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# HISTORY OF THE PERKINS BRAILLER

The Perkins Brailler, viewed by many as the premiere mechanical braillewriter in the world, was first produced in 1951. The quality and reliability of the Perkins Brailler has kept it in demand and in production ever since, with only minimal improvements over the decades. Its success lies in two, nearly contradictory foundations – the remarkable precision of its design and production; and the bold financial commitment and idealism of its producers. The leadership and trustees of Howe Press and its parent organization, Perkins School for the Blind, understood the need for the new brailler, and supported it unfalteringly through fifteen years of design, preparation, and expenditures that committed more than half of the capital of Howe Press.[1]

## A Brief History of Braillewriters

Invented by Louis Braille in the 1820s, braille is a tactile writing system of raised dots. It was a breakthrough for people who are blind, because, unlike earlier embossed-letter reading systems, braille can be used to both read *and* write. It is read very quickly with the fingers, but writing braille manually with a slate and stylus, the device used by Louis Braille, was rather slow.

As braille and New York Point, another raised-dot writing system, became prevalent in the last half of the 19th century, attempts were made to invent machines to speed up the writing process. However, none of these braillers were sturdy or economical enough to find popular usage. It wasn't until 1892 that Mr. Frank H. Hall, Superintendent of the Illinois School for the Blind, invented a brailler that was the first to find general acceptance.[2] Many of the earlier designs held the paper flat in a frame, with embossing heads that moved over the surface of the paper. Others punched rolls of paper tape, which were awkward to work with and store. Hall's invention was shaped like a typewriter, with a six-key keyboard mounted conveniently on the front. Each of the six keys corresponds to one of the

dots in the braille cell. The machine also had a roll-up carriage that accommodated 11-inch-wide paper. This model was popular well into the 20th century.[3]

In the first decades of the 20th century, Perkins School for the Blind designed and manufactured several models of braillewriters. They were similar to the Hall model in that they had typewriter-style keyboards and moving carriages.[4] However, these braillewriters had some drawbacks. Because the machines were individually made, the tolerances were not very accurate.[5] They required frequent repair, the cast-iron frames broke easily when dropped, and they were noisy and expensive. Most braillewriters available at the time had similar problems, and nothing about the Perkins models made them superior to any of the others.[6]

In 1931, Perkins School for the Blind welcomed Dr. Gabriel Farrell as its new director. Dissatisfied with the indifferent quality of the Perkins machines, Dr. Farrell ordered the Howe Press to cease production of its braillewriters. However, he remained determined that Perkins would someday design and produce an excellent machine. In the absence of a skilled person to design it, this remained an unreachable goal for several years.[7]

**The Beginnings of the Perkins Brailler**

David Abraham was a native of Liverpool, England, who had been a member of the Royal Flying Corps during the first World War. While working in his family's stair rail manufacturing business, he had designed and built machines for turning the wooden rods more effectively than ever before. Right after he brought his family to live in the United States, the Great Depression started. Although he was a highly skilled craftsman, Mr. Abraham was forced to take whatever employment he could find.[8]

In the early 1930s, he was working on the road crew on Charles River Road, which runs between Perkins School and the Charles River. He had noticed the Perkins School sign near the road; and one day he came in, asked for, and received employment as an instructor. Mr. Abraham served as a teacher in the Manual Training Department, and in the summers worked in the Maintenance Department. His skill and ingenuity as a carpenter and machinist caught the attention of his supervisor, Nelson Coon, who suggested to Director Farrell that he might be the ideal person to design a new brailler.[9] Fortunately, Abraham agreed to take on the formidable task.

The requirements for the new design were detailed in consultations with Dr. Edward J. Waterhouse, the assistant manager of the Howe Press. Working during his spare time, David Abraham spent countless hours in his basement workshop

testing design ideas. In 1941, after several years of solitary labor, he finally presented the prototype to Perkins. Ingeniously and scrupulously designed, it is essentially identical with the Perkins Brailler still in production more than 50 years later.[10]

**What's So Special About the Perkins Brailler?**

Mr. Abraham and Dr. Waterhouse had created a list of specifications that would make the Perkins Brailler the best machine available. Mr. Abraham managed to incorporate all of these features, plus a few more, into his design. The Perkins Brailler is easy to use. The touch is so light that very young people and those with little strength can use it without strain. The machine is tough and hard to break, and much quieter than other braillers available at the time. Paper can be quickly and easily inserted, and the spacing mechanisms are swift and simple to operate. When the operator reaches the bottom of the page, the mechanism prevents the paper from falling out. It is so accurate in its spacing that previously embossed paper can be reinserted and a single dot can be added to a specific cell, without damaging any of the existing work. The brailler has no projecting carriages or parts because the embossing head is inside the case and moves across the paper.[11] These features made the Perkins Brailler reliable and easy to use, and it remains unsurpassed to this day.

**Manufacturing the Perkins Brailler**

Everyone at Perkins was delighted with Mr. Abraham's model. Unfortunately, plans to produce it had to be postponed because all manufacturing materials and production were devoted to the war effort.[12] As soon as World War II ended, the Perkins School Trustees agreed to subsidize the manufacture of one thousand of the braillers. However, preparing for production was a daunting process, and it would be five years before the first brailler was finally available to the public.[13]

The Howe Press, including the machine shop that would manufacture the braillers, was situated in cramped and inadequate quarters in South Boston, miles from the main site in Watertown. The first order of business was relocating the workshop to the Perkins campus. It took a while to prepare the new workspace, close down the old shop, and get everything set up in Watertown.[14]

Designing the brailler to be simple to operate meant that it was complicated to construct. Mr. Abraham often said proudly that the brailler has more precision parts than a wristwatch. Tooling up with the exactitude demanded in the production of these machines added years to the preparation process. Additionally, manufacturing materials were still hard to obtain in the post-war years. Further slowing the process was Mr. Abraham's perfectionism. He insisted on

experimenting with various ways of manufacturing and assembling the parts, not satisfied until he was certain he had hit upon the best method and materials.[15]

This careful groundwork and attention to detail created the foundation of the Perkins Brailler's long-term success. The quality of material, exactitude of design, and precision in manufacture are what make the Perkins Brailler so sturdy and reliable in its performance.[16]

When the Trustees of the Perkins School had authorized the manufacture and sale of one thousand braillers, there was absolutely no guarantee that there would be a market for the machines. It was the task of Dr. Waterhouse, now Manager of Howe Press, to promote the brailler. Between 1946 and 1950 he traveled to conferences all over the country to display the prototype, mostly to teachers and students. The model was enthusiastically received by those who experimented with it.[17] When production began, there were already 1,500 orders for the new machine.[18] However, this was still a very perilous financial decision, according to Dr. Waterhouse, "…for there were at least three risks we had to run. The first involved costs; until we made some machines, we could not be certain of our price estimates. The brailler might be so expensive that it wouldn't sell. Second, there is always a difference between quantity-produced articles and a so-called 'hand-made' prototype. The finished models might be inferior in operation and not give satisfaction. Third, a new model might reach the market which would be better than ours and put us out of business."[19]

By the time the first braillers were ready for sale, Howe Press had spent over half of its capital endowment. However, the trustees' risky investment was a sound one – from the day the new brailler became available, the Press was unable to manufacture them fast enough to satisfy the demand.[20]

**The Perkins Brailler in the 21st century**

These days, anyone who has access to a computer can use special software and a braille printer to produce braille very quickly. Electronic braille notetakers are extremely light and portable. Why is there still a demand for these mechanical devices?

The answer lies in their ruggedness, reliability, and simplicity of operation. Most people who are blind in the United States have a Perkins Brailler in their home for basic messages and notetaking. Few would ever give it up and use it in conjunction with more modern technology.

There is nothing more tough and dependable in a school environment, and the brailler has found a place in classrooms throughout the world. Many developing

countries struggle to provide education for their children. Children who are blind find that resources and skilled teachers for their education are even more scarce. As a result, these children are often left uneducated and illiterate, becoming adults unable to find employment or to contribute to the support of their families.[21]

In such places, braillers are a powerful tool in gaining literacy and education for people who are blind. They are particularly useful in places without a reliable source of electricity. Perkins, in partnership with the Conrad N. Hilton Foundation, is committed to fighting illiteracy by donating braillers to schools with limited financial means. Access to the brailler enables the children to both read and write braille, entering the workforce fully literate and independent.[22]

The Perkins Brailler contributes in another way to the independence of people with disabilities in developing countries. Assembling the braillers is a source of livelihood for many people in India, Brazil and South Africa. Not only are the braillers useful as finished products, available at lower cost because they're assembled locally, but their assembly provides jobs for people who would otherwise struggle to find a livelihood.[23]

From its beginnings in David Abraham's basement workshop in Watertown, Massachusetts, the Perkins Brailler has attained a worldwide reputation for its quality and reliability. More than 50 years after the machine was first produced, the Perkins Brailler continues to play a part in bringing education, literacy and independence to people throughout the world.

Jan Seymour-Ford /April 2002

**References**


1. Edward J. Waterhouse, "Current Status of the Perkins Brailler," *The New Outlook for the Blind*, vol. 52, no. 4 (1958): 139-140.
2. Edward J. Waterhouse, *History of the Howe Press of Perkins School for the Blind* (Watertown, Mass.: The Howe Press of Perkins School for the Blind, 1975): 16.
3. Harry J. Friedman, "The Technological Origin and Development of Mechanical Writing Devices for the Blind," paper reprinted from *Proceedings of the International Congress on Technology and Blindness*, vol. 3 (ca.1963): 149.
4. Waterhouse, *History of the Howe Press*, 16.
5. Edward J. Waterhouse, "The Perkins Brailler: A Brief History," *The Lantern*, vol.33, no.2 (1969): 3.
6. Waterhouse, *History of the Howe Press*, 28.
7. Waterhouse, "The Perkins Brailler: A Brief History," 3.

8. Waterhouse, *History of the Howe Press*, 29.
9. Waterhouse, *History of the Howe Press*, 29.
10. Waterhouse, "The Perkins Brailler: A Brief History," 4.
11. Waterhouse, *History of the Howe Press*, 29-30.
12. Waterhouse, *History of the Howe Press*, 29.
13. Waterhouse, "The Perkins Brailler: A Brief History," 4.
14. Waterhouse, *History of the Howe Press*, 30.
15. Waterhouse, *History of the Howe Press*, 30.
16. Waterhouse, "The Perkins Brailler: A Brief History," 4-5.
17. Edward J. Waterhouse, "Production of the Perkins Brailler," *The Lantern*, vol. 26, no. 3 (1957): 13.
18. Waterhouse, "Current Status of the Perkins Brailler," 140.
19. Waterhouse, "Production of the Perkins Brailler," 13.
20. Waterhouse, "Current Status of the Perkins Brailler," 140.
21. "Promoting Braille Literacy Worldwide," *The Lantern*, vol. 47, no. 2 (1998): 5-6.
22. "Promoting Braille Literacy Worldwide," 6.
23. "Promoting Braille Literacy Worldwide," 10-11.