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(Compilation of Articles, Notes and Papers originally published as
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ENGINEERING HISTORY PAPER #50

“The Entrepreneurs Behind the Engineers”

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(previously produced as Cedargrove Series #23/2013 – April 2013)

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Introduction

The saying goes that "behind every successful man there is a determined woman." This might be extended to say that "behind every successful engineer there is a determined entrepreneur." Both may well be exaggerations, but with some essential truth to them. The purpose of this paper is to identify a few of the notable North American and British entrepreneurs who were behind notable engineers and engineering efforts at several points in historical time. In some cases the engineers can be identified; in others, they are too numerous.

In this context, and combining several formal definitions, the entrepreneurs concerned were individuals who undertook to manage risky but exploitable environments that permitted engineers to convert their technical brain-children into useful economic assets. I make no apologies for my selection of entrepreneurs. I simply want to illustrate how different they can be.....and yet how similar.

But first, two points of clarification. One is that there have not always been people called "engineers." But there have been - for a very long time - activities that can be defined as "engineering" in either the military or civilian contexts. The second is that there have been notable engineers who have acted as their own entrepreneurs. During the 19th century in Britain there were, for example: Maudslay, Whitworth, Napier, Fairbairn, and the Brunels, father and son. More recently, in North America, there have been George Westinghouse, Thomas Edison, Hewlett and Packard, and Simon Ramo.

Early 17th Century

The first entrepreneur I want to talk about is Samuel de Champlain, one of the very earliest explorers of what is now Canada. He can, from the historical evidence, be identified easily as an *entrepreneur*.....but for engineers?

The historical evidence about him is not always clear. Was he born in La Rochelle or in Brouage, both towns on France's Bay of Biscay? In 1570? Was he of a member of the French Royalty or nobility or of much more humble birth? Was he baptized a Protestant, only to become a Catholic later in life? What did he actually look like? Portraits and statues of him have been based on other people. His grave at Québec has never been found.

Champlain played major leadership roles in establishing New France - and a possible westward way to China....but was he always the boss? Evidently not. He had very good connections to France's King Henri IV, but was held in less favour by the chief ministers - such as Sully and Cardinal Richelieu - of later kings after Henri's death in 1610.

Abstract

This paper was originally presented orally to the Ottawa Branch of the Canadian Society for Senior Engineers on 19 February 2013. It has since been modestly edited and some illustrations have been added.

Its theme is the connection between successful engineers (or engineering efforts) and the entrepreneurs who backed them. Although the number of such 'pairs' included in the paper is very small, it covers engineers/entrepreneurs operating in the 17th, 18th, 19th and 20th centuries in Canada, the United States and Britain and draws several tentative conclusions from the discussions.

About the Series

Principally, the Cedargrove Series is intended to preserve the research, writings and oral presentations that the author has completed over the past half-century or so but has not yet published. It is, therefore, a modern-day variant of the privately-published books and pamphlets written by his forebears, such as his paternal grandfather and grandmother and his grandfather's brother John.

About the Author

He is a graduate in mechanical engineering and the liberal arts and has held technical, administrative, research and management positions in industry in the United Kingdom and the public service of Canada, from which he retired over 25 years ago.

He became actively interested in the history of engineering on his appointment to chair the first history committee of the Canadian Society for Mechanical Engineering in 1975 and has been active ever since in research, writing and editing historical material on behalf of that Society, the Engineering Institute of Canada and the Canadian Society for Senior Engineers. He has also served as president of CSME and EIC.



Champlain ?



Bridgewater



Brindley



Merritt

In his mature years he was an explorer, first of the West Indies and later of New France. He took a principal role in the establishment and fortification of the Ile-Ste-Croix, Annapolis Royal and Québec colonies in New France. Any *engineer* who worked for him on these was a military man. He introduced European tradesmen and tools into the new country, encouraged the development of water-power, prospecting for minerals, the fur trade and farming. At the same time, he was quick to encourage the adoption of the useful technologies of the aboriginal peoples. He fought frequently for the colonists and friendly aboriginal people, and ventured south on their behalf into what is now the Lake Champlain area of northern New York State, as well as north-west from his bases on the St. Lawrence River, up the Ottawa River. Eventually, by way of the French River, he reached Georgian Bay, which he called the "sweet water lake" and which he saw as a major stepping stone in the westward route to China.

Champlain was noted, among his contemporaries, for his ability to work with the Indian tribes in New France, such as the Algonquins, Montagnais and the Hurons, as well as for his hostility towards the Iroquois. However, it seems he often travelled back to France in the Fall of the year and avoided Canadian winters! He also lost the Québec colony to the Scottish Kirke brothers in July 1629, and New France nearly collapsed. He returned to Europe. However, in 1632, after lobbying by Champlain and others in England and France, the colony was restored to France by treaty. A year later he was back in Québec, bringing with him a fresh company of settlers to join those who had remained and survived. Champlain spent his final years rebuilding the Habitation at Québec. He died there after a stroke, in 1635.

I have included Champlain among my entrepreneurs because he *was* one, and because he played an important part in the founding of what later became Canada, from coast to coast to coast, and helped initiate the opportunities that Canadian engineers have taken since his time.

Later 18th Century

Next comes Matthew Boulton, whose partners included engineers James Watt and William Murdoch.

Bolton was born in 1728, in Birmingham, England, the third child of a metalworking manufacturer - known in these days as a 'toymaker' - who specialized in making buckles and buttons. Matthew has been described by some historians as an engineer. But although he was certainly technically literate, an innovator and a problem-solver, he was basically a businessman and manufacturer. He did, however, enjoy membership in the Lunar Society of Birmingham - a group that met regularly for scientific discussions and included such people as Erasmus Darwin, grandfather of Charles, Joseph Priestley, the chemist, Josiah Wedgwood, the ceramicist, John Smeaton, the first *civil* engineer, and James Watt. Also, by 1785 both he and Watt had been elected to the Royal Society of London.

Matthew was made a partner in his father's business at the age of 21 and, when he died in 1759, became the principal. By 1765 the Soho Foundry had been built. It was to become famous,

