

Accounting Historians Journal

Volume 21
Issue 2 December 1994

Article 6

1994

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Recommended Citation

Solomons, David (1994) "Costing pioneers: Some links with the past; Retrospective: David Solomons, 1912-1995 In memoriam," *Accounting Historians Journal*: Vol. 21 : Iss. 2 , Article 6.
Available at: https://egrove.olemiss.edu/aah_journal/vol21/iss2/6

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RETROSPECTIVE

DAVID SOLOMONS 1912-1995 IN MEMORIAM

David Solomons, an eminent accounting scholar and a key member of the accounting history community, died at his home on February 12, 1995 after a long bout with cancer. His article, "Cost Pioneers: Some Links with the Past," that appears in the Retrospective section of this issue, provides us with another of his personal glimpses and keen understanding of those who pioneered the development of cost accounting. His intellectual contributions will be sorely missed by all in the accounting academic community, as will his enthusiasm, zest for a good argument and commitment to principle. The editors wish to express their heartfelt condolences to the Solomons family; we feel fortunate to be able to publish one more article from one of the preeminent accounting academicians of our time.

David Solomons

COSTING PIONEERS: SOME LINKS WITH THE PAST*

Abstract: When the author was working on the history of cost accounting at the beginning of the 1950s, he entered into correspondence with some of the pioneers who were developing the subject at the beginning of this century, or with men who had been personally associated with those pioneers. This paper places on record the more important biographical information that that correspondence gleaned about (in alphabetical order) Alexander Hamilton Church, Harrington Emerson, Emile Garcke and J. M. Fells, G. Charter Harrison, J. Slater Lewis, Sir John Mann and George P. Norton. It also comments briefly on their significance for the development of costing.

In a letter seeking biographical information that I wrote in November 1950 to G. Charter Harrison, one of the great names in the history of cost accounting, I said this:

The history of costing, when it comes to be written, ought, I think, to be more than a bald account of ideas. Some information about the men who formed the ideas ought surely to be available to a later generation.

I take it that the same thought has inspired this conference, and I welcome the opportunity to take part in it.

It is now over forty years since I started work on the long paper that became "The Historical Development of Cost Accounting", the introductory essay of my *Studies in Costing*, published in 1952. I believe that that volume was the first anthology on cost accounting, and it was preceded in that genre only by William Baxter's *Studies in Accounting*, published two years earlier.

The research for my essay, carried out in London, relied heavily on the resources of the library of the Institute of Chartered Accountants in England and Wales, which has an unrivalled collection of material on the history of accounting; on the library of the London School of Economics; and on the library of the Patent office in London. That library is a goldmine for material on nineteenth century technology, both British and

*A paper presented to the Accounting Biography Conference of the Academy of Accounting Historians at the University of Mississippi on December 3, 1993.

American. It must be remembered that much of the early work on cost accounting was done by engineers, not accountants, and was published in engineering journals. But I did not rely only on library research — of course in those days there was no such thing as computer search. I had notices published in the professional journals in Britain, asking anyone with personal knowledge of the persons who had worked in the costing field in its early days to write to me. Several of them did, giving me information, sometimes followed up in interviews, about their own work, but also giving me leads to other pioneers, to whom I could then write. The result was the collection of more biographical material than I could use in my essay. I have been waiting for forty years to find a suitable forum in which I could present it, and this conference has at last provided one.

So far as possible, I shall proceed chronologically, speaking first about the earliest writers I studied, and going forward from there. However, it is not easy to do that, because the trails cross; and in any case, most of the developments that I shall be discussing took place within a span of no more than 25 years.

GARCKE AND FELLS

When I was studying accounting as a young man in London in the early 1930s, a book on cost accounting first published in 1887 was still in use as a text. I refer to *Factory Accounts: Their Principles and Practice*, by Emile Garcke and John Manger Fells. This book went through seven editions, and in J. M. Fells' obituary in 1926 it was said to be "still regarded as a standard book on the subject." Yet Ronald Edwards, in a lecture he gave in 1937, quoted a review of the first edition in *The Accountant* as saying that the book was more theoretical than practical, that it was pedantic and involved "in the nature of a work on political economy." It did, in fact, attract the attention of the leading British economist of that time, Alfred Marshall, who referred to it approvingly in his *Principles of Economics*.

Factory Accounts was important for several-reasons. It was easily the best known book on costing in Britain during a critical period in the development of costing, i.e 1890 to 1910. Beyond that, for the first time it integrated the costing records into the double-entry financial books; and it put forward an enlightened view of the distinction between fixed and variable costs, advocating that fixed costs not be distributed over "the various transactions or articles produced."

I had no personal contact with either Garcke or Fells, for they both died before I began to take an interest in their work — Fells died at the end of 1925 and Garcke in 1930 — but I did have a link with Fells through one Edward Baldry, a practicing accountant in London, with whom I served on a professional committee. He had been apprenticed to Fells in 1910.

Fells was born in Deal, in Kent, in 1858. He was educated in Deal and at the University of London. His early career lay in industry, an accountant and assistant secretary of the Anglo-American Brush Electrical Light Corporation, later the Brush Electrical Engineering Company. He stayed with Brush until 1894. It was there that he must have met Emile Garcke, who was with that company from 1883 to 1893, first as secretary and later as chairman and managing director.

Subsequently, according to Baldry, Fells became chief accountant to the London Electrical Railways, one of the predecessors of London Transport, and then general manager of the Salt Union, the forerunner of Imperial Chemical Industries. In 1899, twelve years after the first edition of *Factory Accounts* had appeared, he commenced practice in London as a consultant, and according to Baldry, who joined him in 1910, his practice then consisted almost entirely of work for the Railway and Canal Commission, the British counterpart at that time of our Interstate Commerce Commission. He must have interrupted his consulting practice during the first World War, for he became Director of Costings in the British War Office (i.e. the Department of the Army) and was on several War Office committees. For these services, he was made a Companion of the Order of the British Empire (C.B.E.). He died suddenly in 1925. Baldry described him as having "Quakerish tendencies".

Whereas Fells was an accountant with an interest in engineering, Emile Garcke was an engineer with an interest in accounting. He was born in 1856 and died in 1930. His early career lay with the Brush Electrical Engineering Company, where he met Fells, and by 1893 he had become its chairman and managing director. In 1895 he founded a company that became the British Electrical Traction Company, and relinquished his duties as chairman only in 1929, shortly before his death. He seems to have had a taste for founding companies for, according to his obituary in the *Journal of the Institution of Electrical Engineers* [Vol. 69, 1931, pp. 1320-1321], at one time he was associated with 30 companies, many of them established by him. But he also had other interests. In 1896 He established

Garcke's *Manual of Electrical Undertakings*, he founded an electrical journal. he founded and became chairman of sections of the London Chamber of Commerce devoted to electricity and electrical traction, and was chairman of the executive of the Industrial Copartnership Association. He was also one of the founders of the British Institute of Philosophical Studies. Somehow he found time to coauthor seven editions of *Factory Accounts*.

GEORGE PEPLER NORTON

George Pepler Norton was born in 1858 and died in 1939. His importance lies in the fact that his book-keeping system for textile manufacturing, which dates back to 1889, clearly foreshadowed standard costing. Indeed, in my essay on the history of costing, I described his system as "the nearest thing that the nineteenth century came to standard costing as we know it".

My link with Norton was through his son, Gilbert Paul Norton, with whom I corresponded in 1950, though I never met him. I quote from a letter that Gilbert Norton wrote to me on November 2, 1950 about his father's work:

My father's book on Textile Manufacturing Book-keeping was first published in January 1889. This quickly became the standard on this subject and was very widely used throughout the Textile Trade. This book was a complete treatise on the book-keeping in all its aspects for a Textile Manufacturer; it not only dealt very exhaustively with the financial books, but also with Mill or Factory and Warehouse books. In this book he devised and set out a method of keeping Departmental Accounts by which the actual cost of each Department or process was compared with a standard cost of the process. In those days there existed well-known trade prices for each process of manufacturing, generally known as "Country Prices", that is, prices at which work could be done by processing firms. My father used these country prices as a standard and so ascertained the profit (or loss) on each process as compared with this standard. The build up of the cost of a piece was ascertained by taking the cost of material and adding the country price of each process. The total of these costs, compared with the actual sales, gave the gross profit over the standard cost. The profit (or loss) on each Department or process was then added to or deducted from the gross profit. Warehouse and Office Ex-

penses and General Charges were also charged and the balance then agreed with the net profit (or loss) as shown by the financial accounts.

Gradually, country prices became obsolete and some other method had to be used to provide the standard cost. From country prices was gradually evolved the modern practice whereby normal expenses are related to a normal output to arrive at a standard cost. This evolution is described in Chapter I of my father's book — Textile Manufacturers' Book-keeping, Part II — called "Cost Accounting and Cost Control" [Part II was published in 1931, forty-two years after Part I]. This chapter clearly shows, I think, how the matter evolved in his own mind and that he regarded it as a logical outcome of his Departmental or Process Accounts.

George Pepler Norton was a chartered accountant, and was the senior partner in the firm of Armitage & Norton, in Huddersfield, Yorkshire. According to his son, who was also a partner in the firm, his main professional practice was with the textile trade. No trace of the firm remains in current directories of accounting firms in Huddersfield.

SIR JOHN MANN

Sir John Mann, who was born in 1863 and died at the age of 91 in 1955, himself saw my letter in *The Accountant* in 1950 calling for information about costing pioneers, and responded through his son James by sending me some notes on the sparse literature of costing at the turn of the century. James Mann, I should explain, was a colleague of mine on a London committee of the Institute of Chartered Accountants.

Sir John Mann was a link with the very beginnings of the accountancy profession in Britain, and therefore in America, for he was the son of one of the founding members of the Glasgow Institute of Accountants and Actuaries, which later merged with the Edinburgh and Aberdeen Institutes to form what became the Institute of Chartered Accountants of Scotland, the oldest professional body of accountants in the world. His importance to our subject lies mainly in his advanced views on the nature of overhead expense. As early as 1891 — here I quote from my "Historical Development of Costings" [p. 24] — he was arguing in *The Accountant* [August 29 and September 5, 1891]:

for a division of overhead cost into (a) buying costs

which vary with the cost of goods bought, (b) selling costs which vary with the sales, and (c) production expenses. So far as the last were concerned he dismissed quantity or value of material as a suitable basis of allocation and pointed out the danger of using wages as a basis where some workers are paid more than others. He emphasised time as the significant factor and put forward some proposals for machine hour rates.

Sir John Mann was educated at Glasgow University, entered his father's firm in Glasgow, and became its senior partner on his father's death in 1910. The firm later spread to London. Mann joined the staff of the Ministry of Munitions during the first World War, and became Controller of Munitions Contracts. It was this, presumably, that won him his knighthood. Further information about him can be found in his obituary in the *Times* in London on July 3, 1955.

Here are some extracts from the notes he prepared for me in 1950:

When I began to study the subject [costing] about sixty years ago, the only books on the subject I could then find were:

(First) Thos. Battersby, an accountant of Manchester, wrote "The Standard Economic Book-keeper for Iron-founders" specially published at a guinea.

(Second) Garcke & Fells on "Factory Accounts" (and another on "Engineering Estimates") both published by Crosby, Lockwood & Son at 12/-.

(Third) Captain H. Metcalfe on "Cost of Manufacture" explaining the Card System used in the American Arsenal (published by Wiley & Son, New York).

My first writing on the subject was a paper I read to the profession in Glasgow nearly sixty years ago. (Pubd. "The Accountant" 29/8 and 5/9/81 pp. 23, and reprinted [I referred to this paper earlier]. Five years later I was invited to repeat my paper to the Edinburgh Chartered Accountants and a revised version was submitted on 9/1/1896 published by St. Giles Printing Co., Edinburgh 1896 (p. 30). Both these papers were entitled "Notes on Cost Records — a Neglected Branch of Accountancy" and they both concluded with the sentence: "I look forward to the time when a proper cost system will form a part of every well-conducted office and the knowledge of Costing Principles will form part of the equipment of

every trained accountant." Did I make a mistake in attempting to prophesy to my own countrymen?

Sir John Mann also contributed two articles to an *Encyclopaedia of Accounting*, edited by George Lisle, a Glasgow accountant, in several volumes between 1903 and 1907, one on "Cost Records or Factory Accounting" in volume 2 (1903) and the other on "On cost or Expenses" in volume 5 in 1904.

ALEXANDER HAMILTON CHURCH

I have little to add to what others have written about the life and work of Alexander Hamilton Church, one of the great names in the history of costing. My claim to have a link with him rests on the fact that I met and talked with one Percy Lightbody, a former president of the Institute of Cost and Works Accountants in Britain, the predecessor body to what is now the Chartered Institute of Management Accountants there.

Mr. Lightbody, whom I met in 1951, when he was about 70 years old, had, like Church, trained as an engineer and had gone to work for Hans Renold's engineering company in Manchester in about 1901 as a cost clerk. At that time, Hamilton Church was installing a cost system there as a consultant. He had previously worked for the National Telephone Company, and Lightbody thought that the Renold system was the last one that Church installed before moving to America. He said that Church's writings had had little appeal in Britain but had a wide success in the United States.

Much research has been done on Alexander Hamilton Church since my 1952 essay was published, and those seeking biographical information about him should consult Vangermeersch [1988] and Scorgie [1993]. Vangermeersch also has much to say about Church's contributions to costing and to scientific management.

Church was born in 1866 in Uxbridge, Middlesex, near London, and died in 1936 in Taunton, Massachusetts, almost a pauper. He left Britain for America in 1909 or 1910. Lightbody's conjecture that the Renold job was Church's last consultancy before leaving Britain may not be wrong, since Church was working as an editor and journalist for several years before moving to America.

Perhaps Hamilton Church's main contribution to costing was his refinement of the process of overhead allocation by distinguishing between works cost and what he called general es-

tablishment charges, and then breaking down a factory department into several production centers, according to whether they used heavy or light equipment, or none at all, and allocating factory overhead by means of appropriate machine hour rates. Somewhat ironically, however, Church's name is generally associated with what was in fact his principal failure. His other contribution was to refine the distinction between absorbed and unabsorbed overhead. But here he went too far. His 'supplementary rate' was a clumsy device, and it was soon discarded.

Church's ideas on these matters were set out in six articles published in the *Engineering Magazine* in 1901 under the title "The Proper Distribution of Establishment Charges". They were reprinted in book form in 1916.

Mr. Lightbody, in some notes he had prepared in 1946 and which he gave me in 1951, wrote of Church's system that "the adoption of the machine hour rate would appear, in retrospect, to have been the greatest single step in costing, chiefly in my opinion, because it brought to light more problems than it solved. He also wrote of Church that he "did more, directly and indirectly, to promote costing, than anyone I know; chiefly, in my opinion, because he promoted thought".

J. SLATER LEWIS

In an article that Church wrote entitled "The Meaning of Commercial Organization" in *The Engineering Magazine* in 1900, he gives credit to one J. Slater Lewis for making the distinction between what he called shop charges and general establishment charges; and Lewis, in the preface of his book, *The Commercial Organization of Factories*, published in 1890, acknowledged a debt to Church. In trying to track down information about Slater Lewis, I was able to make contact with one W. Taylor, the chief accountant in 1952 of the company in Manchester for which Lewis had worked over fifty years earlier. Mr. Taylor had not known Lewis personally, but he had found some records of his work for the company, P. R. Jackson & Co., Ltd. Lewis left the company in 1900. His salary at that time had been £50 a month. Taylor put me in touch with the company's former chief engineer, Isaac Monk, who had been a junior under Lewis at the beginning of this century. Monk told me that when Lewis left the company he had taken a position as general manager with the Brush Electrical Engineering Company in Loughborough. It will be remembered that both Emile Garcke and J. M. Fells,

mentioned earlier in this paper, had at an earlier time also worked for Brush Electrical.

GEORGE CHARTER HARRISON

My biggest live capture during my research for "The Historical Development of Cost Accounting" was G. Charter Harrison, who installed the first full standard costing system in 1911 for the Boss Manufacturing Company, of Kewanee, Illinois, then the largest manufacturer of work gloves in the world. In 1920 he produced the first set of formulae for the analysis of cost variances. Of a series of articles entitled "Cost Accounting to Aid Production" that he wrote in *Industrial Management* between October 1918 and June 1919, I wrote in 1952 that "they have a sureness of touch and a comprehensiveness in their treatment which shows standard costing to have left the experimental stage and to have attained the status of established practice".

Having been impressed by his book, *Standard Costs*, published in 1930, I wrote to Mr. Harrison at the end of 1950, c/o the National Association of Cost Accountants as it then was (now the Institute of Management Accountants), asking him for information about his personal background. My letter produced a richer response than I had dared hope for. It came from Madison, Wisconsin, where he was then in practice as a consultant in partnership with his elder son, G. Charter Harrison, Jr.

George Charter Harrison was born in London in 1881. He was educated at the University College School in London, was articled to a London firm of chartered accountants, and became a member of the Institute of Chartered Accountants in England and Wales in 1905, when he was 24. In the same year he came to the United States, and in 1907 joined the staff of Price Waterhouse. He continued his membership of the English Institute until 1932, in which year his membership ceased, according to the Institute, "by reason of his nonpayment of his annual subscription". He left Price Waterhouse for a while to become controller of a large nut and bolt manufacturing concern, but re-joined the firm and stayed with them until 1916, at which time he was a principal and head of its systems department. It was during that stage of his career, in 1911, that he installed the Boss Manufacturing Company standard costing system.

When Harrison left Price Waterhouse in 1916 he entered into partnership with Baker Sutton & Co. in New York, practicing as Baker, Sutton & Harrison, but after May 1918 he prac-

ticed in his own name, first in New York and then in Madison.

Here is an extract from the notes about his work that Mr. Harrison sent me in 1950:

The standard cost system at Boss Manufacturing Company had its inspiration from a book by an engineer, the late Harrington Emerson, published in 1909 with the title of "Efficiency As a Basis for Operation and Wages". In this book there was a chapter on Cost Accounting recommending the use of both actual and standard costs, the general principle being that only by comparing actual costs with should-be or standard costs could inefficiencies be brought to light. Full credit in "Cost Accounting to Aid Production" by G.C.H. is given to Mr. Emerson's influence in this standard cost development.

Up to 1924 the work of G.C.H. in accounting was largely confined to Mr. Emerson's conception that the primary purpose of cost accounting is to aid in the reduction of costs through disclosing the existence of inefficiencies in manufacturing. In 1924 the scope of G.C.H. accounting methods was expanded to include the use of accounting to stimulate selling efficiency. The body of principles and practices developed in this connection has been given the title of MARGINAL BALANCES.

In the year 1922 G.C.H. was called in by Rolls Royce Ltd. of Derby, England to design a system of standard costs for their company.

HARRINGTON EMERSON

I had already encountered Harrington Emerson's work in the course of my research, and Charter Harrison's acknowledgment of his debt to Emerson prompted me to ask Mr. Harrison for more information about Emerson. In a letter to him in March 1951, I wrote as follows:

Turning now to Harrington Emerson's work, there is one fact about it on which you may be able to throw light. In an article entitled "Percentage Method of Determining Production Costs" in *The Foundry* for October 1904, one finds no hint of standard costing. In his articles for the *Engineering Magazine* in 1908/9, his ideas are altogether more advanced and he has no time for costing without standards. It seems clear, then, that

his development of the idea took place between 1904 and 1908. It would be of great interest to me to know what happened to him during those years and what it was to cause his thoughts to turn to standard costing.

The reply I received three months later was full of interest. Though it did not fully clear up the mystery of the missing years. Harrison said he believed that Emerson "started to experiment with comparisons of actual costs with standards considerably before that time", i.e. before 1904, and in support of that view he sent me some biographical information about Emerson that had appeared in the introduction to a lecture by Emerson entitled "Cost and Efficiency Records" that was published by the Alexander Hamilton Institute in 1914. This stated that Harrington Emerson had been born in Trenton, New Jersey in 1853. His grandfather was a manufacturer, coal operator and railroad builder, and his father was a college professor, thinker and writer. Most of his education was obtained abroad, and he graduated with an M.A. degree from the engineering course of the Royal Polytechnic in Munich, Germany.

According to the same source, which was presumably based on information provided by Emerson himself, he spent the next twenty years "on the American frontier from the Mexican border to Northern Alaska". It is not clear what he was doing there, but it seems to have been connected with business for, the note goes on:

Shortly after this, he was appointed to investigate a number of American manufacturing plants and other operating enterprises for a London syndicate. This gave him exceptional opportunities to study accounts, difficulties, methods and results.

As an outcome of these experiences he was made manager of a small manufacturing plant, which up to that time had been unsuccessful. The enterprise was of a simple type to which basic principles of control and development could be easily applied. Mr. Emerson had by this time thought out some of the theories which were to distinguish him and this was his first opportunity to try them out. The results were great and convincing.

Charter Harrison put these events as occurring round about 1900, and dated Emerson's interest in standards from that time. But the absence of any reference to standards from his 1904 article still needs to be explained.

Harrison's letter to me of June 1951 then went on to give much information about his association with Emerson. Even though it repeats some of the information already given, it is worth reproducing here in his own words:

I met Mr. Emerson early in the year 1909 when I was controller of a large manufacturing concern namely Russell, Burdsall and Ward Bolt and Nut Company located in Port Chester, New York. The president of the company, Mr. William L. Ward, employed Mr. Emerson to undertake what was then known as "efficiency engineering work" in our three factories. I had already become associated with Mr. Emerson's ideas regarding cost accounting through reading his book "Efficiency as a Basis for Operating (sic) and Wages" and was greatly intrigued with his standard cost conception. I was therefore delighted to have an opportunity to become acquainted with this distinguished man. When Mr. Emerson learned that I, a chartered accountant and a former member of the staff of Price Waterhouse & Co. in this country, was in sympathy with his ideas he was very much pleased that fate had thrown us together because, as he told me, I was the first qualified accountant who had taken the least interest in his standard cost idea.

Mr. Emerson urged me to develop his standard cost conception. He pointed out to me that he personally knew nothing about accounting and further that his management engineering work would take all his time. Later on an opportunity presented itself in the form of an invitation from my old firm Price Waterhouse & Company for me to become manager of its system division which I did in January 1911. Early in that year we were called in to design cost methods for the Boss Manufacturing Company of Kewanee, Illinois, then and now the largest manufacturers of work gloves in this country. The Boss system was without question the first complete standard cost system on record as far as I know and by a system I mean a complete whole which was not the case with the system work Mr. Emerson had done which was directed primarily to the determination of efficiencies and the disclosure of preventable inefficiencies by comparing actual costs with standards.

Apart from the acknowledgment that I sent Mr. Harrison in August 1951, that was the end of my correspondence with him I have been unable to find out when he died. He appears in the

New York Times Index of Names only in connection with a lecture that he gave in New York in 1933. Apparently he did not rate an obituary in that august paper.¹

CONCLUSION

All of the men discussed here, except for Harrington Emerson, were born and educated in Britain. Some of them spent their whole lives there, while some of them moved to the United States. Of course there were other costing pioneers, of American origin, who deserve attention, like Captain Henry Metcalfe, whose book, *Cost of Manufacture*, was first published in New York in 1885 and was mentioned by Sir John Mann as one of the few texts available to him as a student in or around 1890. Others were Frank Webner, a CPA, whose book, *Factory Costs*, was published in 1907, and J. Lee Nicholson (1862-1924), whose *Factory Organization and Costs* [1909] was described by a reviewer in *The Journal of Accountancy* as "the first American treatise on cost accounting proper" [Taylor, 1979]. It would hardly be possible now to have the same kinds of contacts with Americans who were working in this field at the beginning of this century as I was able to have in 1950 with their British counterparts. But as Vangermeersch and others have shown, there is still a trail to be followed.

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¹Stephen Zeff has informed me that in 1971 he wrote to the County Clerk of Madison, Wisconsin to find out whether there was a record of the death of G. Charter Harrison and was told that there was no death record for an individual by that name.

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