22</sup> Also under Hudson's influence, the Tasmanian Department of Agriculture was the first to employ an Economist. The first was I. W. Weston (1928-29) who later became a lecturer in farm management at Canterbury Agricultural College. He was followed by B. Y. Whitham (1929-31) after whose resignation the position lapsed until more recent years.<sup>23</sup> So much for the Forerunners themselves.

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<sup>19</sup> Anon., "Recent Honours: Mr E. R. Hudson", *Journal of the Australian Institute of Agricultural Science*, Vol. 2, No. 3 (October, 1936), pp. 135-136.

<sup>20</sup> E. R. Hudson, "Some Reflections upon Rural Relief and Agricultural Extension", *ibid.*, Vol. 1, No. 1 (March, 1935), pp. 11-15; E. R. Hudson, "Periodical Adjustment of Farm Rentals," *ibid.*, Vol. 2, No. 2 (June, 1936), pp. 62-66.

<sup>21</sup> Hudson, "Some Reflections. . . .", *op. cit.*, p. 15.

<sup>22</sup> R. N. Farquhar, *Comparative Extension Education in Anglo-Saxon Countries with Particular Attention to Australia* (C.S.I.R.O., Melbourne, June, 1961).

<sup>23</sup> I am indebted to K. O. Campbell for this information.

What of the orientation of farm management work, so far as it existed in this early period from the start of the century through to 1940 odd? As implied by my sketches of the backgrounds and work of the major personalities of the period, the predominant influence was an agricultural science orientation and training, complemented by an apparent lack of interest by general economists in farm management or economics relating to farms.

Judged on the relevant publications of the various State Departments of Agriculture and the reports of the various governmental Commissions and Committees of Enquiry,<sup>24</sup> virtually all of the farm management work carried out over this earlier period fell within the compass of simple cost accounting, the description of farming methods, and the common sense appraisal of the impact at the farm level of macro-economic conditions and policies. Relative to the orientation of present-day farm management with emphasis on economic principles and substitution possibilities between farm enterprises, the work of the period was extremely naive and unanalytical. Doubtless as a result of the dominant orientation to agricultural science, there was a general failure to recognize that the various technical aspects of the farm constitute a single economic unit. None the less, small though the volume of work was, overall it certainly did not have the fault of not being addressed to real farmers' real problems. At the same time, there were a few analytical studies carried out that involved the use of economic principles; in particular the crop input-output response studies of Richardson's group at Adelaide, the general series of crop-fertilizer trials with marginal analyses carried out under Perkins' stimulus in the South Australian Department of Agriculture,<sup>25</sup> and a 1925 study of the law of diminishing returns by Southee of the N.S.W. Department of Agriculture.<sup>26</sup>

Thus far, in attempting to sketch the major personalities and orientation of this early period, I have made but passing reference to the concomitant efforts that were made to achieve governmental support for an adequate institutional framework for farm management training and research. In fact, throughout the period there were frequent demands for such support, albeit most often as an adjunct or implicit part of proposals for institutional developments primarily oriented to questions of agricultural policy.

At the State level, except for the setting up of a short-lived "Agricultural Survey" Committee in Queensland<sup>27</sup> and the short-lived position of Economist in the Tasmanian Department of Agriculture, there was little response. At the Federal level, endeavours to formally establish farm economics

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<sup>24</sup> Particular mention must be made of the following: "Reports of Royal Commission on the Wheat, Flour and Bread Industries", *Commonwealth of Australia Parliamentary Papers, House of Representatives*, Vol. 4 of 1932/34, pp. 2425-2467 and Vol. 4 of 1934/37, pp. 1-690; and the farm development reports of the Development and Migration Commission, for example, "Report of Development and Migration Commission Relating to the Dawson Valley Irrigation Scheme, Queensland", *Commonwealth of Australia Parliamentary Papers, General*, Vol. 5 of 1926/28, pp. 541-601.

<sup>25</sup> For example, see: W. J. Spafford, "Agricultural Experiments—Report for Year 1918-19", *Journal of Agriculture of South Australia*, Vol. 22, No. 7 (February, 1919), pp. 527-34.

<sup>26</sup> E. A. Southee, "The Law of Diminishing Returns", *Agricultural Gazette of N.S.W.*, Vol. 36, No. 12 (December, 1925), pp. 837-848.

<sup>27</sup> Anon., "An Agricultural Survey", *Queensland Agricultural Journal*, Vol. 27, Nos 1, 2 (January, February, 1927), pp. 3, 81, 135, 137-138.



reached their high point in the late 1920's<sup>28</sup> when it was apparently initially decided by the Federal Government that farm economics investigations could appropriately be undertaken by a special Economics Division of the C.S.I.R.<sup>29</sup> However, waiving the initial decision, in good colonial style the matter was passed over for consideration by the 1929 British Economic Mission to Australia. The mission recommended that the work of the proposed service "was so important as to demand a separate organization" and also suggested that such an arrangement would prevent any prejudice to the work of C.S.I.R. arising from the necessarily political implications of the research of the proposed economic service.<sup>30</sup>

Accordingly, the Commonwealth Government decided to set up an independent Economics Bureau and in 1929 passed an Act for that purpose. Nothing happened, due perhaps to the onset of the Great Depression in 1930. It was another decade before agitation<sup>31</sup> for Federal support again brought forth any hope of realization.<sup>32</sup> This agitation culminated in a proposal by the Australian National Research Council for the establishment of a national Institute of Agricultural Economics with quite sweeping powers.<sup>33</sup> When this proposal was rejected by the Australian Agricultural Council, it was suggested C.S.I.R. might foster such work. C.S.I.R., however, was uninterested. It is ironic that C.S.I.R.'s political troubles of the late 'forties arose directly from the physical sciences and doubly ironic that its recent troubles over the Ord scheme arose from the lack of any economic orientation.

Meanwhile, small economic research units were established in the mid 'thirties in the Rural Bank of New South Wales, the Bank of New South Wales and the Queensland Bureau of Industry. These units, together with the loan appraisal and supervision arrangements established during the 'thirties by Hudson in the Tasmanian Department of Agriculture and a one-year course in economics presented by an economist to Agriculture students at the Universities of Sydney and Queensland since 1928, and an analogous part-course initiated in Melbourne at about the same time, were the only

<sup>28</sup> See: Perkins, "A Plea . . .", *loc. cit.*; Richardson, *loc. cit.*; W. F. Smith, "Australian Rural Problems: Bureau of Agricultural Economics", *Queensland Agricultural Journal*, Vol. 30, No. 1 (July, 1928), pp. 17-23.

<sup>29</sup> Anon., "Research in Economics", *Journal of C.S.I.R.*, Vol. 2, No. 2 (May, 1929), pp. 116-117.

<sup>30</sup> *Report of British Economic Mission to Australia* (Government Printer, Canberra, 1929).

<sup>31</sup> See: J. W. Paterson, "Agricultural Education and Research in Their Reaction upon Rural Prosperity", *Report of the Australian Association for the Advancement of Science*, Vol. 21 (1932), pp. 260-274; *Royal Commission on the Wheat, Flour and Bread Industries: Second Report* (Government Printer, Canberra, 1935), pp. 200 and 256, and *Fifth Report* (1936), pp. 60-61; A. R. Callaghan, "The Need for Trained Agricultural Economists", *Journal of the Australian Institute of Agricultural Science*, Vol. 5, No. 4 (December, 1939), pp. 188-193.

<sup>32</sup> R. P. Roberts, "Agricultural Economics in Western Australia", *ibid.*, Vol. 8, No. 1 (March, 1942), pp. 8-11; K. O. Campbell, "Agricultural Economics", *ibid.*, Vol. 26, No. 2 (July, 1960), pp. 206-216; A. C. B. Maiden, "Beyond the Farm Gate", *Australian Journal of Agricultural Economics*, Vol. 7, No. 1 (June, 1963), pp. 1-11.

<sup>33</sup> Anon., "Proposal for the Establishment of an Australian Institute of Agricultural Economics", *Australian Journal of Science*, Vol. 3, No. 2 (February, 1941), pp. 89-92; Anon., "Recent Activities of the [A.N.R.C.] Executive Committee", *ibid.*, Vol. 4, No. 1 (August, 1941), p. 16.

institutional arrangements anyways relevant to farm management research or training that existed in Australia over the period to 1940. This, despite the fact that two of the major personalities involved—Perkins and Richardson—each occupied positions whereby they might have established a Department of Farm Management or some such within their administrative ambit. Granted the strong interest both displayed in rural economics, it seems sure they were unable to obtain the necessary finance and support for such a move. Indeed, given the location of both Perkins and Richardson in Adelaide and the work they did, it is cause for speculation as to why Adelaide did not become the focal point, rather than Sydney, in the formal development of farm management. One possibility is the hypothesis that farm management could never prosper without a substantial professional orientation to economics. Alternatively, as some would argue, it may just have been a matter of personalities and single-mindedness. Certainly, so far as I have been able to ascertain, there seems to have been no link between what was done by Perkins and Richardson in South Australia over the period to the end of the 'thirties and subsequent developments in New South Wales in the 'forties—developments which mark the real initiation of farm management in Australia. Thus Perkins and Richardson, and Mead and Hudson too, appear to have been Forerunners in the tragic sense of unheeded precursors.

#### ENTER ECONOMICS

In contrast to the Forerunner stage, the second period of farm management development—running from 1940 odd to date—was characterized by three features. These developments were: first, institutional arrangements such that today there is no State Department of Agriculture without at least a nominal farm economics section and no established University without some teaching pertinent to farm management; second, increasing recognition of the role of economic principles in farm management; and third, the development of full-time career opportunities in farm management teaching, research and consulting. These features are in marked contrast to the part-time descriptive efforts of economically untrained agriculturalists in the earlier period.

The natural dividing line between the Forerunner and later periods is 1941. That year marked the establishment of an agricultural economics division in the New South Wales Department of Agriculture, with a major aim of farm management research.<sup>34</sup> The seeds of further academic development were also under way at the Universities of Melbourne and Western Australia with the instigation of rural sociological and economic survey investigations. Concurrently, stimulated by the pressure of wartime planning, the Australian Institute of Agricultural Science became a strong advocate of the need for training and research in agricultural economics and farm management.<sup>35</sup>

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<sup>34</sup> Anon., "N.S.W. Bureau of Agricultural Economics", *ibid.*, pp. 33-35; W. H. Pawley, "The N.S.W. Division of Agricultural Economics", *Journal of the Australian Institute of Agricultural Science*, Vol. 7, No. 4 (December, 1941), pp. 133-142.

<sup>35</sup> A. R. Callaghan *et al.*, "Rural Economics", *ibid.*, Vol. 8, No. 1 (March, 1942), pp. 1-5; J. A. Prescott, "The Institute in War Time", *ibid.*, Vol. 9, No. 1 (March, 1943), pp. 1-6; J. A. Prescott, "Presidential Report", *ibid.*, pp. 37-39.

Chronologically, the next major development of relevance was in the Federal sphere with the gradual growth of agricultural economics activities via the Department of War Organization of Industry, the Rural Research Division of the Department of Post-War Reconstruction, and—most importantly—the investigations of the Rural Reconstruction Commission which sat over the period from 1943 to 1946. These various strands of Federal activity culminated in the establishment of the Bureau of Agricultural Economics in 1945.

An important figure in these New South Wales and Federal developments was J. G. (now Sir John) Crawford. Originally with the economics unit of the Rural Bank of New South Wales, he was the first head (part-time) of the New South Wales Department of Agriculture's economics section and later first Director of the B.A.E. In making these units operational, Crawford made an outstanding contribution.<sup>36</sup> At the same time, I believe the early commitment of these units to the exigencies of agricultural policy formulation and implementation hindered the general development of analytically-oriented farm management in Australia. This must have been more so to the extent that State agricultural departments (apart from New South Wales) misconceived the role of the Federal bureau and failed to realize that farm management—like extension—would remain primarily a State concern. It remains an intriguing question as to how farm management may have been influenced if Professor (now Sir Samuel) Wadham—a leading member of both the Rural Reconstruction Commission and the 1932 wheat industry Royal Commission—had accepted the offer of being first Director of the B.A.E.

Within the State Departments of Agriculture, apart from New South Wales and the short-lived experiment in Tasmania from 1928 to 1931, the establishment of farm economics sections with any orientation to farm management did not occur until the 1950's. Oftentimes, too, these State units were hardly more than nominal with but one or two research officers—a situation that, due to the lack of trained personnel, is still too common today.

In the academic arena, no substantial developments took place until the 1950's. In sequence, and largely under the stimulus of support from the Rural Credits Fund of the Commonwealth Bank, initial academic appointment of agricultural economists with greater or less responsibilities in farm management were made at the Universities of Sydney and Western Australia in 1951, Adelaide in 1953, New England in 1957, Queensland and Melbourne in 1959, and Canberra in 1960.<sup>37</sup> So far as the shortage of funds and competent people would allow, in most Universities these initial appointments have now been supplemented by further teaching staff.

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<sup>36</sup> For an outline of Crawford's part in the early B.A.E., see: Maiden, *loc. cit.*

<sup>37</sup> Campbell, *loc. cit.* Probably the first course in farm economics taught by an agricultural economist was that of D. B. Williams at the University of Adelaide in the years 1947-48. This course used Perkins' Turretfield records (see fn. 4) for the study of problems in income uncertainty and the effects of different systems of financial organization and debt structure on solvency. See: D. B. Williams, "Farm Economics. I. Farming as a Business. II. Producing Maximum Profits. III. Solvency in Farming", *Journal of Agriculture of South Australia*, Vol. 51, Nos. 6, 10, 12 (January, May, July, 1948), pp. 271-274, 488-492, 583-587; D. B. Williams, "Farm Records", *ibid.*, Vol. 52, No. 2 (September, 1948), pp. 71-73 and Supplement, p. 2.

So much for the non-commercial institutional developments that occurred over the period since 1940. Of equal importance is the farm management work that went on in these research and/or teaching units. Overall, despite some trembling footsteps originally, the work orientation has largely shifted away from descriptive survey and cost-accounting studies to analytical studies based on the principles of economic theory.<sup>38</sup> Today the "typical" farm management investigation tries to answer questions of the nature: "Under what conditions might a farmer best do so and so?" In contrast, at the beginning of the period, if it got beyond mere description, the "typical" investigation considered the question: "Under current price conditions, is it profitable to do so and so?" This is not to say that this shift in orientation occurred overnight. It was a gradual shift whose origin can be traced to methodological developments in the U.S. in the 'thirties. These seeds were planted in the New South Wales Department of Agriculture's economics section in the 'forties. In Australia as a whole they had a hard time competing against the cost-of-production weeds so assiduously fostered by officialdom in the face of the limited number of trained personnel available. So much so, that it was not until the early 'fifties that the success of the planting was obvious.

This gradual change over the span of two decades from a rather descriptive to a rather normative and strongly analytical orientation arose from a number of stimuli. These were the concomitant development of quantitative economics and the injection of economic theory into farm management research via specialists with a background in pure economics rather than agricultural science; the enhanced level of economic training provided agricultural science students through University appointments in agricultural economics and overseas study; and the availability from the B.A.E., the Reserve Bank, and other sources, of an increasingly better array of factual and outlook data.

The best evidence of the gradual change in orientation from description to analysis is provided by the farm management research published over the period in the *Review of Marketing and Agricultural Economics*. This is the quarterly journal of the New South Wales Department of Agriculture's Division of Marketing and Agricultural Economics. Judged over the period since its establishment in 1941, this Division has been the leader in Australian farm management research, although now—with the development of University post-graduate schools—it is losing that role. Suffice to note that the Division can currently count seven professors among its alumni—no small achievement given that the Division's staff establishment would only average out at seven or eight over the first twenty years of its existence. What then of the research published in the Division's *Review*? A typical early issue is that for January, 1947. It contains a cost-accounting analysis

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<sup>38</sup> See: K. O. Campbell, "The Determinants of Agricultural Efficiency", *Journal of the Australian Institute of Agricultural Science*, Vol. 21, No. 4 (December, 1955), pp. 254-259; K. O. Campbell, "Contemporary Agricultural Economics in Australia", *Australian Journal of Agricultural Economics*, Vol. 1, No. 1 (June, 1957), pp. 24-33; H. P. Schapper and M. L. Parker, "Improving Farm Management in Australia", *Farm Policy*, No. 1 (June, 1960), pp. 19-25; D. B. Williams, "Farm Management Research in Australia", *Journal of the Australian Institute of Agricultural Science*, Vol. 19, Nos. 3, 4 (September, December, 1953), pp. 158-166, 229-237; D. B. Williams, "Contemporary Agricultural Economics in Australia", *Australian Journal of Agricultural Economics*, Vol. 1, No. 1 (June, 1957), pp. 34-43.

of tractor running costs and a descriptive summary of trends in irrigation land use. In contrast, a recent issue (September, 1964) contains three highly analytical farm management articles. Respectively, these articles cover the economic implications of population dynamics within a sheep flock; a procedure for choosing the most profitable combination of farm enterprises; and a procedure for ascertaining the optimal pattern over time of pasture improvement on a farm. In terms of the principles of analysis used, these research reports are completely oriented to modern developments in quantitative economics and business management. Indeed, two of the three involve areas of mathematical analysis of a form only discovered in the last twenty-five years and well support the argument that the main challenge to mathematics these days is in the social sciences.

Another, and not unrelated, positive aspect of this recent period has been the increasing acceptance by our general economists of farm economists as professional equals. In fact, many would today agree that farm economists have taken the lead in the local development and application of quantitative economic approaches to business management.

The other development of note in farm management over the period since 1940 has been the recent establishment in the commercial arena of a profession of farm management consultancy.<sup>39</sup> Beginning with a single entrepreneur in 1955 and rising to about 50 in 1963, this profession now numbers some 120 practitioners in Australia—surely a phenomenal rate of growth. The majority of these consultants act as a contracted Adviser to a group of 20 to 50 farmers on a fixed annual fee basis.<sup>40</sup> The remainder—perhaps some thirty-odd practitioners—operate as Private Consultants, generally on a retainer basis. Though organizational developments in the profession are still somewhat in a state of flux, a guiding body responsible for professional standards, ethics, publication of a journal, etc., appears to be developing via the Farm Management Section of the Australian Institute of Agricultural Science.

The general role of the farm management consultant is to discuss his client's problems and offer advice on all aspects of the farm. Such a professional development of farm management consultancy coincides with the initiation of a third stage in Australian farm management. Before discussing the likely implications of this new stage, however, I must outline some of the methodological and disciplinary problems of farm management.

### 3. WHAT METHODOLOGY?

Today in Australia, farm management has a predominant economic orientation with economics conceived of as the science of finance. The reason for this is clear cut: financial considerations do rank large in running a farm and economics does provide a set of principles aimed at appraising alternative strategies in the light of financial considerations. In large part,

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<sup>39</sup> P. McGowan, "Changes in On-farm Extension Methods—the Relative Place of Clubs and Practice", *Journal of the Australian Institute of Agricultural Science*, Vol. 29, No. 4 (December, 1963), pp. 229-235.

<sup>40</sup> See: H. P. Schapper, "Farm Management Clubs for Australia", *ibid.*, Vol. 25, No. 1 (March, 1959), pp. 23-30.

these pertinent principles are those of micro-economics and go by the name of value theory or production economics. On this view, therefore, farm management is no more than applied production economics (and hence we have the inextricable mixing of the development of farm management and general agricultural economics in Australia).

So conceived as a part of economics, what role can farm management play in helping farmers? Is it a science in the sense of telling how Nature (i.e. the farm firm and its relevant environment) might be manipulated to serve the farmer's ends, or is it an art? To answer this question we need to look at the traditional assumptions of production economics.

Simply stated, these assumptions are that entrepreneurs have perfect knowledge and aim to maximize profit. Obviously, this is a tremendous simplification of reality. Questions of risk and uncertainty and non-profit motivations, whether they be fixed or changing over time, are completely ignored. The assumptions totally ignore the fact that each farmer is an individual. He has a unique set of preferences that shift over time between profit and other goals that both involve uncertainty of attainment. As a result, prescription based on these traditional assumptions of riskless choice and a non-complex objective can hardly be called scientific in the sense of yielding correct manipulations of Nature.<sup>41</sup>

There are two possibilities for getting round this difficulty. The first is to drop the assumption of perfect knowledge and replace the assumption that profit maximizing behaviour is the only rational behaviour by a more complex criterion involving a realistic set of interdependent motivations and behavioural goals. This, however, is no mean task. To date, despite extensive efforts by economists and others, it has met with little success, due to the failure as yet to discover any substantive operational laws of human behaviour and decision making.

The other approach to getting around the difficulty is that of "conditional normativism". By this is meant the approach of giving a prescription for the attainment of some postulated goal that is compatible with economic analysis. Within this framework it is possible for farm management to be a science in the sense of saying how Nature should be manipulated to achieve the goal. Such conditional normativism requires two things on the part of the farmer. First, that he be prepared to truncate or abridge his preference pattern to the extent of expressing it in terms of some amenable unit such as money or utility. By doing this it becomes possible to supplant the usual economic assumption of profit maximization by some broader objective such as utility maximization or the satisfying of some aspiration level of utility or welfare. Second, the farmer must be prepared to specify what approach to risk and uncertainty best appeals to him. Given both these pieces of information, it then becomes possible via the analytical principles of production economics and statistics to make scientific predictions within the given conditional normative framework.

Obviously this conditional normative approach could involve highly individualistic analysis if carried to extremes. In such terms it is clearly unmanageable. The best procedure would seem to be the compromise one

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<sup>41</sup> M. M. Kelso, "A Critical Appraisal of Agricultural Economics in the Sixties", *Journal of Farm Economics*, Vol. 47, No. 1 (February, 1965), pp. 1-16.

of relaxing the profit maximization and perfect knowledge assumptions slightly, evaluating broad classes of problems under the assumptions and presenting the results to farmers on a "take it or leave it" basis. Such an approach implies saying to farmers, for example, "If you want to keep a fodder reserve for drought that has the least expected cost, then your best bet is so and so". In this example, the profit maximization assumption has been relaxed to one of maximizing expected profit. Other simple relaxations of the assumptions could just as easily be introduced.

Thus I would argue that if farm management is to be viewed as applied production economics, then it can be a science within the framework of conditional normativism. The implication of such a view is that university training in farm management should (i) have economics as its parent discipline and (ii) inculcate via real-world farm problems a strong understanding of the use of economic principles for strategy choice in a farm environment. In practical terms, this would amount to providing training in production economics and associated techniques of financial analysis and quantitative economics, along with a knowledge of technical agriculture and a down-to-earth understanding of farming.<sup>42</sup> Both the agriculture and the economics are essential—agriculture to recognize and understand a problem, economics to solve it.<sup>43</sup>

#### 4. LOOKING AHEAD

Currently, we are entering the third stage of development in Australian farm management. It is characterized by the beginnings of an adequate institutional framework for training and research; accepted recognition of the major role that economic principles must play in farm management; a developing network of State Government extension in farm management; a fast-growing professional farm-management service in the commercial area; the availability of computer services to handle the more voluminous and complex data processing and problem formulations that realistic farm management must face; and an increasing, albeit inadequate, number of competently trained personnel.

For the foreseeable future, academic training for farm management *per se* will continue to emphasize economic principles and techniques as the analytical superstructure to a groundwork of competence in financial analysis and factual knowledge of technical agriculture. For the general run of agricultural science students, I expect farm management will be increasingly recognized as the integrating subject that welds the plant and animal sides into a meaningful unit.

Research, I expect, will continue to become more and more analytical, though not, I trust, so disciplinary as to lose touch with farmers' felt problems. The major area of research, probably, will be farmer decision making, both in terms of the search for lawful behaviour patterns in the face of

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<sup>42</sup> As with any professional discipline, the raw graduate will rarely be fully competent. Whether the interest be research or consulting, a few years of experience must always help.

<sup>43</sup> For an apposite discussion, see: W. Candler, *University Training in Farm Management* (Discussion Paper No. 27, Department of Agricultural Economics and Farm Management, Massey University, December, 1964), mimeo.

risk and uncertainty, and in terms of applying modern techniques of business analysis to farm problems conceived in a conditional normative framework.<sup>44</sup> Concomitantly, Australian farm management researchers could make a substantial international contribution by elucidating the economics of the grazing complex.

Basic to this research array will be the ascertainment of the physical input-output relations involved in farm production. Suffice to note that so far, due to a lack of appreciation of the role of mathematics in science and a lack of training in elementary production economics, our agricultural scientists in the main have not provided anywhere near the log of input-output data that is needed. This situation is changing, slowly, as two-way co-operation develops between agricultural scientists and production economists; and as it comes to be realized that in terms of experimental work, the farm economist is in the same boat as the statistician—unless the experiment is designed appropriately, it cannot be analysed in terms of economic principles.

So far as institutional developments, at the moment we have the seeds of adequate farm management research and advisory units in the New South Wales, Queensland and Victorian Departments of Agriculture, in the B.A.E., and in the Reserve Bank.<sup>45</sup> Due to the efforts of E. J. Waring and R. A. Pearse, the University of New England in 1964 initiated Australia's first farm management service centre—a development that the University of Western Australia hopes to duplicate—and while no University as yet has a professionally adequate teaching programme in farm management, some farm management is available in most.<sup>46</sup> As well, farm management is receiving increased emphasis in most of our agricultural colleges. In short, while farm management training and research is quite inadequate in terms of equating its costs with its benefits to the nation, it has at least begun to be recognized in relevant circles as a pertinent element in our economic development.

This expansionary tendency will be abetted by the feed-back pressure from the fast developing profession of farm management consultancy, in turn reflecting the increasing and never-ending managerial pressures faced by farmers arising from their vulnerability to the vagaries of climate, the inelastic demand for food, advances in farm technology, the pressures of integration and the development of an ever-widening array of synthetics. As a result there seems little risk in predicting the continued expansion of farm management as an academic and professional discipline. Like the gentle sex, farm management, with its charms and its challenges, has an assured future.

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<sup>44</sup> See: J. N. Lewis, "Agricultural Science and Productivity in the Next Decade: Economics", *Journal of the Australian Institute of Agricultural Science*, Vol. 28, No. 2 (June, 1962), pp. 108-117; K. O. Campbell, "The Contribution of Agricultural Economics to the Rural Industries", in A. P. Elkin (ed.), *A Goodly Heritage* (Govt Printer, Sydney, 1962), pp. 96-110.

<sup>45</sup> See: P. C. Druze, "Some Developments in Farm Management Extension in Australia", *Australian Journal of Agricultural Economics*, Vol. 8, No. 2 (December, 1964), pp. 112-123.

<sup>46</sup> See: A. A. Dawson, *Submission on Education in Farm Management to Committee of Economic Enquiry* (Australian Primary Producers' Union, Canberra, February, 1964), mimeo.