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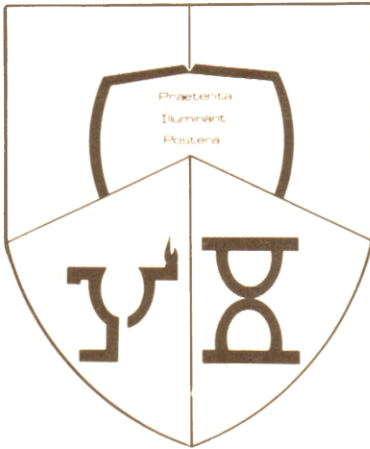
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The Accounting Historians Journal

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Fall 1981
Volume 8, No. 2

Research on the Evolution of
Accounting Thought and
Accounting Practice

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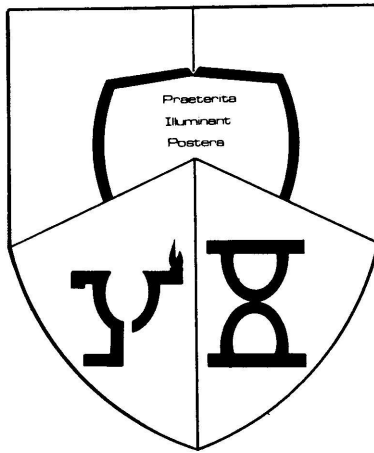
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The Accounting Historians Journal
Vol. 8, No. 2
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UNIVERSITY OF SALFORD

A HISTORY OF THE ABACUS

Abstract: As the revolution in computing advances, it is appropriate to step back and look at the earliest practical aid to computation—the abacus. Its formal western origins lie with the Greeks and the expansion of trade in the seventh century BC, and its design and application showed remarkably little change over the following two thousand years. A measure of the usefulness of the abacus is seen by the fact that it survived the advent of algorism by some six centuries but its major significance for western culture lies in its perfect and seminal representation of the decimal system.

“Can you do Addition?” The White Queen asked.

“What’s one and one and one and one and one and one and one and one and one and one?”

“I don’t know,” said Alice. “I lost count.”

“She can’t do Addition,” the Red Queen interrupted.¹

Pure Science—like social science—is addicted to revolution and revolution usually implies the rejection and exclusion of all that came before. Subsequent reassessment, however, usually reveals this to be a short-sighted attitude. Familiarity with relevant historical developments can sharpen appreciation of a contemporary situation and, where appropriate, an assessment in context of past attainments can bring a recognition of the limitations of current achievements and provide the spur that prevents complacency. Therefore, as the latest generation of silicon chips carries the revolution in computation a stage further, it is appropriate to examine the early history of counting and calculating aids, and look at the use of the abacus.

As Conant has noted,² we know of no language in which the suggestion of number does not appear, and the words which give expression to the number sense must be among the earliest words to be formed in any language. The need for calculation was as ubiquitous among ancient civilizations as our own; everyday intercourse required information as to distance, time, size and cost.

Finger counting is the most obvious starting point for calculating, as every parent and teacher observes from the instinctive reactions of children, and an elaborate system developed from it at an early date. The persistence of this simple but effective means of numbering is evidenced by the inclusion in the 1543 edition of Robert Recorde's *Ground of Artes*³ of a section entitled "The arte of nom-brynge by the hande." It was certainly easier to express numbers than to perform complicated calculations, as is seen by the lengthy passage in Bede's *De Temporum Ratione*,⁴ composed 800 years earlier, but Nagl⁵ adds his authority to the use of the fingers for actual reckoning. The influence of finger counting is seen in the symbolic representation of the number "one" in major cultures—Babylonian, Egyptian, Greek, Roman and Indian each used "1," taken from the single lifted finger. However, a more notable legacy for the purpose of this present paper is the universal decimal system:

We must regard as an unquestionable hypothesis that the ten fingers of both hands provided the principle support for it [the abacus], and led to the decimal system.⁶

The needs of government and commerce in a sophisticated society call for the keeping of records, and it is natural that systems of written notation should develop. Before that was possible, however, the concept of group number must have been discovered and this too would have had its origins in finger counting, with the use of the whole hand as a group of 5 or both hands for 10. Conant mentions⁷ the following method used to determine the numbers of soldiers in a primitive society as late as the early nineteenth century. Each soldier was made to go through a passage in the presence of the principal chiefs, and as he went through a pebble was dropped to the ground. This continued until a heap of 10 was obtained, when one was set aside and a new heap begun. Upon the completion of 10 heaps a pebble was set aside to indicate 100 and so on, until the entire army had been numbered. Faced with similar problems, the herdsman of pre-classical antiquity must also have discovered the practical value of group numbers and, equally significant, the principle of place value, which was much later to reappear in the working of the abacus.

Records inscribed on clay tablets and written on papyrus demonstrate that a written notation using these concepts was firmly established 5,000 years ago. Archibald⁸ mentions the Oxford mace of 3100 BC, on which there is a record of 120,000 prisoners, 400,000

captive oxen, and 1,422,000 captive goats. Of particular interest in the current context is the so-called Senkereh Tablet (2300-1600 BC), a clay tablet unearthed near Babylon in 1854 and now in the British Museum. It shows a list of the squares of numbers up to 24 (and beyond) and was used, presumably, as a kind of “ready reckoner” (Illustration 1). Pullan discusses⁹ the tablet and makes the significant observation that

Nothing is known of the way in which the calculations were made, but the tablet is proof that some method of multiplying numbers was known in Babylon about two thousand years BC [my emphasis].

The fact is, as Smith has pointed out,¹⁰ the Babylonian notation, adapted to a combination of the numerical scales of 10 and 60, and limited by the paucity of basal forms imposed by the cuneiform characters, was ill-suited to calculation. It should not surprise us, therefore, either that a set of tablets was necessary, or that the methods of computation have nowhere come down to us, despite the efforts of the archaeologist.¹¹

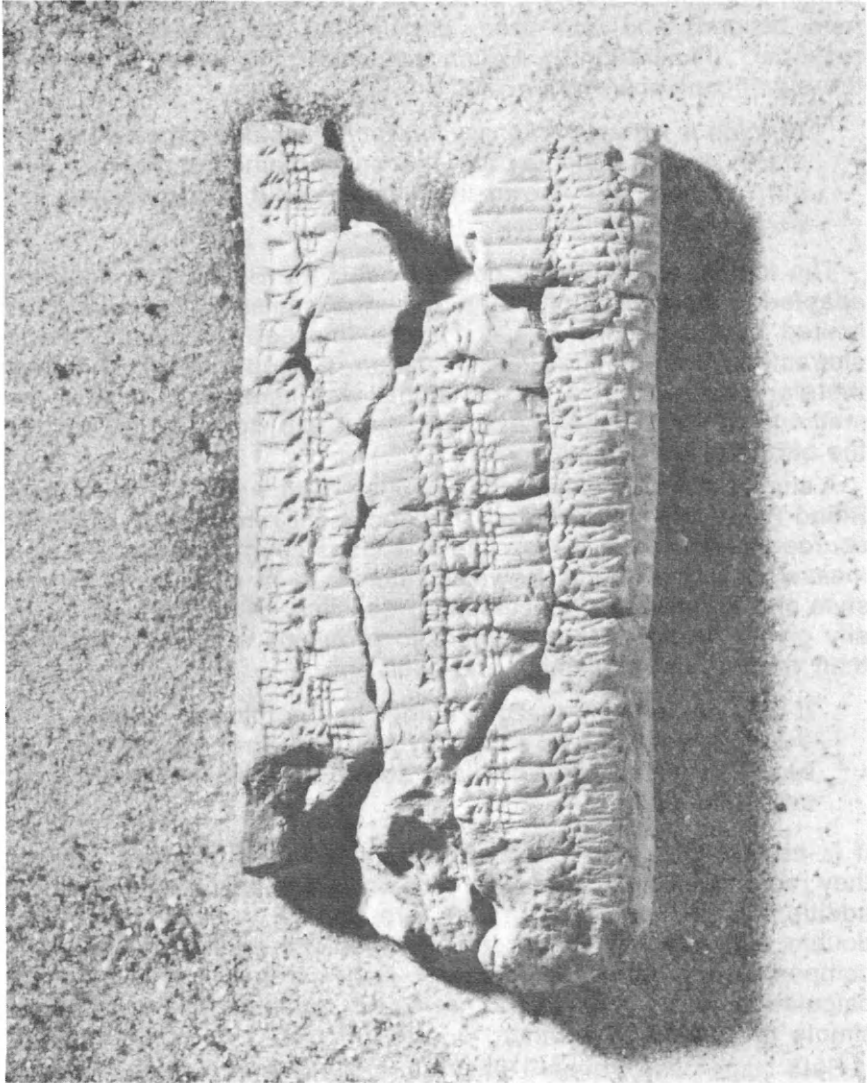
A similar situation exists with Egyptian calculation, as the famous Rhind Papyrus¹² makes clear. This document remains the principal source of knowledge of how the Egyptians counted, reckoned and measured. In his article, Newman refers¹³ to its sometimes cryptic style and the awkward calculating processes—when they are actually given. He notes that answers to problems are given first and then verified, not explained, and goes on:

It may be, in truth, that the author had nothing to explain, that the problem was solved by trial and error—as, it has been suggested, the Egyptians solved all their mathematical problems.¹⁴

It is certain that their arithmetic was essentially additive, that is they reduced multiplication and division to clumsily repeated additions and subtractions, with rare use of the multiplier 2 to double and halve, much as the Babylonians must have done in composing their tables. However, as Nagl carefully points out: “all calculation boils down to increasing or reducing one number in simple proportion to another.”¹⁵

Both Nagl¹⁶ and Pullan¹⁷ illustrate a dot diagram which appears on the back of a papyrus dating from 1500-1420 BC (Illustration 2). It seems to have no connection with the rest of the document and appears to be a casual aid to alleviate the tedium associated with

Illustration 1
Senkereh Tablet

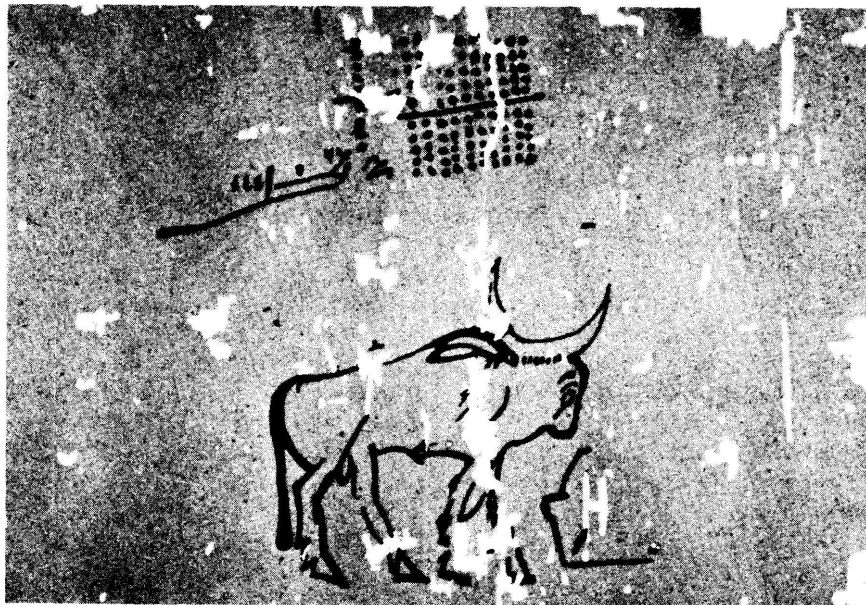


Source: Department of Western Asiatic Antiquities, British Museum, Inv. no. 92680. Reproduced with the permission of the Trustees of the British Museum.

simple calculation. It comprises 10 horizontal rows of 10 dots each, with a line drawn below the fifth row, and a separate vertical row to one side. Pullan notes¹⁸ that addition and subtraction of numbers below a hundred could be effected by counting forward or backward along the rows, and that the diagram could be used as a simple form of multiplication table. Only one other example is known of such a diagram, but, despite the paucity of evidence, it is difficult to avoid the conclusion that they represent the earliest form of practical reckoner, a stage beyond the accepted "table text" of Babylonia and a half-way house to the formal abacus which was to be developed under the Greeks.

The absence of evidence for the existence of a developed abacus in the Babylonian and ancient Egyptian civilisations could indicate that, in general, their societies did not need them. Less sophisti-

Illustration 2 Egyptian Dot Diagram



Source: Department of Egyptian Antiquities, British Museum, papyrus 10184 (Salier 4). Reproduced with the permission of the Trustees of the British Museum.

cated in trading terms and less expansionist in geographical terms than their Greek and Roman successors, their written notation, not perfected sufficiently to allow for ease in general computation, perhaps did not need to serve that purpose—all that was necessary was an occasional dot diagram to make simple calculations less laborious than would otherwise be the case. Moreover, as Pullan has pointed out,¹⁹ practical ways can make computational problem-solving unnecessary:

For example, the lengths of two pieces of wood can be added by laying them end to end, or their difference can be found by putting them side by side. Measuring ropes or tapes can be used in similar ways. Weights and money values can be compared, multiplied and divided by placing the actual weights or coins on a table, and other measures can often be treated similarly. It is possible to work out quite complicated tables of numbers, for example squares and square roots, with no more apparatus than a few pebbles or a measuring rod.

It could well be that the answers to many of the questions regarding Babylonian and ancient Egyptian computation should be sought in a straight forward combination of simple addition and subtraction, practical methods and repeated trial and error.

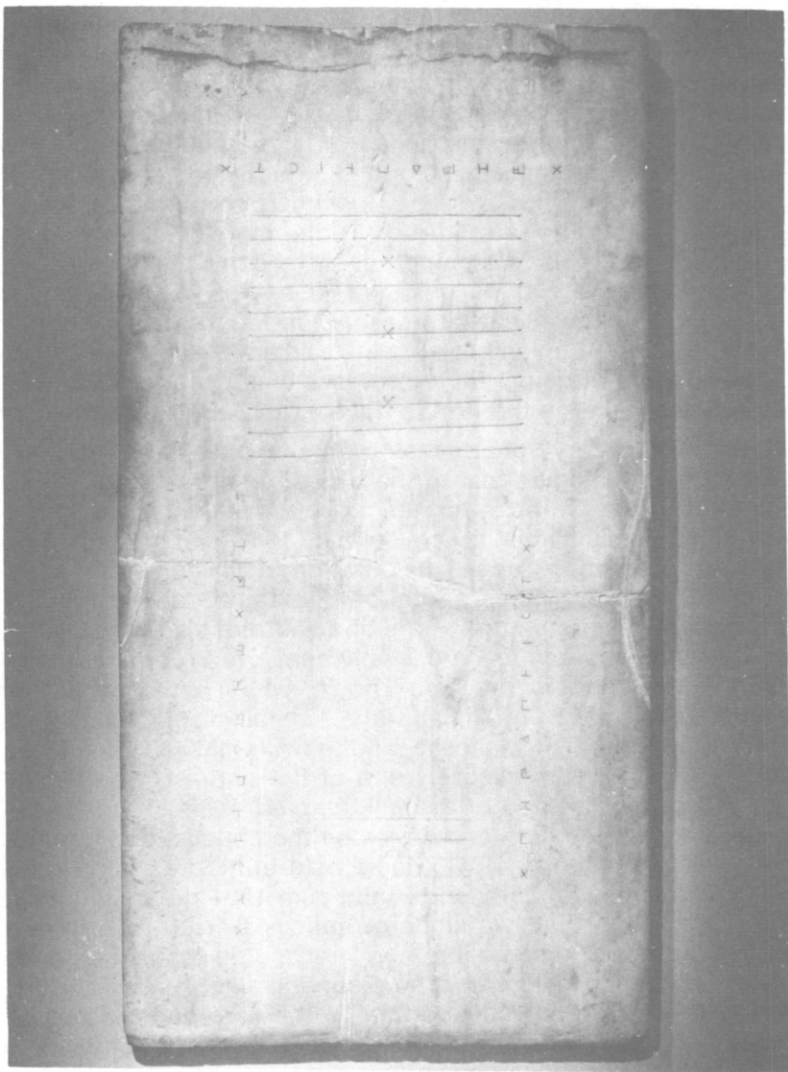
It is certain that, although the written numerations of the Greeks represented a step forward from cuneiform or hieroglyphs, and great advances were made in the science of mathematics under the Greeks, calculation with large numbers was still a cumbersome affair. One merely needs to consider the fact that to be able to express any number below a million, our Arabic notation requires six places and ten symbols, the nine digits and the cypher. The most advanced Greek system (the alphabetic of the fifth century BC) required six places, no cypher, but fifty-four symbols; where one of our symbols—8, for example—can stand in any of the six places and take to itself a new value in each position, in the Greek alphabetic system, separate symbols were required for each of the values eight, eighty, eight hundred, eight thousand, eighty thousand, and eight hundred thousand.²⁰ Despite the efforts of Heath,²¹ who (albeit as a modern mathematician) has skillfully demonstrated the ability of the alphabetical notation to answer relatively complex mathematical problems, it is difficult for a layman not to agree with writers such as Popp,²² Taton,²³ Yeldham,²⁴ and Smith,²⁵ who would support Bell:²⁶

Sporadic attempts to rehabilitate the battered reputation of Greek logistic as a workable system appear to be based on misapprehensions of what the Greeks actually did, and the majority opinion remains that of the conservative and sympathetic historian of Greek mathematics who characterised Greek numeration as vile.

Whatever the talents of contemporary specialist mathematicians, it is also certain that, with the expansion of trade in the Mediterranean, particularly after the appearance of coinage in the seventh century BC, the ordinary Greeks had a more pressing need of extensive calculations for everyday commercial purposes than their predecessors had ever required. Furthermore, we tend to forget that cheap paper is a comparatively recent phenomenon—clay tablets and wax are quite unsuited to extensive numerical work; papyrus was expensive (the reason for its frequent reuse); and parchment was an invention—again expensive—of the fifth century BC.²⁷ It is not surprising, therefore, that under these circumstances the Greeks should be the first to develop the abacus in the West.

Numerous literary references²⁸ and the physical evidence provided by archaeology attest to the widespread use of an abacus in classical Greece. Of the latter, the most famous and complete is the so-called Salamis Table, discovered in 1846 and now in the Epigraphical Museum in Athens (Illustration 3). In her definitive study of the tablet, Lang²⁹ notes a total of 12 extant Greek abaci of varying forms. These are naturally of stone and of a size which indicates a quasi-public use, but many casually converted roof tiles with rows of scratched numbers are also known, which would have served the ordinary trader in a similar way. A detail of the "Darius Vase" (c 300 BC), found at Canossa and now in the Naples Museum, shows Darius' treasurer (surely one of the earliest representations of an accountant) seated at a small, marked abacus table receiving tribute and, with the help of pebbles on the abacus, determining the amount to be written on a wax table held in his free hand (Illustration 4). The abacus clearly shows the sum 1231 drachms 4 obols.³⁰ Lang concludes³¹ that two kinds of abacus were in use in ancient Greece—one with unlabelled and transected columns, and the other with labelled columns. The distinguishing features of both of them, however, are columns vertical to the user and the use of unmarked pebbles that may be moved from column to column.³² Both Lang³³ and Nagl³⁴ have shown how calculations would have been carried out on a Greek abacus, but detailed descriptions of the moves tend to give the impression that the processes are much

Illustration 3
Salamis Table



Source: Epigraphical Museum, Athens. Photo TAP.

Illustration 4
Darius Vase



Source: Photo courtesy of the Deutsches Archaelogisches Institut, Rome. The relevant painting is at twenty five to.

more complicated than they actually are in practice; the actual working time is but a fraction of the time taken to explain the moves.

Apart from its possible origin in and obvious advantage for commercial purposes, Cajori³⁵ claims the following achievement for the abacus:

Had the Greeks not possessed an abacus by the aid of which computation could be carried out independently of the numerical notation then in vogue, their accomplishment in arithmetic and algebra would have been less than it actually was.³⁶

The Roman notation was a considerable improvement over the Greek for simple calculations such as addition and subtraction, as the following example taken from Smith and Ginsburg³⁷ demonstrates:

Addition		Subtraction	
DCCLXXVII	(777)	DCCLXXVII	(777)
CC X VI	(216)	CC X VI	(216)
DCCCCLXXXIII	(993)	D L X I	(561)

No mathematics needs to be learned to perform these calculations; simple rules such as 2 V's make an X are all that is necessary, and the entire operation is reduced to little more than counting. The only advantage of our Arabic notation in addition and subtraction is that it is easier (more compact) to write—it is certainly not easier to apply. However, for multiplication and division, where the Roman numerals are deficient, as well as for speedier performance of addition and subtraction, the abacus was in common use.

The Romans were able to improve upon the Greek abacus by virtue of their notation itself. The importance of the intermediate point—5, 50, 500—in the Roman decimal system meant that the columns which had previously advanced in factors of ten, could now be subdivided in a way which gave a notational value to every counter that appeared on the abacus. In other words, a column did not need to be interpreted before its value could be expressed, as under the Greek system. The number of counters could be reproduced just as they appeared in the columns of the abacus, thus reducing the number of pebbles or counters necessary to express a number.³⁸ An important corollary would be the resultant increase in the speed of operation, by removing the necessity to assimilate and move anything up to nine pebbles—perhaps haphazardly ar-

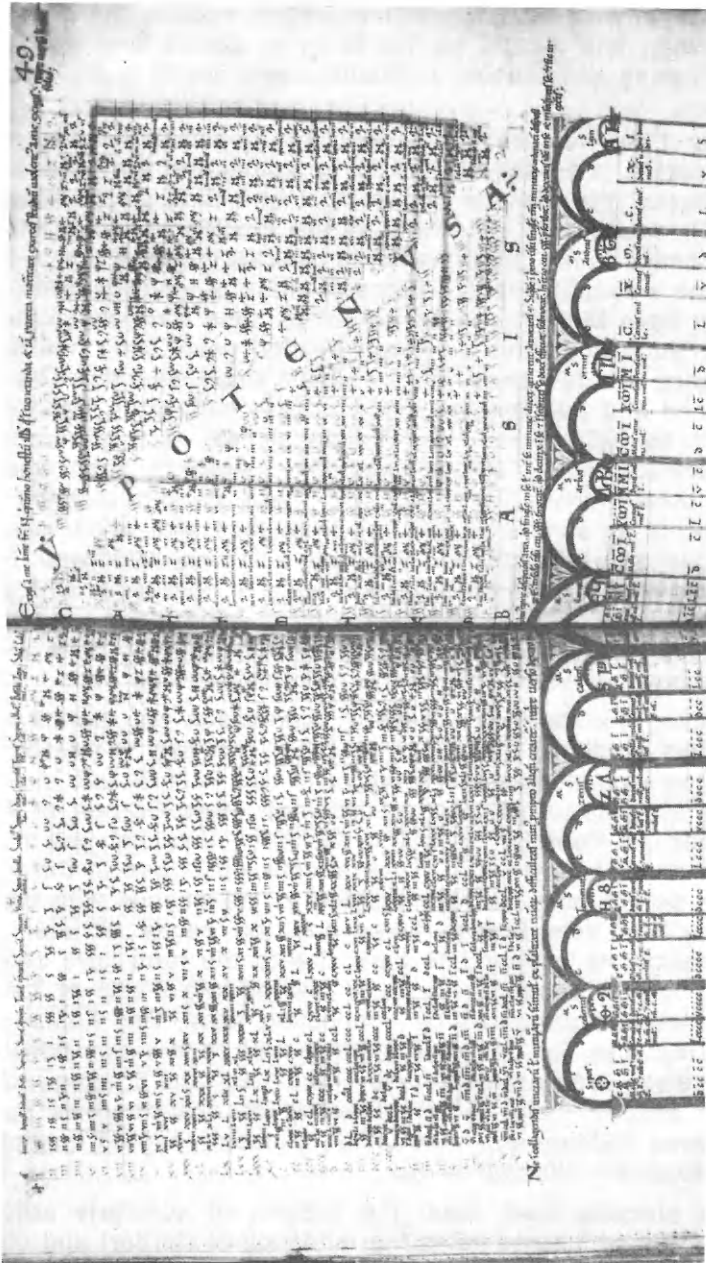
ranged—in a column; under the Roman system, there cannot be more than four stones for the brain to absorb and the finger to move during addition and subtraction, and five in multiplication and division.

One of the most frequently recurring adjectives used to describe the Romans is “practical,” and it is typical that they should afford the abacus, the practical reckoning instrument, a significant place in their education.³⁹ The form of the modified abacus must have been similar to the Greek—smooth pebbles (“calculi” = “ $\Upsilon\text{H}\Phi\text{O}\text{I}$ ”) used on a suitably marked piece of stone or wooden table. Roman calculi have been found on numerous sites throughout the world and in such quantities as to put beyond doubt their nature.⁴⁰ The existence of a few bead-frame abaci,⁴¹ small enough to be held in the hand and manipulated like a pocket calculator, has led some writers to believe that the Roman system was generally more sophisticated than it actually was. The paucity of extant specimens (only three survive, although four have been illustrated in the literature), as compared with the frequency with which calculi are met, can only indicate that their use was very restricted. Perhaps this was because the physical operation of an abacus with pebbles was more easily followed and therefore understood, and also because the sophistication of the bead-frame abacus hints at an expense beyond the pocket of the ordinary working man.

Nothing is known of the western abacus between the fall of Rome and post medieval days. The eleventh and twelfth centuries provided an interesting divertissement in this interregnum in the form of the abacists, of whom the best known was Gerbert of Aurillac, who became Pope Sylvester II in AD 999. “Abacists” is a misnomer in our context, inasmuch as the abacus described in the treatises of the period bore no resemblance to the abacus with which we are familiar from Roman times and the pages of later printed arithmetics. Its appearance gave rise to the term “arc abacus,”⁴² as the vertical columns—up to 27 divided into 9 sets of 3 columns each—were surmounted by connecting arcs. The Roman calculi were replaced by counters marked with a number utilising the newly discovered Arabic notation from 1-9,⁴³ the 0 being redundant on an abacus,⁴⁴ and the treatises which described its operation eschewed addition and subtraction, concentrating on multiplication and division⁴⁵ (Illustration 5).

The abacists have been the subject of scholarly articles by Evans,⁴⁶ in which she notes the tendency of Gerbert and others to give a list of straightforward rules and results without explanatory

Illustration 5
Arc Abacus



Source: From Manuscript 17 (c. AD 1111) in the library of St John's College, Oxford. Reproduced with the permission of the President and fellows of St John's College, Oxford.

details, a conclusion given eloquent testimony by the numerous treatises published by Bubnov, and the failure of many to give even the barest diagrammatic help to their readers. It would be difficult not to agree with the twelfth century historian William of Malmesbury's comment that the rules of the abacus were "scarcely understood by the sweating abacists themselves."⁴⁷ As Evans has pointed out,⁴⁸ it is possible to learn to calculate by learning a series of rules (as the Greeks and Romans had done with their abacus) and being conscientiously accurate in putting them into practice, but there comes a point when one must understand what one is doing. This point is particularly relevant when it is considered that the specific audience for the treatises was schools and scholars, and not commerce: "[the abacist movement] created a strongly scholastic method which had hardly any connection with the commercial world. . . ."⁴⁹

The effective death-knell of the arc abacus was the influence exerted by Leonardo of Pisa's⁵⁰ *Liber Abaci*, written in 1202 and revised in 1228. Despite its (to our eyes) misleading title, this was a comprehensive study of arithmetic, elementary algebra, and geometry, which used the full arabic notation, including the zero, thereby making impossibly anachronistic any scholastic retention of the "arcus Pythagoreus."

We have no reason to believe that the more conventional form of Roman abacus did not continue in use by the ordinary people throughout this time. The simple, proven pattern, which included addition and subtraction—a requirement on which the abacists were silent—as its most obvious feature, would doubtless have been preferred even with greater availability of manuscripts and ability to read. Furthermore, as Yeldham pointed out,⁵¹ the large number of counters required (9 for each column), the cost of engraving them, and the concentration required for selecting the properly marked counter at each step of the computation would have mitigated against popular use of Gerbert's abacus.

During this same period, the so-called *Dialogus de Scaccario*⁵² was written, which describes the workings of the English Exchequer. Despite its composition date—the late 1170s⁵³—when algorism using the new Arabic notation was coming into use, we are told that the Exchequer system of reckoning "follows traditional rules and not those of the new arithmetic."⁵⁴ The Exchequer table is a peculiar variant of the conventional abacus in which the columns also contain multiples of the individual numbers in them. The form and working have been well illustrated in a monograph by Berry,⁵⁵

and Haskins⁵⁶ and Evans⁵⁷ have both compared its operation to contemporary practice on the abacus.

Stone⁵⁸ and Gardner⁵⁹ describe the controversy between abacists (here meaning users of the traditional abacus with Roman notation) and algorists, the proponents of the new Arabic notation which made abacal calculation redundant, as an acrimonious struggle. It is certain that the new Arabic numerals were slow to spread and met with much resistance which continued to give support to the abacal form of computation. Pullan⁶⁰ and others mention the Florentine edict of 1299, forbidding bankers to use the new figures—which were felt to be too susceptible to fraudulent alteration—and the edict of 1348, wherein the University of Padua directed that books should have their prices marked “non per cifras, sed per literas clara [i.e., Roman numerals].”

However, it must be recalled that manipulation of a new notation had to be mastered at a time when reading and writing were still either very basic or the privilege of a minority of the public (and those mostly men). The shapes of the 10 digits of the new notation did not become standardised until after the introduction of printing; and the normal writing medium, rag paper, was not introduced into Europe until the twelfth century, and was made by hand and consequently scarce and expensive. All of these factors mitigated in favour of the status quo and the abacus. As Pullan has pointed out,⁶¹ after centuries of familiarity and use, people were well satisfied with the traditional Roman system—with counters to perform the actual computations, its notation was perfectly adequate for them.

A strange mixture of old and new pervaded commercial records for several hundred years, reflecting the gradual change from Roman numerals to Arabic without affecting the continued use of the abacus in compiling accounting records in the interregnum. Pullan illustrates⁶² a number of account books from the sixteenth and seventeenth centuries which juxtapose Arabic and Roman, even to the extent of an Arabic total at the foot of a column of Roman entries. This did not cause confusion in contemporary minds, the answer being simply that the abacus was used to arrive at the totals, which were then recorded in whatever notation the clerk cared to use. Support for this is provided by the Exchequer records of the seventeenth century, which show many examples of Arabic totals with dot diagrams—abacal jottings—at the side.⁶³ Secondary evidence for its continued use in commerce can be seen in the haphazard arrangement of pounds, shillings and pence for individual entries in many early records; the determination of

totals would have been a precarious undertaking without the assistance of counters. Conclusive proof lies in the pages of contemporary literature.

With the advent of printing, a great series of books on arithmetic poured forth from the press. Most of these texts had as their object the teaching and dissemination of the new science of algorism. Their authors, after all, were mathematicians who recognized the greater efficiency of the Arabic notation and had doubtless used it for computation for a considerable period before merchants and accountants understood and accepted it. However, a considerable number of writers took cognizance of the fact that the abacus was still in general use, and included a section on "line reckoning" or "counter casting" in their arithmetics, showing how the old method could still be used in conjunction with the new Arabic numerals. It is difficult to determine which of altruism or commercialism was the stronger motive; it is preferable to believe the former. Hain quotes⁶⁴ from the introduction to the 1658 edition of Recorde's book (*supra*): "[Counter casting] would not only serve for them that cannot read, but also for them that can do both but have not at some time their pen or tables ready with them."

The earliest printed description of abacal arithmetic is Johann Widman's *Algorithmus Linealis* of 1488, a work devoted entirely to the counting board. It is significant that texts of this nature—mostly written by the so-called Rechenmeister, whose professional instrument was the abacus—disappeared long before those which merely treated it as an aberrant, though still commonly used, alternative to algorism. Smith's seminal *Rara Arithmetica* (*supra*) gives a comprehensive survey of early arithmetics and commercial arithmetics and provides ample evidence for the great variety of treatises, published throughout Europe, which contain explanations of the abacus. Grosse had earlier contributed a more specific work.⁶⁵ In the *Rara*, Smith refers to the "father" of double-entry bookkeeping, Luca Paciolo, as having written a tract entitled *Libro da Abacho*,⁶⁶ but gives no reference (it was not in the Plimpton library); there is no copy mentioned in the catalogues of the British Library, the Bibliothèque Nationale or the National Union. As it is also not noted in the bibliographies of his work in the major directories, it perhaps does not exist.

Barnard⁶⁷ has made a major contribution to our knowledge of the form of the abacus during the last centuries of its life. Its physical shape had changed in line with the fashions and requirements of the times: it could be a complete table, sometimes folding,

and sometimes possessing tills or drawers; a counter combined with a cupboard; a board to be used on a table or the knee; or an ordinary table on which a counter-cloth (to act as the abacus) was placed.⁶⁸ From his search of contemporary inventories, mostly in wills, Barnard found the counter in public establishments, both civil and ecclesiastical, as well as in the houses and places of business of all classes and callings: tradesmen, merchants, lawyers, clergy, and titled and untitled gentry, including royalty:

Manifestly during the centuries covered by these records and authorities it was practically ubiquitous, and one wonders how many of the older oak tables in our curiosity and secondhand furniture shops were once counters that have been converted, where necessary, by the later top so commonly seen on them, into ordinary tables. Such an alteration would help to account for the apparently total disappearance from amongst us of the reckoning-board.⁶⁹

The literature shows that the main principles of the abacus—that is, the values of the lines and spaces, or, in their absence, the values of the positions which they represented—are unvarying and do not differ from the Graeco-Roman pattern, except for the occasional non-decimal units of currency, weights, and measurements used in specialized cases. The counters were manipulated in many different ways during operation, however, as *Recorde* points out—“for the dyvers wyttes of men have invented divers and sundry wayes almost unnumerable.”⁷⁰

Barnard summarizes the methods of operation found in his search of 120 arithmetical treatises (including different editions) as follows:⁷¹

A. Methods with lines

- a. Process in which lines only were used.
- b. Process in which spaces only were used.
- c. Process in which both lines and spaces were used.
- d. Process in which both lines and spaces were used, and also ‘Lyers,’ or stationary counters, i.e., the ‘Tree of Numeration.’

B. Methods without lines

- e. Process in which ‘Lyers’ were used, forming the ‘Tree of Numeration.’
- f. Process in which no guides to help the eye were used.

The most common practice was c.

The abacus fell into disuse in England sometime between 1668, when the chapter on counter casting is still in the edition of Recorde's *Ground of Artes*, and 1699, when it is omitted with the following prefatory remark from the editor: "I have taken all the care I could to do the Author justice by Expunging what is now useless."⁷² Barnard remarks⁷³ that it had possibly become discredited with the better-educated classes as early as 1610, but lingered on with the old-fashioned or unlearned, and especially with women in their housekeeping, only gradually to disappear during the last three quarters of the century. A similar pattern prevailed in the Protestant Netherlands, but in France it lingered on until the Revolution, to be given the *coup-de-grâce* by the new order, and there is evidence to support its existence in Germany up to the same period.⁷⁴ The supposedly antediluvian abacus, despite the frequent derision heaped on it, thus managed to survive the advent of algorism by some six centuries.

At the lowest level, the abacus supplied the common man with a means of applying a reliable quantitative method long before education was a universal reality,⁷⁵ and at the highest level:

We shall always be able to claim for the abacus that it was the first completely successful representation of the decimal system, a representation whose perfection has still not been equalled.⁷⁶

FOOTNOTES

¹Carroll, p. 232.

²Conant, p. 433.

³This text was a landmark in the long series of English publications on arithmetic and commercial arithmetic. The first edition appeared in 1540, and Smith (1908) notes no fewer than 52 editions over a period of 159 years. For comparative purposes, illustrations of finger numerals from a thirteenth century Spanish manuscript and a sixteenth century German arithmetic can be found in Smith and Ginsburg, pp. 455-456.

⁴The Venerable Bede (AD 673-735). An English translation of this passage appears in Yeldham, (1926), pp. 30-34.

⁵"Together (with the use of the abacus in late Roman times) the old form of hand reckoning remained in use for calculations of the simplest kind, and indeed for the actual process of calculating itself and not only for the expression of a number, as is commonly thought."

Original text:

"Daneben (the use of the abacus in late Roman times) war das alte Handrechnen für Rechnungen einfachster Art in dauernder Anwendung verblieben, und zwar auch für das Rechnen selbst, nicht bloß, wie man vielfach angenommen hat, für das ruhige Festhalten einer Zahl." (Nagl, p. 40.)

⁶Original text:

“Es ist eine alte, allgemeine und unbedenkliche Annahme, daß die zehn Finger beider Hände ihn (the abacus) dabei in vornehmlicher Weise unterstützten und zu den dekadischen Zahlensystem geführt haben.” (Nagl, p. 5.)

⁷Conant, pp. 435-436.

⁸Archibald, p. 7.

⁹Pullan, pp. 2-4.

¹⁰Smith, (1921), p. 3.

¹¹Archibald, p. 58, notes that the 300 small mathematical tablets in the University of Pennsylvania collection, together with 200 in the Istanbul Museum, are nearly all “table texts.”

¹²With the exception of the Golenischev Papyrus in Moscow, which predates it by some 200 years, the Rhind Papyrus (discovered in 1858, now in the British Museum BM 10057 and 10058) is the oldest mathematical document in existence, dating from the twelfth dynasty (2000-1788 BC).

¹³Newman, pp. 170-178 *passim*.

¹⁴Newman, p. 173.

¹⁵Original text:

“. . . alles Rechnen nichts anders ist als die Vermehrung oder die Verminderung einer Zahl nach Maßgabe einer anderen.” (Nagl, p. 41.)

¹⁶Nagl, p. 14.

¹⁷Pullan, p. 10.

¹⁸Pullan, p. 10.

¹⁹Pullan, pp. 8-9. In an appendix to his monograph (pp. 105-106), Pullan actually demonstrates how pebbles can be used to build up a table and how a single stick, used as a unit of length, can be used to find square roots without calculations (albeit presupposing a knowledge of Pythagoras' Theorem, which was, however, certainly known to the Egyptians—and perhaps to the Babylonians?)

²⁰Yeldham, (1926), pp. 24-25.

²¹Heath, p. 28 *et seq.*

²²Popp, p. 6.

²³Taton, p. 287.

²⁴Yeldham, (1926), p. 25.

²⁵Smith, (1921), p. 4.

²⁶Bell, p. 51.

²⁷Smith, (1921), p. 5.

²⁸The most famous amongst these are Herodotos (II, 36, 4); Aristophanes in his *Vespæ* (332-333 and 656-657); and Diogenes Laertios (I, 59) who attributes to Solon the famous analogy between tyrants' men and the pebbles ($\Psi\text{H}\Phi\text{O}\text{I}$) of an abacus.

²⁹Lang, pp. 275-276.

³⁰Heath, p. 27; Pullan, pp. 25-26.

³¹Lang, p. 282.

³²Lang, pp. 275-276.

³³Lang, p. 279 *et seq.*

³⁴Nagl, pp. 62-63.

³⁵Cajori, p. 26.

³⁶In this context, it is interesting to note that Archimedes was reputedly using an abacus when he was murdered in 212 BC.

³⁷Smith and Ginsburg, p. 451.

³⁸Consider, for example, the expression of the number sixteen—with columns of “10,” 7 pebbles would be needed; with the Roman system of “5s” only 3 stones are needed.

³⁹Both Horace (*Satires* I, vi) and Juvenal (*Satire* IX, 40) refer to this.

⁴⁰Pullan, pp. 20-21, discusses the frequent description of calculi as “gaming counters,” the Romans being particularly fond of board-games:

“Mere pastimes, however, would not account for the presence of calculi on so many Roman sites, or of other kinds of counters on so many earlier sites, whereas a certain amount of reckoning would occur wherever there was any kind of trade or industry involving the use of money and measures.”

⁴¹Two are illustrated by Nagl, pp. 16-17, and a third, the British Museum specimen, by Pullan p. 19. All three are virtually identical.

⁴²“Arcus Pythagoreus” as compared with the normal “mensa Pythagorica”—the abacus, through an apocryphal version of the *Geometria* of Boethius (obs. AD 524), was popularly thought of as being an invention of Pythagoras; thus Adelard of Bath (c. AD 1120):

“The Pythagoreans invented it (the abacus) in order better to retain the subject matter which their master Pythagorus had taught them in his lectures. They gave the name “mensa Pythagorica” to it out of regard for their master; those that came later called it the abacus.”

Original text:

“Pythagorici hoc opus [the abacus] composuerunt, ut ea, quae magistro suo Pythagora docente audierant, oculis subjecta retinerent et firmiter custodirent. Quod ipsi quidem Mensam Pythagoream ob magistri sui reverentiam vocaverunt; sed posterius tamen Abacum dixerunt.” (Bubnov, p. 157, note 17.)

A rather greater controversy has raged around Boethius' supposed (and on balance refuted) claim that the Arabic numerals from 1-9—the zero is not mentioned in the text—were a legacy of the Pythagoreans (see Cajori, p. 68; for an opposite view see Gandz, p. 411).

⁴³Gerbert is popularly credited with being the first man to introduce Arabic numerals into the West—see Taton, pp. 472-473.

⁴⁴Our symbol for zero was occasionally employed by the abacists, notably by Ralph of Laon, but the implication in Ralph's treatise seems to be that it was not meant to denote a zero, but rather a blank space, a *locus tenens* in one of the fixed columns, to hold open a place that might otherwise be overlooked in the calculation. As Smith has pointed out (1921, p. 16) had the abacists known the zero they would not have needed counters at all. Even a supporter of the zero theory is forced to admit “Quoique le texte [one in which he claims a ‘proper’ zero] ne soit pas très clair de lui-même. . . .” (Bubnov, p. 275, note 9.)

⁴⁵A good illustration, taken from St John's College MS 17, appears in Yeldham, (1926), pp. 38-39. Much of the original latin of this same abacal manuscript, written by a monk of Ramsey c. AD 1111, is translated into English in Yeldham, (Extracts).

⁴⁶Evans, (*Difficillima et Ardua*); Evans, (*From Abacus to Algorism*); Evans, (*Schools and Scholars*).

⁴⁷William of Malmesbury, *De Rebus Gestis Regum Anglorum*, Rolls Series 1887, p. 185.

Original text:

“a sudantibus abacistis vix intelligentur.” Cited in Evans, (*Schools and Scholars*), p. 72

⁴⁸Evans, (*Difficillima et Ardua*), p. 37.

⁴⁹Original text:

"[the abacist movement] hat eine streng scholastische, mit dem Verkehrsleben kaum je in nähere Berührung getretene Methode herausgebildet" (Nagl, p. 45.)

⁵⁰Leonardo Fibonacci (son of Bonacci) was held to be one of the greatest and most productive of medieval mathematicians.

⁵¹Yeldham, (1926), p. 46.

⁵²Richard.

⁵³Richard, p. 11.

⁵⁴Original text:

"secundum consuetum cursum scaccarii non legibus arismetis." (Richard, p. 75, lines 16-17).

⁵⁵Berry.

⁵⁶Haskins.

⁵⁷Evans, (*Schools and Scholars*), p. 79.

⁵⁸Stone.

⁵⁹Gardner, p. 125.

⁶⁰Pullan, p. 34.

⁶¹Pullan, p. 35.

⁶²Pullan, pp. 37-47.

⁶³Pullan, *passim*; also Berry, p. 27.

⁶⁴Hain, p. 154.

⁶⁵Grosse.

⁶⁶Smith, (1908), *Addenda*, p. 4.

⁶⁷Barnard.

⁶⁸Barnard, pp. 252-253.

⁶⁹Barnard, p. 253.

⁷⁰Barnard, p. 265.

⁷¹Barnard, p. 254.

⁷²Barnard, p. 87.

⁷³Barnard, p. 88.

⁷⁴Barnard, pp. 89-90.

⁷⁵Hain, p. 163.

⁷⁶Original text:

"Für alle Zeiten bleibt der Rechentafel der Ruhm gewahrt, daB sie die erste vollständig gelungene Darstellung des dekadischen Stellensystems war, eine Darstellung, die in ihrer Vollkommenheit bis heute nicht übertroffen ist." (Nagl, p. 14.)

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BONSIGNORI FAMILY ESTATE ACCOUNTING 1461-1632

Abstract: The paper investigates the Bonsignori accounts that are in the archives of the University of Kansas, Spencer Research Library. The file contains 133 documents and bound books relating to the affairs of the Filippo Bonsignori family between 1455 and 1632. The most important documents deal with accounting and administration of Filippo Bonsignori's will. The time period involved (1455 to 1632) permits some study of the developments in accounting methods used in fulfilling fiduciary responsibilities. The paper provides insight into the history of Florentine estate accounting.

The history of the city of Florence has been more closely examined than that of any other city. Apart from the intrinsic fascination of the city's rich cultural tradition, much of the magnetic force that continues to attract historians emanates from the city's seemingly inexhaustible archival resources. Based on the existing evidence, Florentines were remarkable record-keepers. In documents ranging from historical chronicles to personal accounts, they recorded the events of their lives. Their documents have survived in such quantity and variety that today the city's archives have few rivals that can yield as many secrets of their pasts.

Despite continuing scholarly activities, there are still vast collections of documents which have not yet been charted and classified.¹ In addition to the documents in Italy a large number of copies have been scattered all over the world. The archives that are owned by Spencer Research Library of the University of Kansas are a good example of the extent of the Florentine record-keeping tradition which stressed the maxim that "paper costs little, and often it returns a good profit."²

The primary objective of this paper is to present the results of the investigations of the Bonsignori³ family accounts that are in the archives of the University of Kansas, Spencer Research Library.

The author wishes to thank the staff of Spencer Research Library, University of Kansas for their kind help and Daniel L. McDonald and Irene M. Gordon for their valuable criticism.

A brief description of the documents will be given, and an attempt will be made to relate these rather incomplete records to the already known development of Italian estate accounting.

Description of the Bonsignori Family Accounts

The records at the Spencer Research Library were obtained in 1969 through a broker in New York from Renzo Rizzi Company of Milan, Italy, a famous book dealer who mainly deals in manuscripts and archival materials. The file contains 133 documents and bound account books relating to the Bonsignori family of Florence during the period 1455 to 1632. The most interesting parts of the file are the records related to the administration of "L'Ospedale di San Paolo di Firenzi," a nursing home primarily serving the poor and the members of the church. The documents can be classified as follows:

- A. Five documents ranging from 1461 to 1487 about various affairs of the family with little relevance to accounting.
- B. Eighty documents and two bound booklets containing various letters and other information about Bonsignori family affairs during the 16th century. Among these letters are two letters signed by Angelo di Medici Visconto d'Assisi,⁴ who had been appointed by the Grand Duke to look at the Accounts and Affairs of the estate. One relates to granting permission for an insignificant family matter. The second letter addressed to the Grand Duke deals with the administration and auditing of the estate account.
- C. Seventeen documents relating to the 17th century (the last date being 1632) deal with various affairs of the family.⁵
- D. Five documents and bound booklets for the period of 1537-1602 relate to a house located in Via del Ramerino, San Simone, Florence.
- E. The balance of the documents concern the will of Filippo di Giovanni Bonsignori, dated December 19, 1461, which, in part, establishes a nursing home (San Francis) at the San Paolo Hospital located at the Piazza (Square) of Santa Maria Novella.⁶ The documents deal with the administration of the will after his death on September 10, 1476 until October 13, 1545, the settlement of the will.⁷ It is this group of documents that form the basis for this paper.

One of the most interesting aspects of Florentine life during the 15th century was the emphasis on charitable institutions. Of all the

forms of charity, none are perhaps more worthy of support or more necessary than those which make provision for the sick and helpless. The principle is now generally, if not universally, recognized in many countries; but the idea was a late development in the history of mankind. Already in the year 1293, the rulers of Florence reacquired the hospital of San Serbio and made it a public hospital.⁸ Probably the oldest hospital in the city was *Santa Maria Nuova* founded in 1285 by Folco Portinari, the father of Dante's Beatrice, and opened to the public in 1288.⁹

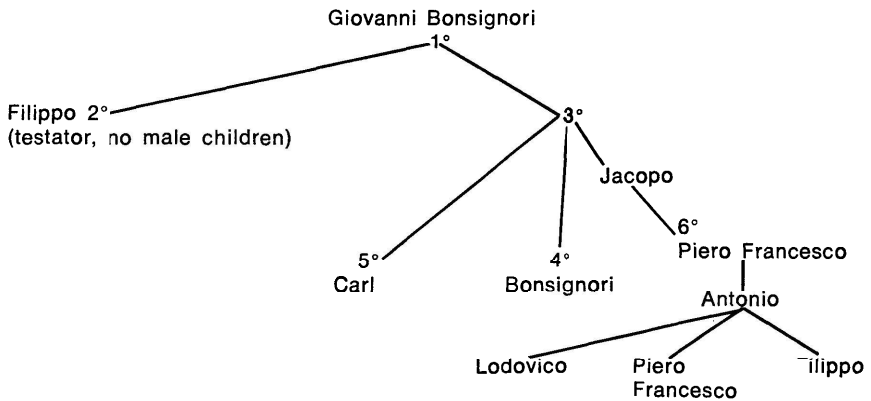
According to available records, in 1338 there were thirty hospitals in the city with more than a thousand beds for the accommodation of the poor and infirm.¹⁰ To the next century belongs San Paolo Hospital, founded in 1451; its portico is still an ornament of the Piazza di Santa Maria Novella. There is no doubt that Filippo Bonsignori's will is related to this well-known hospital of Florence because the location is given precisely in the testament.

The Estate of Filippo Bonsignori

Probably the most important document in the Bonsignori papers is the testament of Filippo Bonsignori which was drafted in Latin on December 19, 1461. It is basically a document that sets up a fund to support a nursing home within the hospital. The original of the testament must be missing because the Latin and Italian copies that are among the Bonsignori papers do not bear signatures and official certifications. It seems that these copies were made in order to simplify the administration of the will. For example, on the top of all copies of the testament the family tree illustrated in Figure 1 appears for the identification of the various parties related to Filippo Bonsignori. It should be mentioned that the family tree does not contain any female members because of the peculiar Florentine inheritance laws.¹¹

Filippo Bonsignori (testator) according to the Florentine records of galley movements was the Captain of two long galleys that were sent to meet Captain Filippo di Francesco Tornabuoni's galleys returning from Constantinople. Tornabuoni's galleys returned in December, 1461. Since during this time Venetians were at war with the Turks, they tried to prevent Florentines from trading with the enemy.¹² The exact date of Filippo Bonsignori's departure of December 7, 1461 and the date of the testament, December 19, 1461 simply cannot be considered as coincidence. It is highly probable that this testament was drafted before the dangerous mission. However, this point needs more research.

Figure 1
Family Tree of Filippo Bonsignori



Source: Kansas-Spencer MS 67:D(temp)f.1r.

Because the will made certain provisions for the minors and the executor, several complete accountings were made. The first accounting occurred on September 10, 1476, the day of Filippo's death. The second accounting was for the provision for the minors who became of age in 1480, and the third accounting came in 1490 with the appointment of a new executor. The final settlement of the estate, upon the demand of two grandsons of Antonio Bonsignori, Giovanni and Girolamo, on October 13, 1545 was a very good example of an outside auditor's work covering a period of nearly fifty-five years. A letter written to the Grand Duke by Angelo di Medici Viscontò D'Assisi, who had been appointed by the Grand Duke to look at the accounts and affairs of the estate, contains several observations and recommendations. He complains about the length of time, the multitude of persons involved in the administration, and the state of disorder of the accounts. He suggests preparation of the overall summary of the accounts according to "truth and equity." He adds that without such a document showing the current state of the affairs it is not possible to make any recommendation.¹³

Trust and Estate Accounting

The records of the Bonsignori family are basically related to a trust left by Filippo Bonsignori and therefore should be compared

with the modern estate and trust accounting. A thorough literature search on the history of estate accounting has revealed a rather limited bibliography.¹⁴ The function of estate or trust accounting differs fundamentally from that of commercial or industrial accounting. Commercial or industrial accounting is based on the equation:

$$\text{Assets} = \text{Equities (Claims)}.$$

On the other hand, estate and trust accounting is based on accountability which means "to be answerable." In this case the above equation becomes:

$$\text{Assets} = \text{Accountability}.$$

The books of an executor are opened by debiting asset accounts with the valuations shown by the inventory and crediting a fiduciary "accountability" account called Estate Corpus or Trust Principal. According to the first entries made by Messr. Bonini, the first executor or administrator of the Filippo estate, this principle was observed. File 4B of the Bonsignori Family records contains the following entry on September 12, 1476, exactly two days after the death of Filippo Bonsignori:

*L'aredita dj filippo de avere addj 12 di settembre 1476 e
... da carlo da castelfranco . . . C 95 R 33 —*

(The estate of Filippo is credited on September 12, 1476 for the amount from Castelfranco Cart No. 95 33 florins)

The existence of this and similar entries shows the recognition of the trust as a separate entity and the systematic operation of a ledger system based on keeping account cards or folios. On the other hand, the general practice today is that liabilities are not recorded until the fiduciary pays them, thus reducing the total assets for which he is accountable. Of course, the fiduciary's accountability is increased if additional assets are discovered after the original inventory is completed. In this case, an account called Assets Subsequently Discovered is usually credited and asset accounts are debited. This account is a supplement to the Corpus account. The executor's responsibility as to corpus is also increased by any gains on the disposal of assets, because gains increase the total assets of the estate. On the other hand, his accountability is decreased by losses. When an asset is sold, the asset account is credited with the inventory value and the gain is credited to a Gain on Realization account.¹⁵ The executor's ac-

countability is decreased by payment of legacies, funeral expenses, and by the payment of liabilities incurred by the decedent.

Following the same logic nearly five hundred years ago Messr. Bonini made the following entry in his books.¹⁶

<i>La heredita di detto Filippo di dare adj 12 di settembre</i>	
<i>1376 R 1 y 56 . 17 . 6 per la spesa del mortorio uscita</i>	
25	R 1 56 . 17.6

The (Heredity account-estate) of said Filippo is debited on	
September 12, 1476 for the amount of R 1 y 56. 17. 6 for	
the burial expenses-exit book Carta No. 25	R 1 56 . 17.6

The fiduciary's accountability is decreased by the payment of legacies. One account "Legacies Paid" is usually sufficient even though there may be more than one legacy. If there are numerous legacies, it is desirable to use several accounts, such as Specific Legacies Delivered, General Legacies Paid, and so on. Messr. Bonini did almost the same thing with considerable detail except that burial expenses and legacies were carried in the same account and no distinction was made between general and specific legacies. However, detailed explanation of transactions were sufficient in this case because in the beginning the number of transactions were not too numerous. The following example prepared by the successor of Messr. Bonini indicates that Account No. 18 was used for legacies and other payments:¹⁷

<i>Lospedale apaghato per filippo p al chosto della</i>	R 9 5 . 11.9
<i>sipoltura d, s^a, maria novella conto 18</i>	R 21 1 —
<i>o rischuatoro altestamento a 18 mona</i>	R 100
<i>zinoba dona di filippo al chonto 18</i>	
<i>p iachopo buonsignoria a 18</i>	R 3 1 . 13.8

translated

Estate paid for Filippo	
for the cost of the tomb at the Santa Maria	
Novella Acct. No. 18	
to Mona Zinoba, wife of Filippo to Account 18	R 9 5 . 11.9
for collection according to the testament to 18	R 21 1
to Mona Zinoba, wife of Filippo to Account 18	R 100
to Jacopo Bonsignori (Filippo's brother) to 18	R 3 1 . 13.8

Modern accounting requires a fiduciary to maintain a clear distinction between principal cash and income cash. A special form of cash book is often used in order to keep this distinction. Messr.

Bonini's book closely follows this approach. He kept his cash book and assigned Ledger No. 1 (*carta 1*) for this purpose. It is also interesting to note, that the terminology used is precisely the same as that used in the modern charge and discharge statement. Messr. Bonini's 1490 statement contains the terms "I charge myself" and "I credit myself." He charged himself for inventory and collections (basically for collection of cash) and credited himself for expenses related to the estate. The ledger (*carta*) numbers used were 25 and 26 for expenses and No. 2 for income and principal.

According to the documents in File 4 C, before the death of Messr. Bonini (1493) the total debits and credits to the estate account were as follows:¹⁸

<i>entrata</i>	911 12 1282.	19-	Estate capital credit
<i>uschita</i>	1249 — 133.	11.8	Estate capital debit

Apparently Messr. Bonini made several mistakes and omissions during his long term as trust administrator. These mistakes are revealed in a summary prepared after his death. This summary first transfers Account No. 2 of Messr. Bonini to Account 17 and the expenses to Account 18. The following examples of this summary give the reader an idea about the nature of the credits to the principal account (all are cash receipts):¹⁹

<i>della charlo bonsignori chonto 17 . R trentatre</i>	R 33 — —
<i>della m^a zinoba difilippo chonto 17 R quindici</i>	R 15 — —
<i>della m^a zinoba detta chonto. 17 R ciento</i>	
<i>cinquantasotto e y 3 9.8 chonte</i>	R157 3 9 .8
<i>della detta R cinquecentoquarantacinque</i>	R545 — —

translated:

from Carlo Bonsignori Account 17 R thirty three	R 33 — —
from Mona Zinoba of Filippo Account 17 R fifteen	R 15 — —
from the above Zinoba Account 17 R one hundred	
fifty seven and 3. 9.8	R157 3 9.8
from Mona Zinoba (the above) five hundred forty	
five, Account 17	R545 — —

There is a striking difference between the credits to the estate account and the debits that were given on the previous pages. In addition to the amounts given in numbers, each amount was also given in writing. The slashes that appear on letters Rs were made by using a different ink because the amounts that appear in this summary (15 credits, 23 debits) were transferred from the *cartas* (ledgers) and these slashes indicate these transfers.

Another important fact that is revealed by this summary relates to omissions. Messr. Bonini left a number of accounts that gave only the descriptions of various assets (i.e. golden thread, pearls, etc.) but did not attach any value to these assets. The new accountant, after giving a list of assets added a note to the summary, "*della scritta di mano di Messr. Bonini*" which means "from the handwritten records of Messr. Bonini." However, he was not able to give any amount for these and omitted them from the totals of the debits and credits. Credits totalled 1291 4.3 and debits totalled 1380 4. 3. 7 showing an excess of debits over credits.

Two more items in this summary deserve a short discussion. One of them is related to the operation of a bakery which incurred expenses amounting to 64 florins. The new accountant did not include this amount in the total because there was no account kept by Messr. Bonini for this purpose. This fact was given in a note within the main text of the summary. The second refers to the fact that some information was obtained from the *catasto* 44 records. After the passage of a law in 1427, Florence began taxing its citizens on the basis of their assets and liabilities. These returns were called *catasto*. A cross check of records in Account 2 and the *catasto* information (*catasto* No. 44) of Franconi, as supplied by Carlo, resulted in a difference of 56. — .16 which was credited as a correction.²⁰ Finally, in one case, an amount of 8 florins that was paid to the Priest of Chiesa Bibbiana (or Barbiano)²¹ was referred to as a doubtful payment and was not entered in the total. Apparently this amount was a part of the 48 florins payment made to the same priest.

Financial Position as of October 13, 1545

The financial position statement as of October 13, 1545 measures approximately 16 by 22 inches (Figure 2). The front section gives debits and credits to the above mentioned accounts No. 2 for Principal and Nos. 25 and 26 for expenses. The right side *partito entrata* entry portion contains twenty-eight items and the *uscita* exit portion, the left hand gives 43 items. Since the credit items were explained with great care and detail, the accountant ran out of space and two items (i.e. 28 and 29) were carried to the blank space under the debits (expenses) side of the statement. Due to length of the time period and the condition of accounts left by Messr. Bonini and other accountants, the preparer of this last statement was very cautious about the transactions mentioned in the previous statement. He entered all the information left by Messr.

Figure 2
Summary of the Estate Account

Handwritten ledger table with multiple columns containing entries, dates, and numerical values. The entries are written in cursive and include names, dates, and descriptions of transactions. The table is organized into two main sections, one on the left and one on the right, with a central column of numbers. The entries are numbered 1 through 43.

Bonini as well as his reasons for corrections. Items 18, which is not completely legible, 19, 20, and 21 relate to the omission of information in Account No. 3 which refers to gold, pearl, and *cafasto* information concerning basically the personal effects of Filippo and his wife. The information in item 23 reveals that Mona Zinobia, Filippo's wife, died in 1486 and some of her property was left to the estate of her husband.

The debit side of this statement contains 43 items without a chronological order. Items are given with a short explanation. However, the exact day, month and year of the expenses were stated clearly. Apparently these expenses were more easily verifiable than the identification of the estate assets. Most of the items are of similar nature, payment to various persons in accordance with the testament. A majority of these payments were made for burial expenses, assistance to the S. Barbiana Church, and to immediate family members. Some items, especially items 39 and 40, occurred in 1476 but were entered after the transactions of 1481. For example,

38 Payment to S. Barbiana Church on October 6, 1481, 76 3. 16 followed by

39 Payment to Mona Zinobia October 7, 1476, 400 — — clearly shows the efforts of the accountant to find omitted accounts.

As can be seen from Figure 2 after corrections, the following totals were given as of October 13, 1545:

<i>heredita deavere</i>	R	2705	1464.	13.9 (credits)
<i>heredita dedaro</i>	R	1282	424.	11.5 (debits)
<i>L'aredita di Filippo a rimano</i>	R	1423	1040.	2.4 (remaining)

In approximately 55 years between Messr. Bonini's account keeping and the final report of the estate, several executors and accountants took over the job of administering the will. It is interesting to see that each change in the executorship of the estate meant a complete review of all the transactions since Filippo's death. The first day on the job each bookkeeper went back to the original will and copied the earlier transactions in full detail in order to limit his own accountability. But some of the earlier errors were not corrected until 1545 when two of the heirs requested the final settlement of the estate. The last accountant took his job very seriously and prepared a detailed final report which showed a balance of R 1423 1040. 2. 4. after corrections.

Certain entries on the back of this statement show a total of 1360 florins of credits between 1476 and 1545. The debits to the estate account total 626 florins.²² Only two transactions totalling 260 10 .2 related to one person, Ottaviano, are shown among the 43 items given in the last statement. Omitted transactions that took place between 1499 and 1545 apparently were discovered by this accountant. It is highly possible that these were included in another statement which is not in the file. If we add these amounts, the balance of the estate principal becomes as follows:

total credits	4065	1464	13.9
total debits	1908	434	13. —
remaining	2157	1030	— .9

Conclusion and Direction for Further Research

Although the Bonsignori documents are incomplete, they are valuable for two reasons. First, because of the length of the period covered by the documents, one can get a good idea of the development of accounting between 1461 and 1545. Various entries reflect developments in the procedures for administration of the estate, set up by Filippo Bonsignori. In addition to the day-to-day accounting aspects, the documents give a good case for the auditing of estate accounts. One after the other, accountants went back and searched for missing entries. In all situations their correcting entries were based on objective documents. Second, the documents can be used to structure the family history of the Bonsignoris. Since this family played certain roles in the political and economic life of Florence, such an investigation can be a valuable addition to the existing body of knowledge.²³

FOOTNOTES

¹Goldthwaite, p. 3.

²Goldthwaite, p. 4.

³There are several ways of spelling "Bonsignori." For uniformity we will use "Bonsignori" throughout this paper.

⁴MS 67(temp 4 D f. 26R).

⁵It is interesting to note that among these documents there is a copy of a will of July, 1931 by Girolamo Bonsignori, the grandson of Ludovico Bonsignori.

⁶The actual location of the nursing home and the San Paolo Hospital is given in a map by Walther Limburger in his *Die Gebäude von Florenz*, see Kent (at the end no page number).

⁷These documents are placed in Files 1, 2, 3, 4 (A through H), and 5 in Box M567 at the Spencer Research Library.

⁸Scaife, pp. 179-180.

⁹Scaife, p. 180.

¹⁰Scaife, p. 182.

¹¹The general rule was: a man's property was divided equally among his "universal heirs"—normally, his sons without any special recognition of the oldest. Goldthwaite, pp. 256-257.

¹²Mallett, p. 69, and p. 166. This trip had two patrons, Paolo di Giovanni Machiavelli and Pietro di Niccolò Piaciti. The former accompanied Filippo Bonsignori and later he became one of the leading Florentine galley commanders. Mallett, p. 69 note 3.

¹³MS 67 (temp 4D f. 26r). This letter is a copy of the original and has no date. However a note on the upper left hand refers to "supplica per degli operai dallo spedale di Santa Pauli" which means "petition for the operations of the estate of San Paolo."

¹⁴Oschinsky, pp. 91-98; Parker in his article in the *Accounting Historians Journal* talks about the history of executorship accounting but gives no specific reference.

¹⁵Griffin, Williams and Larson, pp. 627-661.

¹⁶One gold florin was equal to 20 *soldi* and 240 *denari*. Since coins were used the totals give actual counts. See Goldthwaite, pp. 289-290 and de Roover, p. 149.

¹⁷MS 67: 1:1 (temp) p. 3.

¹⁸MS 67 (temp 4C).

¹⁹MS 67:1: (temp) p. 2 and p. 3.

²⁰MS 67:1:1 (temp) p. 2.

²¹The handwriting has several misspellings which make it difficult to identify this church.

²²MS 67:4A:7r (temp).

²³Goldthwaite gives a good investigation of four families of Florence. It is possible, through these family histories, to trace the underlying factors of accumulation of private wealth in Florence.

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DISCOUNTED CASH FLOW AND BUSINESS VALUATION IN A NINETEENTH CENTURY MERGER: A NOTE

Abstract: In 1889 the Shelton Iron, Steel and Coal Company Limited was incorporated to take over the assets and business activities of two existing companies. To guide the contracting parties in negotiating a price to be paid for the properties belonging to the Shelton Collieries and Ironworks an independent valuation was arranged by Deloitte, Dever, Griffiths & Co., later appointed auditors of the new company. The article comprises an appraisal of the valuation exercise, which is an early example of the use of a discounted cash flow technique to provide relevant information for a capital investment decision.

Discounted cash flow (DCF) criteria have been applied to insurance matters and financial investments for several centuries, but it is only during the present century that they have gained widespread theoretical acceptance for capital investment purposes. Capital value theory was developed by economists such as Irving Fisher and Alfred Marshall in the 1920s, leading to formal expositions of the net present value (NPV) rule and the internal rate of return (IRR) model by P. A. Samuelson and K. Boulding respectively in the 1930s.¹ However, employment of these techniques as part of the decision-making process within United Kingdom companies is not as widespread as might be expected and is sometimes supposed to be the case. G. D. Newbould's study of takeover and merger activity in the late 1960s² showed that none of the companies included in his survey had made use of DCF techniques to value an enterprise, either as a means of assessing the viability of a prospective investment or as a means of retaliating against a low bid. The most popular methods of valuation, identified by Newbould, were book or market values of assets and current market prices of securities. Comparison of price earnings ratios was also favoured as a means of assessing a prospective investment. Judged theoretically, each of these methods is considered to be sub-optimal.

Book and market values of assets bear no necessary relationship to future earnings capacity, the market price of a security reflects only the value of a minority interest, whilst the price earnings ratio is based on past earnings.

Why have these inherent errors of principle not deterred companies from using sub-optimal valuation methods in preference to the theoretically pre-eminent DCF techniques? The reasons have not changed since they were first identified by Bonbright in the 1930s.³ Forecasting future cash flows and selecting a suitable discount rate are subjective exercises difficult to defend in law. Forecasting future cash flows inevitably involves a strong element of crystal-ball gazing and, instead of a series of known returns, estimates used will be, at best, a range of possible outcomes dependent upon the occurrence or nonoccurrence of various future events. Moreover the discount rate which, in theory, should represent the risk-free rate of interest plus a premium for risk, both unknowns, must, in practice, also be estimated. The effect of these practical difficulties is that DCF techniques have come to be regarded, by many businessmen, as academic ideals with little relevance to the imperfect market in which firms operate. It is therefore interesting to discover that as early as 1889, well before the techniques had achieved even widespread academic recognition, use was being made of DCF valuation procedures in an uncontested merger.

An Early Application of the DCF method

Two enterprises, Lord Granville's Shelton Collieries and Ironworks (SCI) and the Shelton Iron and Steel Company Limited (SIS), agreed to join together to form the Shelton Iron, Steel and Coal Company Limited (SISC).⁴ To guide the contracting parties in negotiating the price to be paid for SCI, Messrs. Deloitte, Dever, Griffiths & Co., later appointed auditors of SISC, arranged for William Craig of Cheshire⁵ to value the property belonging to the former company. The detailed terms of reference given to Craig are repeated in his report dated 16 July 1889 and include the requirements to advise on "the condition of the . . . [properties] . . . and on their present value."⁶

Model Employed. The basic model used by Craig for the purpose of computing the DCF value is, in essence, identical with the theoretical model recommended today. Craig forecasts future cash flows based on recent past results and his assessment of the various factors which might be expected to alter these results in the future and, second, estimates a suitable discount rate which, when applied

to the cash flows, produces a figure for present value.^a A preliminary criticism which might be directed at Craig's report is that it does not incorporate a calculation of the break up value of the business, i.e., the lowest price that the vendor should be willing to accept for the sale of the enterprise as a going concern. Nor does he estimate the maximum price the rational purchaser will pay, namely the replacement cost of an enterprise possessing a similar earning capacity. However, these matters were not explicitly included in the terms of reference given to Craig. The owners of the merging concerns were, of course, maintaining their proprietorial links as shareholders of the new concern.⁷ This suggests that a policy decision had been made to continue investing in the manufacture of iron and steel and, except in the unusual circumstance of the break up value exceeding replacement cost, the calculation of these upper and lower limits would have served no useful purpose.

The practical difficulties encountered by Craig when attempting to apply the theoretical model to a real business situation were no different from those facing investment appraisers today. It is therefore interesting to consider how he tackled the problem, the extent to which his figures were relied upon for price-fixing purposes, and the degree of success achieved by a comparison with subsequent events. These matters are examined below.

Methodology

The early part of the report lists and describes the various leases, pits and blast furnaces which comprised the undertaking.⁸ The effect of using this approach is to divide the entire enterprise into a number of separate and distinct parts as the basis for the valuation exercise, the results of which are summarised in Table I.

Cash Flows: Collieries. For each of the pits the present rate of working and the reserves yet unworked are identified.⁹ In accordance with his terms of reference, Craig next assesses the financial implications of opening up several new workings on the leasehold properties.¹⁰ Inclusion of the expected financial effects of development proposals for the collieries is explained in two ways. First, the enterprise was obliged under the terms of its two leases to sink an extra three pits within certain time limits and, second, since

^aCraig's exercise would seem to compare favourably with another early (1915) attempt at investment appraisal for which some sophistication is claimed by George A. Wing, in his article "Capital Budgeting, Circa. 1915," but which uses only simple interest tables to compute present values.

Table 1
Present value of SCI per Craig's Report dated 16 July 1889

	Years	Cash Flow £	Discount Rate %	Value at End of Year 7 £	Discount Rate %	Present Value £	£
COLLIERIES							
Duchy Lease, 30 years:							
Present Workings	1-30	14,646p.a.	15				96,165
Additional Revenue from Opening New Pits, Com- mencing Year 8							
	8-30	14,854p.a.	15	95,051	7	59,056	
Cost of Development							
	1-7	3,751p.a.	5			(20,661)	38,395
End Value of Plant	30	50,000	5				11,550
Sneyd Lease, 40 years:							
Revenue from De- veloping Lease, Commencing Year 8							
	8-40	30,000p.a.	15	198,000	7	123,294	
Cost of Development							
	1-5	9,000p.a.	5			(38,961)	84,333
End Value of Plant	40	15,000	5				2,130
							<u>232,573</u>
BLAST							
FURNACES	Perpetuity	5,000	10				50,000
COPY HOLD							
LAND	30	12,000	5				2,772
							<u>£285,345</u>

Source: Craig, pp. 28, 29 and 35.

several of the pits currently in use were almost worked out new mines needed to be opened up in order to maintain present levels of production. The potential of the new pits was estimated from geological surveys and detailed information regarding conditions of working the same seams of coal and ore by neighbouring concerns. In Craig's judgment¹¹ the new pits could be expected to yield a more valuable class of coal under easier mining conditions and, therefore, prove more profitable than existing workings.¹² In estimating cash flows from present workings and new developments,

Craig uses average prices ruling during the twelve months immediately prior to the date of the valuation exercise, but he does consider the implications of the following expected future developments in the price of coal and wages rates paid to colliers.

1. The price of coal had been comparatively low for twelve years but during the last six months there had been some improvement and Craig was of the opinion that the higher current prices would be maintained in the future.¹³ A repetition of the overproduction of coal which occurred in the 1870s was considered improbable as, from that bitter experience, mine owners had learned that such a situation was disastrous for the supplier.¹⁴
2. Owing to the passage of the Mines Regulations Act of 1887, which restricted the employment of inexperienced and therefore lower paid colliers, an increase in business operating costs was forecast.¹⁵ However, Craig argued that any resulting rise in wage rates would be substantially offset by the lower cost of working the new pits.

Overall, the only significant departure, from the pattern of costs and revenues used for valuation purposes, which Craig considered likely to occur, was the possibility that future coal prices would be higher than the previous year's average prices; i.e. a conservative valuation was implied.

Cash Flows: Blast Furnaces. It is when we turn to the valuation of the blast furnaces that it becomes more difficult to reconcile Craig's calculations with available factual evidence.¹⁶ During the period 1885-89 an aggregate loss of £28,786 arose from operating the blast furnaces, but during the six years prior to 1885 trading results had been more favourable and he uses the overall returns for the period 1879-89 to produce an average annual profit of £2,858. Still not satisfied, Craig points out that iron prices had been low for a number of years but were, in his opinion, now showing signs of improvement. This, he feels, justifies using an average annual revenue of £5,000 for capitalisation purposes. One reason for averaging returns over a number of years, as a basis for future projections, might be to avoid distortions which would be caused by the existence of cyclical fluctuations in trading activity. No suggestion was made in the report that this was the intention. Indeed it is perhaps more instructive, to note the inconsistency between the blast furnace valuation, based on average results over a ten-year period, and the valuation of coal, based on profits earned

during the previous twelve months thus ignoring the less favourable results arising previously from coal.

Discount Rates. It is probably in the choice of discount rates that Craig's analysis is weakest in theory compared with present day DCF criteria. It is generally accepted that the rate used should be a function of the perceived risk attaching to the cash flows from the investment, and that the assessment of that risk and the calculation of the risk premium must be a subjective exercise based primarily on the valuer's judgment. The discount rate in DCF calculations represents an estimate of the opportunity cost of employing funds in an investment of a particular risk class. It would therefore seem appropriate, when valuing a business concern, to consider one rate as applicable to the enterprise as a whole, given its overall risk class. Table 1 shows that Craig selects different rates not only for separate departments but also (1) for cash outlays and inflows relating to a single project, and (2) for different time periods within the same stream of cash inflows. This means that Craig has a range of discount rates, each adjusted according to the risk and uncertainty which he perceives for each stream of cash flows and for each time period. In all he makes use of four different rates, 5% for cash outlays, 15% for revenue from the collieries, further discounted at 7% where there is a seven year delay before revenue begins to emerge, and 10% for revenue from the blast furnaces. Each of these rates includes a premium over what may be considered the risk-free rate of interest in July 1889. For instance, the bank rate at that date was 2½%,¹⁷ although it did fluctuate between 2½% and 6% during the latter part of the nineteenth century. It is likely that, in fixing the risk premiums, Craig had in mind the returns achieved by similar concerns in the locality with which he was closely acquainted.

Once again it is the blast furnaces which receive the most favourable treatment. Despite his already optimistic assessment regarding the revenues likely to arise from that source, Craig introduces further upward bias by applying a discount rate of 10%, compared with 15% for coal reserves.

Values Employed

In the event, Craig's valuations were not used as the direct basis for fixing the price paid to Earl Granville, the sole proprietor of SCI. The prospectus published to advertise an issue of preference shares and debentures by the acquiring company (SISC), at the time of its incorporation, includes reference to Craig's valuation of

Granville's "properties at £285,345 exclusive of stocks of coal and ironstone and stores,"¹⁸ but this is cited presumably only as evidence of the conservative nature of the figures actually used. Separate agreements attached to SISC's memorandum of association, dated December 1889, show that the sale of SCI was "carried out upon the basis of the balance sheet of the said business at the 30th day of June 1889"¹⁹ and that the sale of SIS was "carried out upon the basis of the balance sheet of the said business at the 3rd day of August 1889."²⁰ Balance sheets of the vendor companies appear not to have survived, but the figures at which the assets were initially accounted for by SISC are clearly set out in the unpublished balance sheet of that concern dated 31 December 1889, and this document includes £257,119 for the properties belonging to SCI.²¹

Although one may have major reservations concerning the economic significance of the asset values which were used for the purpose of fixing prices payable to the vendors, it must be remembered that the method of business combination being discussed is in the nature of a "pooling of interests" rather than an acquisition. It is true that external sources of finance amounting to £250,000 (£100,000 debentures and £150,000 preference shares) were raised at the time SISC was formed, of which £220,000²² was paid out to Granville and the shareholders of SIS whose proprietary interests were correspondingly reduced.²³ Nevertheless, the entire equity interest in SISC continued in the hands of individuals who had been proprietors of the merged concerns. This, together with the fact that there was no major disparity between the size and scale of operations of the merged concerns, would cause the event to be accounted for in some countries today, though not in Great Britain,²⁴ on the "pooling" basis. It is also true that, at SISC, one accounting characteristic of pooling was absent, namely the carrying forward of the retained earnings of the amalgamating companies as the retained earnings of the resulting entity; however, the other characteristic was clearly present, *viz.* the carrying forward of the book values of assets belonging to the amalgamating companies to the new concern. Consequently it would seem that we have an early, albeit partial, example of pooling based on the idea that the accounting value of assets is not affected by the legal formality of transferring them to a "new" owner where there is no real change in the proprietary interest. This is not to suggest that those responsible for merging the activities of SCI and SIS were consciously pioneering any radical development in accounting theory and practice. Indeed, the main virtue of the treatment adopted may have

been its easy application and firms elsewhere may well have been doing much the same.²⁵

The effect of using the figures in SCI's balance sheet, at 30 June 1889, was to value the company at the historical costs incurred in acquiring and developing properties prior to that date. The question arises: why did the contracting parties choose not to use Craig's valuation for price-fixing purposes? In the absence of available evidence, we can only speculate on their possible motives. Craig's calculations were based on two series of cash flows, namely amounts expected to accrue from property presently being worked and amounts expected to accrue from the development of leases to be taken over by SISC. Although it is perfectly legitimate to incorporate both series in the valuation exercise, particularly as the leaseholder was obliged to undertake development expenditure under the terms of the leases, it does not follow that the purchaser will be willing to pay the figure which results. In view of the considerable uncertainty attaching to cash flows based on development expenditure yet to be undertaken, the purchaser might well argue for a lower figure, possibly based on present production potential. Table I shows a total value of £232,573 for the collieries, and this includes £96,165 attributable to present workings. One attractive feature of the collieries' figure of £189,611,²⁶ appearing in the balance sheet of SCI, could have been that it fell at a convenient point between those two valuations.

The figure of £50,000 described as "plant, machinery, furniture, goodwill etc." in the agreement between SCI and SISC, is interesting. This item covers the six blast furnaces owned by Granville's concern, a fact which might help to explain Craig's determination to place a similar valuation on the furnaces despite a five-year history of continuous loss making. An alternative explanation for the coincidence of figures is that, as the agreement between SCI and SISC was signed towards the end of 1889, the £50,000 valuation was written into the balance sheet of the former concern *after* Craig had made his report, dated 16 July 1889.

The book values on which the prices paid to the vendors were based, and which appear in the 31 December 1889 balance sheet of SISC, were soon abandoned. It is not surprising that management should have wished to make some adjustment to the heterogeneous selection of figures transferred from SCI and SIS. For instance, there is evidence which shows that many of the figures attached to assets taken over from SIS represented expenditure incurred, at various stages during the previous twenty-five years,

to which no adjustment had been made subsequent to the date of acquisition.²⁷ A revaluation of the assets taken over was reported to the company's auditors in a letter dated 19th January 1891.²⁸ This exercise resulted in a significant reallocation of book values between asset accounts and produced a shortfall of £30,000 which was debited to goodwill.²⁹

An Ex Post View of Craig's Valuation

The difficult problems inherent in achieving a precise assessment of present value, namely accurately forecasting future cash flows and identifying the right discount rate, are well understood. This being so, it might seem churlish to concern ourselves overmuch with an examination of the actual results achieved by SISC in the years immediately following incorporation, particularly in view of the early stage at which these fairly sophisticated calculations were being attempted. Nevertheless, post fact evaluation of earlier business decisions is an important, if sometimes neglected, aspect of management's learning process, and this is sufficient justification for considering forecasts in the light of actual results.

There are practical difficulties which prevent us from carrying out a detailed comparison, at the company level, of forecast results with actual results achieved. First, SISC was formed to carry on the combined activities of two existing companies and, although the management accounting system of SISC calculated the profit or loss for each department,³⁰ a further analysis of results between the assets of each of SISC's forerunners was probably considered irrelevant and was not made. A second difficulty arises because "the system of arriving at interdepartmental costs was altered from January 1st, 1891, the basis of charging at market price being changed for that of charging at cost price."³¹ This change in the company's system of pricing transfers between departments was made at the instigation of the company's auditors, Deloitte, Dever, Griffiths & Co.,³² who had expressed concern with a method of account keeping which made it impossible to establish the actual cost of stock when preparing the annual balance sheet.^b

^bStrict application of the realisation concept might be desirable for the purpose of external reporting but its use within the management information system may be more difficult to justify. The result of the change made at SISC was that transfers of materials between the collieries, blast furnaces, and iron and steel making departments were made at cost, instead of market price which had been used previously. The effect was that, henceforth, internal accounting reports contained less useful measures of the absolute and relative profitability of each department, e.g. assuming the market price of surplus coal sold to outsiders exceeded cost, the re-

Despite these obstacles certain *ex post* observations can be made relevant to Craig's valuation. For the sixteen years following incorporation, SISC did little better than breakeven, and it was only the favourable conditions for iron and steelmaking created by the First World War which saw SISC enjoy a period of sustained prosperity.³³ During the two-and-a-half years following incorporation the reported results were poor and prospects were sufficiently unfavourable to cause one of the company's shareholders to criticise the amount paid to the vendors.³⁴ Moreover, the company's chairman, when addressing the sixth annual general meeting, admitted that the period since incorporation had been one of depression following earlier prosperity,³⁵ and the point has been made elsewhere³⁶ that the reported results of SISC, prior to 1910, would have been even worse but for the failure to make regular charges to reflect the depreciation of fixed assets.

In order to obtain a clearer idea of whether the poor results achieved following incorporation should have been foreseen, we must re-examine Craig's valuations in the light of subsequent events.

Collieries. In 1891 Emmerson Bainbridge of Sheffield was asked by the Board³⁷ to inspect the mining properties and advise on their "present condition and prospects."³⁸ His report, dated 2 November 1891, begins by drawing attention to the fact that "the company was formed just at a time when the temporary inflation of the Coal and Iron trade was at the best."³⁹ An important assumption on which Craig's projections were based was proven wrong by subsequent events. He expected the recent recovery in coal prices to continue, whereas for six years during the 1890s the average price of coal was significantly below that ruling in 1889.⁴⁰ It is likely that this forecasting error was partly offset by two factors—(1) wage rates, which were tied to the price of coal by the sliding scale,⁴¹ also fell⁴² and (2) over the full forecasting period coal prices were higher than had previously been the case.⁴³ Regarding the price paid for the collieries, Bainbridge makes the following critical observations:

I may add at this point (although it may not be within the province of my Report) that considering the outlay upon new works which has for sometime been understood to be necessary, and the stipulation of the leases, and the need for opening out new Coalfields, the value placed upon

sults of the collieries were understated and those of the iron and steel making departments overstated, judged by comparison with today's generally accepted accounting procedures for measuring profit.

these Collieries at the time the Company acquired them was in my opinion very much beyond their actual worth.⁴⁴

We have seen that the figure for the collieries, appearing in the balance sheet used as the basis for fixing the price paid to the vendor, was £189,611.⁴⁵ This is well below Craig's valuation of £232,573, which incorporates the expected financial effects of future developments under the lease. Indeed, the value Craig placed on present workings, £95,165, was probably much nearer what Bainbridge would have considered an appropriate price.

Blast Furnaces. Doubt has already been cast on whether the £50,000 valuation placed on the blast furnaces was the result of an entirely objective estimation process. For the four years prior to the date of Craig's report, losses had been running at an average annual level of £7,196. Craig's optimistic assumption that prices would rise sufficiently to convert this loss into an annual profit of £5,000 proved unjustified as it was a further ten years before iron prices began to improve.⁴⁶ This is not something which is clear only with the benefit of hindsight. Following Bessemer's discoveries in the 1860s there had been a rapid substitution in demand of steel for iron and, as early as 1863, the ironmaster William Crawshay had remarked that "the star of the iron trade was setting fast."⁴⁷ In mitigation of Craig's assessment, it must be said that Jeremiah Head, who was asked to investigate and report on the various departments in 1892, gave no indication either that the iron making potential was in poor condition⁴⁸ or that it was overvalued.⁴⁹ Also, the managers at SISC must have considered it *undervalued* at £50,000 for, when the purchase consideration was reallocated, a figure of £60,250 was included for the blast furnaces.⁵⁰

Summary and Conclusion

The inconsistency of using a single year's results as a basis for projections in the case of the collieries, while for the blast furnaces a ten-year average was calculated, has been pointed out. The use of a number of different interest rates depending on the nature and duration of estimated cash flows has also been criticised. Apart from these two weaknesses, we consider the mechanics of Craig's valuation exercise to be satisfactory. The underlying assumptions on which the calculations were based, however, turned out to be wrong. The rise in the price of coal in the first half of 1889 was a temporary phenomenon and not part of the continuous trend which Craig assumed. In addition, iron prices remained de-

pressed throughout the 1890s, instead of rising sufficiently to convert losses into profits as Craig had hoped. Some doubt has also been cast on the relevance, for price-fixing purposes, of a valuation based on income projections, a major portion of which may arise only if additional capital is raised and future investment decisions are undertaken. As it turned out, the only use made of Craig's estimate of present value was to demonstrate, to new investors brought in at the time SISC was incorporated, the conservative nature of the basis actually used.

One possible explanation for the contracting parties' ultimate decision to use balance sheet values for price-fixing purposes is that, unlike Craig's figures, they take no explicit account of the potential value accruing to new work. However, balance sheet values based on the accounting concept of historical cost are today regarded as an unsound basis for resource allocation decisions. This may not have been the case in 1889, though it is more likely that the combined balance sheet values of SIS and SCI happened to approximate "real" values, and it was considered convenient to use them pending a revaluation of the entire concern. An alternative explanation, put forward for the decision to employ balance sheet values, is that the strong element of continuity of ownership justified the use of a modified version of the pooling of interests basis of accounting for mergers.

FOOTNOTES

¹Parker discusses the contribution of political economists to the development of capital theory, pp. 64-68.

²Newbould.

³Bonbright, Ch. 12.

⁴Edwards, J. R. discusses the reporting practises employed by the directors of SISC, in the years following incorporation, and their implications for the sources employed to finance business activity.

⁵The name and address of solicitors Norton, Rose, Norton & Co., 57½ Old Broad Street, EC1, appear on the front cover of Craig's report. Craig was not himself a solicitor and enquiries have failed to reveal whether he possessed any professional qualifications.

⁶Craig, p. 1.

⁷There were also issues of preference shares and debentures to the general public.

⁸Craig, pp. 3-5.

⁹Craig, pp. 5-18.

¹⁰Craig, pp. 19-29.

¹¹Craig's suitability for undertaking the valuation exercise rests on his own declared experience of coal mining in neighbouring districts, Craig, pp. 21 and 27.

¹²Craig, pp. 19 and 29.

¹³Craig, pp. 17 and 26.

¹⁴Craig, p. 17.

¹⁵Craig, p. 17.

¹⁶Craig, pp. 32-35.

¹⁷Mitchell, p. 458.

¹⁸NWRRRC/472/book 23/fo. 1, *Prospectus* dated 12th December, 1889.

¹⁹NWRRRC/472/book 24, *First Schedule* attached to SISC's memorandum of association dated 6th December, 1889, p. 49.

²⁰NWRRRC/472/book 24, *Second Schedule* attached to SISC's memorandum of association dated 6th December, 1889, p. 62.

²¹NWRRRC/472/book 53/fo. 22, balance sheet attached to letter from Deloitte, Dever, Griffiths & Co., dated 23rd June, 1890.

²²£120,000 was payable in cash with the proceeds arising from the £100,000 5% first charge debentures, later offered to the general public, also due to Granville, NWRRRC/472/book 24, *First Schedule* and *Second Schedule* attached to SISC's memorandum of association dated 6th December, 1889, pp. 51 and 64, respectively.

²³Except that some of the new issues may well have been taken up by the former owners of SIS and SCI.

²⁴A proposal, not acted upon, that certain business combinations should be accounted for on the "Pooling Basis" was included in *Exposure Draft 3*, issued by the Accounting Standards Committee in 1971.

²⁵Since those early days the treatment has attracted an increasing amount of attention and no little support in certain quarters, Rayburn pp. 290-310, although it was not until more than half a century later that the American accounting profession first gave explicit consideration to accounting for mergers on the pooling basis. A report, from the committee on public utility accounting of the American Institute of Accountants, dated 1 May 1945, suggested that one hypothesis which required careful consideration was "that no new cost can result from a transaction that . . . may be regarded as effecting a 'pooling of interest,'" p. 152.

²⁶NWRRRC/472/book 53/fo. 22.

²⁷Edwards, J. R., pp. 243-244.

²⁸NWRRRC/472/3/1, SISC minute book 1889-92, fo. 152.

²⁹NWRRRC/472/book 32/fo. 69.

³⁰NWRRRC/472/book 53/fo. 26, letter from Deloitte, Dever, Griffiths & Co. dated 23rd June, 1890.

³¹NWRRRC/472/book 53/fo. 56, report signed by Lynam dated 26th February, 1892.

³²NWRRRC/472/book 53/fo. 22, letter from Deloitte, Dever, Griffiths & Co. dated 23rd June, 1890.

³³Edwards, J. R., p. 256.

³⁴*Staffordshire Sentinel*, 13th April, 1892, comment by Mr. Lyon, shareholder, at the second ordinary meeting of SISC.

³⁵*Staffordshire Sentinel*, 17th April, 1896.

³⁶Edwards, J. R., p. 256.

³⁷NWRRRC/472/3/1, SISC minute book 1889-92, fo. 202.

³⁸Bainbridge, p. 1.

³⁹Bainbridge, p. 2.

⁴⁰Mitchell, p. 476.

⁴¹Edwards, Ness, Chs. 5 and 6.

⁴²Mitchell, pp. 350-351.

⁴³Mitchell, pp. 476-477.

⁴⁴Bainbridge, p. 11.

⁴⁵NWRRC/472/book 53/fo. 22.

⁴⁶Mitchell, p. 493.

⁴⁷Birch, p. 10.

⁴⁸Head's main criticism concerned the system of "dual management and divided responsibility," Part III, p. 21.

⁴⁹The takeover figures were used by Head to calculate "the proper sum to be set aside for depreciation," Part III, p. 19.

⁵⁰NWRRC/472/book 32/fo. 69.

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THE CULTURAL SIGNIFICANCE OF ACCOUNTS— THE PHILOSOPHY OF DR SCOTT

Abstract: DR Scott was an economist, historian, philosopher, and accountant. Most of all he was a scholar who merged some of the most up-to-date ideas of the 1920s into his book *The Cultural Significance of Accounts*. He concluded that our culture was in a time of relative turmoil because the market was no longer the primary controlling force within our institutions. Accounting as the vehicle of the scientific method would replace the market as the synthesis of institutions which make up our culture.

Evidence suggests that the outcome foretold by DR Scott in 1931—that American society would witness the use of Accounting as a principal means of political and economic control—seems to have come to pass in the contemporary “Bottom-Line” culture of the 1970s.¹

The purpose of this article is to explain how DR Scott^a reached the conclusion quoted above. DR Scott can fairly be described as an economist, historian, philosopher, and accountant. Most of all he was a scholar who brought together knowledge from all those disciplines and merged them into a new view of accounting. The discussion which follows is a synopsis of his most important contribution, *The Cultural Significance of Accounts*. In reading the following, one must remember the ideas were expressed during the late 1920s. The reader should not expect revelations from the following because Scott, by his own statement, was only suggesting a way of thinking about accounting.

Scott joined the faculty of the newly established College of Commerce at the University of Missouri in 1914 as an Assistant Professor of Economics. By 1920 he had been promoted through the ranks to Professor of Economics. In 1930 his title changed to Professor of Accounting and Statistics and he was appointed Chair-

^aTypists and copy editors always have problems with the fact that Mr. and Mrs. Scott named their son DR, spelled with two capital letters not separated by punctuation or blanks.

man of that newly formed department. He continued as chairman until 1940 and as professor until his death in 1954. During his career he published many articles on accounting subjects and matters relating to higher education. A bibliography of Scott's writing appears at the end of this paper. He was an active member of both the American Accounting Association and the American Association of University Professors.

Readers of *The Cultural Significance of Accounts* will note a marked likeness to the writings of Thorstein Veblen. Scott acknowledges in the preface that Veblen is the source of the "viewpoint" expressed in the book. Scott's contact with Veblen was through their mutual close friend, H. J. Davenport. Davenport had been Veblen's student at the University of Chicago, and as Chairman of the Department of Economics at the University of Missouri had hired Veblen.

Veblen's biographer, Joseph Dorfman, suggests that he was aloof from most of the faculty during his six years at Missouri.² However, he was very close to Davenport; in fact, he lived with Davenport and his family for some time. Scott's close relationship with Davenport and his acknowledgement of both in *The Cultural Significance of Accounts* are evidence enough that he had close contact with the thoughts of Veblen. We need only compare the complete title of Veblen's most important work, *Theory of the Leisure Class: An Economic Study of the Evolution of Institutions*, with the content of *The Cultural Significance of Accounts* to see the connection.

The literature of "Scientific Management," much of which is attributed to Frederick Taylor, was very influential on Scott's ideas. A Chapter of *The Cultural Significance of Accounts* relates the scientific management movement to our culture and accounting. In fact, the basis of Scott's theory is a merger of the ideas of Taylor and Veblen.

Institutions

Scott has been described as an Institutionalists. As such, his ideas regarding accounting were based on the assumption that a culture is made up of many interrelated institutions. These institutions were held together to form a culture by the sharing of a common philosophical viewpoint. When that philosophical viewpoint becomes outmoded by changes in the environment, a period of cultural changes occurs.

Scott demonstrated that cultural institutions change over time, not in a constant, even flow of evolution but through periods of

relative stability followed by a period of change. During periods of stability, a society (culture) is in relative harmony with its environment. As the environment changes, existing abstractions and theories are slow to adjust. His view, from the prospective of the 1920s, was that we were in a time of change. The nature of the change was that the market was declining in influence and was being replaced by a dependence upon accounts. This dependence upon accounts would be recognized at some future time, but the present (1920s) was a period of conflict between theory and the environment.

Consistent with his view that cultural institutions evolve he believed accounting as it was then known was also changing. Accounting was becoming a theory which encompassed both book-keeping and certain scientific techniques. Essentially this meant accounting was an integral part of the emerging scientific approach.

Decline of Market Control

Scott argued that the accepted economic theory of the market resolving conflicts of supply and demand was a theory unmatched to the realities of his time or the future as he viewed it. In his view, the market theory was probably correct when applied to the period beginning about two centuries prior to the beginning of the Industrial Revolution. That time was characterized by its individualistic pursuit of profits and lack of large scale business and professional management.

With the growing importance of large scale industry came the need for professional management. Competition led to instability in prices and profits. Capitalistic monopolies were formed to combat the fluctuations and spelled the beginning of the end for the individualistic type of market control. Simultaneously labor began to organize in protest to the treatment it had received under the competitive individualistic system.

Because the market is only one thread in our complex cultural fabric, Scott saw its decline in relevance as disrupting many other institutions.

In a broad sense the market is part of the machinery of government just as the principles which underlie the theory of market control are part of the prevailing system of law. Economic, political, governmental, legal and other institutions serving to effect adjustment of human interests,

develop out of a single process and together they constitute a coordinated unit.³

Changes in the economic realities of the western world spelled the beginning of the end for the market as primary controller. Unfortunately, but not unexpectedly, economic theory and law did not adjust to the changes. "In the eyes of the law and theoretical economics, the market still stands as the central, supreme economic authority. But it stands thus without the loyal support of a large majority of those who are subject to this faltering control."⁴

Scientific Management

During the period of individualistic competition when the market was the most significant controlling force within our culture, accounting served only a simple bookkeeping function. As industries and businesses grew, more professional management was required. These professional managers had to rely on accounting for more and more of the information necessary to manage their businesses. As accounting increased in importance for management, it rapidly evolved into a body of knowledge far surpassing basic bookkeeping. Scott felt strongly that statistical methods were becoming an integral and fundamental part of accounting. "[Accounting theory] has become, or is rapidly becoming, a theoretical summary of the application of statistical methods to programs of public and private economic administration."⁵

Scott's meaning for the term "statistics" is somewhat different from its common usage today. In his context the term is analogous to present-day cost accounting and data processing responsibilities.⁶ Many of Scott's ideas were based on the emerging scientific management literature. The impact of those theories on cost accounting during the period has been pointed out by Eldon Hendriksen:

. . .of the more important influences on cost accounting during the first two decades of the 20th century were the work of the so-called "scientific management" engineers. . . . The greatest impact on management and cost accounting did not come until after Taylor's death in 1915.⁷

Scott seems to use the phrases scientific management, scientific method and the objective point of view interchangeably throughout his book.

Control by Commissions

Application of scientific management techniques was fundamental not only to management of business but also to the commissions and agencies which, in Scott's opinion, were to play an ever growing role in our society. "Opposing economic and social groups hold to radically different beliefs and do not recognize common allegiance to one fundamental authority. An essential contention in the present discussion is, however, that present opposing groups do share a common, though unrecognized, allegiance in their faith in the scientific or objective point of view."⁸ Note in the foregoing quotation Scott writes that the opposing groups have an "unrecognized allegiance" in adopting the objective point of view. This does not imply that any of these institutions would disavow the relevancy of that philosophy. Rather that in general they were using it while believing that the market was the most important controlling factor in our culture. The period of "social readjustment" or conflict would continue until the various institutions were reconciled because of their application of the objective point of view.

The following paragraph is Scott's presentation of evidence to support his contention that the market is no longer in control and the application of scientific management using accounting data was becoming dominant.

When the market has failed to regulate certain economic activities effectively, the government has stepped in to assume direct responsibility for them. This change has been of very great importance in the development of an independent status of accounts. In their early history, regulating commissions were somewhat at sea. They could not turn to the market for the market had failed to meet the situation. They owed their existence to its failure. When they turned to the law they found it assuming an adjustment of economic interests according to the principles of a competitive regime. As a result, instead of dependence upon the market or upon law, regulating commissions turned to accounts and accounting principles for guidance and support.⁹

Scott does not tell us specifically which examples of regulatory commissions were "at sea" or when the law had failed a commission. However, the relationship between railroads and the Interstate Commerce Commission during the 1920s was probably the most important influence. The turmoil to which he refers is not the stock

market crash of 1929. In spite of the fact that *The Cultural Significance of Accounts* was not published until 1931, it was written prior to the crash.

There is some evidence that Scott's prediction that our economy would be run by commissions using accounting and statistics as their basis of control has come full circle at this time. Primary examples are the Interstate Commerce Commission with its current deregulation of the trucking industry and the Civil Aeronautics Board deregulation of airlines.

The Cultural Significance of Accounts

Scott summarizes *The Cultural Significance of Accounts* in the following paragraph.

The prospect of an economic organization around accounts suggests that accounting theory should be expected to take the place of market theory. But institutions and systems of theory do not come into existence full grown. Accounting theory is not now a general theory of economic organization. Hence the suggestion here referred to can only be that accounts and accounting theory promise to serve respectively as points of origin and organization for a reshaping of economic institutions and the development of a system of theory running consistently or primarily in objective terms.¹⁰

Accounts and accounting principles were the primary vehicle of the objective point of view, and therefore the most important single factor in resolving social conflict. However, true to the institutionalist theory, Scott does not let his theory rest on the previous arguments but states that the period of stability is only temporary. "It is a commonplace observation upon cultural development that the radical and subversive principles of one era become the cherished, conservative dogmas of a following era."¹¹

The implications of the importance of accounting in the present and future cultural period is that extreme care must be exercised in the formulation of accounting principles. Scott did not clearly make that point in *The Cultural Significance of Accounts*. In that book he simply concluded with accounting as surpassing the market as the unifying philosophy guiding our culture. It wasn't until later, in an article on the subject of accounting principles published in *The Accounting Review*, that he stated the connection between accounting principles and the cultural significance of accounts.

That accounts will constitute a central feature of the system of economic control in the future is a matter which is no longer open to question. There is no cause for concern on that score. The danger is rather that doctrinaire or half-baked formulations of principles may be frozen into the rigid requirements of law. And the surest way to bring about the adoption of such half-baked principles is for leadership in the accounting profession to take the position that public accounting practice cannot be subordinated to a system of accounting principles or theory. Somehow, the positions of the doctrinaire theorist and the rugged individualist who refuse to recognize the importance of theory must both be avoided.¹²

One is led to wonder what Scott's opinion would be of the failure of the Accounting Principles Board and the Financial Accounting Standards Board to be much more than rule makers for the accounting profession. One would also wonder if Scott would write today that the institution of accounting is standing on the quicksand of an entirely changed environment.

Summary

After the first reading of *The Cultural Significance of Accounts*, one is tempted to conclude that DR Scott had much in common with the Oracle of Delphi, making statements that are sufficiently open-ended to be defined as true no matter which outcome of a forecast event transpired. Actually, the book is a synthesis of the economic theory of Thorstein Veblen, scientific management, fathered by Frederick Taylor and accounting as observed by Scott. He stitches these ideas together with evidence of their interrelationship in the increasing control being exerted by commissions during the 1920s. A thorough reading leads to an appreciation of the logic and definitive nature of Scott's conclusions.

He argues persuasively that history demonstrates the evolution of institutions and thus our culture is based on the interaction of environmental and philosophical factors. He also argues that the scientific or objective point of view is the emerging but as yet unheralded unifying philosophy of the near-term of our culture. Accounting, as the primary vehicle of the scientific method, would replace the market as the synthesis of institutions and thus of our culture.

FOOTNOTES

- ¹Previts and Merino, Preface.
²Dorfman, pp. 310-311.
³Scott, *The Cultural Significance of Accounts*, p. 229.
⁴Scott, *The Cultural Significance of Accounts*, pp. 82-83.
⁵Scott, *The Cultural Significance of Accounts*, p. 283.
⁶For more on Scott's view of statistics see: Scott, "The Influence of Statistics upon Accounting Technique and Theory," pp. 81-87.
⁷Hendriksen, p. 36.
⁸Scott, *The Cultural Significance of Accounts*, p. 159.
⁹Scott, *The Cultural Significance of Accounts*, p. 235.
¹⁰Scott, *The Cultural Significance of Accounts*, p. 284.
¹¹Scott, *The Cultural Significance of Accounts*, p. 173.
¹²Scott, "The Basis for Accounting Principles," p. 343.

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FOUR SCHOOLS OF EUROPEAN ACCOUNTING THOUGHT

Abstract: A feature of the history of accounting thought is the existence of contending theories of accounts in continental Europe. Four schools of accounting thought developed and are here briefly examined.

Introduction

At the end of the 19th century, two theories of accounts gradually appeared in American textbooks and treatises on accounting—the proprietary and the entity theories. A third and later development is the enterprise theory, espoused by many modern writers. According to the proprietary theory of accounts, capital is the amount of assets to which owners possess a claim after indebtedness to third parties has been recognized. Income, from this viewpoint, is the change in net assets. According to the entity theory of accounts, capital encompasses both debt and equity, income being the change in total capital. The enterprise theory of accounts emerged after the Great Crash of 1929 and takes a broader view of the business firm, emphasizing the economic effects of business operations on all of its participants and consequently, upon society as a whole. According to the enterprise theory of accounts, capital also encompasses all items on the right side of the balance sheet but in this theory net income is deemphasized and asset flows to participants are accentuated.¹ The enterprise theory of accounts is the first social theory of accounting in Anglo-Saxon countries.

Along parallel, but not very similar lines, four other categories of theories of accounts have been developed in the French and German speaking world—the personification, legal, materialist, and economic theories of accounts. The origins of these European ac-

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counting schools of thought date back to the beginning of the 16th century and as they have long life spans, they present within themselves a great variety of views. This paper provides a brief description of these theories; a more detailed study is F. Scheerer's thesis *Kontentheorien der Doppelten Buchhaltung*, (*Theories of Accounts in Double-Entry Bookkeeping*). Two other books are also considered classics in the field, Léon Gomberg's, *Histoire Critique de la Théorie des Comptes*, (*A Critical History of the Theory of Accounts*), and Joseph Vlaeminck's *Histoire et Doctrines de la Comptabilité*, (*History and Doctrines of Accounting*).

Specific theoretical views have also been developed for the following three categories of accounts:

1. Contra accounts
2. Intermediate and synthetic accounts
3. Contingent asset/liability (*Comptes d'Engagements*) and memorandum accounts.

The third category has received great attention in France and Italy, but as this category does not exist in Anglo-Saxon accounting, their study should present great interest for the historian who is not familiar with this type of account.

These views can be seen in:²

1. Textbook expositions of a normative theory of "correct" financial accounting.
2. The systematic building of a conceptual framework of accounting which will provide general accounting rules for any value transformation, and its interpretation.
3. The philosophical ideas that underlie each exposition of financial accounting and fundamental analysis of each double-entry system advocated. To the latter belong the development of normative charts of accounts and national uniform accounting "plans" which follow with consistency the advocated merits (also called "principles") of each proposed system. They aim at the formulation of a set of ledger and subsidiary accounts organized on a double-entry basis with internal coherence and maximum informational content.

Professor Most states in this respect.³

On the continent, the classification of accounts has long exercised the minds of writers and practitioners. Although the great historical figures like Pacioli and Ympyn attempted to classify ledger accounts in some kind of logical

order, by separating them into accounts for values, expenses and results, it was a certain Abraham de Graef, in his *Instructie van het Italiaans Boekhouden* (1693) (Amsterdam) whose classification provided the basis for modern developments in bookkeeping. . .

In 1864, the Belgian, H. Godefroid published his *Cours de Comptabilité Pratique, Industrielle et Commerciale*, where he included a "chart of accounts" in the form of a folded graphic insert.

In this paper, the history of four schools of accounting theories is briefly reviewed.⁴ Comparable developments of similar theoretical views in England are excluded.⁵

The Personification of Accounts

As early as the second half of the 16th century first signs of the personification of accounts appear. The personification theory is based on the concept of debiting and crediting by fictitious persons. The thought behind the more advanced later English discussions of this method of reasoning is clarified by the following examples. De Morgan stated:⁶ "If the student finds that it helps him, he may imagine a clerk to every account: one to take charge of, and regulate the actual cash. . . ." Collier also provided such an example:⁷

. . . the whole business is supposed to be carried on by clerks. There is supposed to be a clerk called Capital or Stock⁸ who represents the owner of the business (or the firm). There is supposed to be a clerk called Goods who takes charge of the merchandise. . . .

All transactions were completed by these clerks. Each transaction involved a clerk who received a certain amount and one whose position gave up the same amount. S. Dyer called this the "common sense method of double-entry."⁹

According to O. Ten Have, this sort of "imagining" a cashier, a stock clerk, etc., has its origins in Pacioli's work:¹⁰

Pacioli, who stands at the beginning of the accounting literature, did not use the terms debiting and crediting when journalising, but rather the terms "per" and "a" in accordance with common practice in Venice; these terms cannot be translated. The translators and interpreters of Pacioli reached back to the Italian words "debito" and "credito"; however, these terms refer exclusively to receivables and debts of persons. Because of this translation, the

personification aspect was present at the very beginning. Whenever Pacioli mentions “per” cash, the translator writes, “debit” cash, or in the publication, “The cash owes” as if cash were a person.

In the personalistic methodology, it is emphasized that an account represents personal relationships, claims and debts of real or fictitious persons. The personification of an account was the early attempt to define and analyze the content and role of accounts in economic life; that is why it was named “the classical theory.” It was used in the teaching of accounting for a long time because of its simplicity.

Personification facilitated the teaching of accounting in France during the 18th and 19th centuries. In Italy, Marchi revived personification in 1830. This pedagogical device caused books on accounting with a scientific basis to become very popular among bookkeepers of the time. One such book was L. Barrachin’s, *Théorie de la Comptabilité en Parties Doubles par un Mathématicien*, published in 1888. Barrachin assigned the letter “M” (Monsieur) to every account: M. Capital, M. Balance, M. Frais Généraux, etc., debiting and crediting persons.¹¹ According to Pierre Garnier, (*La Méthode Comptable-Traité de Comptabilité Générale*, first published in 1940), it marked the apogee of classical accounting as conceived by Pacioli.

Personification in One Set of Accounts

Exposition in one set of accounts (*Einkontentheorie, Unicontistes*) assumed that an enterprise was a “person,” and the management of each asset and each liability assigned to a particular manager. There was only one set of accounts—the accounts of the enterprise. The account of each manager was debited with what he received for (from) the enterprise and was credited with whatever he gave (for) it. Thus, managers received the assets of the enterprise for which they were debited, and gave the enterprise the capital they received from the owner-entrepreneur and the loans that were provided by creditors-lenders, for which they were credited. Conversely, managers were credited with whatever asset was given up and debited with whatever was returned to the capital-owner and the creditors-lenders.

There was only one posting rule—debit him who receives and credit him who gives. The owner-entrepreneur was a creditor of the business for his paid-in capital and the profit, on the one hand,

and a debtor for the losses, on the other. In Holland the main exponent of this view was N. Brenkmann, a Rotterdam merchant who was also the first to write about entity theory in his 1882 textbook. In France, support was given to this view by the then famous economist and writer of accounting books, Jean Gustave Courcelle-Seneuil (1813-1892), who presented in his book, *Cours de Comptabilité*, all the analytical peculiarities involved together with his comments.

Personification in Two Sets of Accounts

In this version, the accounts included the accounts of the entrepreneur, namely the capital and profit and loss accounts, and the accounts of the manager or the enterprise, and accounts for stocks of goods and cash. In the first set, profits, since they were capital increases, were credited to the entrepreneur and losses debited.

Personification in Three Sets of Accounts

The three sets were:

1. Accounts of the Capitalist (*Comptes du Capitaliste*)
2. Accounts of the Manager or of Values (*Comptes du Gérant ou des Valeurs*)
3. Accounts of Third Parties (*Comptes des Tiers ou des Correspondants*).

The first included the capital and profit and loss accounts, the second the accounts of things and the third, the accounts of debtors, creditors, agents, etc. (personal accounts). Thus, de Graef, who belonged to this school of accounting thought, divided accounts into the following corresponding groups:

1. Accounts of the Merchant as a Person: Capital, Profits and Losses, Insurances, Reserves, Housekeeping, Interest
2. Accounts for Merchandise: Goods in Store, Goods in Ships Afloat, Cash Available for Purchases, etc. (so called at that time "real accounts")
3. Accounts of Other Persons: Debtors. Creditors, Participants in Trade Ventures, etc.

Personification in Four Sets of Accounts

This was initially developed by the Italian, Francesco Marchi in 1867 in a critical confrontation with the theory of five sets of ac-

counts of the Frenchman, Degrange. Marchi distinguished four main accounts:

1. Account of Proprietor
2. Account of Agents
3. Account of Co-responsible
4. Account of Manager.

To this methodology also belonged the logismography of Giuseppe Cerboni (*La Ragioneria Scientifica*) which was successfully applied by the Accounting Office of the State of Italy and by the managers of military finances in Spain and Italy for many years after 1877. Cerboni initially followed the thoughts of his compatriot Catanneo. His aim was to find a method which would facilitate more accurate and faster accounting controls in the management of the Italian Treasury. As he stated in his book, *Ricomposizione dei Progetti dell'esempi etc.*, he had been working on his system since 1866 in order to allow budgeted as well as actual revenues and expenses to be recorded in account books. Its popularity urged Professor Giovanni Rossi of Bologna University to start a periodical which appeared under the title *Logismografia* for several years. According to this methodology, any administrative action creates relationships of debit and credit between natural or legal entities, as bearers of rights and obligations, either the entities themselves or their agents who have interest in or act on behalf of the enterprise. Thus logismography is simultaneously a legalistic-administrative approach, considering the economic entity "an agent" (azienda) from the viewpoint of the legal relationships that arise from the actions of the commissioners as far as its administration and third parties (persons) are concerned. These persons were classified in four categories:

1. *Proprietors*, who were the persons, or the set of persons, to whom the whole and ultimate responsibility for the results belonged.
2. *Administrators*, who were the ones who received the instructions of the proprietor to execute the administrative duties.
3. *Managers or trustees*, who were those to whom the proprietor had entrusted the custody and stewardship of tangible values of the enterprise (e.g., cashier, storekeeper, etc.). When there was not actually a manager for certain categories of goods, or when the proprietor himself or the administrator executed the duties of a manager-trustee, then the manager was still

assumed to exist in accounting terms, and had therefore to have the appropriate account.

4. *Agents* were all persons who were debtors or creditors of the enterprise.

Thus, Cerboni distinguished not between economic events but between executives of the enterprise, namely the proprietors, managers and administrators, and the agents. The debittings and creditings of a proprietor (who could in practice be also an administrator) corresponded to debittings and creditings of the trustees and agents. Administrative events were taking place, consisting of value movements, classified as follows:

Transfers were administrative events, which simply transferred values, e.g., a purchase of goods for cash, in logismography, resulted in debiting the proprietor and crediting the cashier, and simultaneously debiting the storekeeper and crediting the proprietor.

Modifications were events, which caused an increase or decrease in the so-called accounting 'substance,' e.g., the receipt of rent resulted in an increase in the substance, namely an increase in assets, without a corresponding increase in liabilities. In this case, there was only one journal entry and not two. Finally,

Composite events, which caused simultaneous value transfer and "substance" modification.

Cerboni's logismography had the following three sets of accounts:

1. Account of Proprietor, all the accounts which increase or decrease equity (proprietor's capital) and expense accounts (wages, general expenses, interest, discounts, taxes, etc.)
2. Account of Agents
3. Account of Correspondents.

The first account represented capital, the second and third represented, together, the economic action of capital and thus Cerboni's system can be viewed also as a two sets of accounts system. The account "agents" included the internal activity, namely all the property elements into which capital had been converted, except the fixed and current ones. The supporting idea here was that every element of property was an "agent" of the economic action of capital. The account "correspondents" represented the external action, namely the relationships of an enterprise with third parties

and this series of accounts showed the customers and suppliers of an enterprise considered as its "correspondents." The *Journal of Logismografia* had principally the above three general or summary accounts, each with two columns, one for debiting and one for crediting.

Gabriel Fauré in his book, *La Comptabilité Générale*, used Cerboni's logismography to develop the personification form of accounts into a framework of functions where every fictitious person-account reflected also certain functions.

Personification in Five Sets of Accounts

The sets here were the five means of exchange used as objects of trade, among which were improperly included profits and losses: (1) goods, (2) money-cash, (3) bills receivable, (4) bills payable, and (5) profits and losses (*Cinquecentiste* School of Accounting). The rule for debiting and crediting was: the person who receives is debited and the person who gives is credited. As far as profits and losses were concerned, the leading exponent of this theory, academician Edmond Degrange (*père*) argued that losses burden the trader, who was considered as receiving them, and therefore was debited and profits were the trader's, who was considered as giving them, and therefore was credited. In his book, *La Tenue des Livres Rendue Facile*, Degrange pointed out, however, that there were certain accounts outside these five classes of "real" accounts, and that his classification was therefore incomplete.

The Legal View of Accounts

The legal view of accounts was an elaboration of the personification view and formed the link between the main personal and materialist-objectivist views. The persons here were legal subjects, subjects of rights and obligations, and since the enterprise itself is also a legal entity it was almost exclusively a legal subject. It is accepted today that even a one man business is a separate legal subject, separate from the natural persons and the property of the enterprise. The French writer, Pierre Garnier, wrote about the "algebra of the law," and thought that most accounting events are, in the last analysis, legal events: purchases and sales, labour hiring, loans, etc., although he did not rule out of pure accounting theory (*Comptabilité Pure*) other applications in the spheres of law and economics, even in demography.

The legal views considered accounting as a mathematical formulation which refines and further elaborates the science of law. Each

accounting event was seen as a creation, modification or writing off of a right. The creation or increase of a claim on others caused debiting, the decrease or writing off of it, crediting, and vice versa. The leading representative of this movement was Gabriel Fauré¹² who named this kind of accounting methodology “legal” to stress his opposition to the economic methodologies of accounts. Whereas, the legal view of accounts led to the concept of the balance sheet as an aggregation of accounts, the economic view led to the concept of accounts through an analysis of the balance sheet.

The legal view of accounting formed the basis of the entity theory as it developed in Europe. The Austrian, Georg Kurzbauer, in his book on double-entry bookkeeping published in 1850, formulated the view that every business was an independent entity which had its own property as well as debts and claims, the latter not only against third parties but also against the proprietors. Thus according to this theory (*Geschäftstheorie*), the business was clearly distinct from the proprietor-entrepreneur and accounting dealt with the property of the entity and not with the property of its owner(s). W. Kreukniet included a good exposition of this view in his book, *Zur Theorie der Doppelten Buchhaltung*, together with a summary of the personification view and the developments of the materialist view of that time.

Toward the end of the 19th century or the beginning of the 20th, it became customary to summarize in textbooks all the theoretical views on accounts in an attempt to reconcile them. The legal entity was emphatically distinguished from the economic entity, but both ended up finally together in a balance sheet equation such as:

$$\text{Proprietorship} = \text{assets} - \text{liabilities}$$

and therefore

$$\text{Proprietorship} + \text{liabilities} = \text{assets}$$

or

$$\text{Capital} + \text{income retained} + \text{liabilities} = \text{assets}$$

which, in terms of the former accounting equation, becomes fixed proprietorship (capital) + temporary proprietorship (income retained + liabilities to creditors) = assets. This was the beginning of the “materialist” view of accounts and accounting theory. The legal view of accounts was elaborated in France by A. Beaumont,¹³ in a series of articles during 1920. Beaumont saw in the science of

law the whole foundation of accounting, emphasizing the fact that accounting obligations are nothing more than legal obligations.

In 1927, Robert Lefort¹⁴ described the balance sheet as a complex idea whose substance lay in three concepts: value, law, and person. Of these three concepts, he saw law as being the more pervasive one. A few years later, Louis Sauvegrain tried to de-personalize the theory of accounts examining them purely in terms of logic and value transfers dictated by the legal system.¹⁵

During the whole first half of the 20th century, legal approaches to the formation of accounting thought and practice prevailed, mainly because accounting was viewed simply as one (among many other) functions of the law. Accounting records and financial statements were just as a reporting system that reflected the legal environment at the time.

The Materialist View of Accounts

The point of departure in the materialist view of accounts was the balance sheet equation. A relatively more recent parallel development of this view was the so-called "entity theory" which is still implicit in many Anglo-American textbooks. The principle of this theory was that there were two different types of accounts—asset accounts and liability accounts, which were subject to different laws of debit and credit. In the materialist view of accounts, an account contains and represents general increases and decreases of objects; that is why this is also called an objective view. The materialist-entity theory school of accounting had many supporters in the German speaking countries, such as Berliner, Kohlmann, Novac and Seidler.

This group of theoretical views was considered by its proponents to be an elaboration and completion of the legal view of accounts, and formed the basis of the economic views of accounts that are prevalent today.

The Materialist Presentation in Two Sets of Accounts

This view started with the basic concepts of *property* (assets) and *capital* (equity and non-equity, i.e., total capital or total liabilities). The total property of an enterprise is created by the credit which is taken from the entrepreneur (equity) as well as from third parties (non-equity liabilities). Thus the left-hand side of a balance sheet shows the capital invested in the enterprise, and the right-hand side shows the capital provided to the enterprise, not just the capital

of the entrepreneur. In accounting terms, therefore, Assets = (Total) Liabilities.

There were two sets of accounts, (*Zweikontentheorie*) namely (1) accounts of property assets and (2) accounts of equity liabilities, the latter being accounts of the (total) capital of the enterprise, in Nicklisch's expression. The asset accounts had on the left, their opening balances and increases, and on their right, decreases. Liability accounts had on their right the opening balance and increases and on the left, decreases.

There were three groups of accounting events: (1) pure transformations, (2) pure transformations of results, (3) mixed events of transformations and results;

1. Pure transformations were considered any events which caused only balance sheet changes:

- a. within assets only (e.g., Dr. Machinery, Cr. Cash)
- b. within debts only (e.g., Dr. Suppliers, Cr. Bills payable)
- c. simultaneously within assets and debts
 - c.a. increase of both (e.g., Dr. Machinery, Cr. Suppliers)
 - c.b. decrease of both (e.g., Dr. Bills payable, Cr. Cash).

In all the above cases, each accounting event, without any exception, was posted in two different accounts in two different sides.

2. Pure transformations (or creations) of result were considered the events which caused unilateral changes, increases or decreases, of assets or debts. The increases of assets or decreases of liabilities constituted profits. The increases of liabilities or the decreases of assets constituted losses. Profits and losses belonged to the capital account. Since the events which created results were frequently repeated, they were not posted immediately to the capital account but were temporarily separated and posted to the various kinds of results accounts (revenues and expenses) and they were only posted to capital at the end of the annual (usually) period, in a closing account (income summary) and from this to the capital account. Thus: if + symbolizes debiting and - crediting

Assets or Property Account		Total Liability or Total Capital Account	
Dr.	Cr.	Dr.	Cr.
+ (+)	- (+)	- (-)	+ (-)
+	-	+	-

The theory of two sets of accounts was developed by the Swiss accounting authors F. Hügli (who is considered the main representative of the theory) and J. F. Schär. The Schär theory is summarised below:¹⁶

Accounts of capital components		Capital accounts	
Debit	Credit	Debit	Credit
1. (+ a)		0	(+ a)
2. (+ b)	(- b)		
3. (+ c)			(+ c)
4. _____	(- d)	(- d)	_____
5. (a + b + c)	(- b - d)	(a + c - d)	
	(a + c - d)	(a + c - d)	

(1) represents the recording of the inventory, (2) exchange of values without gain or loss, (3) recording a profit transaction, (4) recording a loss transaction, and (5) that which had to be proved: the entries on the capital components accounts are in balance with and contra to the capital accounts.

As O. Ten Have adds:¹⁷

Kreukniet rejected this, maintaining that Schär was most unscientific. Profit is for the—fictitiously conceived—entity a debt to the owner and constitutes a diminution for the entity: thus, debit and credit have the identical significance for both groups of accounts. When such a prominent personality in Holland made this statement, Schär did not have much of a chance.

Hügli summarized this theory as follows:¹⁸

The characteristic of double-entry accounting consists of the fact, that whatever the kind or form of business on which the accounting system in question is applied, it uses simultaneously two distinguished groups of accounts: (a) the accounts of capital components with positive entries in the debit side and negative in the credit side and (b) the capital accounts with one negative debit and one positive credit. The increases of capital components (assets accounts) are recorded on the debit side and the decreases

(liabilities accounts) on the credit side, whereas the increases of capital (profits) are recorded in the credit and the decreases (losses and expenditures) in the debit side. These two groups-series of accounts are against each other.

The Materialist Theories of Three Sets of Accounts

In these theories we have three sets of accounts (*Dreikonten-theorie*): (1) assets or property accounts, (2) accounts of main (i.e., non-equity) liabilities (debts to third parties) and (3) accounts of capital or net worth, in which case we have:

$$A = L + NW$$

and if we put *i* for increases and *d* for decreases we shall have:

$$A + iA - dA = L + iL - dL + NW + iNW - dNW$$

or

$$A + iA + dL + dNW = L + iL + NW + iNW + dA$$

This theory, which was not basically different from the previous one, was developed in Germany by F. Leitner, W. Le Coutre and M. R. Lehmann. In France, J. Dumarchey founded his positive theory on it.

The Economic Views of Accounts

During the Second World War, Central Europe was under German occupation and this meant a much greater influence than before, in most fields of science and education, of German ideas and practices. On the other hand, due to political affiliations, Italy presented a parallel development to Germany in many fields.

The great innovator of Italian accounting during the 19th century, Francesco Villa, had conceived and developed ideas very similar to the ones of the materialist school, that had most of its followers in the German speaking countries.

The 1940s were the beginning of the so-called economic school of accounts which still has several followers such as P. Lauzel in France, K. Hax in Germany, G. Seicht in Austria and Karl Käfer in Switzerland. The first person to write on the economic aspects of accounting was Coffy who in 1833 broke with the personalist school by stating that value is fundamental for accounting as evidenced by political economy. He further distinguished accounts of real value

from accounts of nominal value. Coffy announced in 1833 in the French Academy his main work "About the mechanism of increase-decrease of property accounts in relation to the results accounts." He was also the first to demand the academic teaching of accounting at the university level in France.

Fabio Besta in Italy, founder of the Venetian school of accounting thought, from the early years of our century defended the idea that accounting is the science of "economic control." Although Besta was essentially a materialist¹⁹ he elaborated on the economic theory as a basis for value to become the exclusive object of accounts. This conception was later developed by Vittorio Alfieri and other disciples of Besta. Alfieri, who is considered to be a leading figure of the school of Venice, occupied the chair of accounting in the Institut Supérieur de Commerce de Bari in 1901, and in 1906 moved to Rome, where he died in 1930. His masterpiece *Ragioneria Generale* was published in 1907. In this book he pays particular attention to the notions of control and evaluation.

Due to the fact that value is a vague concept, as most followers of the economic value accounting school admit,²⁰ depending upon the monetary unit used and whether it reflects the economic reality of the time, there had to be an implicit unification of its notion. This was attempted by borrowing the various definitions of basic concepts needed from economics. Thus J. Lamson,²¹ for instance, used Irving Fisher's concept of capital and made it the departing point for his theory. In fact he considered the accounting entity as the capital itself in a Fisherian sense! Similarly, Jean Fourastié²² defined accounting as "the recording in monetary units of movements of economic values with a view to facilitating the conducting of financial, industrial and commercial affairs."

We can even find elements of this school of accounting at the beginning of our century. Jean Bournisien stated in 1919 that "the object of accounting is the measurement of economic values and their application to the fortune of individuals."²³ Marcel Pauwels, another influential figure in the French-speaking tradition of accounting, considered "accounts as having an economic function to carry out, the operations which they record are value modifications that do not always have a legal character."²⁴ This group of economist-accountants dealt also specifically with accounting measurements of economic efficiency. The Swiss, F. Scheurer, Professor of the University of Neuchâtel, popularised in parallel the term *économicité* (*Ökonomität* in the German language) which conceptually resulted from the comparison between the perform-

ance achieved in a period and the corresponding costs and operating expenditures in the period.

From a combination of the legal and the economic views on the role of accounts in a business community, the social or sociological school of accounts emerged during the seventies. Social accounts, made legally obligatory in France in 1977, must change radically the content and nature of accounts.²⁵

Summary

The objective of this paper has been to trace the theoretical development of bookkeeping in the French and German speaking countries of Europe. Certain types of accounts were suggested by theorists of the 18th, 19th and the first half of the 20th centuries as having a more "proper character" in terms of informative power and in terms of their inter-connections. This survey should be put by the reader in its historical perspective, where the "scientification" of accounting thought in Central Europe is compared with the corresponding developments in the English-speaking world. Thus, he or she will appreciate the higher degree of elaboration and sophistication in the continental progress of bookkeeping techniques and methodology during the period under review. Basil Yamey speaks²⁶ also about this kind of accounting

development which gained strength in the nineteenth century was the formulation of theories of the internal coherence of a set of ledger accounts organised on a double-entry basis or of general explanations of the logic of double entry. . . . Among the theories launched were personalistic theories, materialistic theories, the entity theory, logismography, statmography and mathematical theories. The sustained flow and analysis of ideas—some fanciful, others stimulating—gives an unusual flavour to much of the Continental literature of the second half of the nineteenth century.

FOOTNOTES

¹For an elaboration see Palmer. According to the writer the enterprise theory constitutes an overview of both earlier theories thus regarding management, for instance, just as one of the many factors of production.

²Käfer's *Theory of Accounts in Double-Entry Bookkeeping* covers some of the ground and constitutes probably the only English text as yet on the subject.

³Most, p. 159.

⁴The history of accounting theories is a branch of accounting history which examines the evolution of accounting theories through time and from one country to another. It can contain a comparative analysis or, alternatively, be associated with accounting practice and the academics who influenced it. The other two branches of accounting history are the history of the accounting profession and the history of accounting practice.

⁵For a description see Jackson in Littleton and Yamey.

⁶de Morgan, Appendix VII.

⁷Collier.

⁸In these times, the terms "stock" and "capital" were used interchangeably.

⁹Dyer.

¹⁰Have, pp. 101-102.

¹¹Gomberg, p. 28.

¹²Fauré, p. 39 ff.

¹³Beaumont, pp. 135-136, 305-306.

¹⁴Lefort, p. 10.

¹⁵Sauvegrain.

¹⁶Have, p. 105.

¹⁷Have, p. 105.

¹⁸Gomberg, p. 50.

¹⁹His views were popularised within and out of Italy by Francesco de Gobbis who died in 1942.

²⁰For instance see Dumarchey pp. 53 ff.

²¹Lamson was Docteur ès sciences-mathématiques, docteur en Droit, membre de l'institut des actuaires Français, etc. See also the preface of his book by the famous economist professor Bertrand Nogaro.

²²Fourastié, p. 8.

²³Bournisien, p. 4.

²⁴Pauwels, p. 38.

²⁵Chaigneau. Jessua.

²⁶Yamey, p. XXIV.

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MAY AND PATON: TWO GIANTS REVISITED

Abstract: The paper presents a synopsis of the principles and theoretical dispositions of May and Paton on selected areas of accounting; in particular, income determination and valuation.

No study of the history of accountancy would be complete without consideration of the contributions made by George Oliver May and William Andrew Paton, two "giants" of U. S. accounting. Although both men had background connections with the United Kingdom, most of their contributions were made in the United States. Their influence, however, was felt far beyond U. S. borders. May was a native of England who came to the United States early in his professional career. His views on accounting thought were influenced, at least in part, by his British background. Paton's family originated in Scotland, but he was reared on a farm in northern Michigan where fierce individualism was necessary for survival. This individualistic trait became the backbone of his success in accounting. His writings still exhibit such rugged individualism of thought.

May gave, and Paton is still giving, a lifetime of service to accountancy and both were active during those critical years when the profession was in its formative stages. Although May was the older, they were contemporaries in the profession and the many contacts which they had with one another resulted, it is believed, in their becoming good friends and developing considerable respect for one another. The influence of these men continues to be felt and will, no doubt, continue to be felt for generations. The primary purpose of this paper is to present a digest or cross section and summary of the principles and theoretical dispositions of May and Paton on selected areas of accounting, in particular, income determination and valuation.

This is the revision of a paper presented at the Third International Congress of Accounting Historians in London on August 15-17, 1980.

Purpose of Accounting

May and Paton exhibit many similarities in their approach to the development of accounting thought. One finds evidence of both inductivism and deductivism, as well as a guiding force of ethical considerations, in their writings. Both were pragmatic in developing workable accounting practices.

May believed that accounting is not logical; it is fundamentally conventional and utilitarian.¹ The test of good accounting lies in whether it is useful, not to one particular group, but to society as a whole. He viewed corporation accounting as just one aspect of the corporate form of organization, which he considered to have been created to serve a useful social purpose.² In a 1928 memorandum concerned with the question of the usefulness of corporate financial statements to investors and others interested in corporation securities, he cautioned that one must recognize the limitations on their significance. He often stated that the individual items in financial statements are not statements of fact, but expressions of opinion after the application of judgment and accounting methods to the relevant facts. May believed that there was room for considerable improvement in the presentation of financial information of corporations. He reasoned that the primary purpose should be to satisfy the investor's need for knowledge, rather than the accountant's sense of form.³

May considered the fundamental postulates to be part of the framework of assumptions on which accounting rests. They are derived from experience and reason, and are those working hypotheses which have been proven useful. The three most fundamental postulates were realization, monetary unit, and indefinite life of the enterprise.⁴ The task of the accounting profession was to reexamine them from time to time to ascertain whether or not changes in the social and economic system had invalidated them. The accounting profession should constantly strive to improve the basic hypotheses on which its framework rests.⁵

Paton describes his own approach as postulational. He, too, considers these underlying concepts, or assumptions, to be tentative. They are used as test-standards by which ideas and/or theories are to be evaluated continuously. Paton's postulates were included in his 1922 book, *Accounting Theory: With Special Reference to the Corporate Enterprise*, and were considered to be largely expedient assumptions.⁶

Whereas May refrained from elaboration on the definition and nature of accounting, Paton was somewhat more detailed. Accord-

ing to Paton, accounting is based on the presentation of economic information for business decisions, both inside and outside the entity. The purpose of accounting may be said to deal with the determination of values, that is, the values of specific items that have disappeared from the market and constitute a part of the capital of the particular enterprise.⁷ Some years later in the process of relating the practical aspects of accounting to private enterprise, Paton sees accounting as a process involving systematic measuring, arraying, and interpreting of economic phenomena.⁸ However, he is more specific in his text, *Essentials of Accounting*. Here he states the purpose of accounting as "compiling and interpreting the financial data . . . to provide a sound guide to action by management, investors and other interested parties."⁹ In this manner, the accountant acts as a valuable advisor, or participant, in the decision process.

Throughout both May's and Paton's writings one finds a restlessness against accepting the *status quo*. They were constantly "building." As a prime example, their dissatisfaction with historical cost for income determination and valuation purposes was continuously expanded throughout their writings. This stand has been influential on numerous current developments in accounting practice throughout the world.

Income Determination

May believed that the emphasis placed on a single figure of net income was regrettable. The effort to simplify the information had resulted in the concealment of essential information and tended to deceive investors; therefore, it was necessary to educate the public as to the inadequacy of the information on which it based its conclusions.¹⁰

Paton saw accounting from the point of view of two parties: owners and management. His theoretical development of the entity concept in relation to accounting is well known. He saw the business as an economic entity and knowledge about the return on the entire fund of capital employed was essential for managerial decisions.

As contrasted with Paton's position, May believed that it was not the function of accounting to measure earning power. He took exception to the definition of "income" as stated in *Accounting Terminology Bulletin No. 2*, which he interpreted as including capital gains and losses. The use of the term "earnings," as synonymous to "net income," was considered confusing because net

income may be more, or less, than net earnings. The proper use of the term "net earnings" was a description of the balance remaining after deducting from gross earnings the cost of securing them.¹¹ He believed that it was impossible to establish any universal rule as to whether capital gains and losses should enter into the computation of net income.¹²

In the opinion of May, the value of a business enterprise was dependent, in the main, on its earning capacity. The primary use of the income statement was to determine the capital value of the investment by applying a multiplier to the earnings shown. It was extremely important that this multiplier be applied only to the earnings produced in the ordinary course of business.¹³

May believed that a major need was to formulate a broad concept of business income.¹⁴ He considered business income to be a rather indefinite concept which had not been clearly defined by anyone outside the accounting profession.¹⁵ Paton's views were somewhat similar to those of May. He defined income over the entire life of the business without periodic matching of revenues and cost and expense, and also saw income as the return on capital after periodic cost of recovery of such capital costs. However, he accepted the view of the practicing accountant, that is, periodic matching of revenues and revenue deductions.¹⁶

In the opinion of May, there was no accounting method for determination of income of a complex business organization for a year which could properly be considered valid. The financial statements were based on conventions and were correct only in the sense that they conformed to some particular standard. He often said that "annual accounts . . . would be indefensible if they were not indispensable."¹⁷

For the accountant, the job of income determination is a complex one. As considered by both May and Paton, the source of such income depends not only on one's definition of income, but also on one's approach to valuation. Since many cost items are related to asset expiration, the valuation basis used in the financial statements is crucial.

Valuation

Many accounting theorists have expressed distrust for the historical basis. Few have been bold enough to agitate aggressively for alternatives. Both May and Paton came forth with sound denunciations of the accepted basis of historical cost. They were both vocal on this score from the beginning of their writings.

Departures from unadjusted historical cost are primarily twofold. First, "replacement cost" considers the current input equivalent cost rather than the actual cost assumed at acquisition. This method considers, then, the current cost of specifically identifiable items of assets. "Price level adjustment" accounting, on the other hand, is not related directly to specific items. Instead, the historical cost of the investment in assets (current nonmonetary, as well as plant and equipment items) is updated by price level indexes in order to reflect the price level changes. May and Paton were both very vocal in these two areas. Probably this innovation in the "stream of accounting thought" has identified both of them as "renegades" in the pre-1950 era. Thereafter, the tide slowly, but steadily, changed. Today they are both highly respected for their positive positions on the subject.

Paton was a staunch defender of both "replacement cost" and "price level adjustment" accounting. He saw the advantages and limitations of replacement cost clearly. Current economic value, he believed, influences the decision process more strongly than past recorded costs. However, in connection with plant and equipment accounting, he thought the method would be somewhat inexpedient to apply.¹⁸ In addition,

. . . the price system is not uniformly sensitive throughout, and that for considerable periods selling prices may not move in harmony with changing costs of production. Selling prices, moreover, are not fixed by costs to the particular concern—whatever the basis on which such cost may be computed.¹⁹

Since replacement cost bases are of major importance to business management, they should be considered in making decisions.

May had reservations about the replacement cost basis. Instead, he believed the monetary unit unsuitable for the purpose of serving as the accounting symbol; however he considered it to be virtually the only available one. He believed that, as a result of governmental policy directed at changes in the value of the monetary unit, rather than at maintaining its stability, its adaptability was impaired.²⁰

With regard to asset valuation, Paton alluded to severe price movements and pleaded for consideration of economic values in his 1922 book mentioned earlier. To him this meant "current value."²¹ He believed that the changing value of the monetary unit was a serious limitation to accounting data presented in financial statements. To him, the real basis of accounting is value.

Furthermore, "costs are important only because they are the most dependable measures of initial values of goods and services flowing into the enterprise through ordinary market transactions."²² He indicates that assets which pass through the entity in a relatively short time span may be represented by original cost. But, in the case of assets possessing long lives, strict adherence to historical cost may result in "unreliable or even misleading"²³ information for management. Obviously, results of operation based on such distortion of values would misstate both the value of the entity and its earning power. He considers cost as an amount of economic sacrifice incurred, or "economic force expended or committed."²⁴

May believed that changes in the value of the dollar had created problems for the accounting profession and had left it with two alternatives. The first was to adhere to established conventions and admit that financial statements had lost some of their former significance. The second was to seek to establish new principles which would make the reported amounts more significant. It was his opinion that the second alternative was followed, for example, in the case of inventories when the last-in, first-out method of valuation was employed. The first alternative was followed in respect to capital assets since charges for depreciation did not recognize changes in the price level. It was an inconsistency, and the profession faced the task of rectifying it.²⁵ He reasoned that two objectives should be kept in mind when considering this problem. These were:

1. Expressing revenues and charges against revenues as nearly as possible in units of equal purchasing power;
2. Placing the burden of decline in the value of the monetary unit as equally as possible on investments in monetary claims and investments in tangible capital assets.²⁶

May regarded the LIFO inventory idea as being a compromise between accounting theory, accounting practicability, and convenience. Its significance lay in the recognition of the objective of relating cost to revenue more nearly on the same price level, rather than in the extent or manner of achievement of that objective.²⁷ Paton, on the other hand, had severe reservations regarding LIFO. He challenges the procedure in the following manner:

The adoption of last-in, first-out is sometimes defended by reference to the view that in determining true profit the revenues of the period should be charged with costs

measured by the level of prices obtaining at the end of the period. Is there any substantial merit in this line of argument? Answer in the negative seems to be called for. In the first place not very much of a case can be made for measuring profit in the manner indicated. In the revenues of the period are represented the prices of product in effect from day to day, and the costs to be charged to such revenues are the actual costs which have been incurred throughout the period and earlier which are reasonably assignable to the various batches of product sold. . . . In the second place the use of last-in, first-out does not result in charging revenues with costs based on year-end prices.

. . . where there is a continuous pricing of goods issued under last-in, first-out procedure the total cost of issues for the period may not coincide with the cost of the most recent acquisitions in corresponding quantity. In the third place it may be urged that for managerial purposes it is more useful to apply the relatively recent costs to the goods on hand than to goods sold. Completed sales and the related costs are "water under the bridge," closed transactions. Utilization of the inventory, on the other hand, lies in the future and in planning such utilization the current level of costs is especially significant.²⁸

May believed that whether a change in procedure should be made to bring the cost for depreciation into account at approximately the same price level as revenues depended in part on the importance of the amounts involved. He considered the problem to be of sufficient magnitude to warrant further study.²⁹

May pointed out that the adoption of LIFO had brought with it acceptance of the view that a meaningless amount in the balance sheet for inventories was justified since it resulted in a more informative figure for income. The amount shown for inventories had no relation either to cost or current value. May reasoned that an amount for capital assets which could be described in a similar manner would be open to even less criticism since capital assets were not held for sale, and subsidiary records could be kept which would give all the pertinent information. He saw little difficulty in treating capital assets in a manner similar to inventories on the LIFO basis. The question in his mind was whether or not corporations would be willing to adhere to this policy in periods when prices were still high, but profits were low.³⁰

In *Accounting Research Bulletin No. 5*, the Committee on Accounting Procedure considered the question of the proper accounting for depreciation on appreciation, and concluded that, where appreciation had in fact been recorded on the books, the charge against income for depreciation should be based on the newer and higher values.³¹ May pointed to the decision to record appreciated values on the books as fraught with the difficulty of determining the value to be used. It was necessary to consider prospective earnings since the value of assets was dependent upon their earning capacity. A valuation based on prospective earnings would not necessarily form a suitable basis for the determination of the amount of depreciation charge required to maintain the enterprise.³²

According to Paton, the businessman *must* think in terms of current cost equivalents, not past recorded costs in this connection. Therefore, the use of obsolete historical costs impairs the usefulness of accounting data. He stressed this belief, perhaps more strongly than before, when he stated:

The plain fact is that *values*, not costs, constitute the basic raw material for accounting, and I submit that the profession will keep on floundering as long as economic reality is ignored by kowtowing to the "historical-cost" fetish. . . . cost data are truly significant and . . . afford the best evidence of *value* at the date of acquisition, as in ordinary purchases (including services) on the open market. Where the amount paid is materially at odds with initial value the so-called "cost" figure is an invalid economic measurement.³³

Failure to recognize present value results in distortion of the earnings rate achieved on the value of employed capital. Past performance based on historical cost is "equivalent to courting operating disaster."³⁴

In order to achieve more useful information, Paton would adjust the available cost data by a general price index to achieve a cost value. He argues that the cost principle has not been abandoned. These values are still based on costs, only undated to recognize price changes.³⁵

May believed that every annual report should contain a statement of additions and deductions of fixed assets by years since 1940 both in terms of cost in money and cost in purchasing power. The index figure which was used should be disclosed.³⁶

The problem of valuation caused May and Paton much anxiety. Early in their careers both saw severe limitations on the blind adherence to the use of historical cost. Both saw the wisdom of attempting to implement replacement cost and/or price level adjustments.

Impact

These two giants of U. S. accounting wrote extensively, one being involved in accounting practice, the other in academia.

They respected each other highly. The following quote is interesting in this regard.

Opportunity doesn't knock on the door every day; only occasionally, in special combinations of circumstances, does it become possible to break the grip of longstanding attitudes and traditions, even when they are clearly carrying us in the wrong direction. And we have missed some good opportunities in the past to construct a consistent realistic framework of concepts and general principles as a basis on which to deal with specific problems as they arise. I vividly recall the first meeting of the Committee on Accounting Procedure back in 1939. At this initial session I proposed that we address ourselves first to the preparation of a groundwork statement, a foundation on which to proceed in our study of particular procedures and issues. But George O. May, our first chairman, did not take to this. Instead he urged that we make our first order of business the consideration of how bond redemptions made before maturity date, [were to be accounted for].

. . . Since I have mentioned Mr. May I must add that he was a brilliant man, and that we were good friends for many years. I should also say that our basic points of view were not seriously at variance, and that he and I joined forces several times later in efforts to persuade the Committee to take a firm stand in support of current value, as an important measurement which should not be disregarded. But the combination of the natural preoccupation of practitioners (always a large majority on the Committee) with day-to-day difficulties, the timidity of our professional officialdom and pressure of government agencies dedicated to a policy of ignoring the impact of price ad-

vances on recorded dollars, prevented any decisive accomplishment in this direction.³⁷

The significance of the use of replacement cost and price level adjustment financial information is demonstrated by its use in many countries of the world today. For example, in the U. S. the Securities and Exchange Commission, in 1976, issued *Accounting Series Release No. 190* which required the presentation, as supplementary information, of replacement cost data, for certain entities. This pronouncement has been withdrawn in favor of Financial Accounting Standards Board Statement No. 33, *Financial Reporting and Changing Prices*, which requires both current cost and general price level adjusted financial information for selected organizations.

This continuing emphasis on valuation clearly demonstrates the farsightedness of these two accounting pioneer giants, George Oliver May and William Andrew Paton, who were well ahead of their time in this aspect of accounting. Their influence will continue to be felt for generations.

FOOTNOTES

¹May, "Truth and Usefulness in Accounting," p. 387.

²For a more extended discussion see Stabler, pp. 17-18.

³May, Unpublished Manuscript, A., p. 12.

⁴May, "Truth and Usefulness," p. 387.

⁵Lawler, "A Talk with George O. May," pp. 40-42.

⁶Paton, *Accounting Theory: With Special Reference to the Corporate Enterprise*, pp. 471-499.

⁷Paton, *Accounting Theory*, p. 10.

⁸Paton, "The Accountant and Private Enterprise," p. 44.

⁹Paton, *Essentials of Accounting*, p. 2.

¹⁰Study Group on Business Income, Unpublished Manuscript, G., pp. 13-14.

¹¹May, Correspondence with Wilcox, Edward B.

¹²May, *Financial Accounting: A Distillation of Experience*, p. 224.

¹³May, Unpublished Manuscript, C., p. 1.

¹⁴May, Unpublished Manuscript, F., p. 5.

¹⁵May, "Income Accounting and Social Revolution," p. 36.

¹⁶Paton, "Costs and Profits in Present-Day Accounting," pp. 123-134.

¹⁷May, Unpublished Manuscript, B., pp. 14-15.

¹⁸Paton, *Advanced Accounting*, p. 324.

¹⁹Paton, *Advanced Accounting*, p. 324.

²⁰May, *Business Income and Price Levels: An Accounting Study*, p. v.

²¹Paton, *Accounting Theory*, p. 12.

²²Paton, "Accounting Procedures and Private Enterprise," p. 283.

²³Paton, "Accounting Procedures," p. 283.

²⁴Paton, "Measuring Profits Under Inflation Conditions: A Serious Problem for Accountants," p. 20.

²⁵May, Unpublished Manuscript, D., p. 5. See also May, "Should the LIFO Principle Be Considered in Depreciation Accounting When Prices Vary Widely?" pp. 453-454.

²⁶May, *Business Income and Price Levels*, p. 67.

²⁷May, *Business Income and Price Levels*, p. 67.

²⁸Paton, "Last-In, First-Out," pp. 355-356.

²⁹May, *Business Income and Price Levels*, p. 67.

³⁰May, Unpublished Manuscript, D., pp. 6-7. See also May, "Should the LIFO Principle," p. 456.

³¹American Institute of Accountants, *Accounting Research Bulletin No. 5: Depreciation on Appreciation*, pp. 37-38.

³²May, *Business Income and Price Levels*, pp. 56-57.

³³Paton, "An Opportunity for the Financial Accounting Standards Board," p. 27.

³⁴Paton, "An Opportunity," p. 28.

³⁵Paton, "An Opportunity," p. 39.

³⁶May, Unpublished Manuscript, E., pp. 2-3.

³⁷Paton, "An Opportunity," pp. 29-30.

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RECALLING GEORGE OLIVER MAY AND ME

Abstract: A recollection of the author's contacts with his friend George Oliver May. These personal insights provide an added dimension to the previous article, "May and Paton: Two Giants Revisited," authored by Henry Francis Stabler and Norman X. Dressel.

Included in the papers presented at the Third International Congress of Accounting Historians in London on August 15-17, 1980, was a lengthy piece entitled "May and Paton: Two Giants Revisited," authored by Professors Henry Francis Stabler and Norman X. Dressel of Georgia State University. The authors have made an effort to weave us both into their account, as they go along, and they have managed to keep us nearly abreast with their 191 references. My only complaint of any consequence is the failure of the authors to give some consideration to my writing after the late 1940s—the period in which I did most of my best work. At the conclusion of the Stabler/Dressel paper, however, there is a lengthy quotation from a minor article of mine taken from the June 1974 issue of *The Michigan CPA*. It is this reference that has spurred me into writing these recollections of my contacts with Mr. May with the thought that they may be of some interest as a supplement to the Stabler/Dressel study.

Prior to my membership on the Committee on Accounting Procedure, my contacts with Mr. May were slight, and not particularly friendly. I recall one spat with him (about 1936) in which he took offense at some comment regarding him in one of my articles. He wrote a caustic note, virtually consigning me to outer darkness. He had a point, and I finally replied with a conciliatory letter. Mr. May was a very conceited Englishman, and hypersensitive to criticism, even when somewhat justified. He finally forgave me for this affront, and I've always been glad he did. But when Eric Kohler had the nerve to attack him in *The Accounting Review* (of which Eric was editor at the time), he resigned from the American Accounting Association and never spoke a word to Eric again. I

was made painfully aware of this at a meeting of the American Institute of Accountants (the old name, and a good one). Eric and I were chatting one morning. Mr. May walked up to where we were standing, greeted me cordially and shook my hand. Eric said, "Good morning, Mr. May." George never even turned his head, made a few comments to me about the meeting, and went on his way.

I shouldn't dwell unduly on what I regard as a major fault in my old friend, but I believe his high level of self-esteem, habitually very much in evidence in his demeanor, made him somewhat less effective in his profession. I recall a visit to his office at 56 Pine Street, New York. Mr. May was dressed in a dark, Prince Albert suit, and looked both dignified and forbidding. There was an air of subservience in the way he was treated by all hands. Even Percy Brundage bustled about running errands for Mr. May like an office boy. Percy blossomed after Mr. May retired. He was a man of top-flight professional stature, as I learned when working on a case with him.

One other occasion comes to mind that I can't forbear mentioning. One fall semester (I don't recall the year), I persuaded Mr. May to come to Ann Arbor to address a group of faculty members and advanced students in accounting, at the University of Michigan. We had a good dinner and then Mr. May talked. I thought he did well, and I believe that was the feeling of the group. But during the question-and-answer period following his remarks, his brusque way of disposing of questions he didn't like, and his rather domineering attitude toward all those daring to ask questions, annoyed both faculty and students. I was scolded later for inviting Mr. May, and was told not to do it again.

I would never have had the opportunity to become well acquainted with Mr. May if my career had been confined to "academia," as assumed by Stabler/Dressel in their concluding section. Beginning back in 1914, I was engaged in practical accounting work rather than teaching in summer sessions. I delayed unduly in sitting for the CPA exam, but finally, in 1927, yielding to the urging of two persistent friends, I took the examination in Michigan and was lucky enough to pass. The delay was due in part to the fact that I had the status of a full professor in 1921 and had achieved some reputation as a writer. I didn't fully appreciate the importance of CPA status. Looking back I can see that acquiring the certificate was a most fortunate move for me. It opened a lot of doors. I joined the Institute and made many friends among leaders in professional accounting. For some years, I was a partner in a local firm. Im-

portant consulting jobs came my way. From time to time I was involved in valuation cases, including problems of rate-determination in our public utilities (a field in which Mr. May was also much interested).

In 1939, when the Committee on Accounting Procedure (CAP) was launched, I became a member and served for eleven years. Mr. May was our first chairman. It was during the years of our joint membership that I became well acquainted with Mr. May and we became friends, eventually warm friends. Yes, we did clash at the first meeting. At this meeting, I suggested that we undertake as our first project preparation of a condensed statement of fundamentals, primary considerations. Mr. May dismissed this idea as clearly undesirable, insisting that the Committee's objective was to study practical problems confronting practicing accountants and issue reports that would be helpful in dealing with them. Partners in leading CPA firms were in the majority, and he had no trouble in gaining support for his view. Perhaps he was suggesting a wise course. The subject selected to be examined first, if I recall correctly, was the problem of accounting for bond redemptions prior to maturity, to take advantage of falling interest rates or for other reasons.

We had other disagreements, but as the years went by our views began to diverge less sharply. I like to think that this was partly due to Mr. May's growing interest in and respect for my views on problems of valuation and income determination. At any rate, we began to pull together quite often in Committee discussions as time passed. We would have accomplished more except for the fact that several new members came on about once a year, and this tended to make sustained progress difficult. Another roadblock was the persistent interference by the SEC, and our tendency to knuckle under.

I'm pleased to report that I was on friendly terms with practically all of the members of CAP that served during my long tenure (the longest on record) despite my many dissents. I attended virtually all meetings during my eleven-year membership, worked very hard, and paid all my travel and other expenses during that period. (Perhaps the Institute did treat us to a lunch.) What a contrast we see now in the case of our dictatorial successor, the Financial Accounting Standards Board!

Mr. May was a clear thinker, for the most part, and his interests were broader than those of most professional accountants. As I began to understand him better, I become less disturbed by his

tyrannical ways at times, and his annoying habit, at virtually every session of the CAP, of reading from his own notes and other writings. He was a close friend of the noted economist, Wesley Clair Mitchell, research director of the National Bureau of Economic Research, an organization highly regarded to this day. Mitchell was the author of a monumental work on "Business Cycles" which I remember reading. If I recall correctly Mr. May served for some time on the board of directors of the Bureau.

In 1940 I was appointed Dickinson Lecturer at the Harvard Graduate School of Business Administration. I felt much honored by this appointment, following the first two series given by Mr. May and Sir Laurence Halsey, who was in charge of the London office of Price Waterhouse & Co. I undoubtedly owed this to Mr. May's influence, at least in part. Mr. May attended my second lecture, and the dinner held that evening with a group of six or seven Harvard professors. In the course of our after-dinner discussion, largely in the form of an argument between Mr. May and myself, I still recall becoming a bit irritated by his manner and saying: "Please don't forget, Mr. May, that I can be just as pigheaded as you are." The Harvard professors, somewhat beholden to Price Waterhouse & Co., turned pale; you could have heard a pin drop. Mr. May got very red in the face but bottled his wrath; someone suggested that it was bedtime and we broke up. This recollection continues to plague me, not because George and I were having an argument, but because of my unnecessary rudeness.

I never kowtowed to Mr. May, nor was I ever afraid to oppose him. I believe that is one reason he became a friend of mine. Though tending to demand it by his manner, I believe that he became tired of the extreme deference accorded him throughout his firm. I understand that I was one of only three people who dared to call him "George." We became "George" and "Bill" in the early 1940s, and genuine friends. For the last fifteen or more years of our acquaintance there were no unpleasant incidents.

Mr. May was a man of great courage, determination, and loyalty to his firm and his profession. I believe he was semiretired when the McKesson-Robbins scandal came to light. At any rate, during the period of investigation that followed he was much in evidence, attending conferences and other accounting meetings all over the country. He made it very plain that he had the utmost confidence in the competence and integrity of Price Waterhouse & Co.

Perhaps I should mention the fact that May, Montgomery, and I were the three persons elected to the "Accounting Hall of Fame"

when that honorary roster was launched at Ohio State University in 1950. Mr. May was on a trip to England and didn't attend the ceremony, but Bob Montgomery and I decided to go, though not very enthusiastic about the venture. I might add that the "Hall" has been conducted efficiently, and has acquired a considerable aura of prestige over the years.

A memorable occasion for me was a visit to Mr. May's home in Southport, Connecticut. I was in Boston attending a meeting. Mr. May picked me up in his car (with his "man" driving), and we were off for Southport. I recall that the weather was very bad, and we were pelted with a cold rain all the way. The car wasn't warm, my coat was too light, and I was very chilly when we arrived, though I didn't admit it. Mr. May was a widower, but he had good help. The house was in perfect order and we had an excellent dinner, well served. We chatted, but I don't recall anything of our conversation, or of how I passed the night. Of the house and surroundings the main thing I remember is that Mr. May's land was directly on the ocean, and the area was protected by a very substantial stone wall running along the shoreline as far as I could see. After breakfast Mr. May's man drove me to the station to catch a commuter train back to Boston.

According to the entry in *Who's Who in America*, Mr. May was born in 1875, which made him fourteen years my senior. I received a hearty invitation in the summer of 1955 to attend his 80th birthday party in New York, and I've always regretted that I couldn't make it.

In the fall of 1958, shortly after the AICPA convention in Detroit, some friends of mine staged a "retirement dinner" for me in Detroit, which turned out to be a very pleasant occasion to look back on. Mr. May, well into his 80s, came to participate in this affair. He invited me to have dinner with him the night before, and this was a very enjoyable occasion for me. At the moment I don't recall the names of all those who sat at the speaker's table the night of my party, but I do know that John Carey and Hi Scovill were there. I sat next to Mr. May and recall something of his toast. I'm not going to try to quote him, but I'll never forget how well he spoke, with not a note of any sort in front of him. His remarks were the big event of the evening. I never saw George again.

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VANISHING ACCOUNTING JOURNALS DUE TO PAPER DETERIORATION: A LABORATORY STUDY

Abstract: Many accounting documents and journals disintegrate every year due to the acidic quality of paper used in them. Using the laboratory of the Office of Preservation of the Library of Congress, certain accounting journals were analyzed for their acidic or alkaline paper. Journals printed on acidic paper, such as the *Accounting Historians Journal* and the *Accounting Review* can be expected to disintegrate quickly. Journals printed on alkaline paper, such as the *Journal of Accounting, Auditing & Finance* and *Taxation for Accountants* should last for centuries. Historians wishing to preserve material appearing in acidic journals should photocopy on alkaline paper or use microfilm.

Accounting historians are accustomed to seeing records and documents which are many centuries old. Unfortunately, this will be rare for new generations of historians. Each year, accounting historians lose an unknown number of irreplaceable documents. Some journals and documents yellow, crack at the edges, and eventually disintegrate. The reason for this is the acidic quality of paper being used today.^a The purpose of this article is to examine the problem of document deterioration using current selected accounting journals.

The major portion of the paper being manufactured today has a useful life of fifty years or less, due to processing methods which leave the paper acid.

Acknowledgement is made to Mrs. Ann Alexanian of the Price Waterhouse & Co. library for providing samples to be tested.

The mention of trade names in this article is for discussion only and in no way constitutes an endorsement or recommendation by the authors or their institutions.

^aLinks from over 20 years ago may photocopy better due to the use of carbon black, rather than nigrosine, as a toner. A discussion of the physics of photocopying is beyond this paper's scope.

There have been many changes in paper technology in the last two hundred years. Ancient paper was produced from cellulose fibers obtained from cotton and flax rags. Modern paper is made from cellulose fibers extracted from wood. Newsprint uses unrefined wood fibers which still contain lignin from the tree, and as a result, turns a brown color when exposed to sunlight.

Higher grade paper is made from refined fibers which have been treated to remove the lignin. Recycling the acid paper results in poor quality paper from a preservation standpoint.

Paper is ordinarily produced "sized" or water repellent (droplets of water roll off without soaking in). Sized paper can be written on without the ink line "feathering." Ancient papers were made by hand, sheet by sheet and sized individually by dipping in a gelatin solution.

Modern paper is made continuously, in any length, and by machine. As the machinery was developed, in the early part of the 19th century, a new method of sizing was applied. Rosin soap was dispersed with the fiber in the beater and precipitated by the addition of alum.^b The paper then came from the machine in the sized condition. Unfortunately, as mentioned, the alum left the paper acid and shortened its life. Papermakers are aware of this fact. Newer sizing methods have now been developed which allow sized alkaline paper to be taken from the paper machine. If the paper also contains a filler such as fine calcium carbonate, the paper will remain alkaline even in polluted atmospheres. Unfortunately, most papermakers have not taken advantage of these newer techniques.

Alkaline papers are in existence today which were made over 1,000 years ago, while acid papers made in 1900 have disintegrated. While there is an advantage in strength and durability in making paper with rag fiber, it has been shown that refined fiber from wood can give long-lasting alkaline paper.^c The useful life of paper can be estimated by accelerating aging. A reasonably precise relation exists that 72 hours at 100°C in the dry oven is equivalent to 25 years at room temperature.

Paper becomes brittle on aging. The folding endurance of paper indicates the extent to which this has occurred. Folding endurance of paper is measured by placing a strip under tension and bending it continuously until it breaks. The paper is given accelerated aging

^b*Rosin* should not be confused with *resin*. Rosin is made of resin acids together with neutral materials.

^cOne common misconception is that high rag content will preserve paper; it will not, if the paper is acidic.

and the folding endurance is again measured. The rate of decline in folding endurance (the increase in embrittlement) can thus be assessed.

Using the laboratory of the Office of Preservation of the Library of Congress, the paper of major accounting journals was tested, for acidity and folding endurance (the issue treated is in parentheses).

Acidic journals:

Accounting Review (January, 1980)

Accounting Historians Journal (Spring, 1979)

CPA Journal (May, 1980)

Government Accountants Journal (Summer, 1979)

Journal of Accounting Research (Autumn, 1979)

Tax Advisor (June, 1980)

Alkaline journals:

Journal of Accounting, Auditing & Finance (Summer, 1979)

Taxation for Accountants (January, 1980)

The *Journal of Accountancy* (October, 1979) was neutral.

It was determined, that the more acidic the journal was originally, the faster the journal deteriorates. In particular, the *Accounting Review* and the *Accounting Historians Journal* are very acidic. In 50-75 years, both of these journals are likely to have disintegrated, while alkaline and neutral journals like the *Journal of Accounting, Auditing & Finance* and the *Journal of Accountancy*, respectively, are likely to last for many centuries (see appendix for more detail).

Readers and researchers of accounting history, and accounting firms with libraries, should realize that some journals will deteriorate very quickly. Historians may wish to photocopy key articles on an alkaline paper, or microfilm important papers. Publishers of scholarly journals may consider switching to printing on alkaline paper in the future. Those interested in obtaining information on alkaline paper should contact their local paper supply representative.

Appendix

The folding endurance of selected accounting journals was tested as the journals came from the publisher. The journals were aged 72 hours at 100°C., to simulate 25 years of aging. The following results are arranged by change in folding endurance.

	Average Number of Folds Before Breaking		Change in Folding Endurance (%)
	At Start	After 72 Hours	
<i>Accounting Review</i>	341	157	- 54.0%
<i>CPA Journal</i>	562	318	- 43.0%
<i>Accounting Historians Journal</i>	229	143	- 37.0%
<i>Tax Advisor</i>	327	206	- 37.0%
<i>Government Accountants Journal</i>	387	214	- 45.0%
<i>Taxation for Accountants</i>	582	527	- 9.5%
<i>Journal of Accountancy</i>	670	645	- 3.7%
<i>Journal of Accounting Research</i>	525	519	- 1.1% *
<i>Journal of Accounting, Auditing & Finance</i>	451	541	+ 20.0%

The most acid journals will have disintegrated long before the alkaline or neutral journals are in danger.

*While the *Journal of Accounting Research* exhibited a low drop in endurance, the authors believe that the high acidic content (pH = 5.0 at 72 hours) of the *Journal* will ultimately cause rapid deterioration.

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BOOK REVIEWS

Dale A. Buckmaster, Editor
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Tito Antoni, *I Costi Industriali di Una Azienda Conciaria della Fine del Trecento, 1384-1388* (The Industrial Costs of a Tannery at the End of the Fourteenth Century, 1384-1388), (Pisa: Pacini Editore, 1973, pp. 52, No price available).

Reviewed by
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It is well known that during the 14th century the city of Pisa was a major center for the manufacture of and commerce in leather. There is ample evidence that, at the time, there existed fundamental basic conditions for the creation and development of a tanning industry, including an ample supply of water, easy access to myrtle and chestnut groves, and a reliable source of livestock from the country. In addition, the close commercial relationship with the Saracens from North Africa had further stimulated the development of this industry since the 12th century. In fact, we have knowledge that in 1156 the sovereign of Tunis exempted all Pisan merchants from the payment of export duties on alum, a basic tanning ingredient.

Additional supporting evidence enhancing the position of Pisa is to be found in a ledger discovered by the author among the documents preserved in the State Archives of the city. The manuscript is classified as *Book of Debit and Credit*, and in it the merchant-tanner, Bartolomeo di Tingo, recorded all the costs for the purchase of hides and manufacture and sale of leather for the period 1384-1388. By following closely the allocation and classification of different costs, one may perceive that the basic industrial process used by Bartolomeo was not much different from other various techniques adopted until the second half of the 19th century when great progress was made by the introduction of the tanning drum and the use of chromium salts.

The main operations were usually performed by the river Arno with rather inexpensive tools, such as knives, beams, buckets and vats. Before starting the long and tedious tanning process, hides were first rounded into different sections according to thickness. Imported hides were subjected to a prolonged soaking and subsequently treated with lime in order to separate the corium from the epidermis and to destroy the root hair. The hides were later stripped of flesh, rinsed and repeatedly scrubbed to eliminate any trace of lime and to facilitate the penetration of tanning ingredients, such as myrtle, alum and oil.

The actual tanning process took place in big vats full of hot water, where hides were soaked in a solution of minced myrtle, and sometimes alum was added, to allow what it was called a "double tanning," since the treatment with myrtle was known as vegetal dressing, and the treatment with alum as mineral dressing. The tanning in the myrtle was assimilated by the derma through an osmotic process, making the hides strong, flexible and water repellent. Finally, the finished product was allowed to dry up "in the loft" or "in the field."

By the name of *addobbo*, or dressing, Bartolomeo indicates all the various operations that follow the fleshing until the hides were soaked into the vats. In all, we may count eight dressings that lasted from 24 to 95 days, with an average time span of 35-40 days per dressing. Since different groups of operations were performed at the same time, it appears that the labourers were performing repetitive tasks, as if a very slow assembly line was taking place.

Bartolomeo carried on his business in association with other partners: with Andrea di Puccino, leather-seller, until April 1385; with Dato di Borghese, tanner and merchant, from June 1385 to October 1386; with Piero Pancando, merchant, from February 1387 to July 1388. All the accounts are in paragraph form. The monetary unit is the lira of 20 *soldi* or 240 *denari* and the florin of 70 *soldi*, with the florin valued at three and one half liras. In the ledger there is record of the costs for the purchase of the hides, raw materials used in the tanning process, direct labour, and revenues from the sale of the finished product.

For the first association with Andrea di Puccino, there is no record of costs, but only revenues for the sale of leather in inventory: 450 backs still unfinished and 650 Berber skins were still unsold. The sale of 641 backs and 639 white bellies originated revenues of L. 4,215. This association is in a liquidation stage, and there is no reference to profits or losses. Only for the second association with

Dato di Borghese is there reference to the capital contributed by the partners and the allocation of profits. The initial contribution of Dato was of F. 95 s. 12, and his final balance was of F.176 s. 9 d. 10, with a rate of return of about 85%. The total cost for 152 hides amounts to L. 498.2.7; costs for labour, raw materials and transportation amount to L. 129.16.11. Sales are recorded in four different lots of merchandise, for a total of L. 787.8.9.

For the third association with Piero Pancando, there is no record as to the distribution of profits nor the capital contribution of the two partners, who purchased a total of 1286 hides at a cost of L. 4,615. This cost includes, in separate accounts, the purchase price, transportation by sea and by land, weighing, brokerage, loading and unloading. Additional costs were: labour, L. 501.9.8; myrtle, L. 656.17.6; lime, L. 25.1.10; firewood, L. 64.13.6; gratuities, L. 4.2.5, for a total of L. 1,286.11.3. Total revenues for L. 7,084 were generated by the sale of 685 backs, 1,304 bellies and 590 shoulders.

Based on these data, it appears that the average cost of a raw hide was of s. 65 when imported from a foreign country, and s. 100 when bought from a local butcher. If we add all the costs for material and labour, the final total cost of a tanned hide amounts to s. 79-122, whereas its selling price was of s. 117-150 if tanned with alum, and s. 168-201 if tanned with myrtle. The cost of production may be broken down as follows: raw hides 77.84%, tanning ingredients 13.29%, labour 8.45%, and rent for the shop .42%. The total cost of a finished hide amounts to 84% of its revenue, with a profit of 16%.

If we roughly assume that one *soldo* is more or less equivalent to two dollars of today (although it is almost impossible to make a rational comparison of the two monetary units, due to the great disparity in the purchasing power of money and in the standard of living), we may conclude that raw hides were at least ten times more expensive and tanned hides about seven times more expensive as they are today. The disparity in values was probably due to the relatively low incidence of the cost of labour on the total cost of the finished product.

In this study, the author gives a detailed analysis of the cost accounting system implemented by a 14th century businessman. Bartolomeo, somehow, reflects the personality and aspirations of a typical Medieval entrepreneur dominated by the idea of gain, in his belief that exactitude and clarity were indispensable in the business world.

Horace Lucian Arnold (Henry Roland), *The Complete Cost-Keeper*, 3rd ed. (New York: The Engineering Magazine Press, 1901. Reprint edition, New York: Arno Press, 1979, pp. vii, 408, xi, \$32.00).

Reviewed by
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The Complete Cost-Keeper describes cost systems, not general ledger accounts, found in factories in the late 19th century. The cost-keeper is the bookkeeper whose primary function is maintaining the job cost records for a factory. The book describes actual cost systems in such detail that the cost-keeper position could have been staffed by someone with very little accounting experience.

The book's initial chapters deal with the merits of capitalism in rather lofty phrases such as the following: "possibilities of gain for the day are abbreviated by every tick of the clock as it marks the changeless flight of time from the unborn future to the dead past." Once past these initial chapters, the material deals in minute detail with job cost systems in actual use. The chapters develop these systems from a very simple operation with one factory up to a corporation with several branches. As the cost systems are described in their entirety, some repetition develops particularly in explanations of recording labor time on jobs.

Each factory system makes extensive use of cards upon which the costs of the job are recorded as the job proceeds through the factory. Standard costing is not used in any of these accounting systems, and only actual costs are tabulated. The overhead costs are distinguished from direct labor and direct materials. Although overhead allocation on direct labor is accepted, in one system overhead costs were allocated to machines used in production based on a proportion of the factory's entire machine costs.

An area of accounting theory not strongly developed in this period is the differentiation between assets and expenses. As an example, repair expense of a machine was added to the cost of that machine. Although it was stated that assets benefit future operations, it was not considered important as to whether charges were made against assets or expenses because eventually the results were the same.

The cost accounting systems described in these chapters are mainly oriented at making product pricing decisions. A ledger account with an inventory balance is a secondary consideration, and the ledger described would not necessarily provide inventory infor-

mation. In such cases, inventory values were determined by a physical count.

Throughout the chapters there are extensive illustrations of the forms that are used in these factory accounting systems. The detail on these forms is extensive, i.e., size of the form in inches to color in some cases. In reviewing the numerous forms, it is interesting to see a payroll register without deductions for income taxes or FICA taxes. It makes one realize, although not remember, that there was a period when these taxes were not paid.

The book provides a vivid description of cost accounting systems that were used in the late 19th century. This description is valuable because of the numerous specifics provided about the systems. This value is enhanced because the material does deal with specifics and not the generalities of any theory.

Andrew Barr and Kenneth W. Perry, Editors, *Written Contributions of Selected Accounting Practitioners Volume 3: Andrew Barr* (Urbana, Illinois: Department of Accountancy, University of Illinois at Urbana-Champaign, 1980, pp. ix, 773, \$15.00).

Reviewed by
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Anyone who wishes to trace the development of accounting theory since 1930 and the influence of the Securities and Exchange Commission (SEC) in this development must read the published speeches and articles of Andrew Barr. Barr was associated with the SEC from 1938, when he was hired as a research accountant, until he retired in 1972, except for military service during World War II. In 1947, he was appointed Assistant Chief Accountant and, in 1956, Chief Accountant, a position he held until his retirement. Thus, Andrew Barr was with the SEC almost from the beginning and always was directly involved in the development of accounting and reporting requirements of registered companies. This book presents speeches and articles of Barr from 1930 to 1979.

The kind of man Andrew Barr was is reflected in his writings. He was a candid, forthright individual, concise and direct in his speeches and articles. He was an accounting theoretician and practitioner with a sense of history. Most of his writings describe what was and what is and many of them tell what should be. He was

aware of the necessity and importance of responsible corporate financial reporting to the effective functioning of the capital markets and of the critical role of the independent auditor in this reporting process.

Andrew Barr recognized earlier than most society's demands on and expectations of the accounting profession. "With the widespread recognition of the importance of accounting in solving present-day problems of government and industry, practitioners and teachers of accounting have an unparalleled opportunity to make a constructive contribution. If we do not, the lawyers of the Securities and Exchange Commission and other Government agencies will do it for us." Barr said this in 1938.

Andrew Barr was concerned with and involved in the development of accounting theory. His speeches and articles discuss the critical accounting problems of the time—investment tax credits, leases, pensions, income taxes, business combinations, and replacement costs. However, Barr was not one of narrow vision concerned with theory only. He was deeply concerned with broader accounting and auditing problems such as the following: (1) SEC cooperation with the accounting profession, (2) auditor independence, (3) auditor competence, (4) displacement of local practitioners when their clients go public, (5) investor protection, (6) ambiguous auditor reports, and (7) management services provided by the auditor.

In his speeches and articles, Barr acknowledges the importance of the accounting profession in the effective functioning of the capital markets and the commitment of the SEC to cooperation with the profession in the development of accounting theory. In a 1962 speech, Barr stated that "the professional accountant's reputation for high standards of personal integrity is relied upon to protect the public investor. Basically it is the accountant's conscience which affords the protection demanded by the securities acts." In 1964, Barr, in discussing cooperation between the SEC and the profession, noted that "experience has borne out that the investor, and the public, are best served by this practice."

Barr wanted accounting to change as the business environment changed. However, he wanted the change to be gradual. He was concerned always about the public's confidence in published financial statements. Thus, in his comments on *Accounting Research Study No. 3*, he states that "the proposals might be tested during a conversion period by means of supplementary statements. However, indiscriminate application of the principles could result in false and

misleading financial statements and might tend to undermine the confidence of the public in all financial statements.”

Barr was aware of the problem of local practitioner displacement when his client went public long before Metcalf and Moss. In his speeches and articles, Barr alerted the local practitioner to the demands of the SEC for competence and independence. He advised the local practitioner to anticipate his client going public, to maintain his independence, and to keep up to date with auditing and accounting pronouncements of the profession and the SEC. His commitment to cooperation with the profession extended to encouraging the practitioner to consult with the SEC. In 1963, he noted that “many . . . of the problems . . . and other difficulties of the first-time registrant may be avoided . . . by a pre-filing conference with the accounting staff of the Commission. The inexperienced practitioner should not hesitate to suggest this to his client.”

In 1960, Barr acknowledged the broad scope of accounting services and recognized that the performance of some of these services might create irreconcilable conflicts. He noted that “systems work, cost analysis, budgetary controls and other aspects of business management have long been the province of the public accountants. It could be possible for an accountant to become so deeply involved in performing managerial services for a client that he would lose his objective approach to his audit engagement. In such a case he should concentrate on one activity or the other and not attempt to do both.” Andrew Barr was evangelical in his commitment to auditor independence and investor protection.

This collection presents fifty years of the work of a man deeply involved in the development of accounting theory and the evolution of government regulation. A project of this magnitude cannot be without flaw. The speeches and articles are presented in chronological order. It would have been better if they had been presented by subject matter, wherever possible. An appendix in the back of the book notes where an article was published or a speech presented. It would help the reader if this information was presented on the first page of each work. Finally, when a person is a public figure for fifty years, he repeats many of his thoughts and ideas. Some of this repetition could have been avoided by more thorough editing. However, these flaws are minor and are a small price to pay for having in one book fifty years of Andrew Barr.

Victor Z. Brink, *Foundations for Unlimited Horizons—The Institute of Internal Auditors 1941-1976* (Florida: The Institute of Internal Auditors, Inc., 1977, pp. 177, \$8.95).

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The purpose of the book is stated to be to provide a history of the Institute of Internal Auditors. This has been well done by the author, a person who has been very much a part of the Institute since its inception and has lived the history he has attempted to write. From such a vantage point the author has recorded in minute detail every significant event and circumstance from the time the Institute was established to the time the book was started in 1976, a period of approximately 35 years.

The contents of the book have been organized into three major segments which are further divided into six chapters and several appendices.

In the first major segment, the foreword, a preface, and Chapter 1, the author provides the background information leading to the creation of the Institute in 1941. It is very interesting to note how the ideas of a handful of people working primarily for management for various companies, utilities in particular, led to the birth of a whole new profession of internal auditors.

In the next major segment, Chapters 2, 3, 4, and 5, the author has carefully traced the development of the Institute under four different leaders that exhibited different leadership styles during the 35 year period from 1941-1976. Thus, the author has chosen to divide the middle segment of the book into four major parts based on the different personal styles of the leadership of the Institute the author happens to perceive during the period of the Institute's growth. Here one could question the motives of the author for his preferences. However, if the different personal styles have contributed differently to the growth of an organization, it can be regarded as an acceptable way to write the history of an institution.

The period between 1941 when the Institute was created to February 1947 is referred to by the author as the "Early Years" (Chapter 2), to describe a period when the Institute did not have a central office nor a managing director. The next period, between February 1947 and May 1962, is labeled as "Professional Integration" (Chapter 3), to characterize the reserved but steady growth and professional progress in those years under the leadership of Bradford Cadmus.

During the third part of this segment, covering the period between May 1962 and May 1967, the Institute is reported to have made progress, but not without a lot of problems and organizational changes. One senses here that the author perceives these to be the result of a different kind of leadership provided by Archie McGhee. Reflective of these circumstances this period has been labeled as "Growth with Strains" (Chapter 4).

In the final section of the middle segment, the author describes the growth of the Institute from mid-1971 to 1976 under the leadership of John E. Hermon. The author recognizes the accelerated growth of the Institute during this period calling it "The New Dynamics" (Chapter 5).

The author made an initial commitment to limit his scope by emphasizing facts over subjective opinions and evaluations. However, at times, he seems to have slipped from this commitment which is understandable since he was so much a part of that institution.

In the concluding segment of the book, one observes the change from a pure historical record of facts to an assessment of the future potential of the Institute. Brink has included a conceptual framework in this section wherein he has attempted to identify some of the problems facing the Institute and offers his views on them.

The appendices include copies of historical documents such as the letter regarding the organization of the Institute, the certificate of incorporation, lists of charter members, and the list of officers and directors from 1941 to 1976.

This book is a concise and thoughtfully written overview of the creation and growth of the Institute of Internal Auditors. It has ample references and contains worthwhile insights into the future of the internal auditing profession. This book is a must for all those interested in internal auditing, and it serves as good reference material.

Alfred DuPont Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, Mass.: The Belknap Press of Harvard University Press, 1977, pp. 608, \$18.50).

Reviewed by
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In *The Visible Hand*, Alfred Chandler analyzes the emergence of the modern corporation between 1840 and 1917, in a continuation

of his history of industrial enterprise begun in 1962 with the publication of *Strategy and Structure*. According to Chandler, during this period, as businesses and markets grew, the visible hand of management replaced the invisible hand of the market in all transactions except the ultimate one to the consumer. Chandler finds business organization and methods in 1840 essentially unchanged from those of medieval Venice. Slow transportation and small markets left businessmen with little need for cost accounting—each venture was viewed separately based on immediate market conditions. The coming of the railroads brought the first use of middle management as well as the growth of new financial markets to serve the needs of these early corporate giants. Function limited the railroads' growth (along with that of the communications industry) and the industry had no need for top management or modern accounting procedures. Similarly, the mass retailing firms which grew as a response to the opening up of markets by the railroad failed to produce significant managerial innovations. In the late 1800s, technological changes in manufacturing industries resulted in remarkable increases in the speed with which products could pass through the factory, and thus the volume that a single firm could produce. It was in these industries that the first modern managerial methods emerged. According to Chandler, "high volume industries soon became capital-intensive, energy-intensive, and manager-intensive." In these mass production industries, "technological and organizational innovation created a high rate of throughput and therefore permitted a small working force to produce a massive output" (p. 241). It was thus economies of *speed* not of scale, which transformed these industries. However, innovations in accounting methods were not yet necessary to the mass production firm; first, the successful firm underwent vertical integration, taking over both supply of raw goods and distribution of the finished product. Merger provided the second and better known route to the modern business enterprise. Chandler finds that by 1917, however, only those mergers remained that involved industries able to add supply and distribution networks, as had the mass production industries. It was the firms that grew by merger that developed modern top management structures and moved beyond family control. By 1917, General Electric, DuPont, and General Motors, three firms that had grown both by merger and vertical integration, had developed the methods of accounting, budgeting, and forecasting that were to become normal operating procedures in the 1920s. Managerial innovation thus followed changes in the structure of firms, and "markets and technology . . . had a far greater

influence in determining size and concentration in American industry than did the quality of entrepreneurship, the availability of capital, or public policy" (p. 373).

A Chartered Accountant, *The Etiquette of The Accountancy Profession* (London: Gee & Co., 1927, pp. vii, 85) and *The Ethical Problems of Modern Accountancy* (New York: The Ronald Press Company, 1933, pp. v, 152. Reprint edition, New York: Arno Press, 1980, \$22.00).

Reviewed by
Stephen E. Loeb
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As the name implies, this Arno Press reprint is, in reality, two books compiled as one book. This being the case, each work will be reviewed in the order of its appearance in the Arno Press compilation.

I. The Etiquette of the Accountancy Profession.

This work was originally published in 1927 by Gee & Co. (Publishers) Ltd. The manuscript is in book form and is based on a series of articles that appeared in *The Accountant*. The author is identified as "A Chartered Accountant."

The book attempts to guide the Chartered Accountant as to correct behavior in performing his or her professional role. A wide variety of topics are considered including: fee splitting, incompatible occupations, ethical sanctions, advertising, solicitation, changing auditors, confidentiality, and forecasting.

The work contains some interesting data on accountants sanctioned by the Institute of Chartered Accountants in England and Wales. On page 68 the book points out that between 1921 and 1926 only 26 members were either suspended or expelled from the Institute for ethical violations.

The work contains some interesting discourses on the subjects covered. The discussion on "incompatible occupations" is most interesting. It is noted that the rule is a general one; the determination of the incompatibility of any occupation to be determined in actual cases. The book does indicate that practicing public accounting and being either a stockbroker or an auctioneer is unethical for all public accountants except those practicing both occu-

pations when the rule was first adopted in May of 1880 or who purchases or becomes a partner in a combined business in existence on May of 1880. These lucky individuals were excepted from the proscription.

The policy of "grandfathering" ethical norms seems to this reviewer most interesting. Is it possible for similar professional actions performed at a particular moment of time to be ethical for some practitioners and unethical for others? Are we really concerned with ethical behavior when one criterion for sanctioning appears to be when the individual actually began to perform the action? Such rules reduce the legitimacy and viability of a code of ethics. To its credit, the book does hint at compromises that must be made in the early years of a profession.

The book at times tries to differentiate between "professional ethics" and "professional etiquette." If there is such a difference, the book does not make a totally clear distinction. The book does indicate, however, that at that particular time the British profession had both formal written and informal ethical norms. Correctly, the work does note the dynamic nature of professional ethics.

In summary, the work is of significance in that it provides the reader with a notion of the state of the ethical norms and their enforcement in the British public accounting profession during the early 1920s.

II. The Ethical Problems of Modern Accountancy

This work first published in 1933 by The Ronald Press Company is an anthology of a series of lectures delivered in 1932 at Northwestern University.

The first article (lecture) was written by Professor Vandever Custis of Northwestern University and is entitled "Introductory—Accountancy as a Profession."

Professor Custis takes what might be termed a "static attribute" approach to defining a profession. On page 4 he suggests that "legitimate" professions (1) render a service, (2) have ". . . a certain psychological unity . . . among practitioners, and (3) have a code of ethics to govern their professional conduct." He (p. 23) notes that accountancy meets these criteria and thus is a profession (a young profession). The bulk of the Custis article is spent proving these contentions. The arguments made are well done and set the stage for a lecture series on ethics and accountancy. To his credit Professor Custis makes a strong case for the importance of the third

party obligations of independent auditors. In fact, this last concept is discussed throughout the lecture series.

The next lecture was given by George O. May of Price, Waterhouse and Company and is entitled "The Accountant and the Investor." May identifies the attest function as the work of an accountant that is of particular concern to the investor. In discussing the attest function he (p. 29) emphasizes that exact precision is not possible in the accounts of large modern corporations. He (p. 30) contends that accounts are subject to estimate and opinion. Mr. May emphasizes the importance of the auditor's obligation to third parties. He emphasizes the importance of objectivity and independence from an audit client.

In his lecture, Mr. May also discusses differences of opinion between an independent auditor and a client. In such a situation he suggests that the independent auditor do what is best for investors.

The third lecture was given by J. M. B. Hoxsey who at the time was Executive Assistant for the Committee on Stock List, New York Stock Exchange. The lecture was entitled "The Accountant and The Stock Exchange." Mr. Hoxey presents an interesting discussion of relations of accountants with the New York Stock Exchange at that time. He emphasizes the important obligations that external auditors have to investors. He also discusses a number of then current financial accounting problems.

The fourth lecture in the series was presented by Arthur Andersen of Arthur Andersen and Company and was entitled "The Accountant and His Clientele." Andersen hones in on two basic points: (1) the increased opportunity for service to clients in areas that we view today as management consulting; and (2) the then relatively new realization of the third party obligations of the external auditor in the attest function. Andersen, on pages 97 and 98, laments that no mechanism existed then to protect the auditor from replacement in a legitimate disagreement with a client. He appears to be concerned with clients shopping for independent auditors that will agree with them (the clients) for a price. Furthermore, he wishes for a mechanism for CPAs replaced in such circumstances to present their position. It was to be about forty more years until the SEC provided independent auditors with such an opportunity.

The fifth lecture was presented by Eugene M. Stevens, then Chairman of the Board, Federal Reserve Bank of Chicago. Mr. Stevens' lecture was entitled "The Accountant and the Investment Banker." In the lecture he discusses the accounting profession, the investment banking business, and the independent auditor's respon-

sibilities to investors. He stresses the importance of the external auditor's independence.

The final lecture was delivered by Dean J. Hugh Jackson of the Graduate School of Business, Stanford University. It was entitled "The Accountant and his Profession." Dean Jackson in his lecture recognizes the crucial importance of the CPA's responsibilities to third parties. However, his emphasis is on ethical issues internal to the accounting profession. He stresses that practicing CPAs should contribute to the profession's body of knowledge. Further, he suggests that accountants should assist in the development of the accounting profession by being active in professional accounting groups. Dean Jackson concludes with a discussion of collegial ethical norms.

In summary, this collection of lectures provides an interesting discussion of the prominent ethical issues facing the profession during the early 1930s.

Paul K. Conkin, *The New Deal*, 2nd ed. (Arlington Heights: AHM Publishing, 1975, pp. 114, \$4.95).

Reviewed by
Barry Anderson
University of Delaware

The New Deal by Paul K. Conkin is part of the AHM American History Series edited by John H. Franklin and Abraham S. Eisenstadt. The book consists of four separate essays first published in 1965, but revised somewhat for re-release. The first essay is titled simply "Roosevelt" and presents a rather impressionist character analysis of the thirty-second president. Conkin is clearly fascinated with the character traits which he believes separated Roosevelt from other men and made many of his presidential achievements possible. This fascination manifests itself on virtually every page of the first essay as the author delves deeply into the origins of Roosevelt's personality. We are told, for instance, that Roosevelt's "unusual and politically invaluable self assurance" was the result of an unconventional childhood. Young Roosevelt's "rigid, possessive, but loving mother" and his "elderly, increasingly ill, indulgent father" provided him with "a large farm estate with trees and gardens; nurses, tutors and loneliness for other children; a patterned almost regimented tempo of life; and such Victorian virtues as duty, honesty, and fair play." (p. 2) As if these advantages were not enough,

the author reports that Roosevelt was an only child who was "breastfed, with no competitors for a mother's love, catered to by innumerable servants and relatives, indulged by gifts and toys and pets" and therefore able to grow up "secure and happy reflecting the vitality and commanding presence often observed in single children." (p. 2) The rest of the chapter continues in this vein attempting to explain Roosevelt's personality in terms of his origins and his subsequent career in terms of his personality. The problem with this sort of analysis is that it comes dangerously close to committing the *post hoc ergo propter hoc* fallacy of logic. Simply because Roosevelt was raised in a particular environment and in a particular way does not prove that either the environment or the manner of his upbringing produced his particular collection of character traits. Other explanations are possible. For instance, one might argue that his personality was determined entirely by genetic factors, or by some combination of environmental and genetic factors, or by his astrological sign for that matter. Without statistical or experimental proof, any of these hypotheses is as plausible (i.e. as difficult to refute *logically*) as any of the others. Viewed in this light Conkin's narrative is reduced from scientific inquiry to mere conjecture, interesting but hardly persuasive.

The second essay, "Clouds Over a New Era, 1932-1934," discusses the problems of general economic depression and Roosevelt's proposals to deal with them. It devotes considerable attention to early New Deal programs and the "alphabet soup" of new agencies created to run them. The National Recovery Administration (NRA), the Agricultural Adjustment Administration (AAA), the Civilian Conservation Corps (CCC), and the Tennessee Valley Authority (TVA) are but a few of the agencies whose goals and performance are discussed. Because so many programs are mentioned, however, none is given very much attention. (The TVA, for instance, is covered in but one page and a half.) The result is a nice overview but very little depth. Unfortunately, there are two flaws in this chapter which seriously reduce its overall quality. The first appears in the introductory discussion of the role of government in a free market economy. In that discussion, Conkin points out that government secures property rights, grants corporate charters, taxes for community needs, provides a currency, and conducts an array of other activities designed to provide a social "matrix" for economic activity (p. 25). This is all true enough. In the same discussion, however, he repeats the common misconception that "some classical economists" were unaware of the extent and importance of governmental

influence in maintaining that matrix. Who among the prominent classical economists could possibly be guilty of such naiveté? Certainly not Smith, Ricardo, Malthus, or Mill. Certainly not Bentham, Lauderdale, or Sismondi. Even a cursory reading of these writers reveals their clear understanding of the importance of government for maintaining the social order that underlies a market system. Implying that any of them lacked this understanding betrays an ignorance of their work that is difficult to justify in any critic, especially one who is an historian. The second major flaw is a crime of omission. Almost completely missing is any discussion of New Deal monetary policy. A growing economic literature on the causes of the Depression indicates that it was largely the result of the bank panics that occurred in the early thirties. Once in motion, those panics reduced the money supply by one third, a blow severe enough to cripple aggregate demand and almost by itself force the economy into depression. The Federal Reserve was responsible for the panics, and therefore the Depression itself, because it had the power to prevent them but refused to act. Since the Federal Reserve was the governmental agency most able to arrest the continuing economic decline, one would expect it to receive some attention in any general review of the early New Deal. Such attention is conspicuous in the second essay only by its absence.

The third essay, "Origins of a Welfare State, 1934-1936," describes the changes which the Depression wrought in the American political consensus about welfare and the welfare state. Conkin argues that the enormous suffering of the Depression changed the American view of welfare from "a repudiation of responsibility" and "a catalyst of character decline" to an institution which is generally seen as conventional and orthodox and quite necessary in a modern industrial society (p. 52). He describes Roosevelt's awareness of this change and his willingness to move with it. The Social Security Act, the Wagner Act, and the Banking Act, for instance, would have been unthinkable in 1929 yet all three had been passed in 1935 and, as Conkin points out, passed at presidential behest. The notion that the Depression marked a turning point in American political thought is, of course, not new, but it is well presented in this essay.

Interestingly, the discussion of monetary policy, expected in vain in the second essay, appears briefly in the third. In describing the specifics of the Banking Act of 1935, Conkin presents a variant of the famous liquidity trap argument to explain why during deep depression central bank policies are almost useless unless supported by fiscal policy or by direct controls (p. 67). Conkin's rejection of

the view that monetary policy can be useful against depression is evident elsewhere in the piece when he criticizes Roosevelt for temporarily supporting in 1933 the "pseudosolution" of monetary inflation, (p. 42) or monetary reflation as it might more accurately be called. Conkin's belief that monetary policy was impotent in the thirties explains why he excused the Federal Reserve from his list of important recovery agencies. Unfortunately, the popular Keynesian view that money does not matter during depression was refuted in 1963 by Friedman and Schwartz in their classic, *A Monetary History of the United States, 1867-1960*, a work which appears in Conkin's own bibliography.

The concluding essay, "The Perils of Depression Politics, 1936-1938," discusses the backlash to the New Deal which developed in the mid-thirties and brought it to an end by 1938. The furor over the Court Bill of 1937 is discussed and Roosevelt given the usual low marks for his conduct. Conkin points out that the political losses Roosevelt incurred during the court fight were magnified by the contraction of 1937, which he correctly identifies as the last precipitous economic decline in American history. Unfortunately, as important and severe as the contraction was, Conkin provides little insight into its causes. His claim that it was caused by the timidity of corporate leaders "still overreacting to misinterpreted New Deal policies" (p. 94) is facile and unpersuasive. It also ignores a sizable economics literature which again finds monetary forces at the root of a contraction. As Friedman and Schwartz, Chandler, and others have shown, the doubling of reserve requirements between August 1936 and May 1937 was a devastating blow to a financial system just recovering from collapse. The resulting scramble for reserves produced a credit crunch which certainly played a key role in dampening the economy. Conkin's failure to recognize these findings (and make some effort to refute them if he holds otherwise) weakens his fourth essay considerably.

In conclusion, *The New Deal* is a weak effort with serious flaws in each of its four essays. If it has a redeeming feature, it is certainly its ample bibliography which directs the reader to a number of stronger works on this important period.

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Mortimer B. Daniels, *Corporation Financial Statements* (Ann Arbor, Mich.: University of Michigan, Bureau of Business Research, 1934. Reprint edition, New York: Arno Press, 1980, pp. 122, \$14.00).

Reviewed by
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This book presents a brief critical description of the accounting and reporting practices of corporations in the United States during 1931. Daniels examined the published annual reports of 294 corporations in 1931. He also looked, to a lesser extent, at how these corporations' accounting and reporting practices changed over the twenty-five years preceding 1931.

To an individual interested in external reporting requirements, Daniels provides one with a quick and easy-to-read description of:

- Accounting terminology, principles, and practices in 1931 and the twenties;
- Adequacy of disclosure in corporate annual reports in 1931;
- Uniformity of reporting practices among entities;
- Asset valuation problems existing in 1931.

The book begins with a summary of Daniels' observations in reference to published financial statements. As examples, two of the author's nineteen observations are:

- "Too great emphasis has been placed upon the importance of the balance sheet. . .
- Write-ups of plant assets and write-downs both result in inaccurate financial statements."

The first three chapters describe the underlying structure of financial statements, the format and terminology used within financial statements, and, finally, the adequacy and uniformity of disclosure among entities in published annual reports. These chapters give the reader an overview of the state of the art of accounting in 1931. Numerous excerpts from various reports are presented and, to a limited extent, summary information about the 294 corporate reports examined is given. Examples of summary information are that twelve corporations published no income-sheet data; four published only the disposition of net income after deduction of interest, and so forth.

Following the discussion of the state of the art and illustrations of the adequacy of disclosure and uniformity of terminology, seven

chapters deal with the accuracy of financial statements with respect to valuation of assets, liabilities, and proprietorship. Many of yester-years' problems appear still unsolved. Daniels discusses and gives illustrations of the practice, among other things, of writing-up in the twenties and writing-down in 1931 of plant assets to replacement value and the impact of this on financial statements, especially with respect to depreciation and income. Insight into valuation problems in times past should help the reader understand why the historical cost principle is so embedded into our current accounting practice and makes one appreciate the current controversy, e.g., some advocates of cash flow accounting oppose depreciation as an allocated expense. Many other valuation problems are discussed and illustrated.

The final five chapters deal with lack of disclosure and uniformity relating to the income sheet, treasury stock and reserves, and consolidated statements. Finally, in an appendix, Daniels presents an outline form of a balance sheet and income sheet in order to illustrate adequate disclosure.

This book gives a reader an easy-to-read insight into the state of the accounting art as of 1931. It gives a brief discussion of various alternative reporting practices and the author's opinion as to the best alternative, illustration of actual reporting practices and some summary narrative of the reporting practices of 294 financial statements examined. Any undergraduate with basic accounting knowledge, i.e., intermediate accounting, should be able to understand this descriptive research study. This book could be used as assigned reading in any undergraduate or graduate course where a quick knowledge of the accounting practices of fifty years ago is desired. Also, financial accounting professors might find the Daniels' study interesting in relation to current practices and problems discussed in the accounting literature and classroom.

John M. Houkes with Ljudmila T. Mursec, *A Catalogue of Rare Books, Pamphlets, and Journals on Business and Economics in the Krannert Library Special Collection 1500-1870* (West Lafayette, IN: Purdue Research Foundation, 1979, pp. vii, 357, \$25.00).

Reviewed by
Edwin Bartenstein
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If your research takes you to the study of mines, railroads, labor, agriculture or nearly any kind of business history, you may find

considerable help and interesting stimulation in the Krannert Collection at Purdue University. Most of the materials are original works, a few are copies or republications, and some, especially in the early years, are microfilms. There are Sir Hugh Plat's 1601 treatise on the "setting of Corne" and Samuel Hughes' "treatise on waterworks for the supply of cities and towns, with a description of the principal geological formations of England as influencing the supply of water" written in 1859.

The bulk of the collection was acquired in 1964 by the University when it purchased a large private collection in England. Since that time Professor John M. Houkes, the Krannert Librarian, has been able to add hundreds of titles. On one European buying trip in 1970 he purchased more than 550 volumes when he "visited some 75 second-hand book dealers in 29 cities."

In his introduction, Professor Houkes says that "it has been necessary to observe some flexibility in defining the meaning given to the words 'economic' and 'business.'" He quotes: "... the period which these materials cover antedates the introduction of the straight jacket of modern academic specialization." The catalogue lists publications and manuscripts in the following areas: banking, finance, accounting, agriculture, social conditions, industrial revolution, population, poor relief, corn laws, social movements, English Socialism, Owenism, utopias, voyages of economic interest and travel accounts.

The collection catalogue extends two or three decades beyond those of other famous collections thus permitting coverage of the gold discoveries, manufacturing developments such as steam engines, iron manufacture, heating and ventilation, telegraphy and photography. Changes brought about by the growth of industrial society are reflected in material concerning slavery, women's conditions, the environment, public services and energy resources.

Some of the accounting authors represented are Paccioli, Payen, Cronhelm, Cazaux, Babbage, and Mayhew. Most of the well-known economists are represented. The breadth of coverage is reflected in the forty page length of the alphabetic listing (one line per item). The book is organized chronologically by year, the first entry being Paccioli's *Summa* in 1494. Within years, the arrangement is alphabetical. Each item description is in the language of the document or publication described.

For accounting historians and for those interested in almost any kind of history this volume must be a valuable source. The chronological arrangement encourages browsing in the period of interest

and could result in the discovery of other sources and interesting background in subject areas outside of the major field of study. Someday it may become more stylish to provide translations into English of the foreign language descriptions. This could make a fine source such as this even more valuable to those among us who are not so adept at languages.

Norman J. Marshall, *A Jubilee History, 1928-1978* (Melbourne: The Institute of Chartered Accountants in Australia [Victorian Branch], 1978, pp. 127, \$10.00).

Reviewed by
Frank L. Clarke
University of Sydney

Unless one knows the personalities involved, the history of an administrative body could be dull, uninspiring and seemingly useless. Whereas some may find that this book fits into that mold snugly, if one reads "between the lines" it is quite the opposite. Frequently, such an account of the comings and goings of a body like The Institute of Chartered Accountants in Australia will display all the victories and refer only to the happier occasions in its history. The "losses" and any troubled times will be pushed aside out of sight lest they dented the current public image of a smooth running organization with its act together. Thankfully such a format has been discarded for this book.

The first fifty years of the Victorian Branch of the Institute are detailed through five chapters giving such uninviting titles that the temptation to set it all aside is quite compelling. The chapters, "Origins," "The Pre-war Years," "War Years," "The Research Society," and "Professional Expansion," are poor descriptions of their content, their potential for capturing and keeping the interest of readers, and for giving an interesting insight of the birth of a professional accountancy body.

Although its title gives the impression of a dour recall of stuffy meetings at which a new branch of an already existing body emerged, the first chapter traces not only the conception of the Victorian Branch, but also some of courtship of the accountancy bodies preceding the formation of The Institute of Chartered Accountants in Australia. In this regard, Chapter 1 is of particular interest to Australian accountants, for much of what it contains mirrors the mating ritual currently being performed by the hier-

archies of the Australian accountancy bodies prior to deciding whether to merge. Chapter 1 shows that the path to such things is never smooth. It details the laborious procedure of acquiring a Royal Charter and the difficult task of merging existing bodies. Such is far from dull reading. For not all of the action was as friendly and pleasant as might be imagined. With refreshing candour, sufficient recall is made of the infighting for a clear picture to be formed of the climate of conflict surrounding the Institute's birth, without damaging reputations or creating the impression that it was an all-in brawl. Those events are interesting sidelights of what must inevitably occur when men with a vision set out to bring those with diverse interests and backgrounds together. Recall of the conflicts between accountants in the various Australian states as their respective administrative bodies jockeyed to become a dominant force in the proposed new Chartered Institute makes good reading.

The growth of professionalism and the emerging identity of Chartered Accountants as an important sector of Australian society and the social concern of members during the depression are outlined in Chapter 2. It was no mean feat for any new body to earn such a reputation during those harsh times. The expected stagnation during the war years is shown in Chapter 3 to have been avoided by the older members' continuous efforts to keep lectures and other professional betterment activities going. The Victorian Branch's research society emerged as the members' factotem. Chapter 4 explains how it conducted research lectures, sponsored other educational activities, recreational pursuits and conferences, and husbanded the Institute's first accounting standards committee. It comes as no surprise that the Victorian Branch provided inaugural members of the Australian Accountancy Research Foundation and of the Accounting Standards Committee, the bodies now primarily responsible for shaping accountancy in Australia. In that vein, Chapter 5 gives a good account of the Branch's influential role in the drafting of the Companies Act (Vict.) 1958, which became the template for subsequent "uniform" legislation in all the Australian states during 1961.

The book contains a number of interesting anecdotes about professional accountancy in Australia. For example, it explains how A. A. Fitzgerald, then the first editor of *The Chartered Accountant in Australia*, was carpeted by the new General Council of the Institute for publishing material in the journal ". . . calculated to disturb the peace of the Institute." The offensive material was a letter from a "dissident" member questioning the legality of the

election of Councillors without issuing voting-papers to the members at large. It sparked off a bitter debate over the meaning of the Institute's by-laws before the ink was dry. In the wash-up, Fitzgerald resigned. He later became the editor of the rival journal, *The Australian Accountant* (then published by the Commonwealth Institute of Accountants). Another example of anecdotal material is the open comment regarding the obvious rivalry between the New South Wales and the Victorian branches of the Institute during those early days.

Thus, this book should be a valuable source for any historian looking into the background of professional accountancy in Australia. The tone of the book suggests there is much more to tell about those early days of the profession in Australia than it covers. The author pulls few punches, but is quick to acknowledge the contributions of particular individuals to this unique half century of development in professional accountancy.

John O'Sullivan and Edward F. Keuchel, *American Economic History: From Abundance To Constraint* (New York: Franklin Watts, 1981, pp. xvi, 270, \$15.00).

Reviewed by
Thomas H. McInish
University of Delaware

Because accountants are professionals, they are often called upon to give advice and to make decisions about business strategy and business policy, decisions which require a broader view of the economy than is provided by the typical accounting course. For this reason, the accountant needs to know as well not only where the economy is, but how it got there. *American Economic History* fills this need.

Each of the 12 chapters of *American Economic History* is devoted to a detailed review of a specific period of United States economic history. Topics covered in each chapter are clearly identified and include such diverse subjects as the development of agriculture and the transportation system, the Civil War, and the growth of big business. Each chapter also provides either a biography of an important individual from the period (e.g., Carnegie, Rockefeller, Ford, Mellon) or a more detailed profile of an interesting topic from the period such as "Alexis de Tocqueville's America" or "The Auto-

mobile Industry in the 1950's." An index is provided; references and suggested readings are given for each chapter.

This book is very general, but its strengths make it useful to accountants (and accounting students) who seek a broad overview of the American economy and its past. More importantly, the book is easy to read and understand. This is achieved not through excessive simplification of the subject, but rather by interesting writing which conveys a sense of the relevance of economic history. Statistics are used amply, but the book is not statistical or quantitative. Numerous pictures and biographies personalize the topics.

Alfred R. Roberts, Editor, *Third Charles Waldo Haskins Accounting History Seminar: An Historical and Contemporary Review of the Development of International Accounting* (Atlanta: Academy of Accounting Historians, 1979, pp. 58, \$5.00).

Reviewed by
Wesley T. Andrews, Jr.
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Collectively, the papers presented at the Third Charles Waldo Haskins Accounting Seminar (held April 20, 1979 at the Atlanta Hilton), represent another step forward in our attempt to gain an understanding of the extremely complex issues involved in international accounting. The participants, each having a well-developed sense of the value of the study of history as a point of departure for the understanding of contemporary problems, would probably agree in unison with Santa Anna that "he who fails to study history is doomed to repeat his mistakes." It is this historically based insight that the seminar participants seek in their scholarly deliberations.

The four papers each reflect their authors' appreciation of historical perspective in their own way. Professor Paul Garner's "Comparative Accounting Education: A Neglected Area of Research for Accounting Historians" suggests that an understanding of the differences in accounting disciplines in various countries may be gained through research into the nature of the "accounting educational features of the several dozen countries of the world." Professor Baxter, in "Accounting's Roots—and Their Lingering Influence," presents the traditional historian's perspective, tracing through time and from a macro point of view, the broad currents

of human history and their impact upon the development of the accounting craft.

To this reviewer, the primary insight furnished by the seminar papers is eloquently summarized by Professors Hopwood, Burchell and Clubb in their paper "The Development of Accounting in Its International Context: Past Concerns and Emergent Issues," who add the international dimension to historic analysis. In their words, this is a view of accounting as ". . . a heterogeneous phenomenon, varying in form, content, organization and function across both time and space. As a consequence, accounting is not seen to include a multitude of different practices, the nature of which has changed quite radically over time." Rather, accounting is a universal phenomenon with certain ubiquitous qualities; historical and geographical differences in systems of accounting thought are therefore merely different manifestations of the same force, each manifestation tempered by the socio-economic and cultural influences of a specific region at a specific time. Hopwood, Burchell and Clubb review the attempts of scholars in the field of international accounting to classify different systems of accounting thought on the basis of (a) the institutional contexts from which they spring, (b) specific conditions (such as war) which shape their development, and (c) varying societal needs to which the accounting craft attempts to respond.

Professor Schoenfeld's paper, "Major Influences Which Shape Accounting Systems: An Attempt of an International Historical Analysis," utilizes this perspective to "model" the phenomenon of development of accounting systems by suggesting a taxonomy of "variables" which influence the development process. The resulting taxonomical scheme identifies forces related to international differences in the development of ideas and knowledge, differences related to the effect of diverse economic systems, differences in the mode of societal development between countries, as well as differences between countries in the degree of development of accounting related technology.

And yet each of the presenting scholars is aware of the limitations of their efforts in the light of the enormous complexity of the problems which they address. Each, in his own way, recognizes implicitly that, before we can seek meaning from the order of things, we must first identify and describe such order as exists. Hence, each attempts to describe our efforts to categorize the events of history so that we may gain insights into the forces that influence the development of accounting. In addition, Garner calls for re-

search into comparative accounting education systems while Schoenfeld *attempts* to systematize those influences which history shows to be meaningful.

In conclusion, I must agree with Professor Flamholtz in her discussion of the Hopwood, Burchell and Clubb paper, when she notes that "Too often, . . . accounting history becomes a glorification of the present, written from a perspective . . . which studies the past with references to the present and therefore searches for similarities between past and present. . . . Hopwood, Burchell and Clubb's paper illustrates that a comparative or international approach can help to dispel [this] 'whig' type of perspective. This type of research, by its very nature, breaks down absolute standards." Thus, the papers presented at the third Haskins Seminar offer a broadened perspective, based upon historical investigation applied across international boundaries, to our attempts at understanding the complexities of international accounting problems—perhaps this is the main contribution of the highly capable scholars who presented their work at the seminar in Atlanta.

Henry Whitcomb Sweeney, *Stabilized Accounting* (New York: Harper and Brothers, 1936. Reprint edition, New York: Arno Press, 1978, pp. xiii, 223, \$31.00).

Reviewed by
Dale Buckmaster
University of Delaware

This book has probably had more influence on the development of American ideas of price-change accounting than any other single document. It was also the last of Sweeney's works on general price-level accounting (now more commonly identified as general purchasing power accounting).

I cannot identify why this book has been so influential and widely discussed over the years. But three factors that certainly contributed to its success are that it is beautifully written, completely describes and effectively illustrates the general price-level adjustment model, and demonstrates that application of the model was practical in the accounting environment of 1936. By beautifully written, I do not mean that Sweeney's style was elegant and literary. Rather, the book is extremely readable and Sweeney's points are understandable with a minimum of effort on the part of the reader.

The book contains three separate parts. The first three chapters are a general description and illustration of general price-level adjustments (Sweeney's stabilized accounting) including a chapter on stabilizing replacement cost accounts. The next part of the book (Chapters IV, V, and VI) describes the application of "stabilized accounting" to the accounts of three real businesses. The last part (Chapters VII and VIII) is devoted to discussing general price-level adjustments within the economic environment of that period and to answering objections to the model.

Every person interested in understanding price-change accounting should read *Stabilized Accounting*. But that reading should be a supplement to the reading of Sweeney's earlier publications that are listed in the appendix (p. 204) to *Stabilized Accounting*. The most substantive incremental contribution of the book is the illustration of the application of general price-level adjustments to the three businesses. And that is of limited interest now. The articles contain Sweeney's thought and justification for his advocacy of "stabilized accounting" as well as a complete description and illustration of the model.

Arno Press partially met a need by making *Stabilized Accounting* available again on the new book market. But they could have multiplied the value of the contribution by extending the scope of the project. Specifically, the following items are desirable additions to any reprint of *Stabilized Accounting*:

1. Sweeney's fourteen articles that were published prior to *Stabilized Accounting*.
2. The short essays that were added as "Forewords" to the 1964 reissue of the book.¹ These essays are interesting and add considerable insight into the development of Sweeney's model.
3. A contemporary retrospective foreword written by someone such as Steve Zeff, William Baxter, or Frank Clarke.

FOOTNOTE

¹Sweeney, Henry W. *Stabilized Accounting* (New York: Holt, Rinehart and Winston, Inc., 1964).

Charles Weber, *The Evolution of Direct Costing*, Monograph 3 (Urbana, Illinois: Center for International Education and Research in Accounting, University of Illinois, 1966, pp. 91, \$2.00).

Reviewed by
Lane K. Anderson
Texas Tech University

The author defined direct costing as having three essential features. Direct costing is:

. . . an accounting technique which: (a) is based on the differentiation between fixed and variable costs; (b) is fully integrated into the general accounting system; and (c) gives rise to a multi-step income statement based on the differentiation between fixed and variable costs.

The study is organized into four parts, with each part subdivided into sections corresponding to the three essential elements of the definition. Parts three and four, in addition, review the use of direct costing for planning, control, and reporting purposes.

Part one discusses the nature of direct costing as it appeared in the accounting literature of the United States and foreign countries. Part two presents the development of the basic techniques used in direct costing, with special emphasis on the accounting literature in the United States. Here, the author examines the techniques for separating fixed and variable costs and the development of the flexible budgeting concept. Part three looked at the development of direct costing just prior to World War II. The author dwells on the contributions of Jonathan N. Harris, who was probably the first one to highlight the issues of direct costing for internal reporting in the American accounting literature. Part four discusses the development of direct costing from the end of World War II to the early 1960s. The major development was in the format and detail of an income statement under the direct costing approach.

Throughout the study, the author considers all of the issues in favor of and opposed to direct costing for internal and external purposes. He does not, however, organize this material to highlight these issues so that a reader can evaluate each one and form a position about direct costing.

The author defined direct costing as consisting of three elements, and he organized the material to discuss each of them. It becomes painfully clear that his discussion of the separation of variable and fixed costs and the integration of cost accounting and financial

accounting is superficial. Rather, his discussions center on the income statement reporting format under direct costing. He leaves the impression that the major difference between direct costing and absorption costing is the contribution approach to an income statement. His emphasis is appropriate if direct costing is for internal purposes only. The study also lacks the evolution, issues, and conceptual arguments to justify direct costing for external reporting purposes.

In conclusion, this study identifies and summarizes the major sources in the accounting literature. For the serious student of direct costing, this study provides interesting and provocative reading.

M. C. Wells, *A Bibliography of Cost Accounting: Its Origins and Development to 1914*, 2 Vols. (Urbana, Illinois: Center for International Education and Research in Accounting, University of Illinois, 1978, pp. xv, 1058, paper, \$8.00).

Reviewed by
Adolph Matz
The Wharton School
University of Pennsylvania (Emeritus)

This two part bibliography is a companion volume to *Accounting for Common Costs*, an historical review of the origins and reasons for the allocation of overhead and other common or joint costs.

In the Introduction the author points out that no existing histories of cost accounting are accompanied by a comprehensive bibliography which provides the raw material for studies of that kind. The author believes that A. L. Prickett's *Classified Cost Accounting Bibliography*, Indiana Business Study No. 29 (Bloomington: The School of Business, Indiana University, 1946) is the most complete, but tends to emphasize the two decades immediately prior to 1943.

The Table of Contents of the two parts of this bibliography depicts the compiler's aim to enlarge the field of study by examining more than 130 different journals and nearly 400 books; the total number of references is in the vicinity of two thousand. The journals are classified as accounting, engineering, economic and other journals. More than a third of all the references listed are accompanied by annotations or classified extracts. The extracts chosen were those which appeared to be important to the compiler's view with the hope that they would faithfully portray the content of the

article or book concerned. The journals are all of the English-speaking world. A few foreign authors appear in translation.

The two volumes are over 1,000 pages long with a bibliography that starts with articles published about the middle of the 19th century. As a journal (e.g., *The Accountant*, London: Gee & Co.) is examined, the compiler travels through all the issues available and lists the articles at random. No distinction is made as to topic. At first, this method is disturbing, but the author escapes any criticism when at the end of the second volume the Index of Subjects not only lists the titles but also refers to the articles with the aid of the numbers in which they appear within the four classifications. This Index reveals an astonishing number of articles dealing so many years ago with topics that have been discussed, argued, disputed, and rejected in these 100 years. Any researcher will be pleased to have such an aid at his command. For example, the topic of allocation is in 15 categories, and allocation methods lists no less than 94 articles. It might not be advisable to cite all other topics but it is interesting to discover the following: costs for control; costs for decision making; costing for pricing; depreciation; interest—a cost of production; interest—not a cost of production; inventory valuation; pricing; standard costs; transfer prices; variances; and numerous individual manufacturing cost accounting systems.

Closely allied with the multitude of topics dealt with are the opinions and suggestions made by these early writers. The reviewer was astonished by some of their approaches and believes that a few excerpts from these articles will prove the point: In 1878, Thomas Battersley wrote: "in the above business it is necessary to know the prime cost of the manufactures in *detail*, and the next profit realized, as similar classes of work have to be undertaken and present prices are based on previous data of prime cost . . . while the system of bookkeeping registers the facts of direct and indirect expenses, the system of prime cost takes such data and exhausts them completely and systematically upon the manufactures in detail."

The purpose of cost accounting is stated by Garcke & Fells (1887) "to know the cost of each individual article produced, but equally so to ascertain the cost of any particular part, or of any particular process of manufacture. Localization of cost should be carried as far as possible, so that the varying rates of realizable profit on parts may be known, and the pressure to minimize cost of production be applied in the right direction."

C. E. Knoeppel (1911) discusses the importance of cost allocations stating "that in indirect cost we have an element not capable

of being handled so easily, for while there is absolutely no question regarding the advisability of apportioning this element, part to produce on the basis of tonnage and part on the basis of direct labor, there may be considerable questions regarding the advisability of apportioning the various elements which made up this subdivision according to the manner outlined. . . . In considering the handling of commercial cost, all will agree that some means must be provided for taking care of it—that it is not a cost capable of direct charging and must therefore be classed with the apportionable.” However, Knoepfel is “of the firm opinion that the points brought out logically point to “Commercial Cost” apportionment to production on the basis of “Direct Labor,” as being right and proper.”

Frank E. Webner’s book on *Factory Costs for Cost Accountants and Factory Managers* (1911) clearly “identifies cost accounting as associated with, or a necessary condition for scientific management; discusses opposition to introduction of cost systems by management foremen, labor and unions in terms which indicate concern with scientific management.” For the allocation of overhead the author believes that “the best method for distribution is that which minimizes as far as practicable the amount of indirect costs to be diffused on an arbitrary basis—the method which charges the greatest amount of so-called ‘indirect’ expense directly to the product to which it really belongs.” He also advocates “a general uniformity of practice as between different establishments in respect to expense charges to production costs. As one of the consequences of this lack of uniformity, concerns manufacturing similar lines of product cannot compare costs of production intelligently, and in fact fail dismally when they attempt to do so, because their respective costing charges are not on the same basis . . . a condition which leads to puzzling and unwarranted variations in quotations, sometimes very perplexing to competitors, and occasionally very disastrous to the quoting ‘concern.’”

Benjamin Franklin wrote in 1912 that “there are so many theories of expense distribution, possibly, not a little due to the fact there is no positively right one, but nevertheless the necessity for theory exists. But the theory must be a practical one.” Regarding standards, he thought that “the ability to master this point (that costs vary from time to time) and to figure estimates or production of costs from a standard under varying conditions gauges the comprehension or the meaning and value of practical costs. . . . A product’s true cost is not what it is produced for in good times, in bad times, or the first time, but what it can be produced for in the ordinary average routine of shop practice.”

In 1912 L. W. Rawson, discussing foundry cost data and the problem of transfer-prices believes that "whenever the foundry is run in connection with a machine shop, the accounts should be kept entirely separate and castings charged to the shop at fixed prices, just as if they were purchased from the outside."

Roland Henry published several articles (1897-1898) on the subject of Cost-Keeping Methods in Machine Shop and Foundry. Of interest is this first reference to Responsibility Accounting. "The first aim of the shop manager as superintendent who is immediately responsible for the cost of manufactured articles produced is always directed to the reduction of labor-cost, not because the labor cost is the one element which can be reduced. The expense account is not commonly under the control of the shop superintendent but is determined by the general policy of the establishment."

The contribution margin is introduced by Morrell W. Gaines (1905) by stating that "direct expense per unit subtracted from direct receipts per unit gives the direct net revenue per unit, or net contribution per unit towards all those expenses which are outside of the sphere of influence of the action, and which are with respect to it just as much 'fixed charges' as are those special charges which are 'fixed' or invariable, with respect to all choices of action alike."

A. E. Outerbridge published in March 1900 an article entitled, "The Policy of Secretiveness in Industrial Works," explaining that "English visitors to American industrial establishments have frequently expressed their astonishment at the freedom of access generally accorded foreigners . . . it is not . . . true that secrecy is, according to the generally accepted European idea, the key to success in manufacturing. It is not true, moreover, that this system tends to preserve and perpetuate methods and machines which have elsewhere been discarded as obsolete." In 1904 an Editorial points to the Secrecy article and is inclined "to think that manufacturers have themselves to blame for the backward state of Costing Accounts. It is only within quite recent years that many manufacturers have so far got over their old-fashioned prejudices as to allow professional accountants access to their private books; and their Cost Accounts—which from their point of view, represent the most private books of all they have kept, and in many cases still keep, to themselves till the last."

In conclusion, the reviewer wishes to point out that the quotations cited here represent only a minute number of similar ideas expressed over a period of almost fifty years by many authors. None of these authors was ever cited as the innovator or originator of a

definite philosophy, technique, form or procedure in the field of cost accounting. Many ideas were advanced yet none was immediately accepted as a fundamental axiom. Today's cost accounting thoughts and practices are the result of academicians and practitioners who have combined early efforts with recent developments to create an acceptable management tool. Mr. M. C. Wells' work is admirable since it truly affords a comprehensive picture of the origins and development of cost accounting.

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DOCTORAL RESEARCH

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Two interrelated themes are dealt with in this selection of recent doctoral dissertations: government fiscal policy and economic development under certain social and political conditions. Rather than attempting to separate these issues, the topics are presented in their historical sequence. Thus, the reader may become aware of some of the inherent similarities in research approach: such as the fact that two authors chose to examine tax policy by studying the men who influenced it.

The political perils of attempting to initiate and administer unpopular fiscal policy are illuminated in McCollim's study of Nicolas Desmaretz. Desmaretz, who served as controller general of the finances in the reign of Louis XIV, suffered the consequences of designing a tax system which both extended its coverage and equalized its load. He was not only the first to introduce this innovation, he was also the first controller general to be dismissed for it. He was, of course, ultimately vindicated, but this took some 80 years or so. In the meantime, the rights of privileged interests had already been questioned, violently, in the American Colonies. We hear the echoes of fears for economic survival amid financial turmoil in Larew's research which evaluated banking practices of the Cincinnati branch of the Second Bank of the United States.

The Cincinnati area was undoubtedly rescued from financial disaster by the expansion of industry which took place in the early 1830s. Dyer takes up the study of antebellum business activity, moving northwards to Wisconsin, to examine concentration of ownership in newspaper publishing and its effects on editorial opinion. In the meantime, the lower American continent was also experiencing an economic boom. Lamia analyzed the various economic cycles in Argentina, during the remainder of the nineteenth century, using a new theoretical model which identified primary causal factors and reinterpreted the several crises of the period.

Returning to North America, Gallacher studied the collieries of Vancouver Island in the last quarter of the nineteenth century. He, as did Dyer in Wisconsin, pointed out the crucial role played by the enterprise manager, although Dyer was faced with more evidence of group ownership interests. We cross over into the twentieth century with Lamoreaux's examination of the great merger movement in American industry. She attributes this to a combination of high fixed cost and excess capacity in firms hit by the economic depression of the 1890s.

The turn of the century also marked the beginning of the career of Judge Learned Hand. He had just left Harvard, law degree, plus two others, in pocket and ready to devote his professional life to shaping the nature of tax law interpretation and administration. Flesher's dissertation is a worthy example of the contributions which the study of accounting history can make towards the appreciation of contemporary phenomena.

Our travels end in Iran with Alavi's analysis of the oil industry's influences on so many aspects of domestic experience. Written before the recent change in political administration, this dissertation could well serve as foundation for other studies of cross-cultural or interdisciplinary interest.

The Formation of Fiscal Policy in the Reign of Louis XIV: The Example of Nicolas Desmaretz, Controller General of Finances (1708-1715) (The Ohio State University, 1979, 435 pp.; 40/8, pp. 4709-10-A)¹ by Gary Bruce McCollim. This study examines taxation strategy during the reign of the Sun King, particularly as it was influenced by Louis' last controller general, Desmaretz.

Rather than impose a direct income tax on its wealthy citizens, a very hazardous undertaking politically, Louis XIV's government generally depended on various indirect forms of taxation for its support. Collection of these revenues was farmed out to private financiers, who either paid a farm fee or extended credit to the French crown for this privilege. During the last 25 years of Louis' reign, however, the State's fiscal needs, bolstered by wars and the consequent increased government spending, brought on a search for new revenue sources which reached out to tap the sensitive wealthy sector. As a result, the government adopted two new taxes: the *capitation*, or *per capita*, and the *dixieme*, or one-tenth. The author chose to concen-

¹*Dissertation Abstracts International*, volume and page references.

trate his research on the latter tax because of the availability of documents in the G⁷ series in the French National Archives.

Oversight of the collectors of royal revenues was exercised by various state officials whose activities were gradually centralized into specialized councils, notably the Council of Finances, established in 1661. The most influential official in these government councils, given their preeminent concern with financial problems, was the controller general of finances, who eventually assumed authority for setting fiscal policy. At its inception, the Royal Council was under the sway of the great statesman, Jean Baptiste Colbert, who Louis XIV had appointed to the post of controller general of finances after the death of Colbert's patron, Mazarin. With the goal of making France economically self-sufficient, Colbert cut back on public debt and set up an accounting system aimed at keeping the state within its income. These and other attempts were undermined, however, by the unpopularity of Colbert's attempts to widen and equalize the tax system, coupled with the king's military and personal spending excesses. Colbert's protege and apprentice was his nephew, Nicolas Desmaretz, who went into exile when his uncle, after losing power and popularity, died in 1683.

Twenty years later, having published works on political economy, fiscal policy, and the role of finance minister, Desmaretz returned in 1703 to assist with the government's finance administration. He took over the post of controller general from Chamillart in 1708. During his absence from France, various experiments in taxation strategy had been attempted, including the *capitation* and the *dixieme* mentioned earlier, none successfully. By the time Desmaretz returned to office, France, having lost the War of the Spanish Succession, was on the verge of disaster: both military and financial. In order to liquidate the war debts, Desmaretz made determined but politically ruinous attempts to enforce these tax expedients in the face of heavy resistance from the ruling class. Following Louis' death, he was dismissed: the first controller general to lose office over the issue of extending the tax burden over all sectors of the economy. A similar fate befell those of his successors who attempted to exercise the same philosophy. It took the events of 1789 to settle this conflict over the rights of privileged interests.

The Cincinnati Branch of the Second Bank of the United States and Its Effect on the Local Economy, 1817-1836 (University of Maryland, 1978, 345 pp.; 40/3, pp. 1650-1-A) by Marilyn Melton Larew.

This dissertation evaluated, by means of a case study, two early and divergent views of sound banking practices which had been expounded by an economist and a banker: Adam Smith and Henry Thornton. Briefly stated, Smith posited that, under conditions of specie convertibility, banks would not issue excess amounts of notes because these would be returned to them for conversion into coin. Thornton contested this, stating that, in the short run, banks would be pressured by merchants into continued expansion if the interest rate were lower than the profit rate. The research question asked to what extent the experience of the Cincinnati branch of the second Bank of the United States (BUS) supported either of these claims.

The period covered in this study dates from 1817, the year following the establishment of the second central bank, until 1836 when its charter would have expired, had not Andrew Jackson effectively put it out of business in 1833. The Cincinnati branch was one of 25 through which the central bank operated nationwide from its Philadelphia headquarters. Regulation of branch activities by Philadelphia was easy-going and, as a result, the Cincinnati bank management chose to disregard, or disobey, central bank direction. For example, when the state banks were called on by the central bank and the Treasury to return to payment in specie, all of the nation's banks started to expand credit. Instead of enforcing official policy, the Cincinnati branch actively assisted local banks in expansion practices. It did this by accumulating state bank notes in its vaults, continually renewing notes, and expanding debts to sister branches in the central banking system. When, in 1819, Philadelphia headquarters demanded that Cincinnati collect its debts, which by that time had accumulated to over \$2 million, and cease expansion, the branch suspended operation. It was finally ordered to close in 1820.

At the time, the closing of the Cincinnati branch had a crippling effect on the local economy. However, after two years the situation picked up as new industry moved into the area, and within 5 years the crisis had been overcome. Overall, the central bank only suffered bad debt losses of about \$140,000 because its claims had been settled in exchange for real estate which it subsequently managed, rented, and sold. Larew concluded that both theories of banking practice were supportable: Thornton's in the short-run and Smith's in the long-term, at least as far as Cincinnati's experience was concerned. Despite the mismanagement of the Cincinnati branch, damage to both the local and central interests was short-lived and minimal.

The Business History of the Antebellum Wisconsin Newspaper, 1833-1860: A Study of Concentration of Ownership and Diversity of Views (The University of Wisconsin-Madison, 1978, 683 pp.; 40/6, p. 2959-A) by Carolyn Stewart Dyer. Dyer's research was undertaken to test two generally-held assumptions: that establishing a newspaper in the nineteenth century was relatively easy and inexpensive as compared with today, and that frontier newspapers, generally, were independent institutions. She selected Wisconsin for her geographical sample and found that, rather than being independent, about one-fourth of the 400 newspapers published in antebellum Wisconsin were operated as parts of groups. This discovery led her to extend her work to test for any relationship between ownership concentration and diversity of expressed views.

The data collection and analysis techniques included: (1) searching the 1850 and 1860 federal censuses, and the 400 newspapers published during that period, to prepare quantitative collective biographies on 1,000 newspapermen. This work included comparisons of personal wealth distribution between newspapermen and all Wisconsin men; (2) analyzing the financial reports of 50 newspapers in the 1860 industrial census to learn the details of material and labor costs, capitalization, and newspaper establishment production value; (3) sifting through information from county histories, newspaper guides, and various personal papers, to identify groups of newspapers and their means of financing; and (4) analyzing editorial opinion on the 1846 Wisconsin constitution, through the Rice-Boyle cluster-bloc analysis techniques, to identify the sharing of opinions by newspaper groups.

Dyer's personal wealth distribution comparisons showed that, as a group, Wisconsin newspapermen did not have the personal resources to operate newspapers without financial assistance. The various types of support they relied on included contributions and patronage, as well as mortgages and public office. The conventional wisdom that owners were printer-editors did not hold true. Publishing a newspaper was an expensive, and not necessarily a profitable, operation and jobbing out the printing was an economic necessity. As for the second research question, the cluster-bloc analysis showed more sharing of opinions on the 1846 Wisconsin constitution between two groups of related newspapers than between similar, but unrelated, ones. Dyer interpreted this as evidence of a relationship between an absence of diversity of views, given ownership concentration.

Money, Sheep, and Economic Crisis in Argentina, 1852-1900: Questions About The Principles of Economics (New York University, 1979, 357 pp.; 40/5, p. 2833-A) by Jeffrey Alan Lamia. Lamia brought to this study a new approach to economic analysis, focusing on the economic history of Argentina following the fall of Juan Manuel de Rosas in 1852 until the end of the century.

The modern state of Argentina, the second largest nation of South America and more than one-third the size of the United States, suffered a troubled genesis. Following the 1816 proclamation of the independence of the United Provinces of La Plata, Argentina experienced almost permanent civil war and innumerable *coups d'état* from factions representing regional, social, or political interests. The research period was one of agricultural transformation, large-scale immigration from Western and Eastern Europe, including an influx of Welsh, Scottish, and English sheep ranchers, and heavy capital investment: particularly by the British. The dissertation's historical survey: "(1) discusses the socioeconomic division in Argentina from 1852 to unification in 1862; (2) examines the rise of sheep farming, the trade patterns, the monetary system, and the political community conflicts, all leading to the economic breakdown of the middle 1870s; (3) traces Argentine economic development from 1880 to 1885 with special attention to increased production to mitigate the crisis of 1885, and; (4) shows that agriculture neither displaced the dominance of sheep to 1900 nor grew directly to its twentieth-century characteristics in Argentina and that sheep raising was central to the 1890 crisis."

The economic analysis took the form of a theoretical model, building on the work of John Williams and Alec Ford, in which the severity of the period's crises was hierarchically structured, by economic levels and associated political conflicts, as follows: (1) macro-economic crisis through money; (2) micro-economic crisis through return on equity; and (3) crisis in foreign transaction. This more inclusive model emphasized the preeminent economic importance of sheep farming and reinterpreted the crises of the middle 1870s, 1885, and 1890.

Men, Money, Machines: Studies Comparing Colliery Operations and Factors of Production in British Columbia's Coal Industry to 1891 (The University of British Columbia [Canada], 1979; 40/4, p. 2212-A) by Daniel Thomas Gallacher. The coal mining industry's rapid expansion from 1871 to 1891 in the Vancouver Island region of British Columbia provides the setting for Gallacher's research.

His purpose was "to describe the coal industry's rise, account for its fast growth in the seventies and eighties, and assess the coal trade's general impact upon the region's economy."

Two of the most effective agents in industry expansion were determined to be market demand and management technique, the most successful proprietor being the owner-manager. Entrepreneurs and promoters could only succeed, however, if they had strong experience in mining and as managers. Obtaining labor was one of their biggest hurdles: a considerably greater problem than attracting venture capital which came to them from heterogeneous sources. As a result, labor-saving technology was imported, principally from Britain. Management also adopted the expedient of hiring Oriental workers at considerably less than going wage rates. This wage policy, coupled with difficult working conditions in the mountainous terrain and consequent work safety concerns, aggravated problems between employer and work force and led to numerous disruptions.

The industry's major customer, accounting for about 75 percent of its output, was California. This market was easily accessible through the ports of Victoria and San Francisco, where the major owners maintained their sales offices. Although Vancouver Island's economy was boosted, there was little spillover on the rest of the province of British Columbia. The colliery owners concentrated on developing and maintaining the California market and, consequently, did not invest in coal production-related secondary industries.

Industrial Organization and Market Behavior: The Great Merger Movement in American Industry (The Johns Hopkins University, 1979, 423 pp.; 40/5, pp. 2840-1/A) by Naomi Raboy Lamoreaux. During a 4-year period, neatly bridging the turn of the twentieth-century, a wave of mergers transformed the American business population from many small and competing enterprises to market domination by many fewer and much larger corporations. Lamoreaux's research task was to determine why this happened and how it impacted on industry's organizational structure.

The study's main hypothesis was that the merger movement was prompted by the competitive struggle of the 1890s, brought about by the following interrelated factors: (1) opportunities for growth offered by transportation and communications facilities, which gave rise to widespread, capital-intensive, mass-production enterprises; (2) the expansion of these enterprises in the late 1880s and early 1890s, leading to excess capacity; and (3) the depression of 1893

which prevented the excess capacity problem from being dealt with. The author takes issue with the conventional wisdom that the high fixed-cost structure of capital-intensive firms calls for maximization of output in order to yield lower per-unit costs, leading to debilitating price competition, and hence, to consolidation as an inevitable outcome. Based on her quantitative analysis of manufacturing sector data, and case studies of the steel and paper industries, she concluded that merely having a high proportion of fixed cost was not sufficient to bring a firm to the merger table. High fixed cost had to be allied to some other factor. The most likely additional causal factor was having excess capacity at the time of the depression of the 1890s.

The merger movement led, inevitably, to institutional adjustment in the organization of American industry. In the mass-production sectors, this took the form of a shift in patterns of market behavior from competitive to oligopolistic. Another feature of structural change involved strategic planning to forestall competition, dictated by events occurring after the first merger waves. The higher prices which larger economic units could command because of their market domination attracted additional investment. This led, once more, to excess capacity as the economic cycle repeated itself. However, the successful firms recognized the need to combat such degenerating outcomes by trying to ward off the likelihood of their occurring. Thus, Lamoreaux concluded: "the consolidation movement . . . was not the inevitable result of long-run trends in the economy, but instead the product of a particular historical conjunction of events . . . [and] only one phase in a long-term process of institutional adjustment to modern conditions of production."

An Analysis of The Tax Opinions of Judge Learned Hand and His Contributions to The Development of the Federal Tax System (The University of Mississippi, 1979, 383 pp.; 40/7, pp. 4103-4-A) by Tonya Kay Flesher. Given the centrality of Judge Hand's role in the history of taxation, Flesher's dissertation provides a necessary bridge for those interested in understanding present-day tax practice as well as speculating on its possible future directions.

Learned Hand was born in Albany, New York in 1872. He obtained the LL.B. degree from Harvard in 1896, and became judge of a Federal district court in 1909. Just four years later, the 16th Amendment to the U.S. Constitution was adopted and Judge Hand emerged as the primary shaper of tax law and administration. During his years in Federal district court, and later, from 1924 to 1951,

in a Federal circuit court of appeals, he authored almost 300 tax case opinions and sat on a considerable number of others. Neither was he idle in retirement. In 1952, a collection of his papers and addresses was published as *The Spirit of Liberty* and in 1958, a series of lectures was published as *Bill of Rights*.

Summarizing Judge Hand's prolific contributions to the tax field would be a challenging assignment, given the volume of current practices whose roots may be traced to his guiding philosophy. One could, as an example, point to his decision in the landmark case of *Helvering v Gregory*. This provides an instance of Hand's pragmatism in breaking from a literal interpretation of the law in order to test for business purpose. Fleisher's study is an apt illustration of achieving the intellectual and utilitarian aims of research in accounting history.

History of Oil Industry in Iran (California Institute of Asian Studies, 1978, 315 pp.; 40/4, p. 2208-A) by Seyed Ahmad Alavi. Alavi's research project was to review the historical development of the Iranian oil industry from its origins at the beginning of this century, and analyze the impact of the oil sector on the development of the country's social, political, and economic life.

The Iranian oil concession of 1901 to a British national, D'Arcy, was yielded out of internal turmoil and financial crisis. The concession granted "exclusive privileges for exploration, development, and marketing of oil throughout the country except in five northern provinces." Shortly thereafter, in 1909, the Anglo-Persian Oil Company was established, with protective interest from the British government, one of Iran's major creditors. Another, at that time, was Russia. After World War II, a third major foreign power, the United States, made its presence felt. In 1951, the Iranian oil industry was nationalized, causing international concerns, a boycott of oil from that country, and consequent deleterious effects on the domestic social and political scene. In 1954, however, a working agreement was arrived at with an international consortium, and the Iranian government subsequently concluded agreements with other foreign-owned oil concerns. The National Iranian Oil Company began to expand and the country's revenues climbed from \$30 million in 1954 to \$1 billion by 1970. Prices of crude oil then started to jump, with the result that in the next seven years, revenues reached \$22 billion: a staggering expansion in just over two decades. Even further expansion of the economy was promised by recent discoveries of natural gas, copper, and coal. Given the recent swing away from

the dominance of the industrial sector and industrial expansion, Alavi's study provides a rich base for further research into the impact of culture on economic development.

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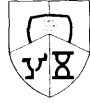
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Due to the increase in printing and postage costs the Academy has found it necessary to increase the membership dues in 1981 to twenty U.S. dollars (\$20.00). It is our hope that we can sustain this amount for at least three years.

Members residing outside the United States are asked to remit payments in U.S. funds drawn on U.S. banks. The collection costs on non-U.S. fund remittances have risen sharply in the last year and we can no longer absorb these charges.

THE ACADEMY OF ACCOUNTING HISTORIANS APPLICATION FOR MEMBERSHIP

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GUIDE FOR SUBMITTING MANUSCRIPTS

The Academy of Accounting Historians invites manuscripts on subjects related to accounting history for **The Accounting Historians Journal**. Articles should have scholarly merit and present an original contribution to the knowledge in the field. Articles presenting the results of research from primary sources will be given preference. All articles will be reviewed by two or more members of the Editorial Board. The **Journal** is scheduled to appear each Spring and Fall.

Manuscripts should be in English and of acceptable style and organization for clarity of presentation. Submit three copies double spaced on 8½ x 11 inch paper. The manuscript should not exceed 5,000 to 7,000 words. The title page should contain name of author, affiliation and address for further correspondence. The title, but not the author's name, should reappear on the first page of the manuscript.

Tables and figures should be numbered, titled and presented in reproducible form. Limited use of original documents etc. can be accommodated in the **Journal** at modest additional cost to the author by submitting camera-ready copy. Important textual materials may be presented in both the original language and the English translation.

Footnote numbers must be referenced in sequence within the article. The bibliography should contain full reference to sources arranged in alphabetical order by author. Informational footnotes are to be presented at the bottom of the page referenced by letters and should be limited in size and number. **Consult a previous issue of the Journal for examples.**

Galley proofs will be sent to the author as permitted by scheduling but additions of new material must be strictly limited and excessive alterations will be charged to the author. Ten copies of the **Journal** on publication will be provided to the author.

An **abstract** of the article will precede the printed article, and should be submitted with all manuscripts. Abstract should not exceed 100 words.

Reprints may be ordered from the printer. Costs of these are billed directly to the author by the printer. Minimum order 100, prices to be established by printer.

SUBMIT MANUSCRIPTS TO:

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