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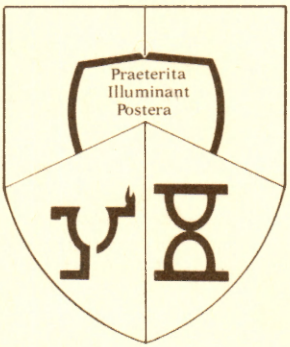

The Accounting Historians Journal

June 1990
Volume 17, Number 1

Research on the Evolution of Accounting Thought and Accounting Practice

The Accounting Historians Journal

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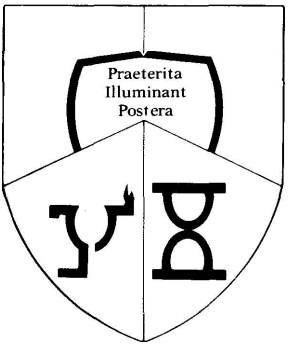

The Accounting Historians Journal

June 1990
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THE ACCOUNTING HISTORIANS JOURNAL

Semiannual Publication of
The Academy of Accounting Historians

Volume 17, Number 1 **June 1990**

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THE ACCOUNTING HISTORIANS JOURNAL
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The editors encourage papers on subject matter related to the development of accounting thought and practice. In addition, papers on biographical subjects and on historical method are encouraged.

Guidelines On Research

1. Manuscripts should provide a clear specification of the research issue, problem and/or hypothesis being addressed, an explanation of the derivation of the issue, and a plan to address these.

2. Authors should develop a statement about the method employed in the research, including a full indication of the extent and the manner in which the methodology is used and the degree to which the research plan is achieved by means of the method. Such a statement should include a specification of the original materials or data collected or employed and a statement of the rationale employed in selecting the source material(s). A description of the evidential data used in conducting the final phases of the evaluation should be clearly stated.

3. When contemporary implications of the research are demonstrable or can be developed, as appropriate, the results of the research will be deemed as having added merit.

4. Manuscripts which involve general periods of time, such as a study over a decade or longer, should develop explanations which are sensitive to changes in technology, education, political, economic and similar environmental factors.

5. While historical research communities have long debated the ability to develop proper evidence to assign causation to particular factors, authors may be expected to address and evaluate the 'probable' influences related to the issue or hypothesis being examined as consistent with an interpretation of the method, data and plan described. In other words, papers must be more than just a description of something.

6. A conclusion/interpretation of the research must be stated so as to be understood as consistent with the objective, plan and data used in the study. The finding(s) should be clearly 'tied back' to the problem specified in the research and emphasize the relevance to contemporary practice, education and/or research and policy issues as appropriate. Implications of the study for future research should be stated.

7. Purely descriptive papers continue to be of importance but must be carefully and completely developed and be based upon original materials as principal sources.

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Dale L. Flesher, Editor
The Accounting Historians Journal
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The cover sheet should state the title of paper, name(s) of author(s), affiliation(s), and the appropriate address for further correspondence. The title, but not the names(s) of the author(s), should appear on the abstract page and on the first page of the body of the manuscript. Authors sign a copyright release form provided by the editors as a condition of publication.

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Tables, figures, and exhibits should be numbered (arabic), titled, and, when appropriate, referenced. Limited use of original documents, etc. can be accommodated in *The Journal* for authors providing glossy black and white prints. Important textual materials may be presented in both the original language and the English translation.

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Illustrations etc., must be prepared so that they can be understood standing alone. A line explaining the illustration should accompany such materials. The source citation for an illustration etc., must be complete.

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Footnotes should not be used for literature references. The work cited should be referenced using the author's name and year of publication in the body of the text, inside square brackets, e.g. [Garbutt, Spring 1984]; [Garner, 1954]. If the author's name is mentioned in the text, it need not be repeated in the reference, e.g. "Previts [Fall 1984] asserts . . ." If a reference has more than three authors, only the first name and "et al" should be used in the text citation. References to statutes, legal treatises or court cases should follow the accepted form of legal citation.

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List of references. This should appear at the end of the manuscript and contain full reference to all sources actually cited and arranged in alphabetical order according to the surname of the first author. Information about books and journals should include the following: Books-name of author, title underscored, place of publication, name of publisher, date of publication; Journals-name of author, article title within quotation marks, journal title underscored; date of issue in parentheses, page numbers. Multiple works by an author should be listed in chronological order of publication, and when multiple works of an author appear in a single year, the suffix a, b, etc. should be used after the year.

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The Accounting Historians Journal
Vol. 17, No. 1
June 1990

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WHAT IS PUBLISHABLE ACCOUNTING HISTORY RESEARCH: AN EDITORIAL VIEW

Although this is the first issue of *The Accounting Historians Journal* that has been published by the new editorial team, the current editors and reviewers have been processing manuscripts for nearly a year. During that time, 40 manuscripts have been received and, so far, only six have been accepted for publication. Such a low acceptance rate brings to mind the question of exactly what is publishable accounting history research.

The reasons for rejection have been numerous. A few manuscripts have been poorly written and were simply boring to read, some have been based too extensively on secondary sources, others have been reiterations of previously published articles, but the majority have failed to meet the expectations of reviewers because of a lack of significance of subject matter or weaknesses in research methodology. For these reasons, this essay is designed to give potential authors some guidance in what and how to research.

GUIDELINES ON RESEARCH

First, what is research? Basically, research of any nature is an organized effort to investigate problems and answer questions. It has often been said that research begins with a question and then includes a clear description of the problem to be solved. This is just as true for historical research as for a laboratory experiment. There is, however, a difference between historical research and other methodologies in that the researcher often cannot figure out the question or describe the problem until much of the field work has been conducted. In other words, the historical researcher often does not know the question until after the answer has been found. Therefore, a lot of wasted effort occurs in historical research because re-

searchers spend time analyzing archival records, but fail to find a problem, or fail to find the answer to a question. In such cases, the researcher apparently writes up a description of the materials examined, comes to the startling conclusion that old accounting records are interesting and/or different from modern records, and then mails off the manuscript to an editor. Such descriptive results are not of historical and literary significance.

The front material at the beginning of this volume includes a page entitled "Guidelines on Research." That page should be examined in detail by would-be authors and used as a checklist to measure the suitability of any manuscript being submitted. Some of the guidelines are self explanatory, such as the suggestions pertaining to indication of the research methodology used and materials employed. Alternatively, some of the guidelines apparently need more explanation since they are often violated by authors. For example, guideline number four emphasizes that explanations in a manuscript should be sensitive to changes in technology, education, and political, economic, and similar environmental factors. In other words, authors need to tie in their records with the world in which the records were created.

The biggest criticism that reviewers have made relates to the fact that many papers are merely descriptive in that the author comes to no substantive conclusions concerning the results. Researchers need to develop proper evidence that will permit the assignation of causation to particular factors and to address and evaluate the probable influences related to the issue or hypothesis being examined. In other words, papers must be more than just a description of some old accounting records. There must be an explanation of why these accounting records are important, or why the conclusions reached from the records are important. Authors need to think in terms of contribution — why or how is the world a better place because of this research project. Researchers must digest their evidence thoroughly, use the work of other scholars, and then venture into some generalization or conclusion. It is this final interpretation and synthesis which gives meaning to accounting history research.

GOALS OF RESEARCH

In other areas of accounting research (or research in any field), the goals of the research project are to: (1) describe phenomena, (2) discover relationships, (3) explain phenomena, (4) predict future events, and (5) influence future events. Not all research projects meet all of these goals. The five goals can be

depicted on a time line. The first stage in the research project is to describe phenomena, next relationships are discovered and then explained. Finally, the results are used to predict or influence future events. All of these objectives are important, but the better research project will accomplish more than one of the above goals. In a new field of study, a descriptive project may make a major contribution. The study of accounting history, however, is not a new field of study. Consequently, descriptive studies typically will not be sufficient to warrant publication in *The Accounting Historians Journal* because they simply do not make enough of a contribution to the literature. This is not to say that descriptive studies will never be published; they will. Such studies, however, must be carefully and completely developed.

If a manuscript is a descriptive study followed by discovery of relationships and explanation of phenomena, then the author's chances for publication are greatly enhanced (assuming that the research question is an important one). The best chances for publication would come when the study not only discovers and explains relationships, but offers the possibility for predicting or influencing future events. For example, a study dealing with a topic being considered by the Financial Accounting Standards Board might be useful in the development of a future accounting standard. Similarly, a historical study of the introduction of Western accounting into Japan might include the history of how management accounting techniques spread among Japanese businesses and were subsequently improved to become today's innovations which can now be offered back to the West. This type of research is more exciting and scholarly than a descriptive study which concludes that "old accounting books are dusty, but interesting."

NATURE OF HISTORICAL EVIDENCE

Researchers must give consideration to the type of evidence being studied. As mentioned earlier, several manuscripts have been rejected because of excessive reliance on secondary sources. Secondary sources are the end products of someone else's research. Textbooks, monographs, and journal articles are generally classified as secondary sources. This is not to say that primary sources are the only acceptable research material and that secondary sources are not valuable. For instance, secondary sources are usually used to place the records being studied in the proper environmental framework. Also, a thorough knowledge

of secondary sources can permit a researcher to concentrate on "surprise" findings — in other words, those findings that differ from or add to the secondary sources. Finally, it should be noted that secondary sources can often be wrong. Anyone who doubts the authenticity of the previous sentence should read the discussion of the railroad land grant legend in U.S. general history textbooks [Henry, 1945, pp. 171-194].

In addition to worrying about the use of secondary sources, researchers should question whether research materials were consciously or unconsciously transmitted. Consciously transmitted materials are items which were designed for use by future scholars. These might include personal memoirs, the management discussion in published annual reports, and taped interviews. Unconsciously transmitted material is evidence that is not looking to be judged by posterity. This would include most accounting and other business records, other than the published annual reports. It should be noted that there has been a growing consciousness of history in recent years, and many types of evidence have become more purposeful in their creation. It should be noted that most empirical research is based on public reports (consciously transmitted). The hidden reports may tell a more understandable (and true) story.

In summary, many accounting history researchers have stumbled into this field of endeavor. As a result, they are often lacking in research skills, and often do not know what constitutes good historical research. Authors should read the guidelines on research published at the front of this volume and judge their manuscripts by these guidelines. Accounting history research is an exciting field of inquiry, but the findings must make a contribution to warrant publication. If authors will keep this need for contribution in mind when designing research studies, the chances for publication will be greatly enhanced.

REFERENCES

Henry, Robert S., "The Railroad Land Grant Legend in American History Texts," Mississippi Valley Historical Review (September, 1945), pp. 171-194.

The Accounting Historians Journal
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CHARACTERISTICS OF THE WORK OF LEADING AUTHORS OF THE ACCOUNTING REVIEW, 1926-1945

Abstract: The Accounting Review has changed dramatically over the years. The purpose of this study is to document these changes, putting into perspective the articles that are currently published in *The Accounting Review*. In particular, this study compares the work of those authors who had the most publications in *The Accounting Review* (Leading Authors) during 1926-1945 with more recent contributions. The results with respect to topic of articles, research methods, citations, and article length reflect the Leading Authors' practical orientation, an attribute that is not particularly apparent in the work of current authors.

Most of us are probably familiar with the current contents of *The Accounting Review*. Both Sundem [1987] and Kinney [1990] report that most recently accepted papers are quantitative/empirical with topics primarily in financial accounting, auditing, managerial accounting and taxation. They also note that almost all of the authors of recent submissions are affiliated with universities. Moreover, according to its editorial policy, the primary audience for *The Accounting Review* [AAA, 1990] should be " . . . academicians, graduate students, and others interested in accounting research."

Most of us are also aware that *The Accounting Review* has changed considerably over the years; however, our perceptions are likely to vary dramatically on the nature of *The Accounting Review* in its early years. While we might know that financial accounting was the dominant topic and that most of the writing

We are grateful to Tom Koster and Sue Wakkuri for their assistance on this project and to the participants of a concurrent session at the 1989 Annual Meeting of the American Accounting Association where an earlier version of this paper was presented. We are also grateful to two anonymous reviewers and Dale Flesher, the Editor, for their suggestions.

was based on normative deductive reasoning, we might not be as aware of other issues. What were the more popular financial accounting topics? What other topics were important? Did empirical research exist at the time? Which journals were influential? How important were books? Who influenced the authors? What did the authors do for a living?

Answers to questions like these should provide a perspective for current authors to better understand the development of accounting and, therefore, be more effective contributors to accounting thought. Such a perspective, for example, might provide support for greater utilization of deductive research methods in the place of quantitative/empirical approaches.

Toward this end, this paper documents characteristics of the work of the early authors of *The Accounting Review* and compares these characteristics to more recent contributions. The focus is on the authors with the most articles published in *The Accounting Review* during its first 20 years of publication (Leading Authors).[1] The following section classifies the work of the Leading Authors by topic and research method for the time period 1926-1945. Citations and article length are also analyzed. The results provide an interesting contrast with recent contributions and contributors to *The Accounting Review.*

TOPICS AND RESEARCH METHODS

The articles of the Leading Authors were classified with respect to topic and research method. To obtain a common ground, the classification schemes developed by Sundem [1987] were used. Each of the three authors of this paper independently classified the articles and all then discussed these classifications to reach a group decision.

Topics

Table 1 indicates that the 19 Leading Authors published 172 articles on seven topics and an "other" category.[2] Financial accounting is the dominant topic with 66.9% of the total articles

[1]Heck and Bremser [1986] identified the authors with the most articles published in *The Accounting Review* during its first sixty years of publication as well as the three 20-year subperiods.

[2]Using the method of Heck and Bremser [1986], the appropriate number of articles was identified for each Leading Author except for Paton. Since it was not clear which article was not counted by Heck and Bremser, who credited Paton with nine, his ten articles were used in this study. In addition, note that the Leading Authors accounted for 24% of the articles in *The Accounting Review*

TABLE 1
Major Topic by Author

	Financial	Education	Nonprofit/Governmental	Managerial	Tax	Professional	Auditing	Other	Total
A. C. Littleton	22	4				1		2	29
DR Scott	10			1					11
Herbert Taggart	6	1	1	2					10
Stanley Howard	5	3	1						9
Perry Mason	8			1					9
William Paton	9				1				10
C. Rufus Rorem	3		2	3			1	1	9
L. L. Briggs	6	1					1		8
James Dohr	3	2		1	2				8
Howard Greer	4	2		1		1			8
Harry Kerrigan	7				1				8
E. L. Kohler	4		2			2			8
Gabriel Preinreich	4				1			2	7
Frank Smith	6							1	7
Henry Sweeney	7								7
William Castenholz	5			1					6
David Himmelblau	3				1		2		6
Lloyd Morey			6						6
Hiram Scovill	3		1			1		1	6
Total	115	13	13	10	6	5	3	7	172
Percent of Total	66.9%	7.6%	7.6%	5.8%	3.4%	2.9%	1.7%	4.1%	100%

during the 1926-1945 time period. They were especially dominant during 1926-1938, accounting for 35% of the articles, from a low of 20% in 1930 to a high of 61% in 1932. Interestingly, they only accounted for 10% of the articles in the World War II years (1939-1945), from 4% to 19% in any one year. According to "University Notes" and "Association Notes" published in *The Accounting Review*, several of the Leading Authors (Taggart, Mason, Kohler, and Smith) had significant war-related duties which may partly explain this reduction.

published. The education and nonprofit/governmental categories are tied for second with 7.6%, and the managerial area is ranked fourth with 5.8%. The Leading Authors published fewer than ten articles each in the tax, professional, and auditing areas.[3]

Recent years have shown greater variety in the articles published in *The Accounting Review*.[4] While financial accounting is still the dominant topic with nearly 50% of the articles [Sundem, 1987; Kinney, 1990], managerial accounting, auditing and taxation each have increased in popularity. Understandably, at a time of great change in financial reporting, the Leading Authors were primarily concerned with financial accounting issues.

Research Methods

Table 2 presents a classification of the research methods used by the Leading Authors. These include: deductive (including inductive, opinion, descriptive, and legal type research methods), historical, general empirical, survey, economic modeling, and analytical modeling.[5] They used the deductive method in over 84% of the instances while the historical method was used about 11% of the time. Thus, these two methods alone accounted for 95% of the research methods employed. Current writers almost always use quantitative/empirical research methods [Sundem, 1987; Kinney, 1990].

This change in research methods is indicative of the present schism between practitioners and academics. Bricker and Previts [1990] suggest several factors that may be responsible for this schism including: application of social science research methods to accounting following World War II; adoption by the AACSB in 1967 of the doctorate as the terminal degree for accounting faculty (which encourages a diverse education background for academics versus practitioners); and recent

[3]The education category was not used by Sundem [1987] since his analysis did not involve this type of paper. None of the papers of the Leading Authors fit into the research methods, international, or information systems categories used by Sundem. Chatfield [1975] also notes that there were few papers dealing with auditing and tax during the first ten years of *The Accounting Review*.

[4]To obtain a current perspective, the work of the Leading Authors is compared to recent contributions to *The Accounting Review* rather than the older work of the Leading Authors from the 1966-1985 period.

[5]See Sundem [1987] for a definition of these methods. Other methods described by Sundem but not used by the Leading Authors are capital market, behaviorial, statistical modeling, and simulation research methods.

Table 2
Research Methodology by Author

	Deductive	Historical	General Empirical	Survey	Economic Modeling	Analytical Modeling	Total
A. C. Littleton	17	11	1				29
DR Scott	11						11
Herbert Taggart	10						10
Stanley Howard	4	5					9
Perry Mason	8	1					9
William Paton	10						10
C. Rufus Rorem	9						9
L. L. Briggs	7			1			8
James Dohr	8						8
Howard Greer	8						8
Harry Kerrigan	8						8
E. L. Kohler	8						8
Gabriel Preinreich	3	1			2	1	7
Frank Smith	5		2				7
Henry Sweeney	7						7
William Castenholz	6						6
David Himmelblau	6						6
Lloyd Morey	6						6
Hiram Scovill	4	1		1			6
Total	145	19	3	2	2	1	172
Percent of Total	84.3%	11%	1.7%	1.2%	1.2%	.6%	100%

promotion and tenure standards requiring research, including theoretical-empirical studies.

Note that these factors post-date the 1926-1945 period under examination. As is reported in a subsequent section, only about half of the Leading Authors held a Ph.D., many of them had extensive practical experience, and they wrote at a time when many viewed the practice of accounting as an art [Previts and Merino, p. 214]. In this setting it is not surprising that deductive/historical methods dominated, even though some quantitative/empirical methods were known (as reported in Table 2) and could have been used more extensively.

Topics by Research Methods

Table 3 shows the cross-classification of research methods and topics. The dedutive approach is not only the dominant method on an overall basis, but it is the dominant method in each topic area except for "other."[6] In addition, the deductive approach is the only method employed by the Leading Authors in the nonprofit/governmental, managerial and auditing areas. Thus, the deductive method is clearly the dominant method of the Leading Authors. Again, this is in sharp contrast with more recent articles in *The Accounting Review* where each area is dominated by quantitative/empirical methods. [Sundem, 1987; Kinney, 1990].

Table 3
Research Methodology by Major Topic

	Deductive	Historical	General Empirical	Survey	Economic Modeling	Analytical Modeling	Total
Financial	99	15	1				115
Education	10	2		1			13
Nonprofit/Governmental	13						13
Managerial	10						10
Tax	5					1	6
Professional	3		1	1			5
Auditing	3						3
Other	2	2	1		2		7
Total	145	19	3	2	2	1	172

Financial Accounting Sub-topics

Table 4 shows a breakdown by author and sub-topic of the 115 financial accounting articles.[7] The articles were initially classified by the topic that they most relate to in intermediate

[6]The historical and economic modeling methods were used as often as the deductive method in the "other" category. Preinreich used economic modeling for his two papers concerning the valuation of common stock.

[7]Since the next most popular topic only has 13 articles, breakdowns of the other topics are not included in this study.

and advanced accounting textbooks. If an article related to more than one topic without one being dominant, the article was classified as "miscellaneous." Kieso and Weygandt's *Intermediate Accounting* [1989] and Baker, Lembke, and King's *Advanced Financial Accounting* [1989] were selected as the basis for the classifications.[8] To facilitate the reporting of the results in Table 4, several related chapters were combined (e.g., the two inventory chapters in Kieso and Weygandt's book were considered a single sub-topic).[9] If a sub-topic only contained a single article, the article was classified as "other."[10] All but six of the 115 financial accounting articles were related to intermediate accounting. Only two of the articles did not relate to an intermediate or advanced accounting topic.

The most popular sub-topic was environment and concepts with 22 articles by ten different Leading Authors.[11] The second most popular sub-topic was stockholders' equity with 21 articles also involving ten of the Leading Authors. The third most popular area was plant and equipment, with articles by six of the Leading Authors.[12] Other popular areas included changing prices, accounting process, balance sheet, inventories, and income statement.

The popularity of environment and concepts is not surprising given events such as the stock market crash of 1929, the Great Depression, financial scandals (e.g., see Flesher and Flesher's [1986] discussion of Kreuger & Toll, Inc.), and the

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[8]Several articles commented on the AAA's "A Tentative Statement of Accounting Principles Underlying Corporate Financial Statements." Since we considered this document a conceptual framework type exercise, these articles were classified under the conceptual framework chapter (i.e., concepts).

[9]The other chapters which were combined to form one sub-topic were: the first two chapters in *Intermediate Accounting* [Kieso and Weygandt, 1989] (environment and concepts); the two chapters involving stockholders' equity; the two chapters involving plant and equipment; the revenue recognition chapter and the income statement chapter; and all the chapters dealing with consolidations.

[10]These included sub-topics on long-term liabilities, investments, income taxes, statement of changes, research ideas, incomplete records, and partnerships.

[11]While the financial accounting textbooks provide a readily understandable and convenient classification scheme, other classification schemes are certainly possible. Different classifications of articles would give different results.

[12]If similar chapters had not been combined, the three most popular areas would have been depreciation (16 articles), retained earnings (16 articles), and concepts (15 articles). Thus, combining similar chapters affected the apparent degree of popularity of the areas but not the qualitative results.

Table 4
Financial Accounting Sub-Topics by Author

	Environment and Concepts	Stockholders' Equity	Plant and Equipment	Changing Prices	Accounting Process	Balance Sheet	Inventories	Income Statement	Consolidations	Financial Statement Analysis	Full Disclosure	Intangibles	Other	Miscellaneous
A. C. Littleton	4	3			7	2	1	3					1	1
DR Scott	4		3				1		1				1	
Herbert Taggart			3		1		1	1					1	
Stanley Howard	2	2											1	
Perry Mason		1	7											
William Paton		1												
C. Rufus Rorem	2			1		2	1		1	1		1	1	1
L. L. Briggs		6												
James Dohr	1	1				1								
Howard Greer	2												1	1
Harry Kerrigan	2	4						1						
E. L. Kohler	1	1				1			1					
Gabriel Preinreich	1		2									1		
Frank Smith	3	1									2			
Henry Sweeney				7										
William Castenholz			1	1			3							
David Himmelblau			2							1				
Lloyd Morey														
Hiram Scovill		1											1	1
Total Articles	22	21	18	9	8	6	6	5	3	2	2	2	7	4
Total Authors	10	10	6	3	2	4	4	3	3	2	1	2	7	4

creation of the Securities and Exchange Commission and the Committee on Accounting Procedure.[13] The importance of stockholders' equity, and especially dividends, which many of the articles by the Leading Authors in this area covered, is emphasized by Previts and Merino [1979, pp. 231-235] in their discussion of problems in accounting practice in the 1920's. Depreciation, which accounted for most of the articles in the plant and equipment area, was also an important issue since it was still considered a discretionary expense by many businesses as late as the early 1930's [Hendriksen, 1977, pp. 42-43]. Thus, the Leading Authors were occupied with many of the major problems of their time.[14]

Sundem [1987] reports that the popular financial accounting topics covered in recent submissions to *The Accounting Review* include inflation, earnings prediction, standard setting, bankruptcy prediction, cash flow, pensions, foreign currency, and ratios.[15] Thus, it appears that current writers, like their predecessors, address important contemporary problems. Inflation, standard setting, cash flow, pensions, and foreign currency each relate to recent Financial Accounting Standards Board projects. In contrast, earnings prediction, bankruptcy prediction, and ratios relate more to the use of accounting information, a theme not readily evident in the work of the Leading Authors.

CITATIONS

In this section the citations given in the work of the Leading Authors (i.e., references made by them in their articles) are examined. Brown and Gardner [1985a and 1985b] used this technique to assess the quality of journals, faculties, and doctoral programs. The specific issues addressed in this section are: the number of citations for journal articles and books; the journals which had the greatest impact on the Leading Authors;

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[13]Knight, Previts and Ratcliffe [1976] present a detailed listing of accounting related events.

[14]Table 4 also shows that Paton exhibited the most breadth by writing in eight different financial accounting areas while Littleton ranked second by writing in seven. These two also authored *An Introduction to Corporate Accounting Standards* [1940], generally considered a classic by accounting academics [Previts and Merino, 1979, p. 274]. For more details about Littleton, see Bedford and Ziegler [1975].

[15]Kinney [1990] did not classify financial accounting articles by specific topics.

and the authors with the greatest impact on the Leading Authors.

Table 5 shows the number of citations of articles and books in the work of the Leading Authors. To be counted, the citation for a journal article needed to include, as a minimum, author, title of article, and journal. The citation for a book needed to include, as a minimum, author and title of book. These minimum requirements provided consistency in the collection of the citations and enhanced objectivity in the analysis.[16] The relatively small number of papers in proceedings were counted as journal articles (and the proceedings were counted as a journal). The relatively small number of chapters in books were counted

Table 5
Citations of Articles and Books

	Articles		Books		Articles and Books	
	Total	Ave.	Total	Ave.	Total	Ave.
A. C. Littleton	19	.6	91	3.1	110	3.8
DR Scott	0	0	1	.1	1	.1
Herbert Taggart	1	.1	0	0	1	.1
Stanley Howard	3	.3	31	3.4	34	3.8
Perry Mason	39	4.3	26	2.9	65	7.2
William Paton	2	.2	6	.6	8	.8
C. Rufus Rorem	3	.3	4	.4	7	.8
L. L. Briggs	2	.3	3	.4	5	.6
James Dohr	2	.3	3	.4	5	.6
Howard Greer	6	.8	0	0	6	.8
Harry Kerrigan	42	5.3	51	6.4	93	11.6
E. L. Kohler	6	.8	2	.3	8	1.0
Gabriel Preinreich	7	1.0	20	2.9	27	3.9
Frank Smith	16	2.3	9	1.3	25	3.6
Henry Sweeney	53	7.6	97	13.9	150	21.4
William Castenholz	1	.2	1	.2	2	.3
David Himmelblau	0	0	0	0	0	0
Lloyd Morey	1	.2	5	.8	6	1.0
Hiram Scovill	0	0	0	0	0	0
Total	203	1.2	350	2.0	553	3.2

[16]During this period references were not listed at the end of articles as is the current practice of *The Accounting Review*. Instead, they were generally provided in footnotes. Also, the references were frequently incomplete with respect to dates and publishers (for books). A work was counted as being cited once regardless of how many times it was referenced in the same article.

as books. Self-citations were eliminated since this analysis focuses on which journals/authors had the greatest impact on the Leading Authors. No adjustments were made for the relatively few co-authored works (i.e., a co-author was given "full"credit in counting publications).

There are two remarkable facts shown in Table 5. First, there are very few citations in the work of the Leading Authors. For the 172 articles examined, the average number of citations per article is only 3.2. Only Kerrigan and Sweeney averaged more than ten citations per article. Of the 19 Leading Authors, 12 of them averaged one or fewer citations per article. Himmelblau and Scovill provided no citations.

The second remarkable fact is that books were cited more often than articles. The ratio of book citations to article citations is 1.72 (350/203). Thirteen of the 19 Leading Authors cited books at least as frequently as they cited articles.

Citations play a much more prominent role in recent articles. In Volume LXIV (1989) of *The Accounting Review*, the authors averaged 22.4 citations per article, seven times as many as the Leading Authors. Individually, none of the Leading Authors averaged this many citations. In addition, journal articles were referenced far more than books in 1989. The recent ratio of book to article citations is only .25 (179/716).

Journal references account for most of the change in citation rates over the years. This increase is consistent with current authors writing for other academics while the Leading Authors, many with extensive practical experience, writing for other practitioners. To a large extent the common body of knowledge for current academics is journal articles while the common body of knowledge for practitioners is practice. Thus, the Leading Authors may have assumed that their readers had first hand knowledge of the issues, negating the need to set the stage with numerous journal references.

Journals

Table 6 reports the journals cited by the Leading Authors. The *Journal of Accountancy* is the most cited journal with *The Accounting Review* a close second.[17] Hence, *The Accounting*

[17]Sweeney, Kerrigan, and Mason accounted for over 66% of the citations for journal articles and Sweeney, Littleton, and Kerrigan accounted for over 68% of the citations for books. Thus, citations by these authors determine the results to a large extent. For a discussion of other limitations of citation analysis, see Brown and Gardner [1985a] and Dyckman and Zeff [1984].

Table 6
Most Cited Journals

Name of Journal	Times Cited
Journal of Accountancy	35
Accounting Review	32
Quarterly Journal of Economics	18
Accountant	16
American Economic Review	11
Harvard Business Review	8
Columbia Law Review	7
Electric Railway Journal	7
Harvard Law Review	4
L'Europe Nouvelle	4
Annalist	3
California Law Review	3
Economic Journal	3
Michigan Law Review	3
Minnesota Law Review	3
8 journals (tie)	2
30 journals (tie)	1

Review was well thought of even in its earliest years (at least by the Leading Authors). Two economic and one British journal round out the five most cited journals. Of the 15 journals listed, five are legal journals. One non-English language journal made the list (*L'Europe Nouvelle*).

The current list of influential journals is quite different. The top five journals cited in Volume LXIV (1989) of *The Accounting Review* are *Journal of Accounting Research, The Accounting Review, Journal of Accounting and Economics, Journal of Financial Economics,* and *The Journal of Finance.* Finance journals have replaced economic journals as the most influential nonaccounting journals. In addition, no legal journals appear on the current list of the 15 most cited journals. Instead, journals from accounting, finance, psychology, and economics predominate. Thus, authors have moved away from legal issues to social science areas. Again, this may be a reflection of the change from a practitioner orientation to an academic one. Indicative of this change, the *Journal of Accountancy* went from being the most cited journal by the Leading Authors to a tie for fifteenth place on the citation list of the current authors.

Authors

Table 7 shows the most cited authors of articles.[18] Irving Fisher, an economist, heads the list. The Leading Authors cited seven different articles written by Fisher. George O. May had the most journal article citations for an accountant. Citations of his work included five different articles. Joseph L. Weiner's work involved legal issues contained in three different articles. The fourth most cited author, E. L. Kohler, was referenced four times. Each reference was to a different article. Thus, specific articles were not heavily cited.[19]

Table 7
Most Cited Authors of Articles

Name of Author	Times Cited
Irving Fisher	8
George O. May*	6
Joseph L. Weiner	5
Eric L. Kohler*	4
John Bauer	3
James C. Bonbright	3
W. A. Hosmer	3
A. C. Littleton*	3
Robert H. Montgomery*	3
22 authors	2
129 authors	1

*Member of the Accounting Hall of Fame

Table 8 shows the most cited authors of books.[20] Once again, Irving Fisher heads the list. His book, *The Nature of Capital and Income,* was cited five times by the Leading Authors. William A. Paton's books were cited the same number of times as Fisher's

[18]Since there was little likelihood that authors cited by current authors would match any of those cited by the Leading Authors, a list of recently cited authors was not compiled.

[19]It was sometimes difficult to determine if two authors with the same last name are, in fact, the same person. For example, are the authors Carver and T. N. Carver the same person? However, these ambiguities only affected the less frequently cited authors and did not affect the authors listed by name in Tables 7, 8, and 9. Therefore, no attempt was made to look up the original references.

[20]Since dates of publications were frequently omitted, adjustments for different editions of the same book could not be made. Thus, if the title of a work remained the same from edition to edition, it was counted as the same work. In contrast, if the title changed from edition to edition, the references were treated as different works.

books. His most cited book is *Principles of Accounting* which he co-authored with Russell A. Stevenson. It was cited four times by the Leading Authors. Hatfield's most cited work is *Accounting* (cited five times)[21] while Seligman's most cited work is *Principles of Economics* (cited three times). The only two other works cited five times by the Leading Authors are Geijsbeek's *Ancient Double Entry Bookkeeping* (a translation of Pacioli's *Summa de Arithmetica, Geometria, Proportioni et Proportionalita*) and Taussig's *Principles of Economics*.

Table 8
Most Cited Authors of Books

Name of Author	Times Cited
Irving Fisher	9
William A. Paton*	9
Henry R. Hatfield*	8
E. R. A. Seligman	6
Jacques Bouteron	5
John Geijsbeek	5
Roy B. Kester*	5
Leon Lancour	5
P. D. Leake	5
Gardiner C. Means	5
Robert H. Montgomery*	5
F. W. Taussig	5
Harry A. Finney*	4
Robert M. Haig	4
W. W. Hewitt	4
W. Mahlberg	4
Eugen Schmalenbach	4
Russell A. Stevenson	4
13 authors	3
33 authors	2
189 authors	1

*Member of the Accounting Hall of Fame

[21]Preinreich also cites a 1932 book written by Hatfield called *Accounting, Its Principles and Problems* which is a later edition of his 1927 book which some of the other authors referred to as *Accounting*. Apparently, the other authors shortened the title of his 1927 book in their citations. Moreover, Hatfield's 1927 book appears to be a revision of his earlier book, *Modern Accounting*. Counting these three different titles as the same book, Hatfield's book was cited seven times (see footnote 20).

Table 9 shows the most cited authors of both articles and books combined. Irving Fisher's work is the most cited. Of the first eight authors listed in Table 9, five of them have been inducted into the Acccounting Hall of Fame [Burns, 1987]. Two of the other three's citations (Fisher and Seligman) were oriented toward economics.

The prevalence of economics journals, books, and authors among those most cited by the Leading Authors is not that surprising given the time period under consideration. At that time many accounting courses were taught in Economics departments. More importantly, most of the Leading Authors with Ph.D.'s obtained their doctorates in fields other than accounting, presumably in economics.[22] For example, Littleton received a Ph.D. in Economics in 1931, eight years prior to the first Ph.D.

Table 9
Most Cited Authors of Articles and Books Combined

Name of Author	Times Cited
Irving Fisher	17
William A. Paton*	10
Henry R. Hatfield*	9
George O. May*	8
Robert H. Montgomery*	8
E. R. A. Seligman	8
Roy B. Kester*	6
P. D. Leake	6
James C. Bonbright	5
Jacques Bouteron	5
Frank A. Fetter	5
John B. Geijsbeek	5
Leon Lancour	5
A. C. Littleton*	5
Gardiner C. Means	5
Eugen Schmalenbach	5
F. W. Taussig	5
Joseph L. Weiner	5
12 authors	4
18 authors	3
50 authors	2
283 authors	1

*Member of the Accounting Hall of Fame

[22]Rorem is the only Leading Author who may have obtained a Ph.D. in Accounting. All the other Leading Authors with Ph.D.'s obtained their degrees before their schools offered a doctorate in accounting.

in Accountancy at the University of Illinois. Thus, the influence of economics on accounting is understandable.

ARTICLE LENGTH

An additional analysis examined the article length in pages. Overall, the average length of all articles analyzed is 8.6 pages.[23] The average length of articles ranges from 4.8 pages (Dohr) to 15.1 pages (Sweeney). Eleven of the Leading Authors wrote articles averaging less than ten pages. The average length of articles in Volume LXIV (1989) of *The Accounting Review* is 18.3 pages. Thus, the Leading Authors tended to write short papers by current standards. Perhaps this was due to research method, fewer citations, and a tendency to write for busy practitioners.

SOME BIOGRAPHICAL INFORMATION

Table 10 contains information on the doctoral education of the Leading Authors and their primary affiliations while they were publishing in *The Accounting Review* during this time period. Information on Ph.D.'s was obtained from the *Comprehensive Dissertation Index, 1861-1972* [Xerox University Microfilms, 1973]. Primary affiliation information was obtained from descriptions of the contributors given in *The Accounting Review* as well as from "University Notes" and "Association Notes" which were also published in *The Accounting Review*. The affiliations, in chronological order, span the time from the year of the author's first article in *The Accounting Review* to the year of the author's last article during 1926-1945.[24] Leaves of absences were excluded.

Only ten of the 19 Leading Authors earned a Ph.D. This is in sharp contrast with the current, essentially Ph.D. only, authorship of *The Accounting Review*. Interestingly, of the eight Leading Authors who earned a Ph.D. subsequent to the first issue of *The Accounting Review* (March 1926), all of them published in

[23]There was a noticeable change in the typeset of *The Accounting Review* beginning with the March 1929 issue. The page length of articles published before this date were adjusted to compare with the length of articles after this date based on an estimate of words per page.

[24]There is a conspicuous absence of information about Eric Kohler in *The Accounting Review* during the time that he served as editor (1928-1942). However, Mautz and Previts [1977] provide many details [also see Cooper and Ijiri, 1979]. During the 1926-1945 period, Kohler also worked for Arthur Andersen & Co. (1933-1937) and during World War II he was a member of the Office of Emergency Management and the War Production Board.

Table 10
Doctoral Programs and Primary Affiliations

Author	Ph. D. (School-Year)	Primary Affiliations
A. C. Littleton	U. of Illinois-1931	U. of Illinois
DR Scott		U. of Missouri
Herbert Taggart	U. of Michigan-1928	U. of Michigan
Stanley Howard	Princeton U.-1916	Princeton U.
Perry Mason	U. of Michigan-1938	U. of Michigan; Antioch College; U. of California (Berkeley)
William Paton	U. of Michigan-1917	U. of Michigan
C. Rufus Rorem	U. of Chicago-1929	U. of Chicago; Committee on the Cost of Medical Care; Julius Rosenwald Fund; American Hospital Association and American Public Welfare Association
L. L. Briggs		U. of Vermont
James Dohr		Columbia U.
Howard Greer		Ohio State U.; U. of Chicago and Institute of American Meat Packers; Kingan & Co.
Harry Kerrigan	Northwestern U.-1938	Northwestern U.
E. L. Kohler		Northwestern U.; Kohler, Pettengill & Co.; Tennessee Valley Authority; Petroleum Administration for War
Gabriel Preinreich	Columbia U.-1936	Practicing CPA in New York City
Frank Smith	Yale U.-1935	Yale U.; U. of Rochester
Henry Sweeney	Columbia U.-1937	Practicing CPA in New York City; Commercial Investment Trust Corporation; Federal Communications Commission
William Castenholz		LaSalle Extension U.
David Himmelblau		Northwestern U.
Lloyd Morey		U. of Illinois
Hiram Scovill		U. of Illinois

The Accounting Review before receiving their doctorate.[25] According to the *Comprehensive Dissertation Index* [Xerox University Microfilms, 1973, p. XIV], for older dissertations it was a common prerequisite that research results were to be published

[25]Of the eight, all except Sweeney published in *The Accounting Review* after recieving their doctoral degrees. Sweeney published all seven of his articles before receiving his Ph.D. from Columbia in 1937.

in order to receive the Ph.D. Apparently, this was the case for these eight Leading Authors; based on dissertation titles and, where necessary, an examination of the dissertations themselves, each of the eight authors published articles related to their disserations in *The Accounting Review* prior to receiving their degrees. Thus, while other types of articles were published in *The Accounting Review*, it did serve as an outlet for pre-doctoral dissertation results. Currently, authors typically publish dissertation results after earning a Ph.D. In addition, a publication in *The Accounting Review* is often a key for tenure rather than a prerequisite for a Ph.D.

Table 10 shows that five of the Leading Authors had primary affiliations outside of academe while they were publishing in *The Accounting Review*. Furthermore, at least four other authors held positions outside of academe in addition to their academic appointments: Paton was a partner in a public accounting firm; Dohr was a partner in a law firm; Castenholz was a member (sole partner?) of the public accounting firm of W. B. Catenholz & Co.; and Morey was the comptroller of the University of Illinois.[26] Thus, at least nine of the Leading Authors had significant non-academic positions while they were publishing in *The Accounting Review.* Again, this is in sharp contrast to the current authorship of *The Accounting Review.* As noted, the practical orientation of the Leading Authors, at least in part, accounts for their choice of topics, research methods, lack of citations and article length.

Although not directly related to publishing in *The Accounting Review,* Table 10 shows two other interesting relationships. First is the tendency of the authors to become faculty members at their doctoral granting institution. Of the seven authors holding a Ph.D. who remained in academe, five of them stayed at their doctoral granting institution. The exceptions are Mason who went to Berkeley (leaving Antioch College) about the time of receiving his degree from Michigan and Smith who went to Rochester about the time of receiving his degree from Yale.

The other interesting relationship is the tendency of the Leading Authors who remained in academe to stay at the same institution. Of the 14 such authors, the only exceptions were Mason and Smith.[27] Furthermore, there is no mention in "Uni-

[26]Morey went on to become the president of the University of Illinois [Burns, 1987].

[27]Paton did take a leave of absence at Berkeley and Briggs took a leave at Harvard.

versity Notes" or "Association Notes" of any of these 14 individuals changing schools through the remainder of the 1926-1945 period.[28] Thus, the market for academics in this time period was considerably different from what it is today.

Other Biographical Information

Eight of the Leading Authors were involved in the editorial process of *The Accounting Review* during 1926-1945. Paton, Kohler, and Littleton were, in turn, the editors during the period.[29] In addition, Littleton, Scott, Taggart, Rorem, Kerrigan, and Sweeney served either as assistant editors or on the editorial board. As is the case today, there appears to be a relationship between being an accomplished author and being involved in the editorial process.

Many of the Leading Authors were actively involved in the American Accounting Association as evidenced by their terms as president. Ten of the Leading Authors served as president [AAA, 1989]: Scovill (1920), Paton (1922), Himmelblau (1929), Greer (1932), Dohr (1934), Kohler (1936 and 1946), Taggart (1942), Littleton (1943), Mason (1950), and Smith (1954). Kohler was the only AAA president to serve twice. By way of comparison, only two (William Beaver and Yuji Ijiri) of the 19 Leading Authors from the 1966-1985 period have served as president to date. Thus, the AAA activities of the early Leading Authors transcended publishing in *The Accounting Review.*

SUMMARY AND CONCLUDING REMARKS

This paper summarizes some of the characteristics of the work of the Leading Authors of *The Accounting Review* during the period 1926-1945 and compares them to current standards. The accounting world today is much different from the 1926-1945 time period. *The Accounting Review* was heavily influenced by authors with extensive practical experience. Not surprisingly, their work in terms of the topics, research methods, citations, and article length reflects this practical orientation. Moreover, at a time when standard setting bodies were just

[28]In 1936, the year after his last article in *The Accounting Review* during this time period, Castenholz resigned from LaSalle Extension University and took an administrative position (vice-president and educational director) with the American Academy of Accountancy. This seemed more like a change in careers (i.e., leaving academe) than a change in institutions.

[29]Technically, Littleton was the chairman of a three person editorial board rather than editor.

beginning, to some extent the authors of that time were the standard setters. Through convincing arguments, they could directly influence the accounting practices of their readers.

Interestingly, the standard setters of today use essentially the same research method as the Leading Authors, the deductive method. While members of the Financial Accounting Standards Board may be influenced somewhat by quantitative/empirical studies, it would be difficult to characterize their decision making process as other than being based on deductive type methods; clearly, they do not rely to a heavy extent on quantitative/empirical methods.

Recent contributors to *The Accounting Review* do rely on these methods. It is well known that most observers believe that the current wave of empiricism has had little impact on practice. Moreover, it is often lamented that academics typically pay little attention to standard setting while it is in process. In addition, the American Accounting Association is concerned by the decline in membership from the practitioner ranks. Perhaps if *The Accounting Review* would broaden its editorial practices to once again include deductive type pieces covering current issues, improvement in these areas could be made.

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AN EARLY ATTEMPT AT BALANCE SHEET CLASSIFICATION AND FINANCIAL REPORTING

Abstract: A recent investigation into the archives of the English East India Company has produced the earliest known *classified* balance of accounts. Dated May 1, 1782, this statement predates the model balance sheet prescribed by the Companies Act of 1856 by some seventy-five years. This classified balance of accounts, together with extensive supplementary notes accompanying it, may be said to represent the earliest manifestation of financial reporting.

The history of the British balance sheet[1] may be divided into two dominant periods: modern and premodern. What marks the beginning of the modern period is the model balance sheet prescribed by the Companies Act of 1856 [Edey and Panitpakdi, 1956]. This statutory model formally introduced the notion of balance sheet classification which has since served as a general guide in the preparation of the statement. In contrast to the modern period, the premodern period is characterized by an absence of balance sheet classification [Chatfield, pp. 68-72]. During this period, the balance sheet, known as balance of accounts, was prepared in unclassified form. It simply listed the company's assets and liabilities in account form and with no apparent order of succession. Included in the liabilities was the stockholders' investment. The difference between the total assets and total liabilities was shown as a balancing figure "in

[1]For studies on the history of British corporate financial reporting, see R. H. Parker, ed., "Select Bibliography of Works on the History of Accounting, 1981-1987," *Accounting Historians Journal,* Vol. 15, No. 2, Fall 1988; "Select Bibliography of Works on the History of Accounting, 1978-80" and "Select Bibliography of Works on the History of Accounting, 1969-1977," in R. H. Parker, ed., *Bibliographies for Accounting Historians* (New York: Arno Press, 1980); the studies are listed under "P. Corporate Accounting." See also: T. A. Lee and R. H. Parker, eds., *The Evolution of Corporate Financial Reporting* (New York: Garland Publishing, Inc., 1984).

favour of" or "against" the company.[2] This period, which covers some three hundred years, extends from the second half of the sixteenth century to the middle of the nineteenth century.

Although the preparation of the balance of accounts in unclassified form was the general practice until the middle of the nineteenth century, a recent investigation into the archives of the English East India Company has produced a *classified* balance of accounts dated May 1, 1782. So far as it is known, this classified balance of accounts is the only extant statement from the premodern period. Published some seventy-five years before the introduction of the 1856 model balance sheet, this balance of accounts is part and parcel of an extensive audit report dealing with the East India Company's financial condition. The significance of this document cannot be overemphasized when one bears in mind that, throughout this period, none of the English language accounting treatises dealt with the subject of classification. In fact, the only accounting treatise that is known to have addressed this subject is that of the Dutch author, Simon Stevin, published some one hundred and seventy-five years earlier, in 1608. Writing of this work, Littleton notes that Stevin "presents models for financial statements which are more in harmony with modern practice than many of those subsequently used by others." He then goes on to say: "It is interesting also to note that Stevin's balance-sheet is in the form now followed in England and to speculate on the question of whether or not this Dutch author was the inspiration for the British practice" [Littleton, p. 134]. While the 1782 classified balance of accounts does not in any way challenge the existing view of the financial reporting practices of the period, it nevertheless provides us with fresh insights into the history of the British balance sheet.

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[2]For published examples of unclassified balance sheets, see: A. C. Littleton, *Accounting Evolution to 1900* (New York: American Institute Publishing Co., Inc., 1933), pp. 138-9; 141-4; 146-7; W. R. Scott, *The Constitution and Finance of English, Scottish and Irish Joint-Stock Companies to 1720* (Cambridge: University Press, 1912; Reprinted by Peter Smith, 1968), p. 175; K. N. Chaudhuri, *The Trading World of Asia and the English East India Company, 1660-1760* (Cambridge: University Press, 1978), p. 424; Vahe Baladouni, "Financial Reporting in the Early Years of the East India Company," *Accounting Historians Journal,* Vol. 13, No. 1, Spring 1986, p. 27. For unpublished examples of the East India Company's unclassified balance sheets, see: India Office Records, Accountant General, L/AG/18/2/4 (1757-1778), L/AG/18/2/3 (1787-1793), L/AG/18/2/7 (1796-1810).

This paper is an attempt at (1) analyzing the classification scheme employed by the East India Company; (2) identifying the information generated by the classified statement as well as the supplementary notes, and (3) assessing the place of the said classified balance of accounts in the evolutionary development of the balance sheet. But, first, it may be helpful to look at the circumstances which led to the preparation of the classified balance of accounts.

WHAT PROMPTED THE PREPARATION OF THE CLASSIFIED BALANCE OF ACCOUNTS?

It all began at a Stockholders' Meeting of the English East India Company (formally known as Untied Company of Merchants of England Trading to the East Indies) held in the Company offices in London on a Monday, April 8, 1782. During this meeting, the Board of Directors presented the Company's balance of accounts dated March 1, 1782. This balance of accounts was not, however, well received. Serious questions about its credibility led the stockholders to move and resolve "that a Committee of Thirteen Proprietors be appointed to examine into the General State of the Debts, Credits and Effects both in England and abroad, and to report the same with all convenient speed to a General Court of Proprietors." [IOR, Court Minutes, B97, pp. 728-9]. It was also moved and resolved that "the appointment of the said Thirteen Proprietors be put by the Ballot at this House on Tuesday the 16th Instant . . . and that the determination thereof be reported to the General Court the same Evening" [IOR, Court Minutes, B97, p.729]. In accordance with this resolution, the elections were held on the appointed day.[3]

Some two months after the election, on June 5, 1780 [1782], the Committee issued a 46-page report on the financial condi-

[3]William Wilson, Esq., Chairman of the Scrutineers (the others being Warwick Roades and James Donaldson), brought in the Report which was read to those present. In part, the report said: " . . . we being . . . appointed to report upon whom the choice falls have accordingly examined the said [voting] Lists, and find that the Thirteen following persons have the Majority of Votes for their appointment as Members of the said Committee, viz. John Call, Lionel Darell, Jr., Henery Dodwell, Phillip Francis, Keane Fitzgerald, William Jones, Stephen Lushington, William Mills, Jr., Robert Orme, Thomas Bates Rouis, Nathaniel Smith, John Frost Widmore, Jacob Wilkinson" [IOR, Court Minutes, B98, pp. 16-7]. Of these, (Sir) Lionel Darrell (1742-1803), (Sir) Stephen Lushington (1744-1807), Nathaniel Smith (1730-1794), and Jacob Wilkinson (*c* 1716-1791) were Company directors. Robert Orme (1728-1801) was historiographer to the East India Company [Makepeace to author].

tion of the Company. The report opened with the charge to the Committee: "to examine into the General State of the Debts, Credits, and Effects, both in England and Abroad, and to report the same with all convenient Speed to a General Court of Proprietors" [EIC, *Report*, p. 1; hereinafter *Report*], followed by the Board of Directors' unclassified balance of accounts [*Report*, pp. 2-5; Exhibit 1]. On the "Dr." side of the statement appeared eighteen items of liability, including the stockholders' investment, while on the "Cr." side, twenty-two asset items. A favorable balancing figure of £3,687,104 showed on the "Dr." side. Footnotes followed the statement. Of these, one was in regard to the balancing figure and the other, the Company's dead stock. With the assistance of the Company officers, the Committee had investigated each item on the balance of accounts and noted its findings with appropriate remarks [*Report*, pp. 6-15]. The remarks ranged from "certification" to providing additional information and explanation in support or revision of an item.

Following this examination or audit, the Committee prepared a revised statement, updated to May 1, "in the usual official Mode," that is, in unclassified form [*Report*, pp. 16-7]. The Committee was induced to prepare this statement in order to

> point out in the most perspicuous Manner, how difficult it would be for the Proprietors to discriminate and dissect such an Account, and how liable they and the Public were to be misled (without the Imputation of Design in any one) by the Inspection of a General Estimate; where on the Credit Side, the Quick Stock in England is blended with the several Quick Stocks abroad, and one general Total involves many Articles which are afloat, at risque, or obviously dormant and non-productive; thereby giving the Whole an equal Degree of creditable Value, in Opposition to Debts, which are actually due and must be paid in England; as well as others which will ultimately come to be paid there, if not liquidated abroad [*Report*, p. 18].

But the Committee did not leave matters there. Recognizing that an unclassified balance of accounts fell short of providing optimally useful information to the stockholders and the investing public alike or, even worse, misled them, the Committee took upon itself to develop a classified balance of accounts — something which had not been done before, nor was it going to be done for the remainder of the Company's life through 1858.

Eſtimate of the General State of the Eaſt-India Company's Debts, Credits and Effects, both in England and Abroad, on the Firſt Day of March, 1782.

		Dr.
To Bonds ſtanding out bearing Intereſt	£. 1,305,500	£. 1,497,000
To ditto, depoſited in the Bank for a Loan	191,500	
To ditto, ſtanding out, not bearing Intereſt		13,254
To Bills of Exchange unpaid — from India 444,524 — from China 746,401		1,190,925
To Cuſtoms on Goods ſold and unſold		1,340,562
To the Exchequer, for the laſt Payment to Government, per Agreement, for a Continuation of the Company's Right to an excluſive Trade, &c.		100,000
To Freight and Demorage		498,700
To Supra Cargoes Commiſſion on Goods ſold and unſold		70,000
To Proprietors of Private Trade		28,000
To Alms-houſes at Poplar		4,794
To Intereſt on Military and Contingent Funds more than has been applied to the Purpoſes of the ſame		93,226
To the Bank of England for Intereſt on Loans [illegible] per Annum		42
To Warrants paſſed the Court, unpaid		71,900
To what owing in the Department of the Committee of Shipping		156,512
To Intereſt on Annuities		53,837
To ditto on Bonds		57,743
To Dividends on Stock unpaid, including what remains of the half Year's dividend due at Chriſtmas laſt, at £. 8 *per Cent. per Annum*		63,789
To what paid by the Adventurers, being £. 87 10*s. per Cent.* on £. 3,200,000		2,800,000
To Balance againſt laſt Quick Stock from Bombay, the Debt due from Ragobah being deducted from the Credit of the ſame		109,794
	£. 8,141,078	
To Balance	3,687,104	
	£. 11,828,182	

London, the 5th April, 1782.

Eſtimate of the General State of the Eaſt-India Company's Debts, Credits and Effects, both in England and Abroad, on the Firſt Day of March, 1782

		Cr.
By what due from Government to the Company more than the Amount of Annuities		£. 1,207,560
By Caſh, its Balance, on the firſt March, 1782		151,680
By the Company's ſeparate Fund — in Caſh £. 94,536 — in Bonds 191,500		286,036
By the Amount of Goods ſold, not paid for (Diſcount deducted)		47,344
By the Value of Goods in England unſold (ditto)		3,376,629
By the prime Coſt of Goods, imported per Prince and Belliſnot, not yet unladen		207,729
By what owing from the Honourable Board of Ordnance for Saltpetre delivered		270,565
By Balance of Quick Stock at Bengal, as per Abſtract, dated the 23d April, 1781. *Current Rupees* 194,45,232		
Deduct what received for the Purpoſe of conſtituting a Military Fund 8,00,000		
Current Rupees 186,45,232		
Ditto Belliſnot's Cargo arrived in England, and valued at Prime Coſt 14,78,216		
Current Rupees 171,67,016		
Add Cargoes of Ships arrived at Bengal ſince the above Quick Stock, and not included therein 2,42,000		
Current Rupees 180,42,958 at 2*s.* 3*d.*		4,029,832
By Balance of Quick Stock at Fort St. George, as per Abſtract, dated 9th January, 1781. *Pagodas* 30,01,577		
Add Cargoes of Ships arrived at ditto ſince the above Quick Stock and not included therein 28,415		
Pagodas 30,29,992 at 8*s.*		4,011,997
By Balance of Quick Stock at Bencoolen, dated 16th October, 1780 *Spaniſh Dollars* 412,577 at 5*s.*		103,144
By ditto from laſt Books at St. Helena, ending 30th September, 1780.		21,338
By ditto from ditto at China, as per Eſtimate received of Thomas Fitzmaugh, Eſq; in November, 1781 *Taels* 1,097,288 at 6*s.* 8*d.*		365,763
By Cargoes of Ships ſent out in Seaſon 1780		373,758
By ditto of ditto paid for, for Exports of Seaſon 1781		146,774
By Silver paid for remaining in the Treaſury in England		779
By Impreſt paid Owners of Ships not arrived in England		124,567
By the Value of the Eaſt-India Houſe and Warehouſe (as eſtimated by the Company's Surveyor)		233,616
By the Value of Ships, Sloops, and Veſſels (excluſive of thoſe deſtined aboard)		47,060
By what the Company paid for their dead Stock in India		400,000
By Expenſes defrayed for the Subſiſtence of French Priſoners in India, and incident Charges, as per General Account delivered		260,687
By what remains due for Expenſes incurred in Expedition to Manilla, as per ditto		139,877
By Hoſpital Expenſes for His Majeſty's Troops at Fort St. George, Bengal and Bombay, as per ditto		21,447
	£. 11,828,182	

Baladouni: An Early Attempt at Balance Sheet Classification
Accounting Historians Journal, Vol. 17 [1990], Iss. 1, Art. 10

Exhibit 1

While it is clear from the foregoing discussion that the Committee's immediate reason for preparing the balance of accounts in classified form was to provide a better picture of the Company's liquidity, other questions also come to mind. One such question is: what brought about the need for preparing a classified statement at this particular time? To simply say that the Company was experiencing considerable difficulty in meeting its obligations at the time is not a satisfactory answer, for it was not the first time that the Company was plagued with liquidity problems. In fact, as recently as ten years earlier, in 1772, the Company's affairs were "greatly embarrassed, and they were under the necessity not only of borrowing large sums of the Bank of England to meet existing demands, but also of making application to the public for a loan" [Auber, pp. 303-5]. The other question that lurks on one's mind is why did the Company not continue to prepare its balances of accounts along this model? In regard to the latter question, one may speculate that the Company went along with the publication of the 1782 classified balance of accounts as a public relations gesture, but was not ready to make a practice of disclosing information to this extent on a continuing basis. These questions call for further investigation.

ANALYSIS OF THE CLASSIFICATION SCHEME

For an intellectually satisfying analysis of a classification scheme, attention must be turned to (1) the nature of the object divided; (2) the criterion of division; and (3) the parts resulting from the classification. It is with this perspective that East India Company's 1782 classified balance of accounts will be examined here.

The Nature of the Object

In epistemology,[4] the term "object" is used to refer to the thing toward which consciousness is directed or, stated simply, the thing perceived or observed. The person doing the perceiving or observing is the "subject." Concerning a knowledge-

[4]On epistemological as well as ontological issues in current accounting literature, see: Wai Fong Chua, "Radical Developments in Accounting Thought," *Accounting Review*, October 1986, pp. 601-32 and Ruth D. Hines, "Financial Accounting: In Communicating Reality, We Construct Reality," *Accounting, Organizations and Society*, Vol. 13, No. 3, pp. 251-61. See also: William H. Beaver, *Financial Reporting: An Accounting Revolution*, Englewood, N.J.: Prentice-Hall, 1989; Yuji Ijiri, *Theory of Accounting Measurement*, Studies in

situation, it is usually asked: Which of the two components impresses greatly its own character upon knowledge — the subject or the object? As it is to be expected, a question put in antithetical form is bound to produce opposing responses. Thus, at one extreme of the issue is the idealistic school which holds that the subject impresses greatly his/her own character upon knowledge, while at the other extreme is the realistic school which claims that knowledge is determined mainly by the object [Runes, s. v. "epistemology"]. To be sure, it is not necessary to dwell on this controversy except to suggest perhaps the obvious, that knowledge is ultimately determined by the interplay of both subject and object.

Whatever the interplay between subject and object, it must be recognized that the nature of an object provides special characteristics to a classification process. It makes a big difference, for example, whether the object of consideration is a real whole or a logical whole. An object is a real whole if it is an internally unified entity such as an organism: a plant, an animal, a human being. In contrast to a real whole, an object is a logical whole if the parts possess only external unity. Examples of logical wholes are a library, an academic institution, or a company's stock (assets). In all these cases, the parts that make up the whole are disparate items, that is, distinct and separate from each other by their nature. They are unified only by some overarching concept. For example, taking a close look at a company's stock, or more particularly, at the stock of the East India Company, one would note such diverse items as cash and warehouses, receivables and forts and fortifications, vessels and merchandise. Despite the obvious differences between them, they may collectively constitute a logical whole if, in one way or another, they can be viewed from a given logical perspective. In fact, the variety of the East India Company's stock or, for that matter, any company's stock, may be viewed as a logical whole since all such items contribute to the same overall goal: to assist the company in making a profit.

The Criterion of Division

Unlike the division of a real whole, the division of a logical whole can be made only according to some intellectual crite-

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Accounting Research No. 10, Sarasota, Fl.: American Accounting Association, 1975; Yuji Ijiri, *The Foundations of Accounting Measurement*, Englewood Cliffs, N.J.: Prentice-Hall, 1967; George Sorter, "An 'Events' Approach to Basic Accounting Theory," *Accounting Review*, January 1969, pp. 12-19.

rion. Now while there may be several criteria for dividing a logical whole, it is very likely that only a limited number of them would lead to a good division. Whatever the number of possible divisions, every division has to be guided by a definite criterion, that is, a fixed point of view. The reason for this requirement is, of course, to ensure the relative clarity of the parts. And, to be sure, a good division helps not only to systematize the various parts of an object, but also to further one's theoretical understanding of it.

For example, a good division comes from the pen of Adam Smith. In his epoch-making work, *The Wealth of Nations,* 1776, Smith divided stock or capital into two classes: fixed and circulating. Circulating stock or capital, he observed, is that which is "continually going from him [the merchant] in one shape, and returning to him in another, and . . . by means of such circulation of successive exchanges . . . yield him . . . profit." Unlike circulating stock, fixed stock or capital "yield[ed] a revenue or profit without changing masters or circulating . . . " [Adam Smith, Vol. 1, p. 331]. As Smith himself indicated, this division of stock was based on the criterion of "capital employment."

It was some six years after the publication of Adam Smith's work that the East India Company issued its first classified balance sheet. However, this balance sheet was based on a markedly different criterion of division. It divided the Company's stock into two general classes of stock: quick and dead. Now according to the *Oxford English Dictionary,* the term "quick stock" referred to any stock which was "productive of interest or profit," whereas the term "dead stock" referred to any stock which lay "commercially inactive or unemployed, unproductive." But this distinction between quick and dead stock is at best confusing and at worst mistaken. Since all items of stock contribute in one way or another to the operation of the company, it would be incorrect to regard any stock as "inactive" or "unproductive."

Where does, then, the error or confusion lie? Anyone who has ever given thought to it is well aware of the fact that a dictionary definition is of necessity general. It rests on vast amounts of the literature of the period and it, therefore, may conceal a great deal more than it reveals. This problem is, however, partly overcome wherever a dictionary provides specific quotations from the literature. In reviewing the quotations given for quick and dead stock, one comes across a particular sense of the word "productive." This sense is revealed in the

following quotation: "The quick stock of both companies shal be paid for discharge of their debts" [*OED*, s. v. "quick"]. It takes no great imagination to realize that in this context the word "productive" meant the ability of a particular stock to serve as a means for paying a company's debt.

It was in this sense that the Committee used the word "productive." In fact, in its long and detailed report the Committee often referred to a particular stock's "productive or effective value" as its ability to generate cash in order to pay the Company's obligations. To quote: "The Part generally deemed Quick Stock, which is Cash, or what is readily convertible into cash, carries its real Value along with it." [*Report*, p. 44]. In contrast, the term "dead stock" referred to those items of stock which could not be converted into cash to pay for the Company's obligations without interfering with the normal operations of the business. This point is well made in the following statement: "The Articles under the Head of Dead Stock must evidently remain so during the Existence of the Company; and though in their present State they may be well worth the Estimated Value, the Amount cannot be converted to any other use" [*Report*, p. 22].

It is interesting to note here that another term, "assets," which has since come to replace the term "stock," had the same connotation in English law as early as the 1530s [*OED*, s. v. "assets"]. At that time, the term "assets" was in the collective singular like "alms," "riches," and "eaves." Today it is treated as a plural and has a singular, "asset." "Assets" entered the English vocabulary via the French. The form it took in Old French was *asez*, whence *assez* in Modern French. In Old Provençal, *assatz;* Old Spanish, *asaz;* Portuguese, *assaz, assas;* Italian, *assai.* In all these forms the word means "enough." According to the *OED*, "the origin of the English use [of the word assets] is to be found in the Anglo-French law phrase *aver assetz* 'to have sufficient,' viz. to meet certain claims" or, stated somewhat differently, to have enough to pay one's debts.

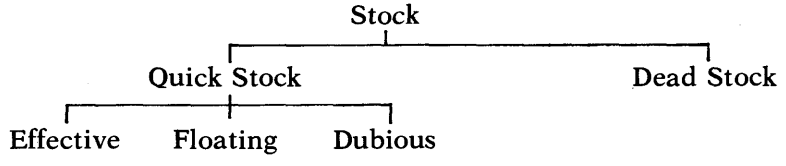
The Parts Resulting from the Division

In its *Report*, the Committee had argued that the time-honored way of preparing the balance of accounts, namely, in unclassified form, not only did not help assess the solvency of a company adequately, but worse than that it misled its readers. The unclassified balance of accounts caused the readers to believe that "the Whole [stock carried] an equal Degree of

creditable Value, in Opposition to Debts" or, stated somewhat differently, conveyed the presumption that all items of stock had an equal debt-paying ability. But since the "various Articles [items of stock] . . . could not be esteemed of the same productive or effective value," that is, convertible into cash for the payment of debts, the Committee went on to say that

> it would . . . elucidate the Value and Destination of the component Parts of the several Quick Stocks, if they were classed and arranged under distinguishing Heads, each of which should comprehend on the Debit Side articles correspondent to those on the Credit Side; and at one View show the Balance of either Side of each Class [*Report*, p. 18].

Based on this criterion of productive or effective value, the Committee then devised a classification scheme, which upon application, produced, as it will be seen a little later, a balance of accounts of considerably greater informational value than the unclassified statement could have possibly generated. This classification scheme is presented below in diagrammatic form:



When applied to the 1782 unclassified balance of accounts, the aforementioned classification scheme produced the following schematic arrangement (in descending order of the stock's productive value):

[Liabilities]	Dr.	[Assets]	Cr.
		Effective Property	
Standing Debts		Standing Credits	
Current Debts		Current Credits and Cash	
Merchandize and Advances		Merchandize and Advances	
Balance			
		Floating Property	
—		Floating Adventures Outward	
Balance			

	Dubious Property
Debts Outstanding	Credits Outstanding
—	Doubtful Credits
—	Stores
Balance	
	Dead Stock
—	Dead Stock
Balance	
Balance (Total of the Balances shown above) [Stockholders' Equity]	

Other features of this balance of accounts were: (1) presentation of items by geographic areas; (2) use of three money columns — England, Abroad, Totals; (3) inclusion of amounts in foreign currencies as well as their rates of exchange; (4) indication of the balance of each component part; (5) recapitulation of assets and liabilities together with the balancing figure (stockholders' equity).

THE INFORMATIONAL VALUE OF THE CLASSIFIED BALANCE OF ACCOUNTS AND SUPPLEMENTARY NOTES

The unclassified balance of accounts had always provided the customary information about the nature and amounts of the Company's stock, debts, and the stockholders' equity in net company stock. What had been missing in such a statement, however, was a classification which would (1) permit the grouping of similar items to arrive at significant subtotals; (2) provide an arrangement so that critical relationships are revealed; and (3) help the reader's attention focus on the most important items. It was in June of 1782 that the East India Company published the first and perhaps only classified balance of accounts that met the foregoing features [Exhibit 2]. Based on the criterion of productive value, this classified balance of accounts, together with the supplementary notes, generated sufficient information to help the stockholders and the investing public assess the liquidity and financial flexibility of the Com-

Exhibit 2

40 (I)

Abstract of General State of the East-India Company's Debts, Credits and Effects, both at Home and Abroad, the 1st May, 1782. *Dr.*

Standing Debts.		Debts in England	Debts abroad.	Total £. Sterling.
		£. Sterling	£. Sterling.	
Owing on Bonds and Annuities		4,489,440		
Owing to Military and Contingent Funds		69,235		4,558,675
Current Debts.				
Bonds, Bills, Dividends, &c. owing in England		1,566,557		
In Bengal — *Current Rupees*, at 2s. 3d.	125,22,709		1,408,805	
Fort St. George — *Star Pagodas*, 8s.	6,33,503		253,401	4,508,202
Bombay — *Bombay Rupees*, 2s. 6d.	95,77,418		1,197,177	
Bencoolen — *Spanish Dollars*, 5s.	329,040		82,262	
Merchandize and Advances.				
Customs, Freight, Commission, &c. in England		1,773,381		
In Bengal, Balances due to Merchants *Current Rupees*, at 2s. 3d.	2,83,922		31,941	1,805,322
Total active Debts		7,898,613	2,973,586	10,872,199
To Balance of effective Property in England		255,919		
Balance of effective Property abroad			1,057,560	
Balance of effective Property in England and abroad				1,313,479
Total £		8,154,532	4,031,146	12,185,678
Floating Adventures outwards.				
To Balance £				852,055
Debts outstanding.				
Bengal Military Fund	9,28,000			
Contingent ditto	2,22,700		129,456	
	11,50,700 *Current Rupees*, at 2s. 3d.			129,456
To Balance dubious Credits in England		422,011	129,456	129,456
To Balance of outstanding Credits and Stores abroad			3,096,098	
To Balance of dubious Credits, outstanding Credits and Stores, in England and abroad				3,518,109
Total £		422,011	3,225,554	3,647,565
Dead Stock.				
To Balance of dead Stock in England		300,676		
To Balance of dead Stock abroad			400,000	700,676
Total £		300,676	400,000	700,676

Recapitulation of the Totals.

To standing Debts	£. 4,558,675
Current Debts	4,508,202
[illegible]	1,805,322
[illegible]	129,456
	11,001,655
To Balance	6,384,319
Total	£. 17,385,974

(I) 41

Abstract of General State of the East-India Company's Debts, Credits and Effects, both at Home and Abroad, the 1st May, 1782. *Cr.*

Standing Credits.		Credits and Effects in England.	Credits and Effects Abroad.	Total £. Sterling.
		£. Sterling.	£. Sterling.	
By Loan to Government		4,200,000		4,200,000
Current Credits and Cash.				
By Government, Treasury and separate Fund in England		708,078		
By Bengal — *Current Rupees*, at 2s. 3d.	66,42,645		747,297	
Fort St. George — *Star Pagodas*, 8s.	4,40,742		176,296	2,573,225
Bombay — *Bombay Rupees*, 2s. 6d.	63,20,637		790,080	
Bencoolen — *Spanish Dollars*, 5s.	245,897		61,474	
Merchandize and Advances.				
By Goods in Warehouses and River		3,156,454		
At Bengal — *Current Rupees*, at 2s. 3d.	143,66,183		1,616,196	
Fort St. George — *Star Pagodas*, 8s.	7,16,353		286,541	5,412,453
Bombay — *Bombay Rupees*, 2s. 6d.	11,95,496		149,437	
Bencoolen — *Spanish Dollars*, 5s.	80,144		20,037	
China — *Tales*, 6s. 8d.	551,368		183,789	
Total active Property in England and Abroad £		8,154,532	4,031,146	12,185,678
Floating Adventures outwards.				
By Cargoes of Ships in 1780 and 1781, and Impress £				852,055
Credits outstanding.				
By Bengal — *Current Rupees*, at 2s. 3d.	39,71,502		446,794	
Fort St. George Presidency *Star Pagodas*, 8s.	8,86,563		1,627,825	2,074,619
Ditto Subordinates	31,83,000			
Doubtful Credits.				
By Subsistence of French Prisoners, Hospital and Manilla		422,011		422,011
Stores.				
By Bengal — *Current Rupees*, at 2s. 3d.	66,69,250		750,291	
Fort St. George — *Star Pagodas*, 8s.	4,36,837		174,735	
Bombay — *Bombay Rupees*, 2s. 6d.	11,82,932		147,866	1,152,935
Bencoolen — *Spanish Dollars*, 5s.	226,822		56,705	
St. Helena			21,338	
Total of Stores, outstanding and doubtful Credits £		422,011	3,225,554	3,647,565
Dead Stock.				
By Warehouses, Sloops and Vessels in England		300,677		
By the several Presidencies in India, according to *Lord Godolphin's* Award in 1702			400,000	700,676
Total dubious and dormant Property £		300,676	400,000	700,676

Recapitulation of the Totals.

By standing Credits	£. 4,200,000
Current Credits and Cash	2,573,225
Merchandize and Advances	5,412,453
Floating Adventures outwards	852,055
Credits outstanding	2,074,619
Doubtful Credits	422,011
Stores	1,152,935
Dead Stock	700,676
Total	£. 17,385,974

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pany. Here are some of the highlights of the 1782 Financial Report.

Effective Property

The Committee brought under this heading the most productive quick stock "which is Cash, or what is readily convertible into Cash" [*Report*, p. 44]. Then as now, "readily" meant promptly, without delay, with facility and quick efficiency. This section was comprised of both short-term (Current Credits and Cash; Merchandize and Advances) and long-term (Standing Credits) items. The long-term item was a receivable from the British Government. This receivable was viewed as a potential source of cash which could be used to pay the long-term creditors: bondholders, annuitants, and others. The short-term items were to be used to meet the Company's current obligations.

From the notes to the balance of accounts, the reader was informed that the "Current Credits and Cash" item included an amount of £286,036 which represented

> the Company's proper and separate Fund, not liable to be involved in their commercial Operations, but applicable to the Augmentation of their Dividends without Participation of the Public, and ought to have been set aside and kept separate, unless introduced as a Loan . . . [*Report*, p. 22].

Had this amount been excluded from the effective property section or offset by a liability account, the favorable balance of £255,919 would have changed to an unfavorable balance of £30,117 (£286,036 – £255,919). Aside from this point, it was also noted that debts amounting to £861,291 were "liable to immediate Demand" and "unless the Sum due from Government for Saltpetre, as well as that due for Goods sold . . . be speedily paid, your committee conceive the Company cannot discharge the . . . Debt . . . " [*Report*, p. 22] and that "the Company will soon be embarrassed in their Operations for Want of Current Cash, unless some relief can be obtained from Government." [*Report*, p. 23].

Floating Property

This class of quick stock — floating adventures outwards — represented merchandise in transit to various presidencies abroad — Bengal, Fort St. George, Bombay, Bencoolen, and

China. Although this stock could be deemed as effective, nevertheless it had to be viewed separately because it could not be readily converted into cash as long as it was subject to the risks and uncertainties of the seas [*Report*, p. 38]. The risks and uncertainties resulted, among other things, from piracy, wars between maritime nations, and the hositility and violence of native rulers and people. Upon arrival at their destination, these merchandise were to be incorporated in the effective property section of the appropriate presidencies. In the meantime, the Committee could do no better than classify them between "the classes of effective and dubious property" [*Report*, p. 42].

Dubious Property

Under this heading came three types of stock. The first of these — Credits Outstanding — represented rents due the Company from the circars (various authorities) of India and other renters in Bengal and Fort St. George. Although the balances of some of these accounts were being gradually reduced, the Committee "thought they could not with Propriety class the whole as Credits, which would probably be paid when demanded" [*Report*, p. 26]. Other account balances were on the rise and the Committee could not, therefore, "possibly class these Totals under any other Head than Outstanding Credits, which they fear will long remain a non-productive object to the Company . . . " [*Report*, p. 30].

The second of these dubious properties — Doubtful Credits — was made up of the following items: (1) Hospital Expenses for His Majesty's Troops at Madras, Bengal, and Bombay; (2) Expedition to Manila; and (3) Subsistence of French Prisoners in India [*Report*, p. 21]. The Committee could neither view these items of stock as effective property nor could it think "warranted totally to reject them, because they [the Committee] conceive when a favorable Opportunity offers, Government will endeavor to obtain some Satisfaction for the Maintenance of French Prisoners; and on some future Adjustment of Accounts admit of a liquidation of the other two Articles" [*Report*, p. 22].

Lastly, "a Variety of Articles, many of which might occasionally be sold to the European or native Inhabitants" [*Report*, p. 26], and, therefore, be converted into cash, yet they had to be included in the section of dubious property because they were "absolute by necessary" to the Safety of their [the Company's] Settlements, [and] cannot properly be parted with" [*Report*, p. 44]. Collectively, these items were referred to as Stores. This

class of stock consisted of military hardware as well as items for "the Service of the Troops in the Field, and such as must, in Case of any great Consumption be replaced, and kept up to the present State" [*Report*, p. 26]. Such stock could not, of course, be thought of as "real Property," that is, "convertible at all Times to Country Currency, or equivalent Sterling Money, and equally applicable to the Discharge of Debts or Encumbrances" [*Report*, p. 26].

Dead Stock

Under this heading fell such items as the East-India House, warehouses, fortifications, and other buildings as well as ships, sloops, and vessels. By their very nature, these items of stock were to "remain so during the Existence of the Company; and though in their present State they may be well worth the Estimated Value, the Amount cannot be converted to any other use" [*Report*, p. 22]. A substantial portion of this stock was created nearly a century earlier in India and were valued by Lord Godolphin's Award in 1708 at £400,000 [Scott, Vol. II, p. 174]. These items of stock were "absolute by necessary to the Safety and Preservation of [the Company's] several Settlements, and give a Permanence and Stability to their Property in India" [*Report*, p. 44]. Although the dead stock could not be converted into cash in order to meet the Company's obligations, yet as the Committee observed, these items of stock "are an essential Part of the Company's real Property that must always give a very considerable additional Value to the Proprietors Stock at Market" [*Report*, p. 44].

A Note on the Stockholders' Equity

In the preparation of the Company's unclassified balance of accounts, it was customary to include the stockholders' investment in the liabilities section and to let the balancing figure represent the retained earnings "in favour of" or "against the Company." The classification scheme for the 1782 balance of accounts had made it necessary to remove the stockholders' investment from the liabilities section and include it in the statement's *balancing figure*, £6,384,319 [see: Exhibit 2, Recapitulation of the Totals]. By removing the stockholders' investment from the class of liabilities, the Committee had made the distinction between the creditors and stockholders clearer. This arrangement also emphasized the residual nature of the

total stockholders' equity (stockholders' investment, £2,800,000; earnings, £3,584,319). Another way of arriving at the stockholders' equity figure was, of course, by adding up the balances of each of the four sections of the classified balance of accounts [*Report*, p. 42].

As in all classification schemes, here too, a whole has been succesively broken into smaller and smaller groups in an empirical manner. The successive subdivision of the whole stock has served to reduce the uncertainties surrounding the "productivity" of the many and sundry items or, to put it somewhat differently, increased their informational value. But to be sure, a totality cannot be divided with complete rigor. Overlaps and crisscrossings are bound to occur. Difficulties in sharply distinguishing between classes do not mean, however, that genuine distinctions cannot be made. They can and are made. In fact, the differences turn out to be far more interesting and informative than the similarities.

The classification scheme employed in the preparation of the 1782 balance of accounts distinguishes four classes of stock: from the most "productive" or liquid to the least "productive" or liquid. While there may not be too much to say about either of the extreme classes — "Effective Property" and "Dead Stock" — there may be some room for argument over the "Floating Property," namely, goods in transit, and the "Dubious Property." It may be argued, for example, that the Committee adopted a rather conservative attitude by not assigning some liability against the "Floating Property" or even by not including it in the "Effective Property" section. However, given the risks of shipwreck and other unforeseen hazards on the high seas, the Committee may have felt justified to create a separate class for "Floating Property" with no liability designated against it. Upon a careful examination of the specific items under the "Dubious Property," too, one may find some crisscrossing with the bordering classes. Then, as now, when a clear decision could not be made in recognizing an item's full potential as a productive stock, one relied on the convention of conservatism by understating the "productive value" of the stock. Primarily geared toward facilitating the assessment of the Company's solvency, the 1782 Financial Report may be said to convey a wealth of information when compared against the meager and often misleading information carried by the customary unclassified balance of accounts.

CONCLUSION: THE HISTORICAL VALUE OF THE DOCUMENT

The English East India Company's 1782 Financial Report containing, among other things, a classified balance of accounts and supplementary information, was studied in this paper both from the "outside" and the "inside" [Collingwood, p. 213]. What constitutes the "outside" of an event are those happenings that can be described in physical terms. Some of the major physical happenings in regard to the event of this study were: the holding of a Stockholders' meeting on April 8, 1782; the Board of Directors' presentation of the Company's balance of accounts dated March 1, 1782; the stockholders' resolution to appoint a committee of thirteen "proprietors" to examine the Company's general state of financial affairs; the actual examination of the Company's state of financial affairs; and, finally, the preparation and publication of the Report.

By the "inside" of an event is meant those things that can be described only in terms of thought. In regard to the present event, two critical thoughts may be discerned: the stockholders' defiance of the Board of Directors' view of the Company's state of financial affairs and the Committee's creative response to the problem of financial reporting. The focus of this paper has been on the latter. It essentially rests on the development of a classification scheme for the preparation of the balance of accounts and a presentation of supplementary information to provide maximum disclosure of the Company's state of financial affairs.

What were, then, some of the significant thoughts behind the Committee's creative response to the problem of financial reporting? Here are three:

1. *Full Disclosure.* Perhaps the most significant thought expressed in this document is the idea of full disclosure. In its broadest sense, disclosure implies opening up something to view. To the Committee that something was sufficient information to enable the stockholders and the public alike to assess the Company's state of financial affairs. This document provides the first clearly-articulated expression of the idea of full disclosure, namely, a balance of accounts accompanied by supplementary information.

2. *Classification.* Equally well articulated in this document is the idea of classification. It was clear to the Committee that an appropriate classification scheme or, in their words, "Imputation of Design," would markedly increase the informational

value of the balance of accounts. Inextricably related to the idea of classification was, of course, the choice of a criterion of division. The choice of "productive value," namely, liquidity, as a criterion suggests that the stockholders' overriding concern was centered on the Company's liquidity and financial flexibility.

3. *Notes and Supplementary Information.* To provide the stockholders and the public with the necessary information with which to assess the Company's liquidity and financial flexibility, the Committee propounded the idea of supplementary information. Notes to financial statements were already in common use. The supplementary information was meant to help the stockholders, creditors, and other users to assess the amounts, timing, and uncertainties surrounding prospective cash receipts and disbursements. By its own admission, the Committee expressed at times its own "opinions" and made certain "remarks" on the state of the Company's financial affairs. It is both interesting and instructive to hear the Committee's reason for this:

> . . . if they [the members of the Committee] have exceeded the Limits of their Appointment, by giving Opinions instead of adhering to Figures only, they did it solely from a Persuasion, that their Report would be incomplete without such Remarks, and that if these Remarks have carried them into Matters not wholly comprised under Debit and Credit, they were so connected with Accounts as to be the very Source and Cause of them [*Report*, p. 45].

Finally, and in more general terms, it may be said that this document, which testifies to a long-felt need for more informative reporting than was customary to provide, represents the earliest manifestation of the idea of financial reporting, that is, presentation of accounting information both by a classified financial statement and supplementary notes. Unique in its conception and application, the English East India Company's 1782 Financial Report remains the only one of its kind during the premodern period.

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ACCOUNTING FOR LABOR IN THE EARLY 19TH CENTURY: THE U.S. ARMS MAKING EXPERIENCE

Abstract: The national armory at Springfield was the largest prototype of the modern factory establishment and its accounting controls were described by Alfred Chandler [1977] as the most sophisticated in use before the early 1840s. In spite of that, armory management did not integrate piece-rate accounting and a clock-regulated workday to produce prespecified norms of output. Hoskin & Macve [1988] have recently suggested that the armory's accounting controls were unable to attain disciplinary power over labor and increase labor productivity until a West Point trained managerial component had been established at the armory after 1840. They called for a reexamination of the historical record from a disciplinary rather than economic perspective to validate this doctrine. The paper presents the findings of this reexamination and indicates that West Point management training was a relatively minor determinant in the evolving nature of accounting. Several economic and social factors are found to better explain why integration did not occur any sooner than it did at the Springfield armory.

The national armory at Springfield was the largest and among the most important prototypes of the modern factory establishment and its accounting procedures and controls were the most sophisticated in use before the early 1840s [Chandler, 1977]. Until that time, however, the armory's accounting system was not designed to integrate piece-rate accounting and a clock-regulated workday.

Hoskin & Macve [1988] have argued that the presence of West Point trained management at Springfield after 1840 was the key factor in the application of accounting to enforce norms of output, attain disciplinary power over labor, and yield significant labor productivity gains. The role of accounting at the Springfield armory and the significance of a West Point trained management component are the main subjects of this study.

OVERVIEW OF THE EARLY U.S. ARMS MAKING INDUSTRY

In response to a severe shortage of small firearms during the Revolutionary War, Congress in 1794 established national armories at Springfield, Massachusetts and Harpers Ferry, Virginia. Because these armories were unable to fully meet the government's needs, 27 private manufacturers in 1798 were awarded two year contracts totalling 40,200 muskets.[1] Contract work was especially attractive because the government made cash-advance payments of between $.50 and $2.00 per musket and contract renewals were based on satisfactory performance and were usually automatic.

As a result of the faulty performance of small arms during the War of 1812, the national armories were placed under military oversight and jurisdiction of the Ordnance Department in 1815 to promote "greater systematization and efficiency" [Smith, 1977, p. 106] and to establish clear-cut lines of administrative authority and responsibility [Uselding, 1973]. In order to obtain government contracts, private arms makers had to supply firearms at a price based on the cost figures incurred at Springfield. Accordingly, the contractors were granted full access to armory facilities to examine the cost records and production methods.

Soon after the economic panic and depression of 1837-43, private arms makers were able to increase their customer base and reduce their overall dependence on federal contracts. A number of new and better capitalized arms makers such as Colt, Smith & Wesson, and Lawrence & Robbins also entered the industry. Concurrently, the government changed from an exclusive system of renewable cash-advance contracts to one emphasizing open-market purchases. This policy shift had major financial consequences to marginally profitable and undercapitalized suppliers, forcing the vast majority of them to leave the industry.[2]

From 1850 onwards, production activities in the small arms industry became predominantly mechanized and machine-directed as the dual goals of parts uniformity and full inter-

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[1]Eli Whitney received the largest of these initial contracts for 10,000 arms. The contract price was $13.40 per stand of arms and $5,000 was paid in advance. The terms of the contract specified total shipment by September 30, 1800, but in fact, Whitney did not fully complete the contract until 1809. See Mirsky and Nevins [1952] for more details.

[2]Of all the pre-1830 private and government arms manufacturers, only the Whitney and Springfield armories survived through the Civil War.

changeability were achieved. The industry also became dominated by large patent arms makers, several of whom have survived until the present day.

SPRINGFIELD ARMORY'S ACCOUNTING SYSTEM[3]

The Springfield armory's accounting system was originally designed to summarize financial transactions, to record the movement of goods to and from inventories, and to establish and enforce individual worker accountability for unnecessary loss or waste. Major Dalliba of the Ordnance Department conducted a detailed inspection of the Springfield armory in 1819. Included in his report (referenced under "American State Papers") was a detailed discussion of the armory's accounting policies and their rationales. The armory used a form of "charge and discharge" accounting and maintained detailed records on raw materials, work in progress, and work completed. Monthly payroll accounts contained the name of each workman, the piece-rate for each task, and the type and quality of work performed.[4]

The Springfield armory's accounting system provided the means of controlling and coordinating arms inventories. Until the early 1840s, accounting was not used to obtain greater control over internal production processes or to improve cost efficiency, perhaps because the national armories operated in a guaranteed market having Congressionally authorized and annually stable output levels. Hoskin and Macve [1988] contend, however, that the inability to integrate accountability and work discipline, through a clock-regulated workday and pre-specified norms of output, better explains Springfield's lack of consistent productivity improvements during Lee and Robb's tenure as superintendents (1815-1841).[5] They then suggest that significant improvements in output and reductions in piece rates that occurred after 1840 were mainly attributable to the infusion of a

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[3]The reader is cautioned from inferring connections between armory production and general manufacturing policies in the first half of the nineteenth century. The two were always different because of the greater accountability to outsiders (the government) involved in armory production.

[4]For specific details of Springfield's accounting methods and procedures see payrolls and accounts of U.S. armories and arsenals, 1816-50, Second Auditor's Accounts, Records of the United States General Accounting Office, Record Group 217, National Archives.

[5]Hoskin and Macve refer to statistics regarding the output of barrel welders as their basis for assessing productivity improvement. See Note 11 for more details on specific production figures.

forceful West Point managerial component. They argue that pre-1840s armory management were untrained and ill-equipped to enforce labor discipline and improve productivity, and thus were unable to fully utilize accounting information and procedures. Other evidence suggests, however, that the armory's accounting system was appropriate to and fully supportive of the needs of armory management, especially during Lee's tenure as superintendent (1815-1833), and that major changes in the use of accounting after 1840 were in response to a dramatically changed social and economic environment.

As mentioned earlier, the Ordnance Department under the leadership of Colonel Wadsworth became the overseer of armory affairs in 1815. Wadsworth was assisted by a group of West Point officers who also believed in the goals of parts uniformity and interchangeability [Hounshell, 1982]. In fact, Wadsworth's motto, "Uniformity, Simplicity and Solidarity," formed the basis of early Ordnance Department policy [Smith, 1977].

In his detailed examination of the Springfield armory in 1819, Major Dalliba indicated that "complete accountability is established and enforced throughout" and the armory's piece-rate accounting system was "the best of all possible plans" [American State Papers, 1823, p. 542]. According to Deyrup [1970, p. 49], the armory "was outstanding for its excellent management and high efficiency" during Lee's superintendency. Springfield armory's accounting controls have also been described as "the most sophisticated used in any American industrial establishment before the 1840s" [Chandler, 1977, p. 74].

Hoskin and Macve [1988] assert that a particular type of management training was needed in order for the role of accounting to change after 1840, but several other factors appear to better explain why piece-rate accounting and a clock-regulated workday were not integrated at the Springfield armory before that time. The following factors are examined regarding this lack of integration: skilled labor shortages and labor's resistance to controls, cooperative knowledge and cost sharing among arms makers, and the absence of significant labor decrafting.

LABOR SHORTAGES AND RESISTANCE TO CONTROLS

Deyrup [1970] indicated that acute shortages of skilled labor were a major factor that contributed to the early business failures of private arms contractors. Because of these shortages,

as well as New Englanders' natural propensity toward independence and mobility [Prude, 1983], employers were precluded from setting piece rates that would extract exceptionally high labor output, and they would be hard-pressed to enforce norms of behavior and work discipline. In his 1819 report, Dalliba described how piece rates were set by Superintendent Lee at Springfield to provide a reasonable wage for reasonable effort, and without contrary evidence, how they were set in the larger private armories as well:

> The prices paid for the working of each piece have been settled by the superintendent, upon the result of much experiment. It is calculated that good industrial men will be able to earn $1.40 per day. Upon this basis the prices have been established. The workmen earn now from $20 to $60 per month; such is the difference in the skill, industry, and ambition of men of the same trade. There are, however, but three or four in the 244 (total number of workman) who come up to $60 per month. [American State Papers, 1823, p. 542]

In effect, skilled-labor cost control was obtained by computing and maintaining a piece-rate system that provided a reasonable wage for reasonable effort. In both the private and the national armories, the majority of laborers were remunerated on a piece-rate basis.[6] Piece-rate accounting was introduced at Springfield in 1806 and at Harpers Ferry in 1809. It was described in 1819 as "the best of all possible plans" [American State Papers, 1823, p. 542], and still was credited in 1855 as providing "the greatest amount of work at the least cost to the employer" [Rosenberg, 1969, p. 193].

According to several historians, skilled labor shortages in the United States in the early 1800s encouraged technological innovation and stimulated the subdivision of work processes into precise, specialized tasks [Habakkuk, 1962; Smith, 1977]. In the arms industry at least, production tasks were narrowed and simplified not in response to new manufacturing methods, nor to control an unruly labor force [Nelson, 1981], but rather to achieve technical and economic objectives (e.g., greater uniformity and efficiency). At Harpers Ferry, for example, the greatest growth in the number of occupation classes occurred

[6]Dalliba reported that of the 244 workmen employed at the Springfield armory in 1819, all but 52 were paid by the piece. Even in 1850, only 76 of 348 workers were paid exclusively by the day or month.

between 1811 and 1816, a time of severe labor shortages, rather than during the 1820s and 1830s, a period of greater mechanical innovation.

Initially, accounting procedures at Springfield were not integrated with a clocked workday to produce pre-specified norms probably because highly skilled labor would have rejected such a system. In rural antebellum communities, for instance, work time was never precisely defined and little effort was made to control the pace of work [Prude, 1983]. In the early 19th century work culture, farm, craft, and other skilled workers were generally responsible for setting their own pace and work time and were compensated according to task rather than by time. In his 1819 report, Dalliba noted that on-the-job drinking, conversing, and socializing were the norms of behavior in most factories. Faler [1974, p. 379] similarly indicated that workplace drinking was part of the pre-industrial culture that did not stress "the subordination of pleasure to productive labor." Smith has argued [1977, p. 67] that the ability to impose labor discipline at the armories was inversely related to employees' skill level:

> Since they were extremely sensitive about their rights and privileges as skilled artisans, particular care had to be taken not to treat them with condescension. No man worth his salt would stand at command or submit to even the most perfunctory regulations unless he was accorded the dignity and freedom that his skilled status deserved.

Until around 1830, the Springfield armory "was outstanding for its excellent management and high efficiency" [Deyrup, 1970, p. 49]. Under John Robb, Lee's civilian successor from 1833 until 1841, management was relaxed, work discipline generally deteriorated, and Springfield's labor and capital costs significantly escalated. The expansion and prosperity of the early 1830s was followed by a period of strikes, union activity, and a reduction in daily working hours. The increase in labor's power vis-a-vis armory management at this time exceeded, but still paralleled the relationship in the private sector. However, the panic of 1837 and the resulting economic depression left workers defenseless against employers seeking to restore long hours [Laurie, 1974]. Clearly the arms-making environment had changed by 1841 when Lt. Col. George Talcott, inspector of armories, reported to the Secretary of War that the practice of allowing workers to fix their own wages, privileges, and working

hours would not be tolerated in a private business and should not be condoned at Springfield [Benet, 1878].

COOPERATIVE KNOWLEDGE AND COST SHARING

The Ordnance Department, under the leadership of Colonel Wadsworth, activley promoted cooperation among the private and national armories in order to achieve uniformity and interchangeability of small parts. For example, Wadsworth conducted a two-day meeting in 1815 to disseminate his uniformity principles and to establish the standards of manufacture for military muskets. The participants at the meeting included Superintendents Roswell Lee of Springfield and James Stubblefield of Harpers Ferry, and Eli Whitney. Whitney was the largest and most influential of the original private arms makers. In addition to his near total dependence on government contracts, Whitney's willingness to share technical information was partially based on the close personal relationships he maintained with Wadsworth and Lee.[7] Letters written between Lee, Wadsworth, and Whitney between 1815 and 1819 show that Whitney shared technical details and actually offered barrel turning machinery to the Springfield armory.[8] As a result of frequent interactions among the key members of the arms-making community, trade secrets apparently did not exist, at least during Lee's superintendency.

According to Uselding [1973], Springfield's primary role was to extend arms-making inventions to more technically advanced stages so that production methods and innovations could be rapidly diffused throughout the industry. Armory superintendents were directed by Wadsworth to cooperate with

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[7]Smith [1981, p.68] described Wadsworth as "an intimate friend" of Whitney, while Lee had worked at Eli Whitney's private armory and was recommended by him for a position at the Ordnance Department. Mirsky and Nevins [1952] and Deyrup [1970] referred to many of the letters that were exchanged among these individuals. For more details see Letters Sent-Letters Received and Reports of Inspections of Arsenals and Depots in the Records of the Office of the Chief of Ordnance, Record Group 156, National Archives, Washington, D.C.

[8]Whitney had invented the cotton gin in 1793 and was continually seeking judicial relief for patent infringements on this invention. Given his experiences, Whitney's decision to offer Lee a machine for turning barrels is more understandable, since men, materials, costs, and technical information were routinely shared during this time. Regarding his decision, Whitney wrote: "... But the probability is that some person would contract to make barrels & not only take advantage of my invention but entice away the workmen whom I had instructed in the use of the Machine before I could be compensated for the experience of making it."

each other "in all matters related to management and manufacturing on the uniformity principle" [Smith, 1981, p. 71]. To partially fulfill this charge, the national armories were open to all visitors, and skilled workers, raw materials, patterns for machines, and manufacturing processes were regularly exchanged among the national and private armories.

Private contractors were also apprised that future arms contracts would depend on the degree they cooperated with the Ordnance Department in sharing new inventions and other relevant information. Arms making was such a cooperative endeavor that important technological innovations are unable to be traced specifically to particular individuals. Instead they were perceived as evolving "through a remarkable process of cooperation, transfer, and convergence" [Smith, 1973, p. 591]. The full sharing of technical and production cost data also enabled the arms makers to control labor rates and limit wage-motivated turnover within the industry. According to Mirsky & Nevins [1952, p. 268], Lee and Whitney worked together and had "a tight control over the labor market" and thus effectively created an oligopsony for armory workers" [Uselding 1973].

This evidence suggests that during the period of full cooperation, arms makers were able to delay implementation of a comprehensive labor-accounting system due, in part, to their ability to openly, regularly, and completely share all relevant cost information. Gentlemen's agreements and personal discourse would be clearly preferred to a comprehensive labor accounting system that might encounter strong resistance from a work force unaculturated to clock-paced work standards and intrusive labor reporting requirements. Demanding prespecified norms of output from workers having widely variant skill levels[9] may also have led to intolerable levels of intra-industry turnover given the shortages of skilled labor that were experienced in New England at that time.

Until the early 1840s, the government's monopoly purchasing power allowed the policy of shared cooperative knowledge to be enforced and sustained. After that time, new and more competitive private arms makers entered an industry that was expanding rapidly and the earlier cooperative spirit naturally broke down. Once the cooperative period ended and a united labor policy disappeared, a more integrative labor accounting system was needed. And only after arms making

[9]See Dalliba's comments in an earlier section.

became highly mechanized and labor had been significantly decrafted would pre-specified norms of output be established.

ARMS MAKING AND LABOR DECRAFTING

At the time of Major Dalliba's inspection in 1819, arms-making machinery had not developed to the point where labor productivity was independent of the skills of the individual worker. Even though Springfield's production workers were subdivided into more than 86 different occupations by 1820, attaining complete uniformity of work and full interchangeability of parts was both unobtainable and unwarranted given existing cost and quality criteria. According to Dalliba in his 1819 report:

> . . . Different men have different visions; they do not see alike, and they do not feel alike; and as the accuracy of parts depends upon the vision and feeling of the workmen, the parts made by them must vary. [American State Papers, 1823, p. 543].

From its beginning, the Springfield armory followed a policy of paying wages above the industry average in order to maintain a stable force of skilled workers given labor shortages and the limited upward job mobility at the national armories [Deyrup, 1970]. Over time, as the vast majority of arms-making tasks evolved from craft judgement to machine tending, this wage-rate policy became unnecessary. Lt. Col. Talcott's report to the Secretary of War in July, 1841 reveals how dramatically the arms making labor market had changed:

> The difficulty of finding good armorers no longer exists; they abound in every machine-shop and manufactory throughout the country. The skill of the eye and the hand, acquired by practice alone, is no longer indispensable; and if every operative was at once discharged from the Springfield armory, their places could be supplied with competent hands in a week. [Benet, 1878, p. 397].

Until the late 1830s, the Ordnance Department gave much greater priority to perfecting the system of interchangeable parts manufacture than to improving cost efficiency. In fact, the Department never really expected significant cost reductions before this time [Hounshell, 1982]. Thereafter, machine capital was increasingly substituted for manual labor and the craft skills of the average arms worker declined significantly. By

1850, all fabrication was carried out by machine except for barrel welding. Once parts uniformity and interchangeability had been achieved, and labor shortages had been eliminated, improving labor efficiency became the new and natural focus of Ordnance Department management.

INCREASES IN LABOR PRODUCTIVITY

Hoskin and Macve [1988] have argued that West Point management methods[10] best explain the major increases in barrel welding productivity that occurred at Springfield armory after 1840 when J. W. Ripley became superintendent.[11] They recognize that Decius Wadsworth and George Bromford, Wadsworth's successor as chief of Ordnance from 1821-1842, both came under the West Point influence,[12] but contend that the physical presence of West Pointers trained by Sylvanus Thayer was the key determinant of the productivity increase at Springfield.[13] Smith [1981] acknowledged that tighter rules, clocked days, regularized procedures, and greater factory discipline all occurred during Colonel Ripley's superintendency. Hoskin and Macve [1988, p. 38] go much further, however, in contending that West Point management methods caused the increase in labor productivity, allowed accounting to be more fully utilized, and were "of crucial significance in business and accounting history."

Ascribing multifarious influences to West Point management methods is alluring, especially when invoking power-knowledge rationales for accounting procedures. In the case of the Springfield armory after 1840, however, several economic factors stand out. The depression that began in 1839 resulted in

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[10]Hoskin and Macve describe in great detail the human accountability techniques that were introduced at West Point by Sylvanus Thayer during the period of his superintendency (1817-1833).

[11]Hoskin and Macve (HM) reproduce figures from Deyrup showing a significant rise in average barrels welded per man after 1842. The increase was from a figure no higher than 2,500 before 1840 to an average of 4,000 after 1842. HM reference Uselding [1972] when arguing that this increase was not due to improvements in technical factors. They suggest that the West Point management style and technique is the most likely explanatory factor for the productivity increase.

[12]Wadsworth and Bromford were West Pointers from before Thayer's superintendency.

[13]Until 1841, Congress mandated that the national armories come under civil superintendency. Accordingly, both Lee and Robb were civilians and not career military men.

major price and wage declines in the private sector.[14] Rezneck [1935] noted that there were nationwide givebacks of wages and working hours during this time.

Barrel-welding output probably increased at Springfield because of higher and more regularized working hour requirements and piece-rate reductions of over 50 percent that occurred between 1841 and 1844. The new armory policies resulted from the 1841 War Department examination that identified the incongruity of private and national armory practices regarding work rules, wages, and regulations.[15] Given the economics of the day, armory workers apparently had to accept the new work requirements, and the increases in output and productivity that resulted did little more than restore the real income levels of prior years.

SUMMARY AND CONCLUSION

In the larger, competitive arms-making environment that emerged after 1840, there was far more industrial secrecy and much less opportunity for firms to share information about costs, methods, and innovations. Labor costs that formerly had been regulated by a few key players via tacit agreement and personal discourse, could now be controlled only by managerial pressure, work discipline, and an accounting system that introduced norms of output. West Point training and discipline probably helped managers perform their work, but this particular background should not be given undue credit for increasing productivity and bringing fundamental change to accounting and accountability systems. Economic and social forces appear to be far more significant.

The depression that ended in 1843 was followed by 14 years of phenomenal growth and westward expansion [Taylor, 1951]. During that time, private sector demand for small arms increased and private arms makers were no longer dependent on

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[14]During this period, wholesale prices fell between 25 and 50 percent [U.S. Department of Commerce, 1960].

[15]In September 1841, a three-man board appointed by the Department of War conducted a detailed examination of conditions and management at the Springfield armory. They confirmed Talcott's earlier comments about high wages and slack work rules. In their report to Congress in 1841, the War Department examining board indicated that "in all the private establishments which were visited by the board, the hours of labor are fixed by regulation" and "In looking into the prices of labor, the board became satisfied that the workmen on the different parts of the musket are very unequally paid" [Benet, 1878, p. 401].

government contracts for continued viability. The trend toward fuller labor accountability at Springfield that occurred under Ripley appears to parallel procedures that existed in private manufactories in light of comments made in the 1841 War Department report. More research on this aspect of accounting history is needed to uncover private industry practices and to better assess the impact of particular management methods and techniques on the development of accounting.

In her study of 19th century business practice, McGaw [1985] concludes that accounting has been supportive of technological change and has supplied owners with the information they needed to manage. This suggests that an integrated labor accounting and accountability system was not needed at the Springfield armory much before 1841. Until that time, a comprehensive piece-rate system supplemented by shared cooperative knowledge of current costs and production methods may have elicited all the accountability that arms workers would have tolerated and probably furnished all the labor cost information that armory management expected or could use.

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COST ACCOUNTING AT KESWICK, ENGLAND, c. 1598-1615: THE GERMAN CONNECTION

Abstract: The growing literature on the history of cost and management accounting has left virtually unexplored the developments prior to the British industrial revolution. Recently the business notebooks of Daniel Hechstetter, the German manager of an English copper works from 1597 to 1633, have been transcribed and published, making available what is probably the most detailed set of business records for a British-based industrial enterprise in this period. This paper examines Hechstetter's background and role at Keswick, and translates a sample of the calculations into modern English. These calculations show that a number of modern cost accounting concepts and procedures were in use by c. 1600. The significance of this in relation to our understanding of the development of cost and management accounting is assessed, and it is shown that there is a strong case for claiming that German enterpreneurs involved in this enterprise were responsible for introducing a range of cost accounting techniques to Britain.

It is evident from the growing number of published works on the subject that accounting and business historians are showing renewed interest in the origins of cost and management accounting. Furthermore, the findings of these studies are altering our understanding of the development of accounting procedures. For instance, until recently it was widely held that little or no progress was made in cost and management accounting in British industry before the end of the nineteenth century [e.g., E. Jones, 1981, pp. 111-16]. A growing body of evidence shows this view to be mistaken, and it is now accepted that a number of firms employed relatively sophisticated cost

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accounting systems by the late eighteenth century [Mepham, 1988, Edwards, 1989, Fleischman and Parker, Edwards and Newell]. Little, however, has been added to the understanding of the development of cost and management accounting before this period. This is in part due to the scarcity of early business records, but it is also due to the fact that recent literature has tended to focus upon the late eighteenth and nineteenth centuries, covering the span of the industrial revolution and its aftermath — a period when evidence for the emergence of new accounting procedures in response to changes in organization, scale and complexity of industrial activity might be expected to be found.

A notable exception is the study by Haydn Jones of accounting practices in Welsh industry and landed estates. Jones notes that the records of the Mines Royal Co.'s copper smelting works in Neath at the end of the sixteenth century display a "concern with output, cost and profitability", although he states that the earliest Welsh industrial accounting records suitable for analysis date from about one hundred years later [1985, pp. 7-8].

The Mines Royal Co.'s activities were not confined to south Wales, and it was noted some time ago that cost accounting was employed at the company's copper and silver works at Keswick in Cumberland [Donald, 1955, pp. 221-30], where Ulrich Fross, the manager at the Neath works, had been previously employed [Rees, 1968, Vol. 2, p. 431ff]. More recently, the business notebooks of the younger Daniel Hechstetter, a manager of the Keswick works from 1597 to 1633, have been transcribed and published [Hammersley, 1988], making readily available what is probably the most detailed set of business records for a British-based industrial enterprise in this period. These records are of particular interest to accounting historians because of the detail of the accounts and because they display a remarkable degree of cost-consciousness on the part of Hechstetter, who undertook calculations to assess the efficiency, profitability and future prospects of the enterprise.

The objectives of this paper are twofold. First, it draws attention to a range of calculations which add significantly to our knowledge of the early development of cost and management accounting. Second, it suggests that the accounting techniques employed were imported from Germany where they were already in use in a similiar industrial setting. After an historical introduction to the Keswick works and the role of Daniel Hechstetter, a sample of the calculations is reproduced, having

been translated from the original into modern English. The importance of these calculations in the understanding of the development of cost and management accounting is then examined.

THE HECHSTETTERS AND KESWICK

Daniel Hechstetter the younger was born in Augsburg, Germany, in 1562.[1] His father, Daniel Hechstetter senior, was a mining engineer and manager who had trained at the copper and silver mines in the Rauris Valley in the eastern Tyrol. His paternal grandfather, Joachim Hechstetter, had continued the family's merchant business in Augsburg and had some, though probably rather limited, involvement in mining.

Both Joachim and Daniel senior had interests in British mining. Joachim visited Britain in the 1520s when commissioned by Henry VIII to investigate gold, copper and lead resources in the British Isles [Rees, 1968, Vol. 1, p. 137]. It would appear that nothing came of this exercise. Daniel senior came to Britain in 1563 at the behest of Queen Elizabeth I as manager of a mining venture financed by the Augsburg merchant house of Haug, Langnauer & Co. Having been granted a prospector's warrant to search and work ores in Devon, Cornwall, Lancashire and Cumberland, Daniel senior and his associates decided to establish mines and smelting works at Keswick, Cumberland, of which Daniel senior became manager. From this mining venture was formed the Mines Royal Co. (well-known to historians for being one of the first two chartered manufacturing companies established in Britain).[2]

The younger Daniel probably spent his early childhood in Augsburg and came, with the rest of his family, to join his father in Keswick in 1571, when he was nine years of age. It is most likely that he was trained in mining and metallurgy at Keswick, partly by his father, but mostly by his older brother Emanuel, who was also involved in what was to develop into the family business.

In 1580, Daniel senior and Thomas Smith leased the Keswick mines and works from the Mines Royal Co., and these remained under the control of the Hechstetter family until 1633.

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[1]The historical details in this section have been obtained from the following sources: Colingwood, 1910, Donald, 1955, Hammersley, 1973 and 1988, and Rees, 1968.

[2]The other being the Co. of Mineral and Battery Works. See Scott, 1912, Vol. 1, p. 40ff.

Smith died in 1591 and was, for a time, succeeded by his son John. Daniel senior died in 1581 and was succeeded in the business by Emanuel and his son-in-law Mark Steinberger. When Steinberger died in 1597, he was replaced by Daniel junior. The lease of the works was surrendered in the same year, but the Hechstetter brothers continued to manage operations on behalf of the Mines Royal Co. until 1603, when they obtained a new lease on more favorable terms. Emanuel died in 1614 and was replaced by his son Joseph, while Daniel continued as manager at Keswick until he retired in 1633 at the age of seventy-one. The history of the Keswick works is uncertain after this date, but it would appear that they were run by a Thomas Whitmore sometime after 1633 until about 1636 and were closed in about 1640.

Throughout its history, the Keswick industry was never highly profitable. Silver was not found in the quantities hoped for and the company therefore relied upon the manufacture of copper for its main source of revenue. The combination of the high costs of mining and smelting in this remote and hilly location and the low price of copper throughout this period ensured that even in the early seventeenth century, when the enterprise was at its most successful, it was never more than moderately profitable.

Several studies of cost accounting have shown how the cost-consciousness of industrialists was heightened at times of low profitability [Burley, 1958, p. 58; McKendrick, 1970, p. 48]. It is not surprising, therefore, to find that the younger Daniel Hechstetter displayed a keen interest in costs throughout his period of management, given that his company was always operating on the margins of profitability. Neither is it surprising to find early use of cost accounting in this industry. A principal factor which is widely acknowledged as having influenced the development of costing in the late eighteenth and nineteenth centuries was the changing structure of industrial activity [e.g., Garner, 1954; Johnson, 1981]. Recent research has shown that smelting works and mines provided earlier examples of the types of centralized production units where cost accounting was likely to develop [Edwards, 1989, pp. 306-8]. Further support for this view is provided by evidence from the copper and iron industries which shows that smelters were particularly cost-conscious given the opportunities for incurring excessive costs through the inefficient use of resources in the smelting process [Edwards and Newell].

The costing techniques relevant to mining and smelting no

doubt required familiarity with the nature of the business activities and the response of costs to changes in activity, but they were relatively unsophisticated and could be worked out by a literate businessman with a degree of common sense. This should be noted, since there is no evidence to suggest that the younger Daniel Hechstetter was a particularly innovative businessman, metallurgist or accountant. It would appear, however, that he was a careful manager who was well-trained, technically competent and aware of the necessity to control costs if his business was to remain profitable. His business skills were almost certainly inherited from his father, Daniel senior, though perhaps passed on indirectly through training from his brother Emanuel.

By all accounts, Daniel senior was an astute businessman, and it was he who had masterminded the development of the Keswick works at a time when the company had faced severe financial difficulties. It was almost certainly the older Daniel and his fellow German workers who introduced cost accounting at the Keswick works. This is supported by the similarity of an even earlier cost calculation undertaken at Keswick in 1570, when Daniel senior was manager [H. Jones, 1985, p. 6; Rees, 1968, Vol. 2, p. 413n], with that reproduced in Figure 2 below, dated c. 1600. The importance of the Germans' presence in 1570 is shown in the report that "If the Company [Haug, Langnauer & Co.] were to break off and leave the works, we have no Englishmen that have skill to take them in hand" [Rees, 1968, Vol. 2, p. 413n].

It is likely that Daniel senior would have been aware of the importance of accounting for mercantile purposes and informed about accounting practices from his involvement with the family merchant business and his association with other Augsburg merchants. More importantly, it is probable that Daniel senior was instructed in cost accounting when training in the Rauris mines. The Tyrolean copper and silver mines and smelting works were technically the most advanced at this time and Garner has found some of the earliest evidence of cost accounting in this industry [1954, pp. 4-7]. The accounts of the Fugger family's mining and smelting activities, covering the period 1548 to 1655, display an approach to costing comparable to that at Keswick, and it is highly plausible that methods similar to those used by the Fuggers were employed at the Wieland family mining and smelting works, where Daniel trained in the 1540s.

What is certain is that Daniel senior and the other German partners in the Mines Royal Co. placed great importance on

accounting. It was they who, in the early 1570s, pressed their English partners on a number of occasions for the appointment of an "honest person with knowledge of accounts to assist them in their negotiations for obtaining wood, peat and charcoal", arguing that such a person could save the company a considerable amount of money and that the "longer the appointment of such an accountant was delayed, the greater the loss" [Rees, 1968, Vol. 2, pp. 413-4].

THE COSTINGS

This section contains a summarized and annotated version of a sample (six items out of 17) of the costings produced by Hechstetter. Inverted commas are used to indicate reproduction of the original wording where the meaning is unclear or to convey the flavor of the times. The original calculations use mainly arabic numerals, but there is some use of roman numerals for quantities, dates and values.

Cost of mining 30 kibbles of copper ore in a week at Goldscope in the early seventeenth century [Hammersley, 1988, pp. 118-19].

The financial statement reproduced as Figure 1 deals with the mining activities of the company, and is a calculation of the cost, per kibble,[3] of mining copper ore over a period of one week at Goldscope, near Keswick. Because the statement focuses upon cost per unit, the calculation is sensitive not only to the accuracy with which costs are forecast, but also to whether the anticipated output of 30 K can be achieved. The calculations, as in each of the other cases, are supported by a detailed narrative. The financial analysis, reproduced below, comprises four elements:

1. Allowance on the piece-rate basis for each ton of copper ore mined.
2. Extraction costs.
3. Cost of extending the works.
4. Calculation of cost per K.

[3]The kib(b)le was a hoisting bucket used in mines. It is generally thought to have held between 1½ and 1¾ cwt of copper ore. The weight of the contents, however, cannot be exactly defined as it would depend upon local or traditional or personal practice in producing flat or differently heaped containers. The weight would also vary with the density of contents; the kibble of lead was expected to weigh 2 cwt, for example. The letter K is used to denote a kibble in the remainder of this paper. The cwt (sometimes expressed as quintal(l), cs or C) usually weighed 112 lbs, but occasionally meant 100 lbs (when the C was used), or 110 or 120 lbs.

Figure 1

				£	s.	d.[4]
1	26 K mined at 2s. 8d. per K			3	9	4
2	4 K mined at 3s. per K				12	0
	Breaking up ore, at 6d. per K				15	0
	Cleaning out "dead work", or	s.	d.			
	rubble, from workings	1	0			
	Bearings, and oil for the engine	1	4			
	Keeping the wheel	5	0		7	4
	Drawing up water from bottom of mine				4	6
	Wheel repairs				1	0
	Rope for engine		6			
	Candles for hodman and other workers		6		1	0
	Carriage of 30 K of ore at the rate of 23s. 4d. for 120 loads				5	10
3	Extraordinary charges: miners' wages for lengthening the works at 40s. a fathom is £5 14s. 8d. for 26 weeks, so for one week				4	4
	Cost of 30 K			6	0	4
4	Which is equal to 4s. for 1 K					

Hechstetter recognized that an increase in the quantity of minerals extracted each week would reduce the unit cost: "if xl [40] kibles be weekley gotten the kible will coste iij [3]s 9d" and "If the helpe money grow lesse or the worke softer the charge will also abate". The revised cost per unit calculation is of particular interest since it has not been reduced in direct proportion to the hypothetical increase in the quantity of copper ore mined from 30 K to 40 K. This implies that the adjusted figure is based upon calculations which recognize that some costs will increase with the level of activity, while others remain fixed. Thus it would seem that Hechstetter distinguishes between and utilizes fixed and variable costs in his calculation.

Trial smelting of Coniston ore, c. 1600. [Hammersley, 1988, pp. 122-4].

The trial involved processing 100 K of Coniston copper ore to discover "what 1 cs of Copper soe made outt of that quantity doth cost". The cost statement (Figure 2) sets out the various

[4]Before the decimalization of British currency, there were 12 "old" pence (d.) to the shilling (s.) and 20 shillings to the pound sterling (£).

labor and material costs involved in the conversion process. The inclusion, in some cases, of round sum daily allowances may be either indicative of a broad estimate, the result of a detailed costing calculation which is not disclosed, or the sub-contracting rate for the work.

Figure 2

	£	s.	d.	£	s.	d.
Bringing 100 K of Coniston copper ore						
ore to the roast: 42 horse loads						
(of peat?) at 6d.	1	1	0			
labourers' wages		3	0	1	4	0
Melting ore for 13 days to produce						
47 cwt of greenstone "at the						
least doth cost 10s" per day				6	10	0
Roasting greenstone in five fires:						
60 loads of peat	1	10	0			
labourers' wages		6	0	1	16	0
Further melting of greenstone,						
four days at 9s. per day				1	16	0
Further roasting in four fires:						
24 loads of peat		12	0			
labourers' wages		1	0		13	0
Cost of melting the roasted ore					10	0
Further costs associated with melting:						
12¼ cwt of "blacke copper" and						
6 cwt of thin copperstone:						
1 fathom of roasting wood		9	0			
12 horse loads of peat		6	0			
labourers' wages		1	6		16	6
Cost of further melting in the						
refiner's furnace — one day					16	0
Carrier of coal						7
Allowance for charcoal, 10½ seams at						
40d. each				1	15	0
Cost of making 13 cwt 2 quarters of						
"good rough copper"				15	17	1

Hechstetter calculates the cost of one cwt as £1 3s. 6d. and comments, perhaps more in hope than judgement, that "which if it were done in the greate woork I know wilbe at the least 2^{s} lesse".

Profit on making copper near Keswick throughout the year 1615. [Hammersley, 1988, pp. 82-5].

The calculation starts with an estimate of how much copper the firm might expect to produce as a result of mining 4161 K of copper ore, of varying degrees of purity, at three locations during 1615.

Figure 3

	cwt.	qu.
2604 K of ore mined at Coniston yields, at the rate of 1 cwt of copper for 8 K of copper ore	325	2
637 K of ore mined at Gassgarth and Newlands yields, at the rate of 1 cwt of copper for 10 K or copper ore	63	3
920 K of ore mined at Coniston and Newlands yields, at the rate of 1 cwt of copper for 12 K of copper ore	76	3
	466	0

It was discovered that only 436¾ cwt. of copper were actually produced, and Hechstetter then proceeded to calculate the costs and profits associated with the production and sale of that amount. The analysis, set out in Figure 4, comprises five stages:

1. Weekly costs associated with smelting, multiplied by 52 to give an annual figure.
2. Cost of copper ore delivered to the smelter during the year.
3. Miscellaneous material costs expressed as annual amounts.
4. Miscellaneous items, including the royalty due to the monarch which is fixed at the value of one fifteenth of total output.
5. Profit calculation.

The profit figure is based on the assumption that the entire output of 437 cwt can be sold, presumably at the current market prices, as a note attached to the original manuscript indicates that only just over 362 cwt of copper was actually sold during 1615.

The costing statement is followed by a comparison with the results of the trial smeltings of Coniston copper ore (Figure 2)

and Tilberthwayt copper ore, undertaken at Keswick in 1600. The conclusion reached is that it "will cost vs no less to bringe the same into Rough copper than [those] ij [2] sorts . . ."

Figure 4

		£	s.	d.	£	s.	d.
1	Weekly charges:						
	4 skilled labourers plus each their man				1	12	0
	Watchman					3	4
	4 labourers					12	0
	Carriage and charcoal-burning					2	6
	Limestone					6	0
	Sieves and scuttles					1	5
	Wallstone					1	6
					2	18	9
	Forging 8½ cwt of copper at 4s. 8d.				1	19	8
	Smithswork in smelting and hammer house					10	0
	Carpenters					15	0
	Timber at £13 per annum					5	0
					6	8	5
	Payment to "officers" (clerks and like employees)					10	0
	Travelling costs (inspecting mines, contacting customers, etc.) and cost of keeping horse					6	8
	Total smelting cost per week				7	5	1
	Smelting cost for 52 weeks				377	4	4
2	Cost of 4161 K of copper ore delivered to the smelter				962	13	0
		£	s.	d.			
3	Peat	333	6	8			
	Stonecoal	150	0	0			
	Charcoal	120	0	0			
	Wood	30	0	0			
	Lome	10	0	0			
	Slates and slater	5	13	4	649	0	0
4	Journey to London				13	6	8
	Rent				160	0	0
	Royalty, one fifteenth of 437 cwt = 29½ cwt at £4				118	0	0
	Interest "for mony above our 1200 stock"				100	0	0
					2,380	4	0
5	The 437 cwt of copper can be sold for £2,605 leaving "clear onto the farmers the some of 1i 225".						

Estimated cost of making one cwt. of rough copper from 9½ cwt of copper ore in a shift, c. 1600. [*Hammersley, 1988, pp. 114-17*].

Figure 5 contains an estimate of manufacturing costs for a shift, made some time between 1598 and 1603. There are five stages in the financial analysis. Stages 1 to 3 list the costs which can be identified directly with a single shift — called the "ordinarye charge" — and abates forecast output, accordingly, to find cost per cwt. Stages 4 and 5 list a range of annual figures for what today would broadly be described as overhead costs (called by Hechstetter "extraordinarie charges"), and divide the total by expected annual output to produce, again, a figure for cost per cwt. The individual stages are as follows:

1. Cost of copper ore consumed in an individual shift.
2. Labor and material costs associated with each stage of melting and roasting.
3. The produce of a shift — 1 1/5 cwt of copper — is expressed in terms of cost per cwt, distinguishing between the cost of the initial copper ore input and conversion costs.
4. "Extraordinarie charges", expressed as annual amounts, are divided into two categories: costs associated with vessel manufacture (see Figure 6 below), and costs associated only with the manufacture of rough copper. One third of the total cost is apportioned to vessel manufacture. The total is divided by the expected yield of 468 cwt to give a cost per cwt.
5. The royalty due to the Queen.

Hechstetter then considered the implications of his calculations, and again displayed a fairly clear awareness of differential cost behavior and the impact on cost per unit if the quantity of copper ore mined fell below expected production, stating "yf 72 kibles of ewere be not gotten weekely the certaine charges of the officers and reparations must be charged vpon that which is gotten which will then add an increase of charges upon a quintall".

The impact of changes in the yield from copper ore is also explored:

> "if the ewers [copper ores] prove leaner than 8 kibles quintall [i.e., if more than 8 kibles of ore are required to produce 1 cwt of copper] the charges of make=inge the quintall will increase and beinge willde will consume more tyme and labour on rosteigne. But if more kibles the 72 shall be weekly gotten or the ewers grow richer they viij [8] kibles to yeald a quintall or the rocke softer then this charge will abate . . . "

Figure 5

					£	s.	d.
1	2 barrowfulls of Coniston ore, plus 2 barrowfulls of Newland ore, plus 2 barrowfulls of once roasted Coniston ore, equals 9½ cwt at 4s. 3d. per cwt.				2	0	4
2	9 loads of peat for the furnace, at 6d. per load		s.	d.			
			4	6			
	5 loads of stonecoal at 8d.		3	4			
	Coal dust and white clay for plaster(?)			2			
	Limestone to make copper ore run			6			
	Master melter, per week	9s.					
	2 other melters at 5s.	10					
	3 workmen at 3s.	9					
		28					
	15 shifts a week (to take account of holidays and "casualties", gives per shift		1	10		10	4
	Cost in labour and peat in further roastings "each fire greater than another"					5	0
	Separate roasting of the Coniston ore						10
	Cost in labour and peat of first melting in smelting furnace					3	0
	Peat and wood costs of six or seven further roastings of copper stone					2	6
	Cost of bringing roast copper "to perfection" in great furnace and transferred to the refinery where it is refined "with purest charcooles and made into rough copper"		s.	d.			
	8 loads of peat		4	0			
	3 loads of stonecoal		2	0			
	Extraordinary plaster		0	4			
	Melters		1	10			
	Carrying charcoal			3			
	Charcoal		7	6			
	For six cwt, which for $1^{1}/_{5}$ cwt is					3	2
	Total cost of $1^{1}/_{5}$ cwt of rough copper				3	5	2

Figure 5 — (continued)

					£	s.	d.
3	Equivalent cost of 1 cwt of copper ore				1	14	0
	making into rough copper				1	0	8
					2	14	8
4	Extraordinary charges, per annum	£	s.	d.			
	Watchman at 6d. per day gives, per annum	9	2	6			
	Three labourers to carry peat and coals to the furnace and hammer at 8s. per week gives £20 8s. 0d.	23	8	0*			
	Buckets, rods, sieves and trays	3	0	0			
		35	10	6			
	Two thirds (one third charged to production of copper vessels — see below)	23	13	8			
	468 cwt produced in a year, gives for 1 cwt		1	0⅛			
	Further annual charges:						
	Blacksmith's charges for repairing tongs, forks, water wheels, and the tubes conducting air to the furnace	£10					
	Renewing and repairing bellows	5					
	Lamp oil for melters	1					
	Candles for watchman	1					
		17					
	468 cwt produced in a year, gives for 1 cwt			9⅜+		1	9½
	Hogs' grease (lubricant for bellows) for 1 cwt						1
5	Royalty					3	11½
					3	0	6

* It seems likely that either the 8s per week or the £20 8s. 0d. is a mistake as a figure of £23 8s. 0d. is needed to balance the list with all the other totals provided.

+Does not tally exactly.

Estimated profit arising from the conversion of 1 cwt of rough copper into malleable copper and forging into vessels, c. 1600. [Hammersley, 1988, pp. 117-18].

This analysis (Figure 6) takes the previous calculation a step further by estimating the cost of making copper vessels from 1 cwt of rough copper. The stages are as follows:

1. Cost of 1 cwt of rough copper, as calculated above.
2. Labor and material costs involved in forging, hammering and metal polishing.
3. Annual charges from blacksmith plus the ⅓ apportionment of the "extraordinarie charges" (as calculated above), divided by expected output to produce figures for cost per cwt.
4. Labor and materials involved in the repair of fixed assets plus travel costs and a clerk's wages.
5. Total cost compared with the sales price of copper vessels.
6. Estimated profit per cwt multiplied by the estimated annual produce of rough copper (437 cwt) to give a forecast of yearly profit.
7. The existence of unrecognized further costs is acknowledged.

Figure 6

			£	s.	d.
1	Cost of manufacturing 1 cwt of rought copper		3	0	6
2	Forging sub-contracted to Sebastian Dibler and his son			9	0
	Vessel polishers: labour			1	7
	Materials (vinegar and salt)				2
3	Smiths charges hammers, barrows, iron and steel				9¼
	Wages of watchman and labourers to carry peat and coal, allowance for scuttles, etc.				6¼
			3	12	6½
4	Wages of Mr. Carpenter and son, per annum	£39			
	Timber for repairing bellows, water wheels, hammer, shafts, barrows	20			
	Travel costs and clerk's wages	24			
		83			
	Proportionately, per cwt, on 437 cwt			3	9¾
5	Sum total of all charges		3	16	4¼
	Copper vessels sold at melting house, per cwt		4	10	0
	Profit "clearly gained"			13	8
6	Which for 437 cwt per year is		299	1	5
7	Out of which sum is to be deducted the "officers" allowance, yearly rent and interest on money above £1,200 stock.				

The calculations are again followed by a narrative which indicates an awareness of the effect of possible changes in the level of production, and also the need for differential pricing in certain geographical areas. Apparently, the firm was willing to accept a price of less than "xiiij nobles" (14 × 6s. 8d. = £4 13s. 4d.) for copper in London, and that this departure was balanced by the fact it could sell some at £5 12s.

'Capital' expenditure at Keswick, pre-1605. [*Hammersley, 1988, pp. 119-20*].

Introductory remarks refer to the fact that the company had an initial £1,200 "stocke" and that Emanuel and Daniel Hechstetter made further injections amounting to £650 following their entry into the firm. The financial statement (Figure 7) is a crude valuation of the business, probably made in 1601 or early 1602, to find out what had happened to the money and how they now stood.

Figure 7

	£	s.	d.
Engine at cost	301	0	0
Sinking shaft and draining drifts at Caldbeck	70	0	0
Further sinking and draining at Coniston	30	0	0
Workmen's (and other) debts	150	0	0
Stock of charcoal at the melting house	133	6	8
Stock of stonecoal at the melting house	66	13	4
Stock of colling wood	20	0	0
Stock of peat at the melting house	100	0	0
Stock of copper (ores and roasts, i.e., not finished copper), 120 cwt at £4 (per cwt)	480	0	0
Stock of copper ore at the melting house and mines, 600 K	150	0	0
Stock of roasting wood	30	0	0
Stock of iron	20	0	0
Lost in partnership with Mr. Smith	135	0	0
Copper lost at sea	40	0	0
Repairing and mending roasthouse and copper furnace	30	0	0
Stock of clay	5	0	0
Horses	6	13	4
Stock of stonecoal in Coniston and Newlands	6	6	8
Stock of charcoal in Coniston for the blacksmith	2	0	0
Stock of Caldbeck copper ore	30	0	0
Materials for bellows	40	0	0
Cash in hand	95	0	0
	1,941	0	0*

*Total should be £1,951 0s. 0d.

Most of the items listed above would be considered appropriate for inclusion in a present day business valuation. The method of valuation is not given, except in the case of the engine, and it is not clear whether cost, market value or some other measure is used in the remaining cases. The status of the partnership loss is not clear, but it is possibly John Smith's share of a loss arising when he was a member of the partnership and which it was still hoped to recover.

CONCLUSION

Costing calculations made as a matter of systematic routine will be the product of a formal system of bookkeeping, which is quite possibly integrated with a company's financial accounting system. The earliest examples of records maintained in this form in Britain or the United States date from the late eighteenth century. It is well known that costing exercises undertaken for particular purposes — sometimes described as *ad hoc* costing — have even earlier origins [Pollard, 1965, p. 219ff]. A significant feature of the Hechstetter records is that they exhibit advanced features of this version of accounting undertaken at the very beginning of the seventeenth century, about one hundred years before further evidence of such practices is available.

An *ad hoc* costing calculation may take the form of an *ex ante* estimate, made as the basis for deciding whether to invest in a particular activity and/or to serve as a standard against which actual performance can subsequently be measured. Costing calculations may also be made *ex post* to assess the profitability of products and to help monitor the performance of individual workers. Such calculations may be made on an actual or estimated basis.

Most *ex post* calculations made in the seventeenth century, and much later, were probably estimates of actual costs incurred, relying on the businessman's intimate knowledge of his trade, rather than precise financial calculations based on carefully maintained accounting records. This might well have been because the accounting records were insufficiently reliable or comprehensive to allow actual costs to be ascertained, or because the time and cost involved would not have been justified in terms of the expected benefit to be derived from a more exact calculation, particularly in circumstances where the owner and/or manager remained in close contact with all aspects of day-to-day activity [Edwards and Newell].

It is not immediately obvious into which category of costings each of the six calculations reproduced above falls. Hechstetter knew how he had made the calculations and, because he was also making the decisions based on the information obtained, found it unnecessary to point out the precise stage at which each was made. Moreover, the authors' inability to translate accurately all that was written acts as a further constraint in exploring fully the ramifications of the calculations. Bearing in mind these difficulties, it is nevertheless possible to make some assessment as to how the calculations were determined and to what uses they were put.

The calculations reproduced in Figures 1, 5 and 6 are estimates of actual costs incurred in extracting minerals and manufacturing copper, made in the hope of reassuring management that it was worthwhile continuing operations in an industry in which a substantial amount of money had been invested. The trial smelting (Figure 2) was an experiment undertaken to discover the costs which *should be* incurred as a yardstick for judging future performance, while the calculation in Figure 4 combined actual costs incurred with estimated revenue as a basis for monitoring performance during 1615. The inventory prepared at the beginning of the sixteenth century (Figure 7) was used to identify the company's current position.

The calculations are rudimentary and there is no way of judging their accuracy. Furthermore, it is impossible to assess their usefulness for making management decisions. Certainly the company failed to prosper, but whether poor accounting data contributed to this lack of prosperity remains a matter for speculation. Since trading conditions at this time were unfavorable, however, it is equally plausible that the determined efforts of Hechstetter to subject business events to financial analysis paid dividends in the sense that the company did better and survived longer than would have otherwise been the case.

While no assessment as to the impact of the use of cost accounting on business performance at Keswick can be made, it is nevertheless possible to glean information about the accounting methods employed. Irrespective of the quality of individual figures, it is clear that a significant number of costing concepts which remain in widespread use today are recognizable either implicitly or explicity within these calculations undertaken nearly four hundred years ago. These include:

1. The identification of costs associated with individual inputs.

2. The distinction between direct and indirect costs (called "ordinary" and "extraordinary costs" at this time).
3. The distinction between material costs and other direct costs.
4. The calculation of total costs.
5. The calculation of unit costs.
6. The association of costs with their natural time horizon, e.g., a shift or a week or a year.
7. The ability to equate costs associated with different time horizons.
8. The apportionment of joint costs between different activities.
9. A rudimentary system of process costing.
10. A recognition of differential cost behavior.
11. An awareness of the impact on unit cost of changes in the level of production due to variations in mining and manufacturing conditions.
12. An awareness of the logic of charging what "the traffic would bear" in order to maximize profit.

The Hechstetters' approach to business has been contrasted with what is known of native British industry in this period, and the lack of sophistication evident in other surviving business records has led to the Hechstetters being described as "professionals in a land of amateur industrialists" [Hammersley, 1973, p. 25]. Whether this was indeed the case may never be definitively established.

As it stands, the identification of the use of a number of modern accounting procedures, as early as the turn of the seventeenth century, is of considerable interst to accounting and business historians. In broad terms, it throws additional light on the possible contribution of accounting procedures to business decision-making in the early stages of industrial development. At the more specific level, the fact that the Mines Royal Co. accounts pre-date the industrial revolution by a considerable margin demonstrates that when faced with unfavorable economic conditions at least some businessmen responded in a similar manner to their more celebrated successors of the eighteenth and nineteenth centuries.

These findings add support to the persuasive "demand/response" theory of accounting development, which sees accounting as a "social technology", continually responding to changes in business requirements. In this respect, prevailing economic conditions, the nature of business organization and the willingness of management to innovate combine to dictate,

to a large extent, what accounting practices will develop. At the same time, it must be accepted that the findings demonstrate a certain consistency — perhaps even inertia — in accounting practice. This might mean, in terms of the "demand/response" characterization, that certain basic accounting requirements have remained stable over a considerable time period. A quite different interpretation is that accounting systems are less flexible than is sometimes imagined.

With regard to the German influence on seventeenth century accounting practices in Britain, the lack of surviving records makes it difficult to assess whether the accounting methods employed at Keswick diffused to other enterprises or whether they were redevised independently elsewhere. Mining and smelting in Cumbria certainly stagnated after the closure of the Keswick works, but metal industries developed in south Wales near to where Ulrich Fross had smelted copper, and where evidence for the use of similar accounting methods is next found [H. Jones, 1985]. It is not inconceivable that a migration of labor from the copper works may have resulted in a transfer of accounting methods elsewhere, or indeed that later generations of migrant German metallurgists brought similar accounting expertise to Britain [cf. Day, 1984] to form the basis of the better documented advances of the eighteenth century [H. Jones, 1985, Edwards, 1989]. In the absence of records for the intervening period, this must remain a matter for speculation.

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A WORLD WAR II COST ACCOUNTING ASSIGNMENT

Abstract: This article describes the development of a process cost accounting system for a war production plant in 1942. A variety of cost drivers were used for purposes of allocation of overhead. In addition, the role of the cost accountant in the war effort is emphasized.

Although Pearl Harbor and America's declaration of war against the Axis powers was creating tension in the country, my professional life as a CPA in Arizona was relatively normal in the winter of 1941-42. At that time, I heard of a tremendous complex of plants being built nearby for the production of magnesium. The site of the plants was later named Henderson.

Magnesium is the lightest of the metals and has many structural uses when alloyed with zinc, manganese or aluminum. This plant's output, though, was wanted for its pyrotechnical qualities in order to manufacture incendiary bombs to be dropped on Germany. The name of the Organization was Basic Magnesium, Incorporated (BMI) and the Defense Plant Corporation was destined to invest some $140 million in the project. Over 7,000 employees were already working feverishly to complete the facilities by mid-1942, the date targeted for initial magnesium production.

Everything about the BMI situation intrigued me: its size, its importance, its proximity, and the metal-extractive nature of the underlying production processes. So, with some audacity perhaps, I applied to BMI on January 2, 1942, for the specific task of designing and installing BMI's accounting system. Following a drawn-out series of letters and interviews, I was hired and reported for work on May 13, 1942.

BMI ACCOUNTING

Upon reporting for work, I was flabbergasted with the size of it all — not one plant, mind you, but rather 12 or 14 huge, separately structured, facilities in process of construction and machinery installation. As I recall, there were some 300 people

in the offices, including the Defense Plant Corporation crew, the legal, insurance and office-services departments and, of course, the accounting department of 150 or more.

The accounting function was split into two divisions: Construction and Acquisition (C & A) and Management and Operation (M & O). I thought I had been hired to go right to work in M & O, designing the magnesium process-cost system. To my surprise, the production phase was at least three or four months away, hence relatively low on the priority list for the time being. There were a host of more pressing C & A problems on the front burner. Clyde Warne, the BMI controller, immediately delegated me to try to unlock the numerous accounting "logjams" that had developed.

Time kept passing. One of Basic's ten magnesium-reduction plants was now scheduled to go on stream sometime in October. The process cost system could not be put off any longer. To design it properly, two conditions were absolutely essential: (a) non-interruption and (b) collaboration with someone who understood all the step-by-step processes resulting in the end product: magnesium.

The first requirement was easily arranged. A secret room, without telephones, was set aside for the exclusive use of me and my collaborator. No one knew where we were. We were out of reach.

The second requisite was met by assigning a young man named Malcolm (Mac) Maben to work with me. Until this time, the only two places where magnesium had been produced from magnesite in any significant quantities were Germany and England. Therefore, to acquire the knowhow to build and operate Basic's plant (by far the biggest of its kind in the world), it had been necessary to send a group of key technical people to Britain for instruction and training. They were referred to as "trainees". Maben had been one of these, having spent several months in Britain studying the processes and their costing with metallurgists and cost accountants.

Both the setting and the collaborator proved to be ideal. He and I were closeted in that room, with no interference, for about five weeks. During that period, I broke away once to visit Basic's mine at Gabbs, Nevada, over 330 miles from our plant. It was a hot, desolate, tiresome trip, yet rewarding because, as always, I was interested in the pecularities of that mine, and how the geologists and engineers who had explored and developed the magnesite property at Gabbs were putting "rock in the box".

MAGNESIUM COST ACCOUNTING

Rather than describe the work Mac and I did together, I am simply appending the master process cost sheets and the supporting sub-sheets that were developed to pin down the costs of each link in the production chain. When these sheets were laid alongside each other, they took up a whole wall of a good-sized room, much to the astonishment of all concerned. This was the biggest cost accounting job of my career. In light of the current popularity with discovering "cost drivers," students of cost accounting may be surprised to observe the many cost drivers used to allocate service department costs (Appendix B).

In the course of our work, we found that there were no less than 45 service functions or departments needed to enable the actual magnesium reduction processes to take place. In a small plant, many of these would have been merged; but here at "The Desert Giant" each one was distinct and individually staffed. (In present-day dollars, this plant would have cost well over a billion dollars.)

As shown in one of the attached charts, the reduction of the numerous raw materials to the end product required 33 separate stages or processes. First, chlorine had to be produced, hence it was necessary to build the largest chlorine plant in the United States. Second, the raw magnesite had to be mixed with peat and other ingredients to form bullet-like pellets which were chlorinated. Finally, the chlorinated pellets were electrolyzed to produce magnesium metal. These were the essential steps.

Along the way, we had to enter into a number of bypaths. One of the most interesting of these was the way peat is harvested by cutting deep trenches and cutting it into big blocks like bales of hay for removal. This decomposed forest material is on its way to eventually become coal, a nonmetallic mineral. Thus the extraction of peat from the earth is a cross between agriculture and mining.

It would be pleasant to report at this point that the use of magnesium had burgeoned over the subsequent years and that our cost analysis work had gained wide adoption. Alas, such is not the way it turned out. In comparison with aluminum, the other leading "light metal", magnesium's worldwide production ratio is about 1 to 275. Moreover, most of the 260,000± metric tons of magnesium annually produced is now extracted from brines rather than from hard-rock magnesite ores. Despite its never having been extensively utilized, I still look back upon our work with a certain fondness because we were so

totally absorbed in what we were doing. In other words, the work itself was the reward. (The collaboration with Maben was most satisfying. Our thinking seemed to synchronize. After leaving BMI, he and I may have exchanged a few short notes; then, as usually happens, we lost track of each other. At that time, he was only 25 or 26 and was subject to being drafted, having received deferrment only for his "trainee" period in Britain. Ever since, I've wondered and worried if, indeed, he did serve in Europe and, like so many others, failed to return.)

THE WAR PLANT, THEN AND LATER

In December 1942, the first magnesium ingot was poured. It was displayed in the lobby of the Administration Building for everyone to stare. Although production was behind schedule, it increased rapidly to a peak in March 1944. But in November 1944, the plant produced its last ingot on orders of the WPB (War Production Board).

Having been both an observer of and participant in the project, I have put together the following condensed information concerning it. First as to the plant, its cost was in the neighborhood of $140-million. It was then the largest magnesium plant in the world and the only one using the electrolytic process except for its prototype plant in England. One had to see it to realize how big it was. Its plans and blueprints, if spread out, would cover 46 acres. It was the second largest steel construction job up to that time; the lumber it required was enough to build a city of 40,000 inhabitants; the facilities included 350 miles of pipe. From the standpoint of engineering skill and the marshaling of a vast new labor force in the desert, the construction of the plant was unquestionably a great accomplishment.

As to the plant's doing what it was designed to do, the answer has to be mixed. On the plus side, BMI supplied one-fourth of the magnesium that was used in the incendiary bombs dropped by the Allies in World War II. (Magnesium is inflammatory in finely powdered form or when formed into thin wire or foil.) Further, it achieved its production capacity of 112-million pounds a year and got its cost down to 18¢ or 19¢ a pound. At peak production, 5,500 workers were employed. Upon closing, 26-million pounds of magnesium were on hand out of a total of 100-million in the National Stockpile.

On the minus side, the plant did not produce magnesium after the shutdown. Although the metal weighs about one-third

less than aluminum and has attained a niche in airplane manfacturing and other uses, magnesium production has not boomed worldwide to the extent once anticipated, especially in comparison with aluminum.* However, the BMI plant is still utilized on a limited scale by lessees. Shortly after the magnesium production ceased, Stauffer Chemical Co. began making chlorine and soda ash; Western Electrochemical made potassium perchlorate; and Hardesty Chemical produced a variety of chemicals including synthetic detergents. No attempt has been made to trace the plant's operating history from 1944 to date.

In retrospect, the cost accounting system developed for BMII was state of the art, and probably would still be so today. Its development in such a short period of time shows what could be accomplished under the motivation of war-time conditions. Those involved with BMI felt they had a patriotic calling, and part of that calling was the establishment of a cost accounting system. Indeed, cost accountants throughout the land made their contributions to the war effort just as surely as if they had carried guns or piloted bombers.

*90% of America's magnesium now comes from ocean water, the extraction ratio being about 1,000 to 1. That is, 1,000 pounds (125 gallons) of sea water must be processed to get one pound of magnesium.

APPENDIX A

THE PROCESS-COSTING STRUCTURE FOR PRODUCING MAGNESIUM AT THE HENDERSON, NEVADA PLANT OF BASIC MAGNESIUM, INCORPORATED, 1942-44

In basic structure, the costs at BMI were similar to those of most processing industries. This is shown below in simple diagrammatic form where E signifies Direct **E**xpense Elements, F the various **F**unctions or processes, and C the **C**onversions of the materials from one stage to another until the final product (in this case, magnesium) emerges.

	F1	F2	F3	F4	F5	Etc.	
E1	$	$	$	$	$	$	
E2							
E3							
Etc.							
E Totals	$	$	$	$	$	$	
C1			($$)	$$			
C2				($$)	$$		
C3					($$)	$$	Etc.
				Cost of Final Products			$$$

APPENDIX B

FUNCTIONAL COSTS

These were of two kinds: those functions preparatory to or serving the magnesium-reduction processes AND those directly involved in producing magnesium and intermediate products.

SERVICE FUNCTIONS OR DEPARTMENTS

Function or Department	Basis of distributing charges to beneficiaries
1. Plantsite lands and streets	Square footage of area occupied
2. Fire protection	Insured value of properties
3. Plant protection	No. of employees
4. Safety department	No. of employees
5. Industrial relations	No. of employees
6. Canteens	No. of users
7. Change houses	No. of users
8. Payroll and timekeeping	No. of employees
9. Purchasing and expediting	Dollar values of materials consumed
10. Plant offices	Dollar value of direct costs
Water system	
11. A. Pumping and transmission	
12. B. Storage	
13. C. Distribution	
14. D. Total	Gallons of water consumed

Function or Department	Basis of distributing charges to beneficiaries
Power system	
15. A. Transmission	
16. B. Conversion (substations)	
17. C. Distribution	
18. D. Total	KWH of energy consumed
Transportation to plantsite	
19. A. Vehicular	Car miles
20. B. Railway	Tons transported
21. C. Cranes, hoists, conveyors, etc.	Estimates of use
22. D. Total	

MAGNESIUM REDUCTION PROCESSES

Unless otherwise noted, the product emerging from each process flows or passes to the next process listed. For example, the Brine Solution goes to Electrolysis, and so on.

Process	Resulting Product	
CHLORINE PLANT		
1. Brine preparation	Brine solution	
2. Electrolysis	Chlorine gas; cell liquor to caustic evaporation #6	
3. Cooling and Drying	Chlorine gas — to Process #17	
4. Liquefaction	Liquid chlorine	
5. Vaporization	Chlorine gas — to Process #17	
6. Caustic evaporation	Caustic solution and caustic soda	
PREPARATION PLANT		
7. Dust collection	Dust mixture	)
8. Coal milling	Pulverized coal	)
9. Peat shredding	Shredded peat	) To
10. Calcined magnesite grinding	Ground calcined magnesite	) Process #13
11. Raw magnesite drying & grinding	Ground raw magnesite	)
12. Magnesia milling	Pulverized magnesia	)
13. Dry mixing above 6 products	Pellet mixture	
14. Pellet production	Finished pellets	

Process	Resulting Product
10 METAL PLANTS	
15. H C1 recovery & neutralization	Magnesium chlorate solution
16. Effluent disposal	No product; cost charged to #17 below
17. Chlorination	Anhydrous magnesium chloride to #20
18. Motor generators	D.C. energy charged to #20
19. Rectifiers	D.C. energy charged to #20
20. Electrolysis	Raw magnesium metal (lbs.); cell mud to #30 and #32
REFINERY & FOUNDRY	
21. Manganous chloride dehydration	Manganous chloride (lbs.)
22. Primary ingot casting	Primary alloy ingots
23. Secondary ingot casting	Alloy ignots
24. Crude billet casting	Crude billets to #28
25. Crude slab casting	Crude slabs to #29
26. Powder billet casting	Powder billets
27. Powder slab casting	Powder slabs
28. Billet machining	Finished billets
29. Slab machining	Finished slabs
FLUXES PLANT	
30. "A" Flux grinding	Ground materials
31. "A" Flux mixing	"A" Flux
32. "B" Flux grinding	Ground material
33. "B" Flux mixing	"B" Flux

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CREATING AN ACCOUNTING CULTURE IN THE CLASSROOM

Abstract: Numerous critics of accounting education have suggested that students graduating from accounting programs are well-trained but poorly educated. One reason that this may be occurring is that accounting education has become increasingly rule-oriented, focusing more on *training* future accountants rather than on *educating* those individuals. It is suggested here that accounting educators should spend more time developing an awareness in students of the culture of accounting. Two methods for accomplishing this change are suggested: (1) Focusing on the issues instead of the rules, and (2) providing students with a historical perspective of the events which have developed and shaped the practice of accountancy. By adding culture to the accounting curriculum, students will be better educated and thus be better prepared for their future careers.

Accounting education in recent years has been criticized for not adequately preparing students for their future careers. One common criticism of graduates of accounting programs is the inability of those graduates to think; that they lack the conceptual and analytical skills needed for success.

For many accounting students, this inability to think may be caused by the absence of a sense of history, or an accounting culture, in the classroom. Due to the absence of this culture, students, as future accountants, frequently fail to understand their roles in society. And, in failing to understand their own roles, they fail to understand how those roles interact with the roles of the standard setting boards, the regulatory agencies, and the various professional affiliations and organizations.

The current educational process is clearly flawed since it denies many students knowledge of the culture of accounting. By making modest changes in the current educational process, however, an accounting culture can be added to the curriculum. This rather modest change brings the study of accounting history into the classroom. And that study can start students thinking.

THE ACCOUNTANT AS AN HISTORIAN

Accounting is in substance a financial record, or history, of an entity, and thus the accountant is in essence an historian, a chronicler of financial transactions and events. Yet the study of accounting focuses primarily on current rules and regulations. Little time is spent studying how those rules and regulations have evolved.

The culture of accounting, however, transcends what currently exists at any one point in time. Culture includes "the sum total of ways of living built up by a group of human beings and transmitted from one generation to another."[1] Thus, culture includes not only what currently exists, but also what went before.

Accounting educators have a professional responsibility to ensure that this accounting culture is transmitted to their students. Only through studying accounting's history can educators discharge this responsibility to transmit culture from one generation of accountants to another. Only through studying history will students be aware of the rich and diverse events that created the current culture of accounting. And only through this study will students better understand their culture and become better financial historians.

THE EDUCATIONAL PROCESS

Many members of the accounting profession are calling for major changes in accounting education. Recently, an increase in the number of credit-hours of coursework (to 150 hours) has been advanced. Several studies and proposals suggest that major revisions in accounting education are needed. One study [American Accounting Association, 1986, p. 172] states:

> . . . there is little doubt that the current content of professional accounting education, which has remained substantially the same over the past 50 years, is generally inadequate for the future accounting professional . . . a complete reorientation of accounting education is needed.

Another monograph [Arthur Andersen & Co., et al., 1989, p. 11] states: "The current textbook-based, rule-intensive, lecture/problem style should not survive as the primary means of presentation."

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[1]*The Random House College Dictionary, Revised Edition,* 1984.

It is apparent from these comments that the current form of accounting education is not meeting the needs of its constituents. But what is it that needs to be changed?

A Traditional Education

Fifty years ago, accounting education consisted of (1) identifying a reporting issue, and (2) defining the accounting methods and procedures needed to resolve the issue. Very few acounting methods and procedures existed at the time, and even fewer controversial accounting issues. What determined whether an accounting principle was generally accepted or not was just that — general acceptance or usage of the principle by practitioners. Authoritative statements, by and large, did not yet exist. Thus, a fairly large proportion of the time available to educators could be spent on analyzing the issues and identifying *alternative* measurement and reporting techniques.

Standards Overload

A proliferation of accounting standards has occurred over the last fifty years. The Committee on Accounting Procedures issued 51 Accounting Research Bulletins from 1938 to 1959. From 1959 to 1973, the Accounting Principles Board issued 31 Opinions. And, since 1973, the Financial Accounting Standards Board has issued more than 100 Statements of Financial Accounting Standards. With this tremendous increase in the number of authoritative standards, something has to be omitted in the classroom. And that something has been the study of the issues: Educators have replaced study of the issues with study of the rules.

Current Education

Many instructors spend the majority of their classtime covering the current authoritative standards (GAAP) and the procedures used to ensure compliance with those standards. This approach has benefits for both the student and the instructor. For the student, intensive study of GAAP assists in preparing for and passing the Uniform CPA Examination.[2] For the instruc-

[2]Passing the Uniform CPA Examination has an obvious benefit to students. Whether or not study leading to this achievement is the most beneficial use of a program of study is a wholly separate issue and is open to debate. A similar debate centers on whether CPA examination pass rates can be used to measure the quality of an educational program.

tor, the most significant benefit is the relative ease of teaching compliance with rules and procedures as opposed to developing students' conceptual and analytical skills.

The cost. There is also a cost associated with the current method of teaching. Students are taught that there is only *one* correct set of solutions — those defined by GAAP. They learn that there are *no* alternatives; that one cannot contradict the rules. Study of the rules instills in students the notion that there is a readily available (and correct) solution for every reporting issue. And that all the student must do to find that solution is consult the authoritative standards.

This discourages creativity in the student. And creativity is exactly what is needed when new reporting issues emerge or evolve. Accountants lacking strong conceptual and analytical skills will simply be unable to cope with those new issues.

Training Versus Educating

Unfortunately, the current educational process merely *trains* students in GAAP; it does not *educate* them for a career in accounting:

> Education is the development of the special and general abilities of the mind (learning to know) . . . Training is practical education (learning to do) or practice, usually under supervision, in some art, trade, or profession . . .[3]

Accounting education, emphasizing memorization of rules and procedures, is not appropriate in today's environment. As Cragg [1987, p. 61] so aptly stated, "No intelligent person maintains that any amount of listening and remembering will produce an educated man."

The monograph authored by the managing partners of the Big Eight accounting firms further emphasizes these issues: "The focus should be on developing analytical and conceptual thinking — versus memorizing rapidly expanding professional standards" [Arthur Andersen, et al., p. 8]. But how can the accounting instructor develop analytical and conceptual thinking?

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[3]*The Random House College Dictionary, Revised Edition,* 1984.

FOCUSING ON ANALYTICAL AND CONCEPTUAL THINKING

The author has found two basic rules that help to focus the classroom experience on analytical and conceptual thinking. Those rules are: (1) study the issues; and (2) study history. Based on the author's experience, following those two simple rules adds immeasurably to what the student gains from the classroom.

Rule #1 — Study the Issues

Make sure that your instructional methods leave time for studying the issues as well as the rules. For example, consider the accounting for business combinations.

One method of instruction might simply state that there are two basic methods of accounting for business combinations, purchase accounting or pooling-of-interests accounting. Students can be instructed to memorize the twelve criteria for distinguishing a pooling-of-interests from a purchase. Once this basic distinction has been established, the instructor can emphasize the worksheet procedures and techniques used under each method.

A second method of teaching purchase and pooling-of-interests accounting would focus on the issues first: Why are there two methods of accounting for business combinations? Could there be more than two methods (the part-purchase, part-pooling argument)? What are the substantive differences between the accounting procedures for each method (market values versus book values)? Why might managers prefer to use one method over the other? Could this lead to accounting abuses? Would the public interest be better served if there were only one method? Why do we need twelve criteria to identify a pooling-of-interests? Only after completing the analysis of the issues would the procedures and techniques used under each method be discussed.

Students "trained" using the first method will probably be technically competent, and they may perform well on professional examinations. They will not, however, be as well prepared to serve the public interest as students "educated" using the second method. Students instructed using the second method would have a much better understanding of the social, political, economic, and ethical problems involved in the accounting for business combinations.

Rule #2 — The Issues Are Not Enough — Study History

Studying the issues results in a much broader coverage of the practice of accountancy. And this naturally creates a need for setting an historical perspective in the classroom. As an example, consider the accounting for an early extinguishment of debt.

Instructional method one would be very brief and concise — any early extinguishment of debt is accounted for as an extraordinary item under existing GAAP. Students can easily memorize this and little class time is "wasted".

Method two, however, would examine the issues in more depth. Does an early extinguishment of debt meet the criteria of an extraordinary item — that is, is it characterized by an "unusual nature" and "infrequency of occurrence"? If not, why should it be treated as extraordinary?

Taking an historical perspective helps to explain the rationale for this treatment. Prior to 1973, gains and losses incurred on debt extinguished through refinancing were typically amortized in future years. Effective in 1973, *Accounting Principles Board Opinion No. 26* required that all gains and losses from early extinguishment, including those from refinancings, be recognized currently in income. *Accounting Principles Board Opinion No. 30,* which was effective in late 1973, established the "unusual nature" and "infrequency of occurrence" criteria for extraordinary items, and classified gains and losses on early extinguishments to be reported as ordinary income. Interest rates in the early 1970's climbed well above previous rates. This resulted in opportunities to reacquire debt at substantial discounts and, correspondingly, huge gains. This ability to increase ordinary income through a simple refinancing quickly became a concern of the Securities and Exchange Commission, and, soon thereafter, of the newly formed Financial Accounting Standards Board. The result, issued in 1975, was *Statement of Financial Accounting Standards No. 4,* requiring that gains and losses from early extinguishments of debt be reported as extraordinary items.

Discussion Opportunities

An historical analysis such as this offers the instructor numerous opportunities to get students started developing their conceptual and analytical thinking abilities. For example, the discussion might include:

1. The interrelationships between accounting standards, and how those accounting standards may impact the financial statements.
2. The nature of the bond market and when bonds will sell at a premium or discount (and thus when bonds can be refinanced at a gain or a loss).
3. The definition of "net income" and its components.
4. The ethical implications of managers "artificially" manipulating income to achieve certain operating results.
5. The political setting of accounting standard setting, including the roles of the SEC, the FASB, and other interested parties.
6. The ability of an accounting standard to positively or negatively affect the public interest.

CONCLUSION

Adding an historical dimension adds a sense of culture to the accounting curriculum. Developing the students' awareness of this culture will help them to understand the role of accounting in society and their own role as accountants. This should lead to better educated students and better prepared professionals.

Adding accounting culture to the curriculum does not come without a cost. More class time will need to be spent on discussion of substantive issues rather than accounting procedures and techniques. The instructor must be willing to make a trade-off between "training" and "educating". Adding culture, using the historical approach suggested, does not require a wholesale revision of the methodology of accounting instruction. Each instructor can and should determine the appropriate mixture of training and educating that will best meet the needs of his/her students at each class level. Quite clearly, however, adding more hours of training to ensure coverage of the burgeoning number of accounting standards will not benefit our students' future careers.

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REVIEWS OF BOOKS AND OTHER PUBLICATIONS

Roger Backhouse, *Economists and the Economy: The Evolution of Economic Ideas 1600 to the Present Day* (New York: Basil Blackwell, 1988, 224 pp. $49.95).

by
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Roger Backhouse's book, "Economists and the Economy", is concerned with both the history of economic thought and of the economy. His main concern is that present day economic thinking and analysis are too divorced from reality. The book examines how economic and political events from the seventeenth century until the present day have impacted upon, and have been shaped by, the economic thought of the time. His main aim is to provide students of economics with some of the historical and contextual background they need in order to better understand the subject they are studying.

The book is divided up both chronologically and by economic subject. In this respect, it is a series of histories. Chapter 2 is concerned with "Growth and Development", Chapter 3 with "Regulation of Trade and Industry", Chapter 4 with "Money and Inflation" and Chapter 5 with "Employment and Economic Fluctuations". In each of these chapters Backhouse illustrates the intertwining or reciprocal relationship between economic thought and economic and political events. The final two chapters switch the emphasis to a more theoretical posture where he explores the "Theory of a Market Economy" in Chapter 6 before concluding with a more general overview of the "Discipline of Economics" in Chapter 7. These final two chapters include a critical examination of the contributions made by, and the strengths and weaknesses of, economic theory.

By concentrating upon specific subjects, for example, economic growth, the reader is exposed to the intricacies and interrelationships of thought and practice over the centuries, as well as how the economists of a period often differed in their economic interpretations and prescriptions. The manner in which the book is structured means that a number of economists are visited again and again (most notably Adam Smith), vividly revealing their contribution to a wide range of economic theory

and practice. The structure also allows the material to be expressed as a lively narrative rather than in a technical style.

Given the length of time covered (from 1600 to the present day), Backhouse introduces the reader to a number of lesser known and neglected seventeenth and early eighteenth century economists such as Quensay, Boisguilbert, Cantillon and Locke. He reveals how these and other scholars grappled with, and made sense of, the newly emerging and increasingly complex economic order of their time, as well as revealing how their work subsequently informed those of the better known classical economists. What is surprising, however, is the omission of some of the economic greats such as J. R. Hicks and George Stigler. The latter has been one of the central opponents of the regulation which Backhouse writes about in Chapter 3. The volume also brings the reader up to the present date, considering such issues as the EEC, privatization in the U.K. and deregulation in the U.S.A., all of which are important to the reader's understanding of contemporary economic thought and the economy. Obviously with such a time frame, the book is very much an overview, however, given the thrust and intention of the book, this is a very valid position to adopt and one which is executed with consummate skill.

One of the author's purposes in writing this book is to demonstrate that our understanding of contemporary economic thought and practice, and to some extent the economy itself, must be situated *both* historically and contextually. This book, therefore, not only considers how past economic thought and practice preconditions, or at least shapes and influences, the future, but also examines the specific economic conditions within which particular economic theories and practices emerge. I believe that this approach to a history of thought and practice offers a number of advantages. Grounding theories and practice in their economic as well as historical context not only breathes life into the narrative, making it more real and intelligible, it also reveals the very important intertwining of systems of economic thought and practice with other contemporary events and discourses. In this respect; much economic thought and practice over the centuries is seen to be constituted within, or informed by, events taking place in the real world. The book also reveals how such theories are then often tested against, and sometimes contradicted by, subsequent events. My only real criticism of this book is that the "other" events and discourses are largely restricted to the economic and political realm. Contemporary social, and indeed philosophical discur-

sive practices, which may also be observed to impact upon economic thought, practice and the economy, received scant attention. This, however, is possibly too much to expect from a single volume.

Roger Backhouse weaves into his history a number of stated positions, which he refers to as recurring themes. These are that "there are very serious limits to what economics can achieve" and that "there are certain problems that economists have never managed to tackle successfully and which are unlikely to be tackled much better in the foreseeable future" (see preface). While I have some sympathy with the positions adopted, others may not. Nevertheless, their presence is refreshing and valuable. Too often histories eulogize their disciplines rather than critically reflecting upon them. In contrast, the "recurrent themes" in Backhouse's book serve as a challenge to the reader. The reader is required to consider what the author is saying and whether or not he or she agrees with his position rather than uncritically accepting the material as a given fact.

Although never specifically referring to accounting thought and practice, the orientation of the book may serve as a useful model for similar historical studies in accounting. As with economics, accounting thought should be situated in its historical, economic, political and, if I may add, social context. The book may also provide useful source material for historical studies in our own discipline. For example, accounting historians may wish to explore whether economic growth, regulation of trade and industry, money and inflation, employment and economic fluctuations over the centuries have impacted upon accounting thought and practice.

Barber B. Conable, Jr., *Congress and the Income Tax* (Norman, Oklahoma: University of Oklahoma Press, 1989, 132 pp., $17.95).

Reviewed by
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As depicted in the preface, *Congress and the Income Tax* is based upon Barber Conable's 1985 Julian J. Rothbaum lectures at the University of Oklahoma which describe his twenty-year tenure in the House of Representatives. Conable's knowledge and observations from his distinguished career on the House Committee on Ways and Means form the basis for the six chapters. Following his organization, this review will first

consider each of the six lectures separately before appraising the book as a whole.

The first chapter, "A Former Congressman's Backward Look", provides the reader with an introduction to Conable's perceptions of membership on the House Committee on Ways and Means and the public's feeling for federal income taxation. Describing himself as a member of the Republican minority who had a "relatively 'safe' seat" which allowed him to "make tough decisions and survive" [p. 6], Conable sums up the taxpayer's definition of tax reform as "I am paying too much tax because somebody else isn't paying enough" [p. 11].

"The Committee on Ways and Means" provides the reader with the history of the Committee and its interaction with the Senate Finance and Joint Tax Committees in the second lecture. Emphasizing Ways and Means under Wilbur Mills, Al Ullman, and Dan Rostenkowski, Conable's provocative discussion illustrates how the personalities and politics of the three chairmen and the remaining members shaped the Committee and tax legislative history.

Beginning with an historical perspective, "The Federal Income Tax: One Man's Perspective" traces the income tax from the Civil War through World War II. The characteristics of typical tax bills [p. 42] then precede Conable's enlightening discussion of the major tax legislation enacted from 1964-84 when he served on Ways and Means. Here questions such as who was a part of each negotiation? why did a proposal or "reform" become law? and how did each portion of the tax legislation progress to the President's desk?, are expertly answered. Particular attention is devoted to the code sections resulting from bills which Conable sponsored, including "above the line" charitable contributions, ACRS, and indexing marginal rates.

Conable uses his intricate knowledge of the interrelationships within the Congress to explore the Tax Reform Act of 1986 in "The 1986 Act, An Appraisal". Although he was not present, his knowledge of the personalities and politics offers an astute overview of the evolution of this major income tax revision.

Wordsworth's "getting and spending, we lay waste our powers" [p. 93] provided the basis for the fifth lecture. Conable first enumerates the attempts to decrease spending such as zero-based budgeting, sunset laws, and Gramm-Rudman-Hollings. However, most of this lecture is devoted to "getting", and the problem of how to broaden the tax base and increase revenues by removing "preferences" while supporting simplication and "lowering" the tax burden.

Conable's expression of the responsibilities of members of Congress forms the basis of his last lecture, "Taxation with Representation: A Current Appraisal". He believes that Congressmen should be generalists not specialists. While generalized judgment creates a dichotomy between compromise and complexity, he asserts that random and other influences take a back seat to a Congressman's perceived consensus among the people [p. 125].

The lectures in *Congress and the Income Tax* flowed together to form a very interesting and informative work. The only criticism is the lack of summarization at the end of each lecture and at the conclusion of the book. As separate lectures, the second and third should become required reading for graduate-level tax policy, procedure, and/or research courses. Those who are curious about the historical basis of the federal income tax, and the personalities and politics surrounding the current tax law will enjoy the third and fourth lectures immensely.

In summary, Barber Conable provides readers with an insider's appraisal of past and current tax legislation, the personalities shaping the major acts and the political compromises creating the complexity. The enjoyable style of the lectures will treat all taxpayers to a concise explanation of the formation of tax policy.

Edgar Jones (editor), *The Memoirs of Edwin Waterhouse: A Founder of Price Waterhouse* (London: B. T. Batsford Ltd., 1988, 248 pp., $34.95).

by
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In 1985, the manuscript memoirs of Edwin Waterhouse (one of the founders of Price Waterhouse) were discovered and Edgar Jones, whose earlier work on *Accountancy and the British Economy, 1840-1980*, [1981], was received with much acclaim, was asked to edit the eleven large volumes. The memoirs were written when Edwin was in his 60's, but for the period up to 1869 they are based on detailed diaries which he maintained. Together with an appendix, the writing continues up to the year of his death (1917). This book is an edited version of the memoirs together with a useful introductory chapter and extensive notes and references by Edgar Jones.

Edwin Waterhouse (1843-1917) was the youngest of seven children in a Quaker family, whose Quakerism went back for several generations. His father, Alfred Waterhouse, was a prosperous Liverpool cotton broker, but the family moved from Liverpool to Bristol (and later to Reading) during Edwin's boyhood. At the age of 15, he became a pupil at University College School, London. Subsequently, he was a student at University College, and he graduated from that college in 1860. In the year following his graduation (at the age of 20), he entered the office of Coleman, Turquand, Youngs and Co., an important city firm of accountants, as a trainee. He stayed with this firm for three years.

The section of the memoirs dealing with his accountancy training is not particularly informative, but he does say that "on the whole" his time with the firm was interesting and that he obtained a "considerable variety of experience". Although there were no professional accountancy examinations at that time (prior to the founding of the English Institute of Chartered Accountants), Edwin did take, and pass, examinations of the Institute of Actuaries.

In 1864, Edwin put up a brass plate and began to practice on his own account. One interesting job that he specifically mentions as arising during his first year in practice, is work on a costing system for John Fowler, a Quaker manufacturer and inventor of the steam plow. It seems that much of his early professional work came either from his family or from his Quaker contacts and Quaker names crop up throughout his memoirs.

In 1865, Edwin entered into partnership with Samuel Price, who had almost 20 years experience in accountancy, and William Holyland, with whom he had worked at Coleman, Turquand, Youngs and Co. Waterhouse became the junior partner in the new firm of Price, Holyland and Waterhouse. When Holyland retired in 1874, the firm's name was changed to the more familiar Price, Waterhouse and Co.

Coleman, Turquand, Youngs and Co. had specialized in company liquidation work. Waterhouse was also involved with a number of important insolvencies during his long professional life, and he lectured on the topic. In the second half of the 19th century, auditing work was increasing in importance and Price, Waterhouse and Co. also developed in this area. Edwin was particularly active in the audit of railway companies and banks. He was also the auditor of Oxford University and the Dean and Chapter of Westminster Abbey. There was, however, a great

variety of other work including financial investigations and arbitration. Edwin's descriptions of some of this work, and some of the frauds that he encountered, are particularly interesting for the accounting historian. In 1870, he was involved in devising a profit sharing scheme which attempted to avoid conflict between labor and capital. He undertook several industrial arbitration assignments and volunteered his services in one case. He was also involved in the important Neuchatel Asphalte Company case which clarified the law on the writing off of wasting assets.

In his earlier book, Edgar Jones has noted the connection of the early accountancy profession with non-conformist sects. Edwin Waterhouse's career is an example of this phenomenon. In their early adulthood, however, Edwin and his brothers and sisters (perhaps as a revolt against the perceived strictness of their Quaker sect) joined the Church of England, although Edwin did this without renouncing his membership of the Society of Friends. Much later during his presidency of the English Institute of Chartered Accountants (when his "nominal membership" was queried by the Society), he made it clear that he still considered himself to be a Quaker. His local "Monthly Meeting" of the Society accepted this position.

Edwin Waterhouse's manuscript is (to date) the only complete autobiography of a founder of one of the major international accountancy firms. Its importance is enhanced because its author was also a leader of the profession in the early years of the Institute of Chartered Accountants in England and Wales. He was a member of that Institute on its formation in 1880. In 1887, he was elected to the council, and he held the position of president from 1892 until 1894.

The memoirs are not restricted to accounting matters since they contain much fascinating detail of the day to day life and concerns of a remarkable Victorian family. The chronicle of Edwin's ascent to the top of his chosen profession is interwoven with the success stories of two of his brothers, Theodore and Alfred, who also established themselves in their chosen professions. Theodore, a lawyer, became a respected member of the Council of the Law Society, and Alfred rose to the Presidency of the Royal Institute of British Architects. The book will thus be of interest not only to accounting historians, but also to social historians. This reviewer concurs with the editor's note that "It is in some respects a real Forsyte Saga, a narrative of the rise and achievements of a successful upper-middle-class family, revealing their motives, abilities, prejudices and preoccupations."

Marvin Kitman, *George Washington's Expense Account* (New York: Simon and Schuster, 1970. Reprint edition, New York: Harper & Row, Publishers, 1988, 283 pp., $8.95).

by
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"In some ways General Washington's expense account is the forerunner of the welfare state of the rich" [p. 30]. This quote from Marvin Kitman's entertaining and irreverent "account" of George Washington's financial arrangements for his services as Commander in Chief of the Continental Army aptly demonstrates that General Washington's expense account writing is second to none. The statement takes on added significance in view of recent attempts to denigrate Washington's accomplishments in war and peace.

Kitman, like many American schoolboys, had heard the story concerning Washington's willingness to serve his country without salary during the Revolutionary War. Somewhat reminiscent of a United States national leader almost two centuries later, General Washington explained in a stirring speech after his election as Chief of the Continental Army in June 1775, that all he asked of his new country was that it pick up his expenses. Nothing much is heard in the classrooms about the equally stirring expense account General Washington submitted after the war.

Many modern expense account writers believe that each expense account submitted should be higher than the last. This "escalation principle" was followed unerringly by Washington during the 96 months he was on the expense account. Kitman's exhaustive examination and evaluation of Washington's submissions demonstrate some rules of the General's model: omit nothing; be specific on the smaller expenditures and vague on the larger ones; whenever possible, intermingle personal and business expenses; pick up the check for one's associates; and above all, be reasonable — know what the market will bear. While there is no claim that Washington invented the expense account, Kitman maintains that the items in the ledger book suggest that the General may have been the founding father of "expense account living."

But there is more, much more, to this expense account than mere financial citations of payments to whom and for what. This account, to quote Kitman, " . . . is filled with tales of violence, sex, and camaraderie; of betrayal and espionage; of

night patrols and hot pursuits; of men living on the edge of death or capture by the hated tyrant" [p. 23]. Further, the account evokes the aroma of special dinners and the rustle of clean sheets as well as the rattle of sabres, the roar of muskets, and the smell of damp defective gunpowder.

For the eight-year duration of the war against the British, General Washington turned in an expense account slightly in excess of $449,000. However, all of Washington's bill wasn't for out-of-pocket expenses. Included was implicit interest of 6 percent per annum for the money he laid out from his private purse to cover his expenses for the first two years of the war. Also, a surcharge for depreciation was thrown in, which was caused by some degree, by the loss of confidence in his military leadership.

The sum of $449,000 may at first appear exorbitant when compared to the $48,000 General Washington would have been paid had he been compensated for eight years of service like other patriot generals. However, to begin to remotely appreciate the significance of the remuneration, one must compare the expense account to what it is worth in today's buying power. Those Continental dollars that Washington was requesting were much harder currency than we have today. Continental money had a nice ring to it. Whether we use the conservative scale of appreciation — say 10 times the 1969 dollar (or 35 times the 1989 dollar) — or the Galbraithean scale of 50 times, we are talking about millions, according to Kitman.

Clearly, Washington was a hero and Kitman doesn't diminish that contention merely because of the General's highly creative expense account; it merely proves his humanity. As it has been pointed out for two centuries, George Washington was willing to make every sacrifice for liberty except one: reducing his standard of living. But even here, says Kitman, he may have sincerely been unaware of the incongruity of his actions. Writing in 1776, Washington indicated "No person wishes more to save money to the public than I do and no person has aimed more at it" [p. 282].

In the final analysis, Washington may have been just another congressman at heart — wanting economy for the nation, with a little prosperity for his own interests. Nonetheless, his account was promptly settled at the conclusion of the war, while lower ranking men waited for years. However, when he offered to serve for expenses only after his election as first President, Congress promptly turned George Washington down flat. He was begged to accept a salary of $25,000 when the salary

of the Secretary of State (a gentleman by the name of Thomas Jefferson) was fixed at $3,500.

Read this delightful account by Marvin Kitman and judge for yourself.

Charles Kohler, *Five Years Hard! Memoirs of an Articled Clerk 1928-1933* (Institute of Chartered Accountants in England and Wales, 1987, 44 pp.).

by
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"You are to be a chartered accountant, dear. . . . You are a very fortunate boy" [p. 7]. With these words from his mother, Charles Kohler began the first chapter of this chronicle of his time as a London chartered accountant's articled clerk between 1928 and 1933. I read the book without putting it down, not just because it is short, some forty-four pages, but because it is so refreshingly well written. I began my three-year articles of clerkship in Manchester, England, some thirty-five years after Kohler qualified as a chartered accountant. I was intrigued to find that we had experiences in common.

At that time, Kohler did not appreciate his mother's view of his good fortune. Indeed, he suggested strong links between punishment and chartered accountancy training through the title of the book, "Five Years Hard!," and through some of his chapter titles, notably "On Probation" and "The Gates Open." The reasons for the analogy with punishment are not hard to find.

First, the young Charles Kohler wanted to be a teacher — but "Uncle Billy says chartered accountants earn much more than school teachers and the work's a lot more interesting" [p. 7]. Thus, in 1928, at the age of seventeen, Kohler became an articled clerk in Uncle Billy's office, knowing little or nothing of what he would be doing for the next five years. He did know that the substantial premium commonly required of articled clerks would be waived, and that he would receive no salary for the five years of articles. Second, early in Chapter Two ("Tedious Years"), Kohler stated, "My years from seventeen to nineteen were lonely, wasted years" [p. 17], leavened it seems by attending, in office time, lectures on bookkeeping and law held at the Institute of Chartered Accountants. He acknowledged that his

loneliness was largely the result of his leaving the community of a Quaker boarding school and his friends to become a commuter from an anonymous London suburb.

After about eighteen months of "calling over" and "casting," Kohler's spirits lifted as he acquired a new focus to his professional life — the Institute's Intermediate Examination and a structured correspondence study program with H. Foulks Lynch & Co. He found the correspondence tuition "thorough but narrow: practical rather than theoretical" [p. 18], and derived more satisfaction from the evening lectures. These were conducted by people such as H.A.R.J. Wilson and W. W. Biggs, names familiar to succeeding generations (mine included) of articled clerks, as authors of required texts in the Foulks Lynch correspondence study program. Kohler passed the Intermediate Examination, and the reader detects the first glimmer of hope — "I had now served half of my sentence. There was no remission of good conduct, but I knew that the future would provide more interesting and responsible work" [p. 21].

The more interesting and responsible work turned out to be bank reconciliations, sales ledger balance extraction, final account work, including being present at discussions with clients, and travel to clients in different parts of the country. His journeys to South Wales and the Midlands, where he "encountered a different culture from that of the soft south" [p. 25], advanced his education. His brief descriptions of coal miners and of mine officials, and their way of life, like the descriptions of his colleagues and of London life throughout the book, are vivid and expressive. He also advanced his education by browsing through the Institute library, and attempted the pages of that "rather prosaic journal" [p. 30], *The Accountant,* in order to gauge his financial prospects on qualifying. These ranged from five or six pounds per week at a Far Eastern rubber plantation to about three pounds in public practice. Life was certainly becoming more exciting. He described games of office cricket, the misuse of the office adding machine for gambling purposes, and meals at the Lyons tea houses that identified him as a man with a strong constitution. Curried vegetable hotpot, a glass of milk and a portion of jam roly-poly pudding comprised his typical luncheon fare.

Kohler wrote the seven papers of the Institute Final Examination in November 1933. In the following January, he learned — after initially reading the wrong list and being dejected to find his name not there — that he was one of the fortunate forty-three percent who had passed. At this point, and for the

first time, he was to receive a salary, three pounds ten shillings per week.

In the final chapter, Kohler stated that although he did not choose to be a chartered accountant, he "harboured no regrets" [p. 42]. He regarded the first half of his article service as "largely wasted in ticking, vouching and the calling over of figures" [p. 40]. This he ascribed to the years of industrial depression, unemployment and the dole, which reduced the amount of available responsible work, and turned the articled clerks into a pool of free unskilled labor. I am bound to say that my own experience suggests that this was an over-generous assessment. At least half of my three years of articles was similarly wasted, and this in a period of relative prosperity some thirty-five years later.

E. Kenneth Wright, a past president of the Institute, and a long-time colleague of Kohler, stated in his introduction to the book: "Charles has produced a period piece which will be read with great enjoyment by his contemporaries. The present generation may possibly pursue it with a condescending smile" [p. 5]. As someone in between those two generations, I read the book with great enjoyment, with perhaps a little — but not much — nostalgia, without condescension, but with a recognition that the profession has improved its practices and its training over the years. Yet some things remain the same. Through our training we did acquire, in Kohler's words, "the essential disciplines of the profession: the capacity to concentrate; to be accurate and to be objective" [p. 40]. Further, we began to understand "the responsibilty of the practising accountant: a responsibility . . . that would test integrity" [p. 40]. Anyone reading this book — from my generation — will be the wiser for its account of, and commentary on, one period in the evolution of the accounting profession in England.

Charles Kohler really wanted to be a teacher. To judge from this book, his colleagues, his clients, his clerks and his readers will have found him to be a remarkably successful one.

George J. Murphy, *The Evolution of Selected Annual Corporate Financial Reporting Practices in Canada 1900-1970* (New York: Garland Publishing, Inc., 1988, 240 pp., $35).

by
John K. Courtis
University of Waterloo

This book originally appeared without substantive change in 1970 as the author's doctoral dissertation. Its purpose is to document chronologically the changes in selected corporate annual financial reporting practices in Canada from 1900 to 1970, together with their underlying influences.

The work, which is structured into seven chapters, commences with the evolution of the mandatory audit and its scope. Attention is then given to how the balance sheet and profit and loss statements evolved, including their content, classification, and general valuation base. The earned surplus statement, footnotes to financial statements, secret reserves and extraordinary items are then examined. A separate chapter is devoted to corporate depreciation practices. The book includes a comprehensive 270 item bibliography and five supporting appendices, but no index.

The study's perspective is broad-based. It focuses on general changes and influences, and especially on the reporting practices of industrial companies that fall within federal, and not provincial, companies' act legislation. To document these changes, the annual reports from a random selection of ten companies are examined for each of the periods: 1903 to 1919, 1920 to 1939, and 1940 to 1970. In addition, test readings of corporate reporting practices of 30-40 companies are made approximately every ten years throughout the period. These samples, together with the descriptions and studies of similar evidence by academic and professional commentators of the time, comprise the fabric upon which themes are developed.

The initial influence of English company legislation, followed by the growing influence of pronouncements from the American Institute of Certified Public Accountants, especially during the formative 1930 to 1950 period are reviewed. These influences are carefully traced to both Canadian company legislation and to pronouncements of the Canadian Institute of Chartered Accountants about the scope of financial statement audit and the form and content of the audit report. The implicit thesis of this longish second chapter is that improvements to annual reporting practices since 1900 have been a reaction to

the mandatory audit and its scope rather than to voluntary disclosures. One surprise was to learn that it was not until 1964-65 that Canadian federal legislation required the auditor to give an opinion on the profit and loss statement.

The book then details an intricate chronological mapping of the several influences that underlie the evolution of financial statements' form and content. This is dealt with in three periods: 1900 to 1920, 1920 to 1940, and 1940 to 1970, and is based on a review of corporate legislation, financial press commentary, the professional and academic literature, and a sample of corporate annual financial statements.

The 1900 to 1920 period appears to reflect a philosophical tug-of-war between maintaining secretiveness in corporate reporting practices (motivated partly by fear of helping a competitor) and an increase in voluntary disclosures, the latter emerging victor. In the second period, there was increased emphasis on operating profit as a commentary on valuation. This, together with advocacy of disclosures which would prevent recurrences of the Royal Mail Steam Packet case, acted as the catalyst for the federal Companies Act of 1934 (and its 1935 Amendment). This legislation introduced several new mandatory profit and loss disclosures, especially about each asset category's valuation base. An underlying motivaton of this Act was to give additional protection to the public against corporate stock promotion and capitalization abuses.

In the third period, the Ontario Corporations Act of 1953 constituted a significant revision of financial statement disclosures, these being based almost entirely upon recommendations of the Canadian Institute of Chartered Accountants. This provincial legislation became the precursor for federal Companies legislation eleven years later, and was also extended to the rights of shareholders, the duties of directors, takeover bids, and insider trading. The author notes that almost all of the legislation relating to financial statement disclosure is a direct copy of recommendations of the Canadian Institute of Chartered Accountants, which in turn has benefitted from the American Institute of Certified Public Accountants' having supplied the prototype for many of these recommendations.

The book also has a chapter on the evolution of the depreciation concept in Canada. Between 1932 and 1954, the depreciation methods of Canadian companies tended to follow conventions adopted by the tax department. Subsequent to 1954, no correspondence between depreciation for book and tax purposes was required, and the accounting concept of depreciation was

replaced by the new concept of "capital cost allowances." This development was as much a function of general fiscal policy as it was of the need to amortize corporate fixed assets against corporate revenue. This has given rise to the tax allocation problem, and it is unfortunate that the book does not detail the outcome of deferred tax since 1970. An additional chapter on inventory valuation would have rounded out attention to specific financial reporting practices.

While the greater part of this book is enlightening, its impact is diminished because it is incomplete. Being the only published Canadian study of its kind, the author had a responsibility to use his knowledge of source documentation and his analytical skills to update the text to include the changes that have taken place since 1970. The influence of environmentalists and other vested interest groups on social responsibility reporting, the growing demand for disclosures of an expectational nature, the influence of more recent corporate and bank collapses, several stock scams involving disclosure practices and auditor responsibilities, the Institute's excursion into current cost accounting, and the political influences that underlie the standard setting process have all been influential in explaining how we have arrived at present reporting practices. At least some of this information might have been obtained from personal interviews with relevant individuals. Such inclusions would have significantly updated, enlivened and enriched this scholarly book. Although we are interested in history, our anchor-point is, more realistically, the present, and not 1970.

Terry K. Sheldahl, Editor, *Education for the Mercantile Counting House: Critical and Constructive Essays by Nine British Writers, 1716-1794* (New York: Garland Publishing, Inc., 1989, 440 pp., $60.00).

by
G. A. Swanson
Tennessee Tech University

This volume contains two parts — the first chapter and the rest of the book. The first chapter is a 115-page treatise on the evolution of English general education from 597 to the mid-eighteenth century. The remaining chapters concern nine eighteenth-century essays. Although the essays are not likely to change our perceptions about the development of accounting

education in that century, they may provide insights into how liberally general educators perceived bookkeeping as a subject.

The title of the book is misleading. The connection between the education discussed and the mercantile counting houses is never made in either the treatise or the essays. It is like titling a book on modern business education "Education for the Banking Industry" because banks in some sense underlie modern business. Readers looking for information on mercantile counting houses will be disappointed in the book's contents.

Notwithstanding its title, the book is a useful addition to the study of both business and accounting education. Some educators assert that the present emphasis on liberal education for business is a modern phenomenon, but the nine essays refute this assertion. For example, Thomas Watts' essay "On the Proper Method for Forming the Man of Business," published in 1716, advocates the combination of accounting and liberal education advocated by many business actors today [pp. 123-138]. Watts suggests the following five areas of learning, in order of importance: (1) correspondence, (2) computation, (3) bookkeeping, (4) mathematics, and (5) "Propriety of Expression." He describes a package of knowledge and skills from communications and computing to analytic and interpersonal skills that includes accounting.

The author-editor's own treatise in the first chapter is tedious if a reader is searching for accounting education milestones. It is quite revealing, however, of the apparent general education value English educators placed on bookkeeping. Long before it was associated with trade schools, bookkeeping was part of the emerging general education.

The nine essays are mostly photographic representations of original imprints. Well over 100 other works are cited by the author.

The volume should interest all accounting and business historians, particularly those interested in education. It should be considered for assigned reading in courses in the history of education generally and in the history of business and accounting education specifically.

Atsuo Tsuji, *The Historical Development of Management Accounting* (Tokyo: Yuhikaku, 1971. Revised and enlarged edition, 1988, 308 pp., Y4800E).

Reviewed by
Takashi Oguri
Kagoshima Keizai University

The first edition of this book gained a reputation in Japan of having successfully established a social science methodology for researching the history of management accounting and of having analyzed the formative stages of U.S. management accounting from 1880 through 1920. The revised and enlarged edition, now available to readers eager for a reprint, has elaborated both the methodology and content through subsequent research.

The author's methodology can be identified with one of the critical schools of accounting in Japan whose origins go back to the early 1950s (or, according to some researchers, to the 1930s). While traditional accounting theorists tended to confine their research to mere discussion of accounting techniques and interpretations of law, the development of accounting as a social science discipline was heavily influenced by the critical theories. The latter theories share common characteristics in that they are based on a political economy of capitalism or monopoly capitalism and view accounting in a social and historical context. Through applying these perspectives to his study, the author has proposed a productive methodology oriented both to the analysis of logical relationships between accounting theories or techniques and the development of capitalist economy and to the analysis of individual historical facts.

Through this effective methodology, this book arguably makes the following contributions to the research of management accounting history.

First, it identifies the managerial or control function of costing *per se* at the stage of the modern factory system as a basis of management accounting. Traditional research approaches were concerned with the history of linkage between costing and the accounting (bookkeeping) system. On the contrary, this book demonstrates that costing was developed, especially in the USA, regardless of articulation with the accounting system.

Second, this book successfully discerns two types of costing development, the UK-type and the US-type. While accountants took the lead in developing a system devoted to precise calcula-

tion of cost in the UK-model, it was the engineers with experience in the scientific management movement who initiated efforts to design new methods of reducing cost in the US-model. As a result, the US-type invigorated the formation of management accounting.

Third, Tsuji's book elucidates the history of two indispensable components of management accounting: standard costing and budgetary control, while other researchers tend to lean toward one or the other. This book emphasizes that the scientific management movement stimulated the formation of standard costing and budgetary control and that the first stage of management accounting was promoted by engineers who were not acquainted with the traditional accounting system. The book goes on to argue that management accounting, initially formulated as an accounting of engineers, was finally completed and institutionalized by combining the accounting of engineers and the accounting of accountants.

The uniqueness of the book lies in its theoretical categorization of the types and stages of development of management accounting and its emphasis on what the author terms "the logical inevitability imminent in historical facts." These characteristics are deeply related to the author's methodology.

This theory-oriented study contrasts with the empirical (facts-oriented) works of such authors as A. D. Chandler, Jr. and H. T. Johnson. One of Tsuji's apparent objectives is to criticize these empirical case studies as lacking theoretical analysis. It is difficult to determine which criterion ought to be used to denote the development of management accounting. Can it be any practice in a particular company, a theory which popularizes a typical method or any set of practices and theories? This book is stimulating in that it raises these significant, controversial issues.

Unfortunately for our non-Japanese readers, this book is written in Japanese. It is to be hoped, however, that through international exchange and cooperation the book can come to be regarded as a contribution to be reckoned with in our future debates extending beyond the language barrier.

William J. Vatter, *Managerial Accounting* (New York: Prentice Hall, 1950. Reprint edition, New York: Garland Publishing, 1986, 510 pp., $80.00).

Reviewed by
Thomas Tyson
St. John Fisher College

Recently educated accounting academicians may not be familiar with William Vatter or his 1950 textbook, *Managerial Accounting,* now published in reprint form by Garland. Professor Vatter received the 1984 AAA Outstanding Educator Award and served on the faculties of the University of Chicago (1936-57) and California-Berkeley (1957-72). He is perhaps best known for the "fund theory" of accounting and the concept of "service potential" as the key attribute of assets.

Professor Vatter produced eleven books, monographs, or handbook contributions and over fifty articles. He developed *Managerial Accounting* for his University of Chicago managerial accounting course and it was reprinted 18 times by Prentice-Hall until 1962. Charles Horngren, one of Vatter's students and colleagues at Chicago, has dedicated every edition of *Cost Accounting* to Professor Vatter.

Managerial Accounting differs in many ways from today's accounting textbooks. The book contains 36 chapters that are divided among five topic areas: Accounting Concepts, Budgeting and Managerial Control, Elements of Accounting System, Accounting for Unit Product Cost, and Problems of Cost Interpretation. Vatter unites these disparate topics through his consistent interpretation of accounting. For Vatter, "the fundamental and most important uses of accounting are bound up with the operations of management" [p. 2], and accounting is "a means of getting at the facts with which management is concerned" [p. 15]. Throughout the text, accounting procedures are explained and assessed in relation to their usefulness to management.

Vatter focuses much more on the conceptual rather than the factual-recall level of learning. Each chapter contains one or two detailed, challenging problems, rather than the innumerable review questions, exercises, problems, etc., that appear in many modern texts. Accounting procedures are often described narratively rather than in debit/credit form, and these procedures are carefully reported and thoughtfully reasoned. As a result, the book has a distinct and personal flavor to it.

Perhaps it goes without saying, that *Managerial Accounting* is clearly not suitable for use in today's managerial ac-

counting courses. Too much of its procedural content is outdated and none of the most current managerial accounting issues (e.g., JIT, quality costs, activity accounting) are explicitly addressed. If the book is read as accounting literature, however, it is far more satisfying. Chapter 1, "Introduction", and Chapter 20, "The Problem of Cost-Finding" are finely written and especially stand out. For example, Vatter writes:

> "The cost unit may be a function, a process, an activity, a method of doing something, or one of the available alternatives in a problem of choice or decision; . . . or it may represent a hope, a plan, an event, or any other item or conception about which question of cost significance may arise" [p. 330].

Professor Vatter provides a unique perspective on accounting terms, concepts, and procedures. His style is lucid and personal, but never opinionated. The book does require selective reading and should be of interest to those that appreciate a literary approach to basic accounting concepts and principles.

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