

HERMAN  
HOLLERITH

---

Forgotten Giant of  
Information Processing

---

Geoffrey D. Austrian



COLUMBIA UNIVERSITY PRESS  
NEW YORK

# Contents

|  |      |
|--|------|
| Preface  | ix   |
| Acknowledgments                                    | xiii |
| 1. Discovering the Census Problem                  | 1    |
| 2. Instructor at M.I.T.                            | 11   |
| 3. Grounding as a Patent Expert                    | 19   |
| 4. Experiments with Air Brakes                     | 24   |
| 5. Trials for a Census System                      | 39   |
| 6. 1890: Beating the Mills of the Gods             | 58   |
| 7. Taking the Census Abroad                        | 74   |
| 8. Setting Up Shop in Georgetown                   | 97   |
| 9. Railroad Experiments                            | 107  |
| 10. Persuading the Russians                        | 115  |
| 11. Taking on the Central                          | 124  |
| 12. The Russian Census                             | 142  |
| 13. The Tabulating Machine Company                 | 152  |
| 14. 1900: Putting Information on the Assembly Line | 168  |
| 15. Probing the Commercial Market                  | 197  |
| 16. Getting Started in Britain                     | 212  |
| 17. "My Row with North"                            | 221  |
| 18. Commercial Success                             | 238  |
| 19. An Unusual Competitor: the Government          | 258  |
| 20. Enter Mr. Powers                               | 267  |
| 21. The Growing Impasse                            | 277  |
| 22. <i>Tabulating Machine Co. v. Durand</i>        | 296  |
| 23. Hollerith Sells Out                            | 306  |
| 24. A Life of Leisure                              | 315  |
| 25. The Rise of IBM                                | 323  |
| Notes  | 349  |
| Selected Bibliography                              | 403  |
| Index  | 407  |

# Preface

The use of computers is taken so much for granted today that it would be difficult to envision our modern society without them. They are used to simulate the actions of our economy, make long-range weather forecasts, land planes at busy airports, and monitor the heartbeat, blood pressure, and other vital signs of patients in hospital intensive care units. We carry pocket calculators, costing a few dollars, that employ the circuitry that computers use. Advances in the microelectronic technology computers use are so rapid that the cost of computing has fallen by some 15 to 20 percent a year, leading to a hypergrowth industry, composed of hundreds of firms, that tends to render its own products obsolete within a handful of years. The velocity of progress is such that it allows little time for introspection, for a recognition that many of the ideas behind modern data processing systems date back to earlier times, to inventors such as British mathematician Charles Babbage, who tried unsuccessfully to build calculating machines organized very much like today's computers.

Standing like a giant among these pioneers, but almost totally unknown, is the American inventor Herman Hollerith, the subject of this book.

Where does an industry's fledgling technology come from? What needs does it seek to fill? How do its customs and practices evolve? Who are its first customers? What determines the early uses for its products? By what means is its equipment developed? How is it sold, installed, and serviced? More fundamentally, what must take place for a major new industry to be born?

Working in the electromechanical technology of his day, Herman Hollerith answered many of these questions for the early data processing industry, just as surely as did Henry Ford, Alex-

ander Graham Bell, and Thomas Alva Edison for their respective fields. Hollerith's pioneering punched card tabulating machines made it possible for the first time for government and business to process large amounts of information in an efficient, economic, and timely way—to act on the basis of current facts, as one of his associates put it, before they became ancient history.

Hollerith's basic equipment—his punches, tabulators, and sorters—are as crude, compared to modern computers, as the first "cats-whisker" radio receivers are to today's radio and television sets. In retrospect, his inventions may be different in *kind*, as well as in degree, from today's computers. Yet, born while Lincoln was President, Hollerith left behind a profitable business embodying a viable technology. Refined, added to, and improved by others over the years, it became part of the sure stream that flowed into the development of the first electronic computers. Similarly, the uses he established for his machines, such as inventory control and sales analysis, became the bread-and-butter jobs for the new electronic machines when they came along. In the course of his business, Hollerith set down the beginnings of an industry not only in the United States but in many countries overseas. And many of the customers that he convinced to try his equipment remain among the most innovative users of data processing equipment today. The familiar punched card that Hollerith settled on as a practical medium for holding information nearly a hundred years ago—but never claimed to invent—is becoming increasingly obsolete today. But when cultural anthropologists are sifting through the remnants of our civilization a thousand years from now, they may well fasten upon it as a hallmark of our age.

Why is Hollerith virtually unknown, even in his own country? Part of the answer lies in the character of the man. He was devoted to his work, his family, and little else. Intensely private, he eschewed the use of advertising, and even of salesmen, to promote his machines. Like Babbage, he was also embittered by his unfortunate experiences with his own government and, possibly for this reason, withdrew further into his private world. Finally, he sold his business in 1911 to a small company, later to be renamed IBM. Under the forceful leadership of Thomas J. Watson, it would

soon become celebrated throughout the world, and, without intending to, it would eclipse its early beginnings.

Hollerith's life raises questions that go beyond the scope of this book. Is there still a place for highly individualistic, strong-willed, and even eccentric individuals in a society that appears to emphasize "getting along" and functioning as "a member of the team"? Would his career, and those of other inventive go-getters, still be possible in a closely regulated society that seems to value short-term security as much as risk taking and the chance for material gain? In today's science-based technologies, where the development and manufacture of new products often calls for the joint efforts of hundreds of engineers and technologists, is there still a place for the old-fashioned inventor-entrepreneur? Or are such characters to be relegated to the movies and the depths of the national psyche?

The author holds the optimistic view that many creative, independent-minded individuals are, in fact, at work today in both large and small organizations. But in a world replete with problems that cry out more than ever for innovation, there is an urgent need for a new social and organizational climate that gives greater scope and reward to creative effort. If Herman Hollerith's example and career are obsolete in modern terms, the question may still be asked: what kinds of individuals will take his place?