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F.E. VIGARS' STATION BOOK-KEEPING: A SPECIALIST AUSTRALIAN TEXT ENABLING THE ADAPTATION AND TRANSFER OF ACCOUNTING TECHNOLOGY

Abstract: Studies of early Australian accounting texts and their authors have yet to be augmented by examinations of the subsequent specialist books which were written to guide accounting practice within specific domains, such as the pastoral and mining industries. This study examines the contents, use, and influence of an early specialist pastoral accounting text entitled *Station Book-keeping*, which was published in Australia in five editions over the period 1900 to 1937. The life and career of the book's author, Francis Ernest Vigars, are also outlined. *Station Book-keeping* described and advocated a comprehensive system of double-entry accounting for pastoral stations and is posited as a key medium by which this technology was adapted and transferred for use by these entities. In turn, it is argued that Vigars' book, by extending the use of conventional accounting technique, facilitated greater involvement by professional accountants within a major Australian industry.

INTRODUCTION

The earliest known accounting and bookkeeping texts to be published in Australia began to appear in the second half of the 19th century. Expositions of the contents and influence of

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these books, as well as biographies of their authors, have been the subject of several contributions to the accounting history literature. Recent examples include Carnegie and Parker [1994] on James Dimelow who, as far as can be ascertained, wrote the first accounting text to be published in Australia and which appeared in sets between 1871 and 1873; Carnegie and Varker [1995] on Edward Wild; and Carnegie and Parker [1996] on William Butler Yaldwyn, a peripatetic accountant who authored bookkeeping texts while residing in New Zealand and South Africa. Previously, Goldberg [1977, 1984] explored the contributions of John Scouller to the development of the accounting literature in Australia.

The existing Australian historical literature of this genre relates to texts of a general nature rather than those dealing with bookkeeping within specific industries. This is not surprising, given the tendency for generalist texts to precede those of a specialist nature and the propensity of accounting history researchers to favor accounting “firsts,” such as locating the earliest local bookkeeping text in a country or region [Carnegie and Napier, 1996, p. 8; Carnegie and Williams, 2001, p. 105]. Economic development in colonial Australia relied heavily on the two key industries of agriculture and mining, which emerged to exploit the natural resources available. Conforming to the general pattern, specific local contributions dealing with accounting in these specialist fields were not published until after locally authored, generalist bookkeeping texts became available.

The earliest local contributions dealing with accounting within the Australian mining industry, typically among other subjects, include works by Armstrong [1888], De Lissa [1894], Brayshaw and Berriman [1899], Godden and Robertson [1902] and Hoover [1903, c.1905, 1906].¹ The earliest publications on bookkeeping for pastoralists and farmers in colonial Australia include relatively brief contributions by Musson [1893], Buckley [1897], Goldsbrough Mort and Co., Ltd. [1897], Hombsch [1897], and Brooks [1899], and an anonymous article on “Farm Book-keeping” in the *Queensland Agricultural Journal* [1899].

The first locally authored and published work to provide a comprehensive treatment of pastoral accounting, *Station Book-keeping: A Treatise on Double Entry Book-keeping for Pastoralists*, appeared in 1900. In the introductory comments to this work, the author, Francis Ernest Vigars [1900, p. 3], made the follow-

¹Hoover, who worked as a mine manager in Western Australia, subsequently became president of the U.S. [Vent, 1991].

ing claim: "As far as the author is aware, no work treating with Station Accounts exclusively has been published." *Station Book-keeping* was published in five editions through 1937. From the second edition of 1901, the title of the text was expanded and became *Station Book-keeping: A Treatise on Double Entry Book-keeping for Pastoralists and Farmers*. The main purpose of the text was to articulate an accounting system for the large pastoral stations that dominated the fertile agricultural regions of Australia at the end of the 19th century.

In spite of the apparent popularity of Vigars' book, evidenced by available indications of sales volumes and its frequent presence in public library collections,² little has been written previously about this text or its author. This study seeks to overcome this lack of attention by describing the background and content of *Station Book-keeping* and elucidating its role in shaping accounting practice within a major Australian industry. Implications for the nascent organized accounting profession in Australia are also considered.

Consistent with these objectives, the key theoretical premises of the study are developed around the notion that textbooks may function as key media for the transfer of technology. Further, this process of technology transfer may have implications for defining and consolidating the jurisdiction of an organized occupational group. These theoretical premises are elaborated in the following section, followed by an outline of the life and career of Francis Edward Vigars. The purpose of this exposition is twofold. First, because of the essential interplay between "text" and "author," an awareness of Vigars' life and career assists in understanding his book and its origins. Second, following Yamey [1981, p. 131], it recognizes that an important role of the accounting history literature is to enrich the biographical record of significant contributors to accounting practice and thought. Proceeding from this biographical outline, an overview is provided of the pastoral accounting industry in Australia to 1900, the year in which the first edition of *Station Book-keeping* was published. The text itself is then reviewed, highlighting that the essential accounting technology it refined, articulated, and advocated was double-entry bookkeeping (DEB). The implications of the book are then explored in terms of the adaptation and transfer of accounting technology and the professionalization of the accounting occupation. Summarizing comments are provided in the concluding section.

²Evidence to support these assertions is presented in a subsequent section.

THEORETICAL PREMISES

Dewey, in his well-known library classification system, first published in 1876, depicted accounting as a technology [Gordon and Kramer-Greene, 1983], a typology that has been adopted by many subsequent writers [Chatfield, 1977; Chambers, 1991, p. 3; Bougen, 1994, pp. 325, 328; Boyns and Edwards, 1996; Carnegie and Parker, 1996; Foreman, 2001]. Carnegie and Parker [1996] utilized this perspective in assessing the influence of Yaldwyn's publications on the transfer of accounting technique from the U.K. to the southern hemisphere (particularly Australia, New Zealand, and South Africa) during the latter part of the 19th century. A similar framework was applied subsequently by Foreman [2001] in examining the development of an accounting system during the period 1910 to 1916 at Commonwealth of Australia government factories, where Taylorist precepts deployed were linked to a visit by John Jenson, a Defence Department public servant, to the U.S. and Canada in 1910.

As these studies have shown, accounting techniques, as with other technologies, are susceptible to transfer. This is a key theoretical premise of this study: that the practice of accounting derives not just from the development of particular techniques, but also from the circumstances and means which cause those techniques to be adopted in settings from which they were previously absent. The inherent nature of accounting, emphasizing written records and statements, suggests that textbooks may function as a key medium for the dissemination of accounting techniques.

The technology transfer enabled by Yaldwyn's text, among other books, was generalist and geographical; it involved the transfer of general accounting techniques from one location to another. In the present study, this notion of technology transfer is refined to take account of the nature of a specialist text. That is, Vigars' *Station Book-keeping* is posited as a facilitator of a second wave of technology transfer which was industrial (rather than geographical) and specialist (rather than generalist). Further, a process of adaptation was an essential precursor to this transfer. Generic accounting techniques had to be refined and augmented in order to comport with the peculiar needs of the industry in which they were to be applied. This necessitated that an author's general accounting expertise be supplemented by relevant industry experience.

As well as positing that significant textbooks may function as vectors of accounting change by acting as media for the adap-

tation and transfer of accounting technology, this study is guided by a second theoretical premise. When accounting changes, so also do the circumstances of those who practice it. In particular, such changes are likely to have implications for the status and work opportunities of accounting practitioners and the standing of their occupational associations.

The concept of social closure, as encapsulated in the “professionalization project,” underpins the literature on the sociology of professions. A professionalization project is mounted by an occupational group whose members are concerned to close opportunities to others in order to secure social and economic rewards and achieve professional trajectory [see, for example, Weber, 1968; Larson, 1977; Willmott, 1986; Murphy, 1988; Walker, 1995; Carnegie and Edwards, 2001]. In her acclaimed book, *The Rise of Professionalism: A Sociological Analysis*, Larson [1977, p. xvii] defined the professionalization project as “an attempt to translate one order of scarce resources – special knowledge and skills – into another – social and economic rewards.”

However, in spite of its centrality throughout an otherwise often dissonant sociology of professions literature, the nature of professional expertise has remained under-explicated [West, 1998, 2003, ch. 2]. As summarized by Goldstein [1984, p. 175], a body of knowledge is presumed to be “absolutely necessary” for aspiring professions, with “the social process of professionalization ... dependent on the intellectual core.” Yet, the same author notes that sociologists of professions have taken bodies of professional knowledge “as givens,” and proceeded by “placing the *constitution* of professional knowledge outside the purview of their investigation” [Goldstein, 1984, p. 177, emphasis in original; see also, Freidson, 1973, p. 14; Parkin, 1979, p. 103; Boreham, 1983, p. 695; Baer, 1986, p. 532; Shaw, 1987, p. 778; Robson and Cooper, 1990, p. 386].

As is the case for their counterparts in other locations [see, for example, West, 2003, pp. 56-62], identifying the special knowledge and skills of early Australian accountants is a somewhat problematic task. This is also evident from the studies which highlight the diverse occupational backgrounds and aspirations of the founders of one major occupational association [Chua and Poullaos, 1993, 1998; Edwards et al., 1997; Carnegie and Edwards, 2001; Carnegie et al., 2003]. Following Larson [1977], a lack of distinctive expertise would appear to be a major impediment for an occupational group seeking to achieve a professional trajectory. This is reinforced by Abbott’s [1988, p. 70] claim that the capacity of an occupational group to carve

out a professional jurisdiction will be “based on the power of a profession’s abstract knowledge to define and solve a certain set of problems.”

The strongest claim of the nascent accounting profession in Australia to distinctive expertise lay in the area of DEB. As stated by Carnegie [1997, p. 243], “double entry accounting, as a mystery to the laity, also served to mark off the accounting profession from other professional groups.” Textbooks which represented DEB as the preferred or “proper” system of accounting therefore seem likely to have served the interests of local accounting practitioners. In addition to advocating and standardizing particular techniques,³ textbooks may aid a professionalizing occupation by enhancing and formalizing the education of novices, as well as providing tangible evidence of an occupation’s claim to scholarly knowledge.⁴

In summary, two interrelated rationales are advanced for why significant accounting textbooks warrant attention from accounting historians. First, such books may be important in explaining and tracking how particular accounting techniques came to be adopted in specific regions or industries. Second, given the presumed importance of specialized expertise in determining occupational status, studies of texts which served as formal and didactic records of accounting technique may assist in explaining the emergence and consolidation of accounting as a professional occupation. Building from these theoretical premises, the next section provides a biographical sketch of the author of *Station Book-keeping* as a precursor to examinations of the industry for which it was written and the text’s contents and implications.

VIGARS’ LIFE AND CAREER

Francis Ernest Vigers was born at Ysbytty Ystwyth, western Wales, on March 8, 1866. The family later moved to the Isle of Man where his father became mine agent at the Laxey Mine. Little is known of Vigers’ education, particularly where he gained his accounting knowledge; however, his elder brother Alfred was an accountant in Aberystwyth [*Census...*, 1881].

³Napier [1995, p. 269], for example, has identified that accounting books published in the U.K. in the late 19th and early 20th centuries were important in developing consensus on accounting principles.

⁴*Station Book-keeping*, with its scholarly epithet of “a treatise,” appears to exemplify such knowledge claims.

Vigers arrived in Sydney, via Tasmania, in January 1891.⁵ At this time, he had no relatives in Australia and resided in boarding houses [Vigers, 1939].⁶ He stated that he came to Sydney because of his “delicate state of health” and a belief that the Australian climate would be more suitable for his condition. He was employed in “various positions” prior to the publication of the first edition of *Station Book-keeping* in 1900, including a brief stint working as a public accountant (*Sands Directory*, 1895, 1896). Around 1897, Vigers left Sydney for pastoral station life. *Station Book-keeping* [1990, p. 3] alludes to this experience: “the many special advantages which the writer has had of studying the best means of filling this want.” The address given under the author’s name in the introduction to the first edition of *Station Book-keeping* is “Carwell,” Gulargambone, New South Wales.⁷ Situated in western New South Wales, Gulargambone was a pastoral run which started about 1840. In 1900, it would have been a small, remote township since the railway system did not reach the area until 1903 [“Coonamble,” 2003].

Gibson [1974, pp. 20-21] noted that larger New South Wales pastoral stations (20,000 acres and over) around the period 1900 to 1914 normally employed a resident bookkeeper who lived with the family. It seems likely that Vigers was employed as the station bookkeeper at “Carwell” at the time of writing the first edition of his book. This would go far to explain his first-hand knowledge of the Australian pastoral industry.

In the second edition of his book, published 18 months after the first, Vigers described himself as a “station accountant and auditor” of 14 O’Connell Street, Sydney. Later in 1901, he entered into a partnership with Frederick Morse Sky, which op-

⁵These details of Vigers’ arrival in Australia were obtained from shipping records held at the Archives Office of Tasmania (Marine Board 2/39/42, p. 213) and the State Records Office, New South Wales [Passengers Arriving 1854-1922, Location X209, January to February 1891, Reel 501].

⁶One of the sources for the details of Vigers’ early life summarized here is a statutory declaration he prepared in March 1939 at the age of 73. The purpose of making the declaration is unclear. However, a note in the document indicates that the original had been forwarded to Barclays Bank, London. The declaration is contained in the deceased estate file for his second wife, Una [State Records Office, New South Wales, 20/2507, No. 6579].

⁷“Carwell” is the name of a pastoral station that continues to operate in the area although it has changed ownership many times and is now much smaller than at the time of Vigers’ involvement. In 1885, “Carwell” was listed in *Hanson’s Pastoral Possessions* as comprising 53,612 acres. **The authors are indebted to Mrs. D. Best, president of the Gulargambone Historical Society, for this information.**

erated from the same address under the name “Vigars and Sky.”⁸ The partnership was evidently successful, with Vigars and Sky gaining a reputation as a specialist firm in pastoral accounting [Gibson, 1974, p. 19]. In 1910, for example, the firm prepared the information for a prospectus of the British Australian Meat and Produce Export Company, Ltd. [Mitchell Library, Q338C].

At the time of publication of the third edition of his book (1909), Vigars described himself as F.E. Vigars, FCPA of the firm of Vigars and Sky, Incorporated Accountants, Sydney.⁹ In the same year, he visited England [*The Public Accountant*, 1909]. In the fourth edition (1914), Vigars described himself simply as “Incorporated Accountant, Sydney.” He retired from the firm on September 3, 1926 due to “his state of health” [*The Public Accountant*, 1926; Vigars, 1939], although a practice continued to operate as Vigars and Sky until 1959 [Sky, 2002]. When leaving the firm 26 years after the initial edition of *Station Book-keeping*, Vigars was 60 years of age.

Vigars was an associate from 1901 of the Corporation of Accountants in Australia (CAA), formed in 1899 [*The Public Accountant*, 1901]. The CAA was amalgamated in 1909 with the Australasian Corporation of Public Accountants (ACPA) which Vigars and Sky had joined as fellows by April 25, 1908, although they were not founder members. The ACPA was the antecedent of The Institute of Chartered Accountants in Australia (ICAA), established in 1928 [Poullaos, 1994]. Vigars claimed to have been a member of the ICAA “for many years” [Vigars, 1939], although in the fifth edition of *Station Book-keeping* (1937), he still used a post-nominal (FCPA) which dated from the ICAA’s predecessor organization.¹⁰ His name last appeared on the published ICAA membership lists in 1931, in the “Separate List” of members who were retired or had accepted salaried appointments outside of public practice.

Twice married in later life, Vigars survived both his wives. There was no issue from either marriage. From 1938, Vigars

⁸Frederick Morse Sky was active in politics and public affairs and owned a pastoral station in the Mudgee district of New South Wales. He was a member of the CAA, the ACPA, and the ACPA’s successor, the ICAA. Sky died on June 10, 1935 at the age of 62 after a career in public practice that spanned more than 30 years [*Sydney Morning Herald*, June 11, 1935].

⁹Vigars’ post-nominal indicates fellowship of the ACPA.

¹⁰There is some evidence to suggest that Vigars was active within the accounting bodies in which he held membership. In August 1901, a letter appeared under his name in *The Public Accountant* urging the adoption of decimal currency [Vigars, 1901]. For several years, he was a presiding officer at the CAA’s examinations.

was a recipient of the Commonwealth government old age pension and upon his death in 1940, due to coronary failure, his only recorded asset was land at Blacktown in New South Wales, valued at £18.¹¹ His death notice was no more than a short announcement: "Vigars December 28 1940 at Sydney Francis Ernest Vigars aged 75 years" [*Sydney Morning Herald*, January 1, 1941, p. 4]. No published obituary notice has been located in the professional or general press.

During his professional career, Vigars acquired many investments in land in Sydney and in other parts of New South Wales, such as the Shire of Blaxland [Torrens Title Purchasers' Index, State Records Office, New South Wales B227782 Book Vol. 3756 Fol. 36]. However, these investments, with the exception of the one piece of land listed in his estate, had been disposed of at the time of his death. The available evidence suggests that Vigars died having accumulated few financial resources from his professional work as an accountant and textbook author. He seems to have suffered from periods of ill health which may have contributed to his impoverishment in later life. By the time of his death, Vigars had dissipated most of his financial resources. He may well have died a lonely man.¹²

PASTORAL ACCOUNTING IN AUSTRALIA TO 1900

Commercial enterprises in pre-Federation Australia were reliant on Britain for the vast majority of their technology, including accounting systems and texts [Carnegie and Parker, 1996, p. 25].¹³ For example, the library catalogue published by the Incorporated Institute of Accountants, Victoria in 1896 almost exclusively comprised British publications, with a small number sourced from the U.S. [Bridges, 1975, p. 13]. British texts were readily available and often accompanied migrants arriving from Britain [see, for example, Scorgie and Capitanio, 1997]. Accordingly, the available books on farming and related matters tended to have been written essentially for the British

¹¹This information on Vigars' estate was obtained from the State Records Office, New South Wales.

¹²At the time of his death, Vigars' had at least two nephews living in Australia, but neither was mentioned in records and announcements of his death and funeral. Upon enlistment in the armed forces in 1942, one of these nephews, John Vigars, listed Francis Vigars as next of kin, presumably unaware that his uncle was already deceased [Australian Government, World War II Nominal Roll].

¹³Federation of the six British colonies within Australia into the Commonwealth of Australia took place on January 1, 1901. Upon federation, the colonies became known as states [Turner, 1973, pp. 327-356].

system of agriculture which featured mixed-farm activities [see, for example, Juchau, 2002, pp. 375-378], typically conducted by tenant farmers.¹⁴ The landlord was often absent and relied on an agent to look after his interests, including the collection of rents from tenant farmers [Carnegie and Napier, 2002, pp. 704-705].

Agricultural operations in Australia were vastly different to those of Britain [Carnegie and Napier, 2002, p. 703], with pastoral stations at the close of the 19th century often in excess of 20,000 acres [Carnegie, 1997, p. 30]. The dominant crop was wool, introduced by Macarthur in the early years of European settlement. This quickly became the primary export, and Australia's development up to the discovery of gold in the 1850s was tied closely to the wool industry. Cattle numbers began to increase with the advent of frozen and chilled shipping in the mid-1880s, which permitted beef exports [Greasley and Oxley, 1998, p. 197]. The work of Farrer [1898] during the last decade of the 19th century in developing strains of wheat suitable to Australian climatic conditions, particularly wheat that was resistant to rust, also helped to develop a further major export industry. Nevertheless, sheep dominated the rural landscape in large parts of the country, and the majority of pastoral stations remained wholly or significantly dependent on wool production.

Although Australian exports were subject to volatile world prices, the biggest single factor causing variability in farm income was weather, particularly drought. The drought of 1895-1903, known as the "1902 drought" [Foley, 1957, p. 13], was one of the most severe on record and affected most of the heartland regions for wool production – New South Wales, Victoria, and southern Queensland. The aggregate flock numbers provided by Butlin [1958, p. 5] for these three locations highlight the volatile nature of the industry – 47.3 million in 1887, 89.3 million in 1892, and 44.3 million in 1902. The rapid increase in the five years to 1892 was due to new land areas being opened up and the prevailing high international prices for wool. The subsequent drop of over 50% in ten years reflected drought conditions, accentuated by the generally depressed world market for wool.¹⁵

It is against this background of new settlement amid harsh climatic and economic conditions in the last decade of the 19th

¹⁴A description of the British rural sector at the turn of the century may be found in Delderfield [1966].

¹⁵By contrast, the period from 1904 to 1908 was one of excellent growing conditions and good world prices for wool, with the result that stations were able to record very good returns.

century that the earliest local publications on pastoral accounting appeared [Musson, 1893; Buckley, 1897; Goldsbrough Mort and Co., Ltd., 1897; Hombsch, 1897; Brooks, 1899; "Farm Book-keeping," 1899; see also, Juchau, 2000]. A common theme of these publications was to lament the general state of accounting practice within agricultural enterprises and urge the adoption of DEB. Musson [1893, p. 162] exemplified these concerns, asserting that "it appears to be the rule amongst farmers to keep no proper set of books from which a balance sheet could be made out, for instance." Musson advocated the adoption of DEB based on the preparation of a day book and a ledger, as well as other books of account.

While these advocates of "proper" accounting practice were contributing to a local accounting literature and recommending the adoption within the pastoral industry of the accounting systems with which they were familiar, it would be hazardous to presume that pastoral accounting practice itself was either non-existent or totally inadequate for pastoral station management purposes. Carnegie's [1997, p. 242] study of 23 sets of surviving 19th century business records of pastoralists from the Western District of Victoria found that accounting records "were not only maintained at stations but the pastoralists involved generally focused on the integrated use of financial and non-financial operating information for pre-Federation pastoral industry management."

In summary, Carnegie [1997] found that Western District pastoralists typically prepared personalized ledgers that were not structured to enable the determination of periodic financial performance and position. Instead, the ledgers constituted ends in themselves and were, in effect, combined debtors and creditors recording systems which catered for barter transactions while also providing a means for recording key personnel information. In the case of volume records, diverse, non-financial operating statistics were commonly recorded in books maintained for stores, stock, shearing, and bales of wool produced. Such detailed records provided the capacity to measure wool and lambing production over time.

Later, from the early 1870s, professional accountants would often become associated with a Western District station on the advent of a deceased estate, typically with the death of the pastoral pioneer. From 1870 in Victoria, such an event would precipitate a need to determine and pay death duties [Carnegie, 1997, pp. 176-180, 215]. The advent of income taxation in Victoria in 1895, with the consequent need for the financial

information required for the preparation of income tax returns, further increased the demand for professional accounting services within the pastoral industry. Predictably, the providers of these services tended to favor what they perceived as “proper” accounting systems, double-entry financial records. These were sometimes added as an overlay to existing personalized financial recording systems. In summary, pastoral accounting practices began to change in the latter part of the 19th century. A key impetus for this was the introduction of various taxation measures which made pastoralists accountable to the state.¹⁶ The newly emergent class of “professional” accountants were facilitators of the change.

At the close of the 19th century, and presumably based on his pastoral accounting experience in remote areas of New South Wales, Vigars augmented calls to pastoralists to introduce “proper” financial recording systems. In the introduction to the first edition of *Station Book-keeping*, published around March 1900, Vigars [1900, p. 3] stated:

In writing the accompanying work it has been the author’s aim to place within reach of all those interested in pastoral pursuits, a clear and concise mode of keeping Station Accounts. That such a work is wanted, is undoubted; and from the many special advantages which the writer has had of studying the best means of filling this want, has sprung the present treatise.

Vigars [1900, pp. 3-4] proceeded to amplify the need for his treatise observing:

It must be obvious to all thinking persons, that, in these days of keen competition, a strict record of all business matters undertaken should be kept, and comparisons made from year to year of the Receipts and Expenditure and their sources. By this means a Pastoralist can at any time ascertain his actual financial position, and not be led or misled by supposition of such-and-such being his position.

As the first comprehensive Australian text on pastoral

¹⁶This parallels accounting development in Britain, as described by Parker [1989, p. 11]: “Annual profit calculation and asset valuation were of little use in the absence of sophisticated capital markets and income tax collectors, neither of which, so far as most business enterprises were concerned, were present until the late nineteenth century. It was only then that the benefits of double entry were generally perceived to exceed the costs.”

accounting, *Station Book-keeping* reflected the author's DEB knowledge as well as his practical experience in the field. It also provided him with an opportunity, as a practitioner with expertise in a major local industry, to return to public accounting in Sydney as a "station accountant and auditor."¹⁷ This was a new class of specialist accountant and signaled Vigars' belief that pastoral accounting constituted a distinctive field of expertise.

A REVIEW OF *STATION BOOK-KEEPING*

The first edition of *Station Book-keeping*, comprising 71 pages, was divided into two parts. The first consisted of an explanation of DEB and presented the various books of account prescribed for a station owner. These books, illustrated with sample entries and explanations, included a day book, invoice book, account sales book, bill book, cash book, journal, and ledger.¹⁸ The second part contained a comprehensive example of accounting records for a period of three months, including opening and closing entries, trial balance, profit-and-loss account, and balance sheet. It also included a specimen of a sheep paddock book for monitoring numbers of sheep in any particular paddock by recording all movements in and out, including those slaughtered for rations.

The second edition, published 18 months later in September 1901, was expanded to five parts, spanning 171 pages. In this edition, Vigars [1901, p. 4] elaborated on his aspirations by stating in the introduction that he intended the book to "aid towards a complete system of [double-entry] Book-keeping being more largely adopted upon stations and farms." The new edition included a wages book and a shearing expenses book among the necessary station financial records. Also presented were examples of accounting for the conditional purchase of land from the state by installments, with annual principal and interest payments shown. The 1901 edition included a comprehensive illustration of accounting for transactions for a period of six months,

¹⁷In an advertisement appearing in *The Australasian Pastoralists' Review* [1901, p. 831], Vigars announced his preparedness "to take up station accounts, prepare balance sheets, supply properly ruled books, and generally advise on station bookkeeping."

¹⁸In spite of this range of subsidiary records, as pointed out by Parker [1990, p. 441], Vigars recommended that all transactions recorded in the subsidiary records be repeated in the (general) journal. This, again, seems to indicate Vigars' emphasis on the standard, formal double-entry system of accounting, with subsidiary records serving primarily as temporary memoranda until their details could be entered into the "proper" double-entry system.

three more than the first edition, incorporating entries to the additional books introduced in this edition.

The slight expansion of the third edition (1909) to 188 pages reflected the addition of sections on accounting for share farming and the preparation of partnership accounts. The fourth edition (1914) marked a comprehensive revision and an expansion to 250 pages. Included in the introduction were references to the need for trustees to maintain proper records and the requirement to submit an annual tax return, but these matters were not subject to further exposition in the text itself.¹⁹ This edition illustrated the preparation of station records without the use of a journal, with entries posted directly from a diary in which activities and transactions were initially recorded. This was a departure from previous editions where the use of a journal was emphasized as an essential part of the double-entry accounting system.²⁰

The fifth and final edition (1937) continued the earlier pattern of expansion, comprising 318 pages. This edition recognized for the first time that some pastoralists would, in addition to their station operations, hold investments such as fixed deposits, shares in public companies, and interests in other properties. Accounting for such investments and the methodology for incorporating the associated income into the "income account" and balance sheet were illustrated. The income account was in addition to the profit-and-loss account for station operations. A further feature of the 1937 edition was the provision of exercises which required the preparation of entries in the books of account for a list of pastoral transactions, the calculation of profit or loss, and the preparation of a balance sheet.

Station Book-keeping, in all five editions, demonstrated a lack of concern for the evaluation of pastoral industry performance in physical terms. Apart from presenting a descriptive list of types of volume records that "may be recommended" for the pastoralist [Vigars, 1900, pp. 10-11, 1901, pp. 10-11, 1909, p. 10, 1914, p. 10, 1937, p. 10], pastoralists were not instructed by the author on how to prepare and use volume records. Vigars did provide a specimen of a sheep paddock book in the first edition [1900, pp. 70-71], but this was removed from subse-

¹⁹Vigars may have considered such tasks to be the exclusive province of professional accountants.

²⁰This change to Vigars' previous insistence on recording in the general journal was possibly made in recognition of changing practice. Overseas textbooks of the period did not recommend the use of a general journal except for closing entries [see, for example, Dicksee, 1910; Cole, 1913].

quent editions and published separately. There was no further discussion or illustration of recording systems concerned with the capture and use of non-financial operating information. It therefore seems likely that Vigars shared the common perspective of early pastoral accounting authors on this matter – that the maintenance of volume records was largely outside the domain of “proper” professional practice. It may also be the case that operational records were not included because Vigars and the profession generally considered that these were already well understood and effectively utilized within the pastoral industry. Despite this lack of emphasis on the use of operational information, Vigars did include a wide range of additional information for the benefit of pastoralists in all five editions, ranging from water tank measurements to hints on disease control in sheep. This is consistent with Vigars’ avowed intent that the text was to assist owners and managers in the management of pastoral properties.

As *Station Book-keeping* expanded in size, it appears that there may have been some refinement of the text’s target market. The first edition [1900, p. 3], a comparatively slim 71 pages, had proclaimed “the author’s aim to place within reach of all those interested in pastoral pursuits, a clear and concise mode of keeping Station Accounts.” Consistent with this intent, the first published review that has been located for the book appeared in an agricultural journal, *The Pastoralists’ Review* [1902, p. 782]. This review of the second edition noted that, “the explanations are such that a person who has never done any work of this sort could speedily become expert in a thorough and sound system of keeping accounts.” The first advertisement located for Vigars’ book also appeared in this journal and expressly stated that it was a work “for Pastoralists and Farmers” [*The Pastoralists’ Review*, 1902, p. 30]. The third edition of *Station Bookkeeping* was also reviewed in *The Pastoralists’ Review* [February 15, 1909, p. 1135].

However, a revised market focus appears to have accompanied the comprehensive revision which spawned the significantly enlarged fourth edition. Reviews and other notices relevant to the book appear to cease in agricultural journals.²¹ Instead,

²¹The predominant agricultural journal in Australia during the early 20th century commenced publication in 1891 as *The Australian Pastoralists’ Review*. It was subsequently re-named three times – *The Pastoralists’ Review* in 1901, *The Pastoral Review* in 1913, and *The Pastoral Review and Graziers’ Record* in 1935. No reference to Vigars and his book was located in this journal subsequent to the 1909 review of the third edition.

such reviews and notices began to appear in the accounting literature. The first of these is an anonymous review of the 1914 edition and other publications by Vigars which appeared in *The Accountant in Australia* [February 1932, p. 74]. Significantly, this review described Vigars' *Special Station Ledger* as having been "specifically designed to meet the needs of Station Accountants."

The fifth edition, for which mention has not been found once again in agricultural journals, was reviewed in *The Chartered Accountant in Australia* [1937, p. 20]. It was also listed in the "Publications Received" column of *The Australian Accountant* [1937, p. 7]. Later, Bridges [1975, p. 23] expressed the view, however formed, that "*Station Book-keeping* was written principally for those accountants who made rural accounting their main business." Further evidence of a change in target market is evident from the inclusion of practical exercises in the fifth edition, suggestive of the book's adoption in formal educational programs. In sum, as the book progressed through its various editions, it appears that its target market was refined from a generic group of interested readers for whom station bookkeeping was an ancillary pursuit, towards those for whom it was a principal activity, whether in professional accounting practice, pastoral industry management, or preparatory educational programs for these careers.

Vigars also wrote other publications designed specifically for the pastoral industry. *Special Station Ledger*, based on the station ledger section of *Station Book-keeping*, appeared in 1902 and provided a ready to use ledger for a pastoral station. In 1905, *Shearing Record and Wool Analysis* was published. This, again, was essentially a re-publication of a part of *Station Book-keeping*. In 1910, *Tank and Other Measurements, Also Forms of Agreement* was added to the list of texts for pastoralists. Vigars also wrote and published a short work entitled *Jackeroos, Their Duties and Prospects in Australia* (1918), reprinted in 1936.²² At least the fourth edition of *Station Book-keeping* was also reprinted, with the present authors having discovered a copy including an advertisement for a boarding school (The Scots College, Warwick, Queensland) that was not opened until several years after the edition's initial publication date.

²²For readers not familiar with the uniquely Australian occupation of "jackeroo," the *New Shorter Oxford English Dictionary* [1993] offers the following definition: "a novice on a sheep-station or cattle-station." Typically such employees were involved in assisting with general station tasks. The more recent term of "jilleroo" describes the female equivalent.

Station Book-keeping appears to have been an influential text in the local market over an extended period of time, as the following evidence suggests:

- Vigars himself claimed that *Station Book-keeping* was well accepted. He asserted in the 1936 reprint of *Jackeroos* that 12,000 copies had been sold, a figure also reported by Bridges [1975].²³
- Copies are still held in many public libraries in Australia. The National Library in Canberra has copies of all five editions, and there are multiple copies in the state libraries of New South Wales, Queensland, South Australia, Tasmania, and Victoria.²⁴ CPA Australia and the ICAA both retain copies in their libraries.
- Gibson [1974, p.19] avers that *Station Book-keeping* was the required text at Barker College, Hornsby, New South Wales, in 1912. Scotch College, Melbourne, also used the text in 1925 [Scotch College, 2005].
- Copies are held by pastoral stations in several states. In the course of his research on pastoral accounting in the Western District of Victoria, Carnegie noted at least two stations that retained a copy in private collections. Some 3,500 kilometres (2,200 miles) north, the surviving records of Bowen Downs Station in north Queensland (held by the James Cook University archives) include a copy.
- A search of web-based book sites revealed six copies of *Station Book-keeping* for sale across four sites (Biblioz, Antipodean Vision, Books for Sale, and Abebooks). Copies of other accounting texts of a similar age rarely appear for sale.

Some other publications dealing with farm accounting appeared during the early decades of the 20th century [e.g., Russack, 1905-1906; Wolseley, 1905-1907; Orwin, 1908, 1914, 1924]. However, with the exception of Orwin's *Farm Accounts* [1914], these were relatively brief journal articles. Orwin's book appeared in only one edition, marking it as a minor work relative to the almost four decades' long publication span of *Station Book-keeping*.

²³The sales figure claimed by Vigars has not been independently confirmed due to the relevant publishing records having been destroyed. By comparison, Yaldwyn claimed sales of 4,569 copies of all his publications by the end of 1897 [Carnegie and Parker, 1996, p. 29].

²⁴The British Library also has a copy in its collection.

IMPLICATIONS OF *STATION BOOK-KEEPING*

Consistent with the theoretical premises introduced earlier, the implications of *Station Book-keeping* are evaluated at two levels. First, consideration is given to the role of the book in facilitating a technology transfer which resulted in a significant change in accounting practice within a major Australian industry. Second, the implications of that change for the nascent organized accounting profession within Australia are evaluated.

Technology Transfer: Vigars' *Station Book-keeping* is depicted as a key vector of accounting change within a major Australian industry. The change it enabled was the adoption of comprehensive systems of DEB. Vigars was, as far as can be ascertained, the first local accounting textbook author in Australia to adapt this core technology to a particular industry and, thus, to facilitate and promote its uptake nationally.

Prior studies on the transfer of accounting technology [Carnegie and Parker, 1996; Foreman, 2001] have been guided by a framework of questions posed initially by Jeremy [1991, pp. 3-5] in connection with technology transfer generally. These questions have been summarized by Carnegie and Parker [1996, p. 25] as follows:

1. What inhibiting factors were there, technical and non-technical?
2. What were the vehicles of transfer, the networks of access to the originating economy, the information goals of acquirers, the methods of information collection, and the speed of transfer of the technology?
3. What was the rate of adoption, the networks of distribution into the receptor economy, and the hindrances faced by carriers of the new technology?
4. Was the incoming technology reshaped by economic conditions, social factors, and/or conditions in the physical environment?
5. Were there any reverse flows of the technology?

These questions are again adopted here to provide a framework for understanding Vigars' *Station Book-keeping* as an episode in the complex process of the adaptation and transfer of accounting technology. In what follows, each of the above questions is addressed in seeking to elucidate this process.

Turning to the first of the questions posed above, there were relatively few factors inhibiting the transfer of accounting technology within the British Empire. People of all backgrounds

and occupations, including accountants [see, for example, Johnson and Caygill, 1971; Briston and Kedsle, 1997] flowed freely between Britain and Australia, with many choosing to seek a new life in the great southern land. Those emigrating to Australia during the 19th century for employment and business purposes brought with them an array of knowledge and skills, however acquired, and would add to that expertise by studying the British texts which accompanied them or were purchased locally. Language barriers were few, with the vast majority of the new settlers being native English speakers. The emerging legal system and culture of Australia were significantly influenced by those prevailing in Britain.²⁵

One factor inhibiting technology transfer was the very distinctive geographical and climatic conditions of Australia. The implications of living and operating in this environment were particularly evident in agriculture. Land was plentiful, but rainfall was not, the converse of what usually confronted European farmers, with the result that farming in Australia developed in a radically different way from Europe. While British books on accounting were readily available in Australia in the 19th century, supplemented by locally written accounting texts of a general nature by non-indigenous authors from the early 1870s, Vigers was unique in preparing a book on pastoral accounting for Australian conditions based on his own experience in accounting roles while working in the pastoral industry in New South Wales. Indeed, there seems little likelihood that he could have ever written his book without that experience. *Station Book-keeping* adapted the generic model of DEB to encompass the peculiarities of pastoral stations (e.g., accounting for itinerant labor, livestock, wool production, and shearing costs). Vigers' experience provided the basis for the development and exposition of an accounting system for a specific industry and led him to be both an adopter and an advocate of that system.

One of the key means of diffusing accounting technology in Australia in the 19th century was through the agents, managers, and employees of British firms which were seeking to establish a presence there [Carnegie and Parker, 1996, p. 25]. Pastoral stations in Australia were often out of direct reach of such influence as they were located in isolated regions, such as on "Crown Lands beyond the limits of location" [Carnegie, 1997, p. 11]. Further, they were established by enterprising emigrants, known as

²⁵See Parker [1989] for an overview of how accounting techniques and concepts were imported and exported from one country to another.

pioneers or “squatters,” who were, in the main, not representing British firms. Rather, these pioneer farmers were principals who were guided by their own interests, sometimes with the financial backing of their families in Britain. Hence, station accounting was usually conducted in isolated settings and, for much of the 19th century and extending into the 20th, were often not subject to the administrative procedures associated with company and other formal business structures.

Although the emphasis in this paper is placed upon the contribution of one person, this is not intended to imply that Vigars should be perceived as “heroic” in his endeavors and impacts. Rather, Vigars is depicted as a prominent professional accountant who was active in the Australian pastoral industry from at least the mid-1890s until near the time of his death in 1940. According to Bedford [1966, p. 2], “historically, the process by which accounting procedures and thought have been transmitted from one country to another has been by the physical transfer of accountants.” However, in the case of the intra-country transfer of accounting technique to a specific industry that is under examination here, the primary media were the successive and progressively expanded editions of a book of which the author claims 12,000 copies sold, a very impressive sales figure given the book’s specialist nature and the population of Australia at the time. As well as providing a guide for pastoralists and accountants, there is evidence that the book was used within educational settings. In all, these circumstances suggest a relatively gradual diffusion of technology reflective of the almost four-decade publishing span of the book.

With regard to the rate of adoption, those implementing the bookkeeping system advanced by Vigars were apparently persuaded, whether by Vigars’ book or other proponents, that a comprehensive system of DEB was the “proper” method of accounting for pastoral stations. Direct hindrances to the adoption of such a system would appear to have been few, especially given the often painstaking detail with which Vigars articulated his system and the numerous examples presented to demonstrate its application. However, DEB was regarded as sufficiently complex to constitute a core expertise of the nascent accounting profession.

As outlined above, there is evidence that suggests that the target market for Vigars’ book was altered in the course of its almost 40 years in publication. The early, slim editions were aimed at pastoralists and farmers, as evidenced by its review and advertisement in agricultural journals. By the fourth edi-

tion, however, the pattern had changed. Notices and reviews of the book appear to cease in the agricultural literature and are instead prominent in professional accounting journals. Two general themes become discernible: (1) a continuing advocacy of DEB systems as the “proper” method of accounting for pastoral operations; and (2) an increasing recognition that the implementation of such a system would be the province of a specialist practitioner. The final edition of Vigars’ “treatise” contained practice exercises for the novice, seemingly to suggest that expertise in pastoral accounting would be acquired only with effort and practice. A likely consequence of the book is that it caused many station owners or managers, whether by inclination or necessity, to engage at least some supplementary expert assistance in the form of a professional accountant in order to implement the system advocated. Vigars himself may well have been a beneficiary of such arrangements.

The fourth question concerned the influence of local environmental factors on imported accounting technology. As this is not a study of actual pastoral accounting practice, which would require scrutiny of surviving business records, it is difficult to assess the influence of an array of local, time-specific environmental factors on the structure and usage of pastoral accounting information. However, Vigars was influential in adapting a particular bookkeeping technology to pastoral pursuits in Australia. In the introduction to the second edition, for example, Vigars [1901, p. 3] referenced this role saying, a “greater interest will be taken in the study of a work treating on Sheep, Cattle, Horses, and Wool transactions than in ordinary commercial transactions; and, as this is written more especially for those who make Station Products their chief business, it should prove particularly interesting to them.” Further, Vigars wrote in the introduction that, “the writer has not deemed it advisable to exclude all technical terms from the present work but has only introduced those which are in most common use; their meanings will be easily discovered by a little thought.” Vigars was, of course, adapting the technology for a particular industry, taking into account his experience of participants’ ability to understand key technical terms in the content with “a little thought.” He also prepared and published from 1902 a special station ledger, specifically ruled and indexed, to assist in facilitating the adoption of DEB within the pastoral industry.

The final question relates to the identification of any reverse flows of technology. Given that the essential purpose of *Station Book-keeping* was to adapt a general accounting technique to the

specialist needs of a particular industry, such reverse flows seem unlikely. In addition, no evidence has been uncovered which would indicate that Vigars perceived there to be an international market for his book. On the contrary, surviving commentaries and promotional material, as well as the content of *Station Book-keeping* itself, emphasize relevance and application only to the uniqueness of the Australian pastoral industry. Consistent with the specialist nature of his publishing project, Vigars was therefore unlike Dimelow and Scouller, both earlier Australian-based accounting authors, who did publish in the “home” country [Goldberg, 1984, p. 29; Carnegie and Parker, 1994]. Rather, as a British emigrant, Vigars was a leading adaptor of the core technology of DEB to the Australian pastoral industry. It appears that he was also the first to do this through a published book, complemented by ancillary publications such as the *Special Station Ledger*.

Organized Accounting Profession: At the dawn of the 20th century, the strongest claim of the nascent accounting profession in Australia to distinctive expertise remained anchored to DEB. In this respect, Vigars’ *Station Book-keeping* seems likely to have served the interests of local accounting practitioners. The timing of Vigars’ publishing career was especially propitious. Organization of the Australian accounting profession had commenced during the last two decades of the 19th century, but a period of consolidation was still required during the early decades of the 20th.²⁶ The successive editions of Vigars’ *Station Book-keeping* which appeared during this time facilitated this consolidation in several ways.

First, as mentioned above, it fostered the adoption of DEB within a major Australian industry which had not previously used that technique extensively. Second, it served to standardize the operation of the technique within that industry, evidencing the reliability of the expertise claimed by accounting practitioners. Third, it provided a means for enhancing and formalizing the education of aspiring professional accountants.²⁷ Fourth,

²⁶Australia’s first professional accounting association, the Adelaide Society of Accountants, was formed in the colony of South Australia in November 1885 [Parker, 1961]. Several more associations were formed in the course of the following two decades [see Linn, 1996, pp. 203-204; Carnegie and Parker, 1999].

²⁷Questions on accounting for agricultural and farming operations were apparently common on examination papers administered by Australian accounting associations during the first half of the 20th century. The surviving examination papers of the ACPA and its successor, the ICAA, are incomplete. However,

Station Book-keeping, with its scholarly epithet of “a treatise,” contributed some much needed intellectual capital, both in substance and appearance, to an occupation that was engaged in an ongoing struggle to demonstrate that its members possessed distinctive knowledge and skills. Fifth, the book served to reinforce to existing and potential clients the importance of “proper” accounting within the pastoral industry. These individual factors also culminated in a growing recognition that the importance and complexity of pastoral accounting would often necessitate the engagement of a specialist practitioner. In this way, the text aided the accounting profession in claiming jurisdiction over work within the Australian pastoral accounting industry.

By the time of the publication of the fifth and final edition of Vigars’ book in 1937, DEB had become normalized within the Australian pastoral industry, and accounting had consolidated its status as a “professional” occupation. *Station Book-keeping* played a significant role in the first of these outcomes and, along with a range of other scholarly books and publications, made a contribution toward achieving the second.

CONCLUSION

This study of Francis Ernest Vigars’ *Station Book-keeping* has examined the contents and influence of a specialist pastoral accounting text and has elucidated aspects of the author’s life and career. Like most of the authors of the generic early accounting texts authored and published in Australia, Vigars was a British emigrant. He gained experience and related specialist skills in pastoral accounting in the period before the appearance of the first edition of his text in 1900. As a specialist, his comprehensive pastoral accounting text was the first book of its kind in Australia.

Vigars’ publications, encompassing five editions of *Station Book-keeping* along with related works, spanned nearly four decades and influenced accounting developments within a major Australian industry. This influence was exerted through Vigars’ adaptation of conventional DEB practices to encompass the peculiarities of Australia’s pastoral industry, as well as his articulation and advocacy of this form of accounting. He believed that a comprehensive double-entry system was the “proper” system of

comprehensive questions in this subject area were included on examination papers for at least the years 1913, 1918, 1919, 1921, 1923, 1942, 1943, and 1946 [ICAA Library].

accounting for this industry and would overcome the inadequacies he perceived in extant pastoral accounting practices. The influence of the book was extended through its use in educational settings.

Accordingly, *Station Book-keeping* has been characterized as a specialist text which enabled the adaptation and transfer of accounting technology. Whether accounting practices were improved in the pastoral industry is a moot point and has not been the subject of investigation here. What is evident is that Vigars' book facilitated a movement away from the single-entry approach previously relied upon for pastoral industry management. This change also had implications for the nascent accounting profession within Australia. The distinctive expertise claimed by members of this profession in the early part of the 20th century centered on DEB. By fostering the implementation of such systems within a major Australian industry, Vigars' *Station Book-keeping* assisted in creating new work opportunities for accountants and contributed to raising the status of their core expertise.

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