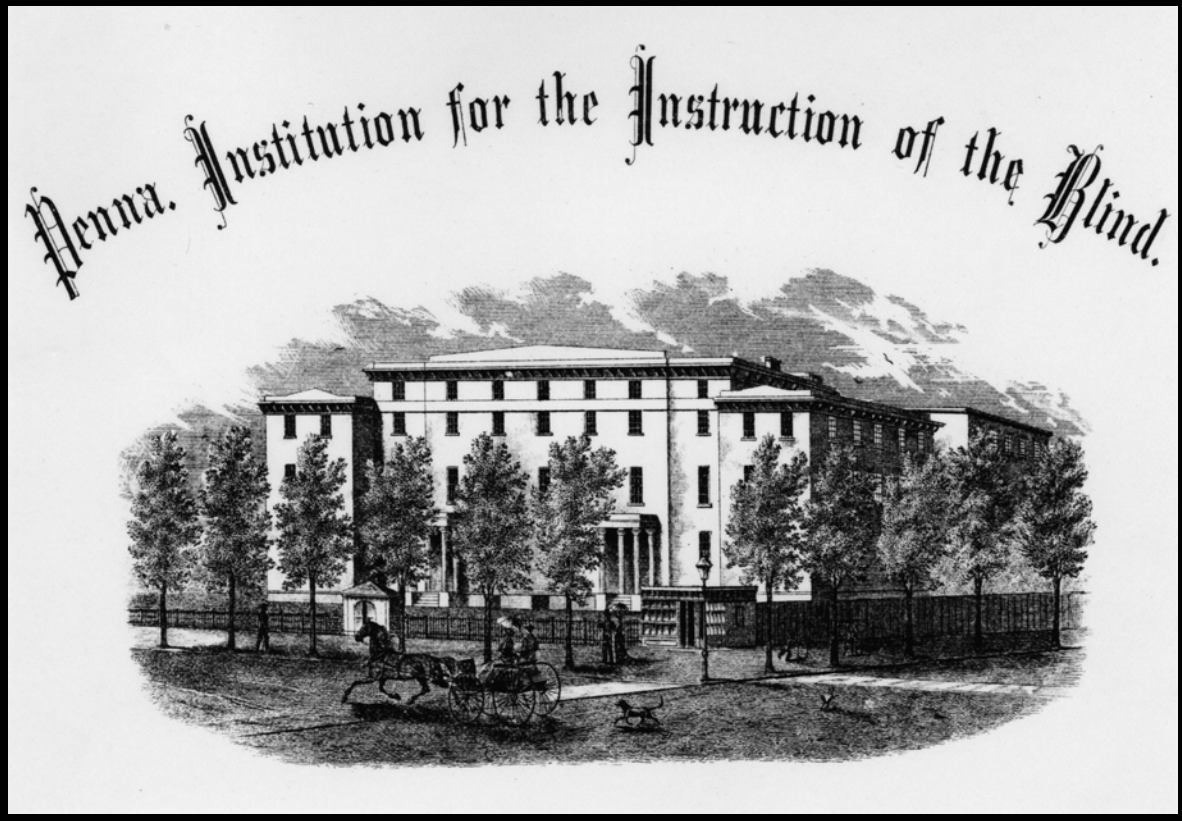
# History of Technology for the Blind




**Presented by: John Hernandez,**
**Archivist, NY Institute for Special Education**

# Topics to be covered

- What was used in the past?
- Where we are today and how did we get here?
  - Writing Codes
  - Braille Production and Devices
  - Print Reading Technology
- Where we are going?

# Few Guideposts and Knowledge

- Europe started schools first
- Schools were poor and considered charities
- No government support or supervision

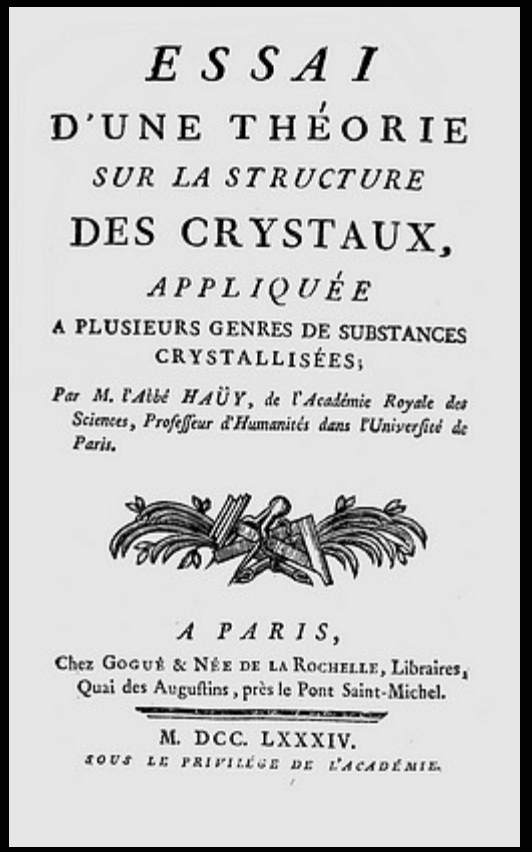
# Valentin Hauy
# 1745 - 1822

In 1771, he witnessed an ensemble of people from a hospice for the blind being mocked during a religious street festival.

# Essai sur l'éducation des aveugles [1]

- By 5 December 1786, Haüy's pupils had embossed from movable letterpress type his "Essai sur l'éducation des aveugles" the first book ever published for the blind

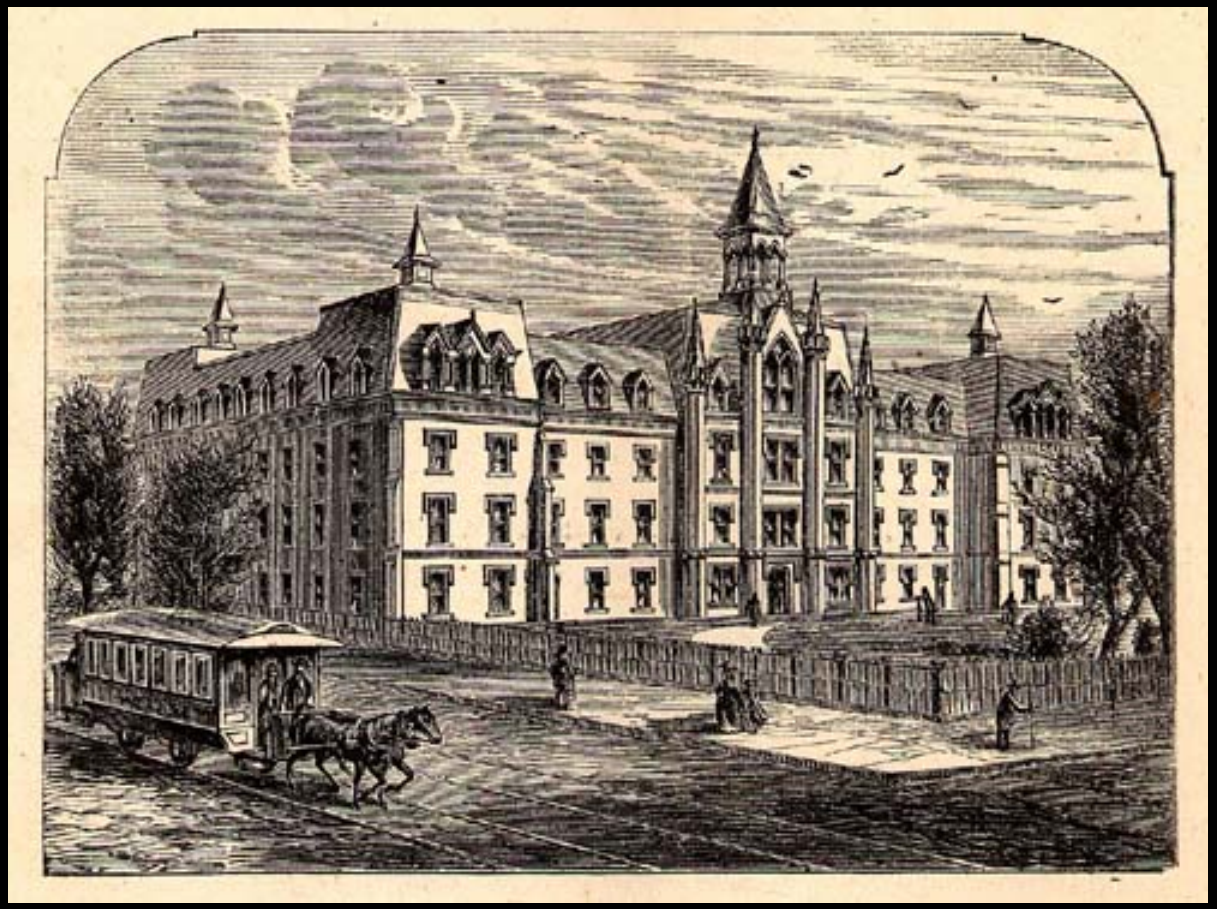
- With the patronage of Louis XVI, Haüy had also secured from various organizations the means to expand.


ESSAI
D'UNE THÉORIE
SUR LA STRUCTURE
DES CRYSTAUX,
APPLIQUÉE
A PLUSIEURS GENRES DE SUBSTANCES CRYSTALLISÉES;
Par M. l'Abbé HAÜY, de l'Académie Royale des Sciences, Professeur d'Humanités dans l'Université de Paris.
A PARIS,
Chez Gogué & Née de la Rochelle, Libraires, Quai des Auguſtins, près le Pont Saint-Michel.
M. DCC. LXXXIV.
SOUS LE PRIVILÉGE DE L'ACADÉMIE.

([1] **An Essay On The Education Of The Blind**)

# New England Asylum for the Blind - 1829

# New York Institution for the Blind 1831



# Pennsylvania Institution for the Blind 1832

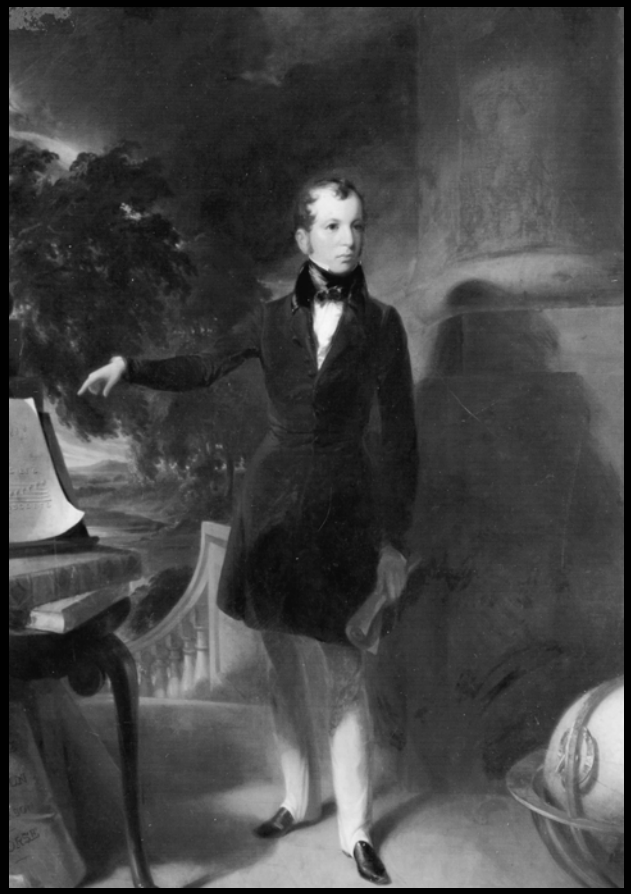
| | First Institute founded in the year | Number of Blind | Number of Educational Institutes | Number of Trade Schools and Asylums |
|---|---|---|---|---|
| France | 1784 | 32,340 | 24 | 10 |
| England | 1791 | 26,330 | 24 | 54 |
| Scotland | 1793 | 4,000 | 5 | 2 |
| Austria-Hungary | 1804 | 41,400 | 11 | 17 |
| Germany | 1806 | 49,570 | 34 | 48 |
| European Russia | 1807 | 221,208 | 37 | 6 |
| Sweden | 1808 | 4,100 | 3 | 5 |
| Switzerland | 1809 | 2,500 | 4 | 5 |
| Ireland | 1810 | 5,120 | 6 | 7 |
| Denmark | 1811 | 1,961 | 2 | 2 |
| Spain | 1820 | 21,000 | 11 | 5 |
| United States | 1831 | 64,763 | 44 | 24 |
| Belgium | 1836 | 4,935 | 8 | 4 |
| Italy | 1838 | 30,210 | 19 | 5 |
| Norway | 1861 | 2,816 | 2 | 1 |

# Early Systems of Embossing Codes


Six Principal Systems of Embossed Type

**Reference:**
**http://www.newadvent.org/cathen/05306a.htm**

# Julius Friedlander



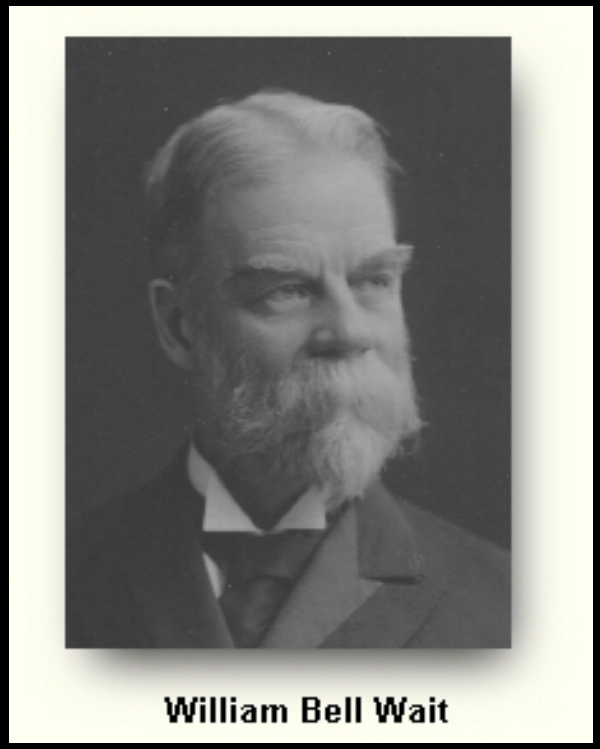
**Came to Philadelphia from Germany with the expressed idea of starting a school for the blind.**

**An idea we are all celebrating today.**

# Philadelphia Line Embossed Print


- Samuel Howe of Boston School for the Blind was using embossed printing close to standard Roman characters
- **Julius Friedlander embossed in a system of all capital letters known as the Philadelphia Line. Later, William Chapin, added lower case letters.**
- The Missouri Institution f/t Blind was alone in the United States in 1861 using Braille type.
- The New York created its own dot code.

# William Bell Wait

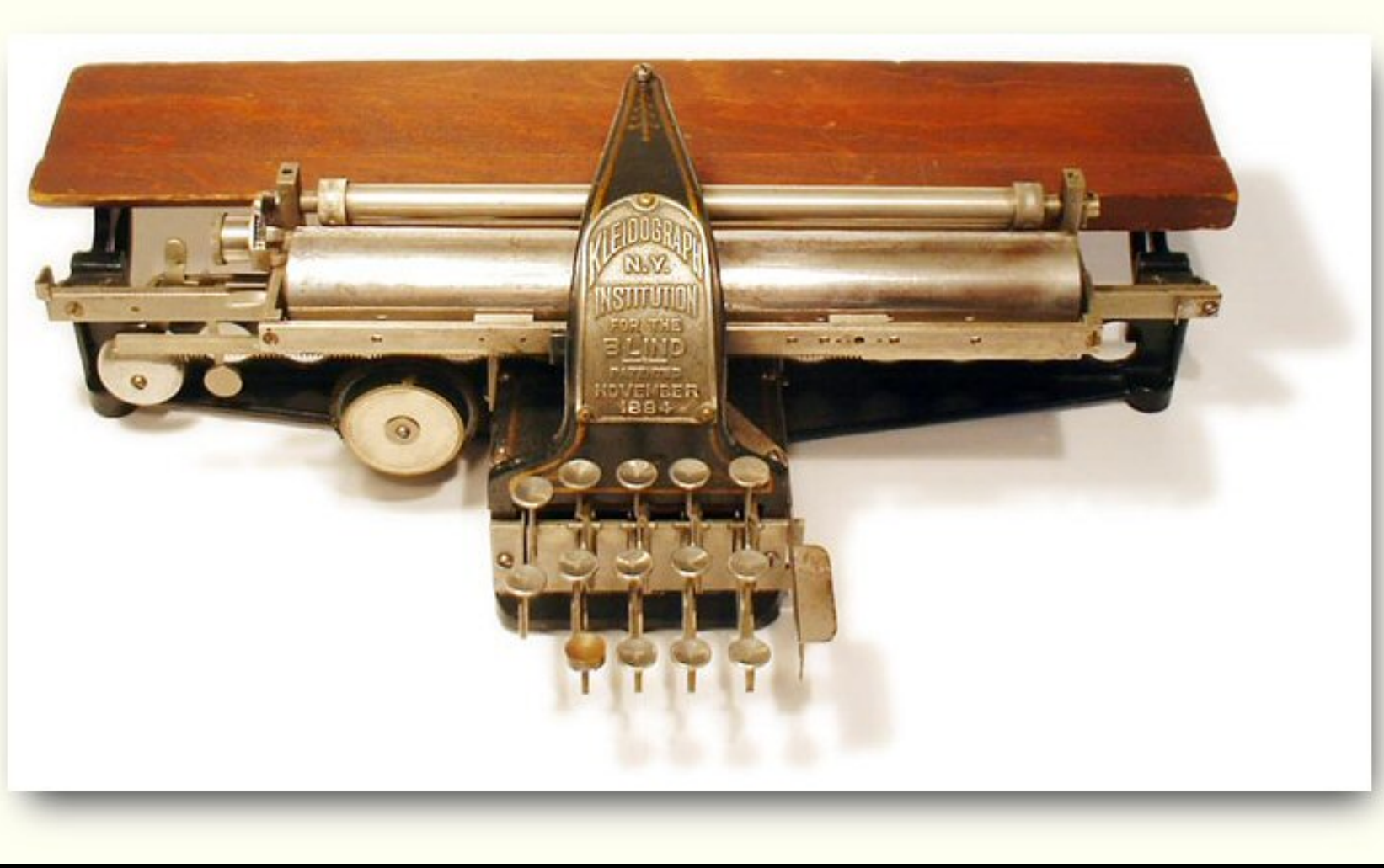


William Bell Wait

Inventor of the Kleidograph, a machine for embossing the New York Point system on paper.

- The Kleidograph was sold by the school and designed to be used with one hand leaving the other free to read.
- It uses the eight point alphabet not the six dots that the Braille alphabet uses today.

# The Kleidograph - 1894



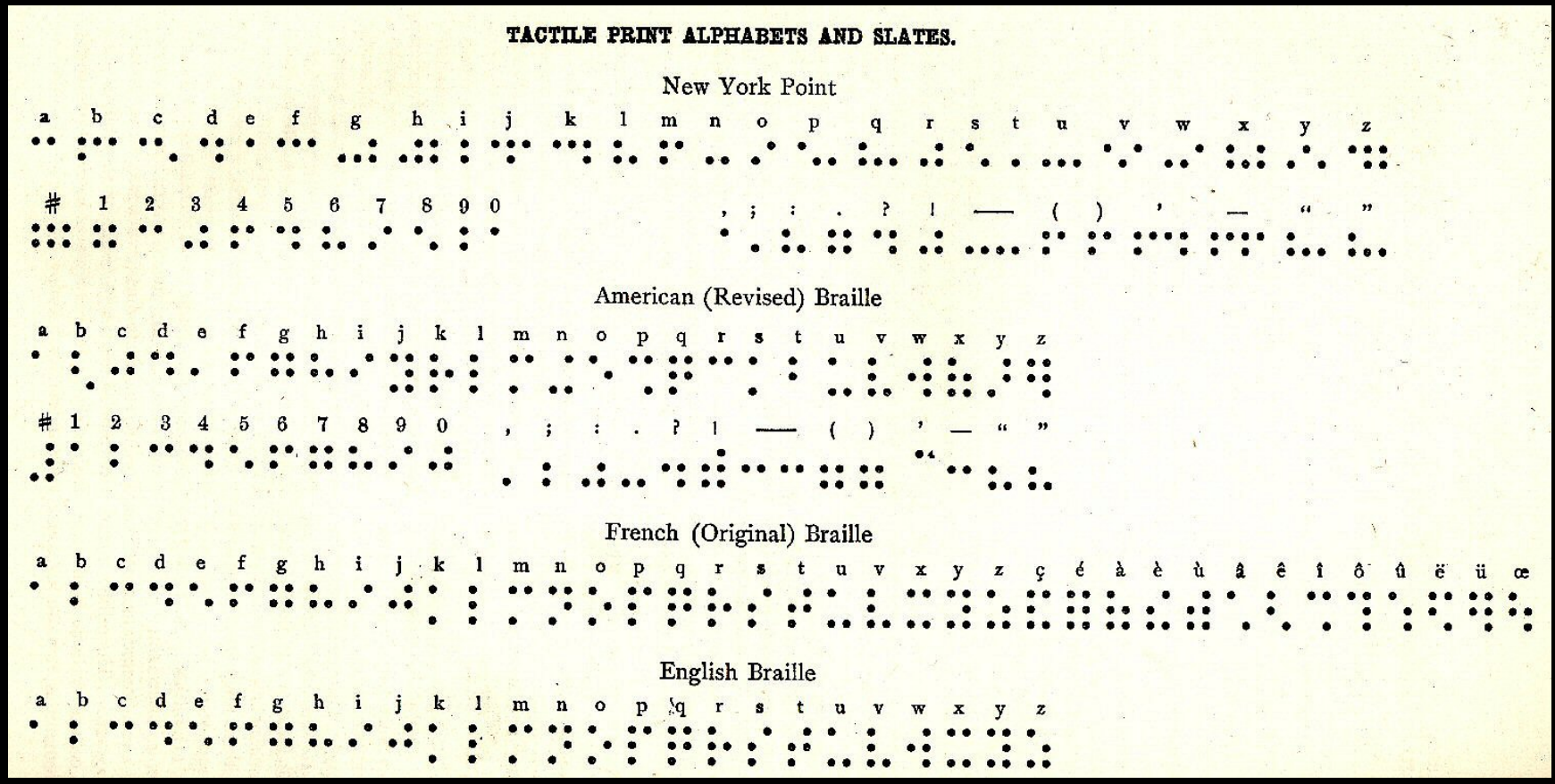
# New York Point

New York Point was widely used by schools for the blind in the United States in the late 1800s.

The 1910 US Census lists 57% of respondents using NY Point.

Mary Ingalls, the sister of Laura Ingalls Wilder author of the Little House books, learned New York Point and embossed letters at Iowa Braille and Sight Saving School in the late 1870s and 80s.

# War of the Dots



TACTILE PRINT ALPHABETS AND SLATES.

New York Point

a b c d e f g h i j k l m n o p q r s t u v w x y z

# 1 2 3 4 5 6 7 8 9 0 , ; : . ? ! — ( ) ' — " "

American (Revised) Braille

a b c d e f g h i j k l m n o p q r s t u v w x y z

# 1 2 3 4 5 6 7 8 9 0 , ; : . ? ! — ( ) ' — " "

French (Original) Braille

a b c d e f g h i j k l m n o p q r s t u v x y z ç é à è ù â ê î ô û ë ü œ

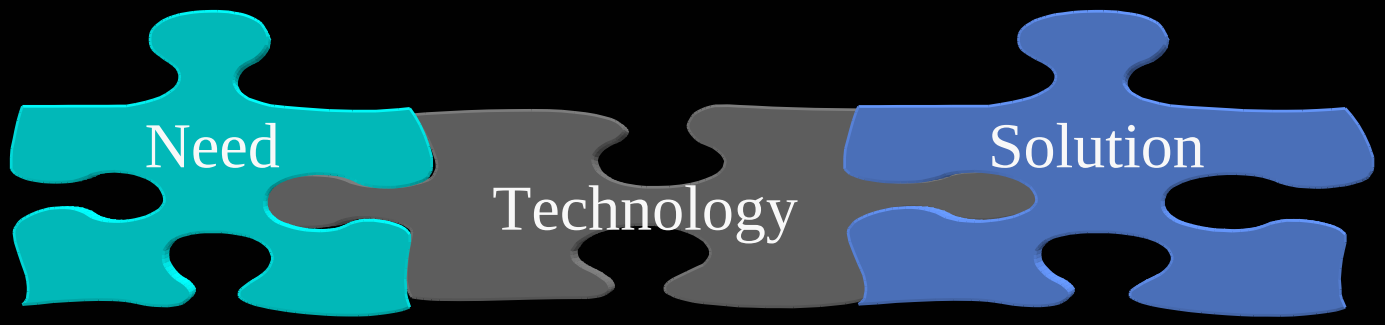
English Braille

a b c d e f g h i j k l m n o p q r s t u v w x y z

# Where we are today and how did we get here?

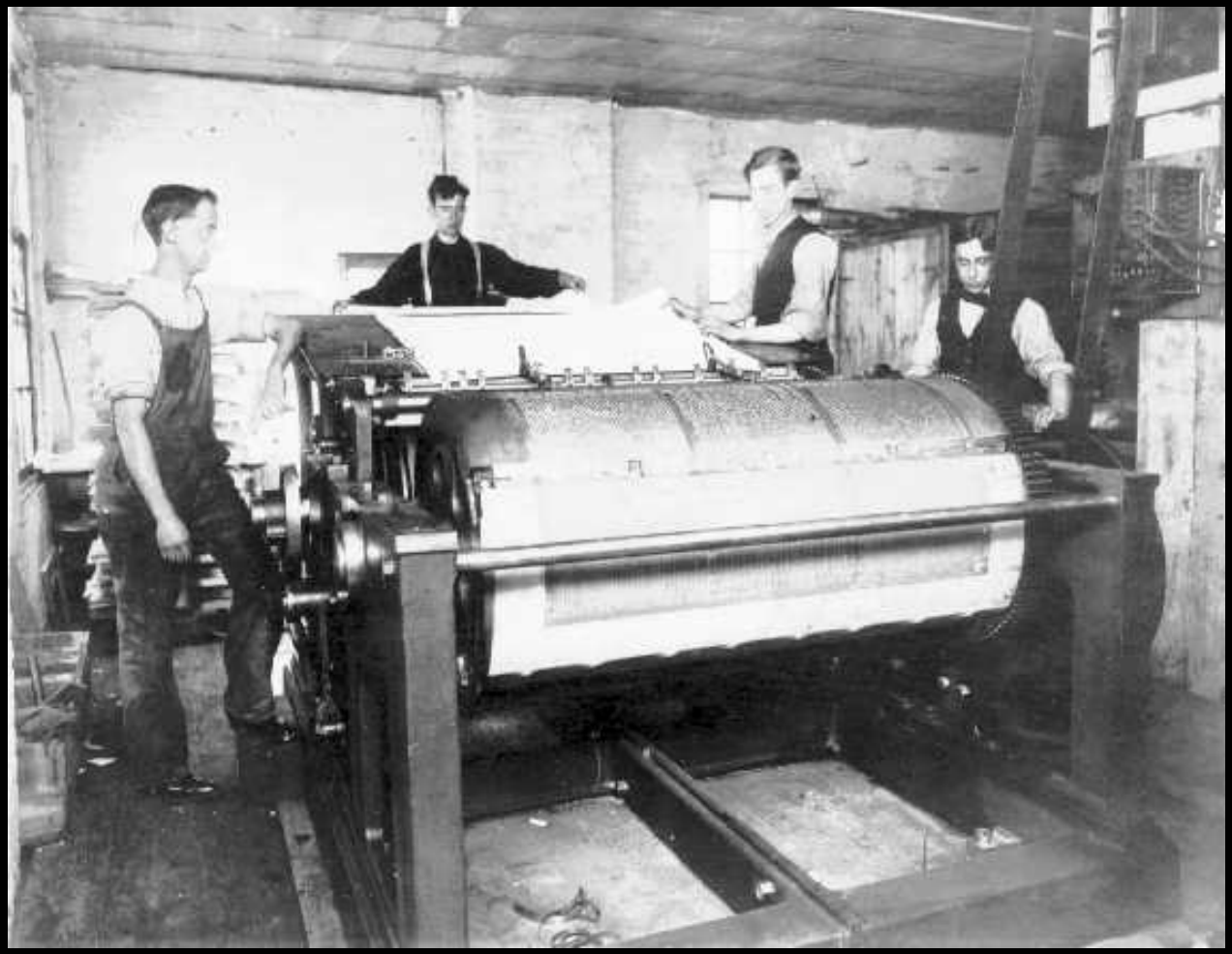
# Overview:
# Need + Technology = Solution

- There is a **need** that is not being properly served
- After years of experimentation, the **technology** has evolved to be time efficient
- The **solution** needs to be simple and intuitive



# Some things never change

# Production and Efficiency



# NY Point Printing Press

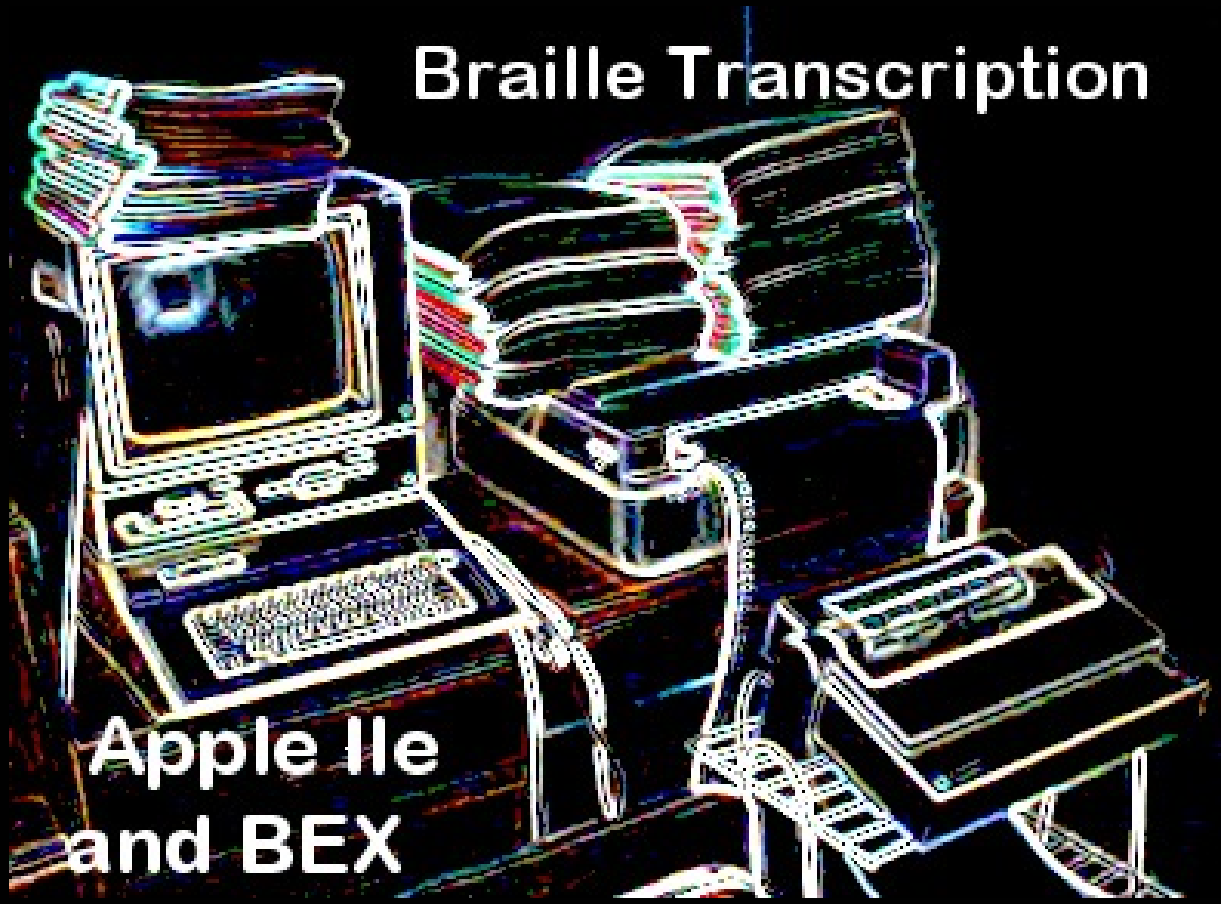
# A Need for Speed

- 300 characters per second
- Emboss 1000 pages an hour

$34,000

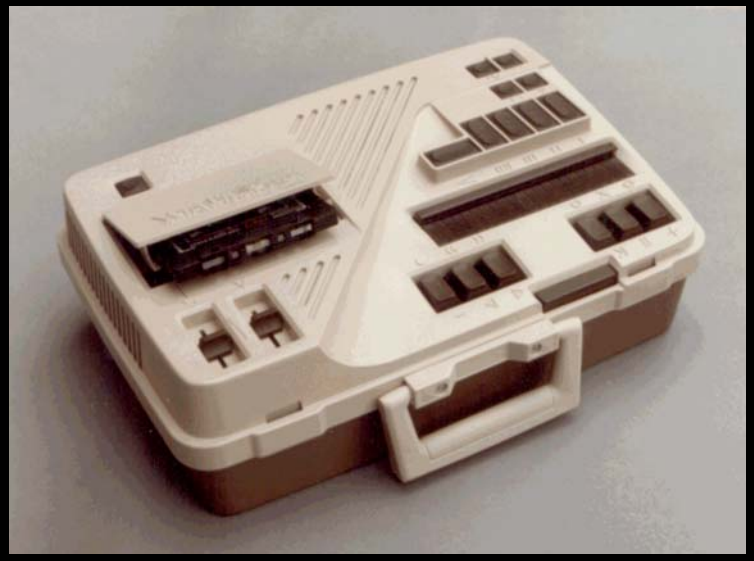
4waves PRO
Production Braille Embosser

# Apple II Production Using BEX




**Circa 1985**

# The original computer room - 1985

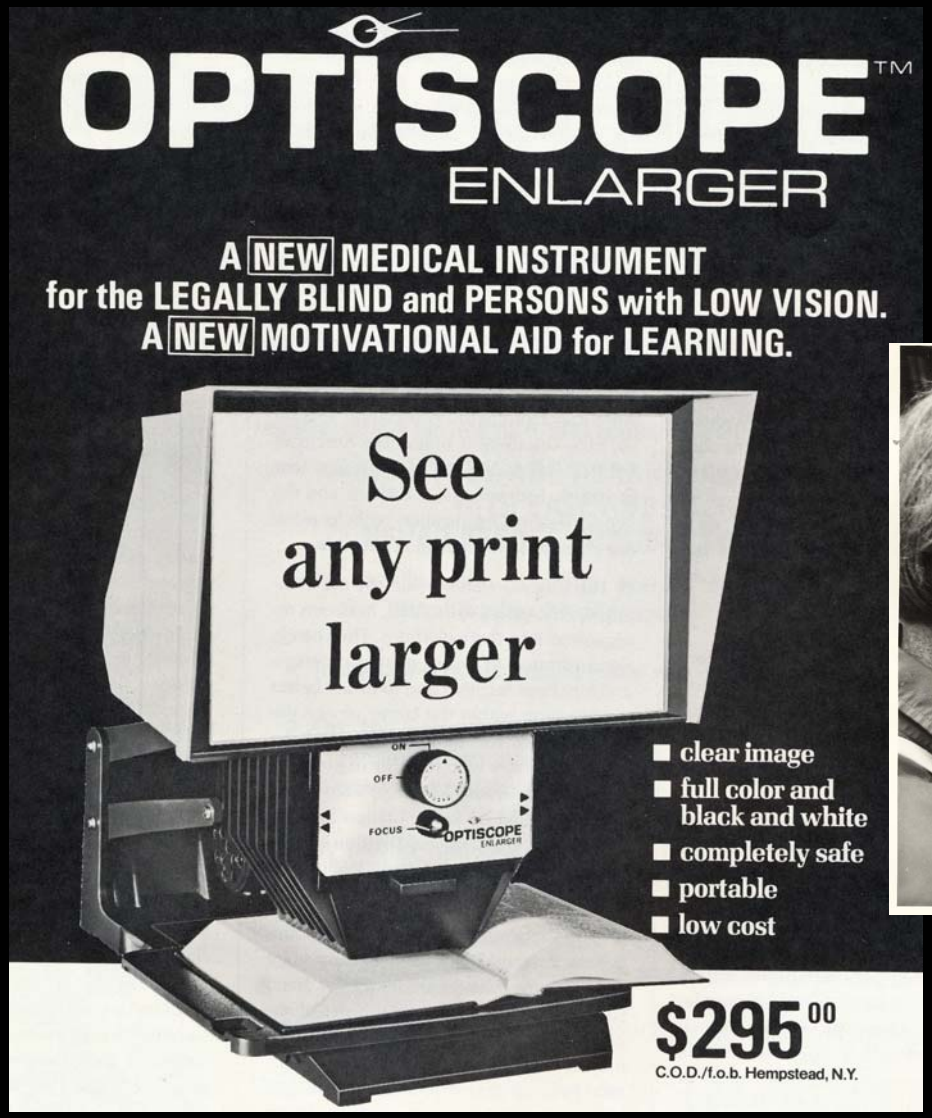


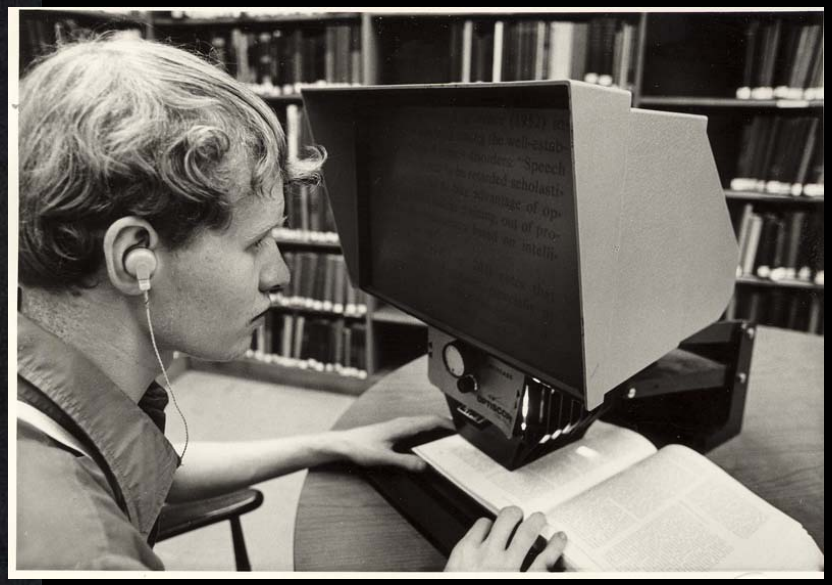
# Braille Devices

**Yes, we had laptops.**

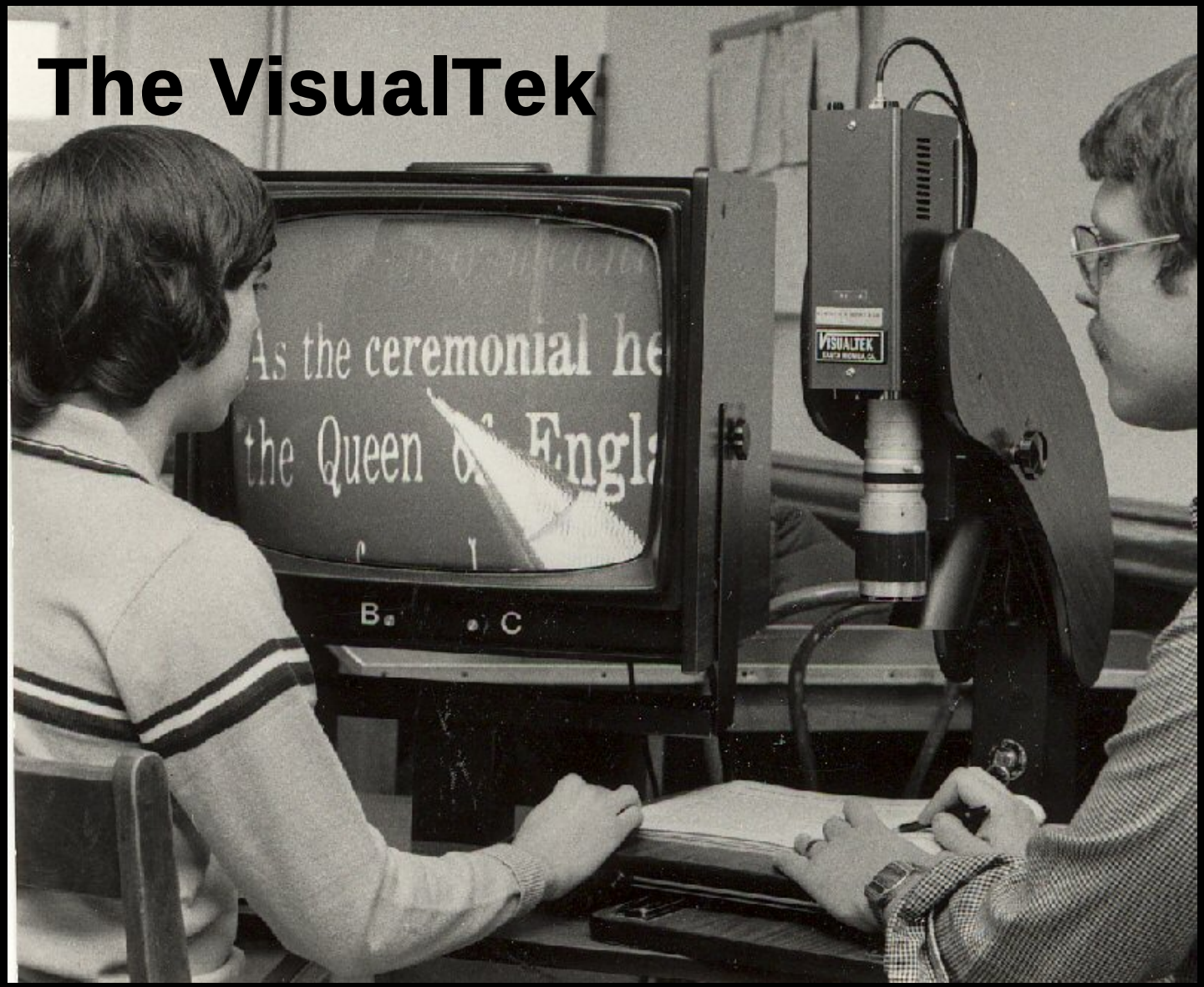
# Braille Devices

# 1972

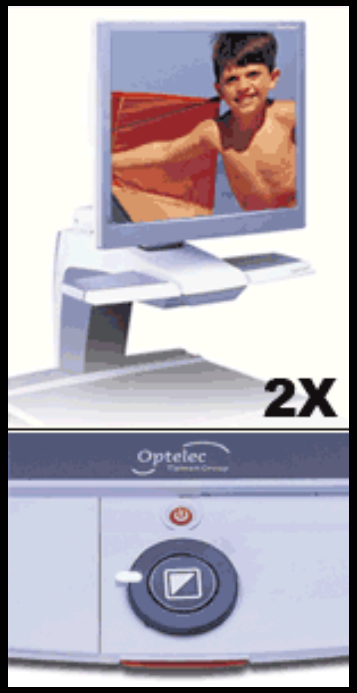

OPTISCOPE™
ENLARGER
A NEW MEDICAL INSTRUMENT
for the LEGALLY BLIND and PERSONS with LOW VISION.
A NEW MOTIVATIONAL AID for LEARNING.
See any print larger
clear image
full color and black and white
completely safe
portable
low cost
$295.00
C.O.D./f.o.b. Hempstead, N.Y.



# The VisualTek

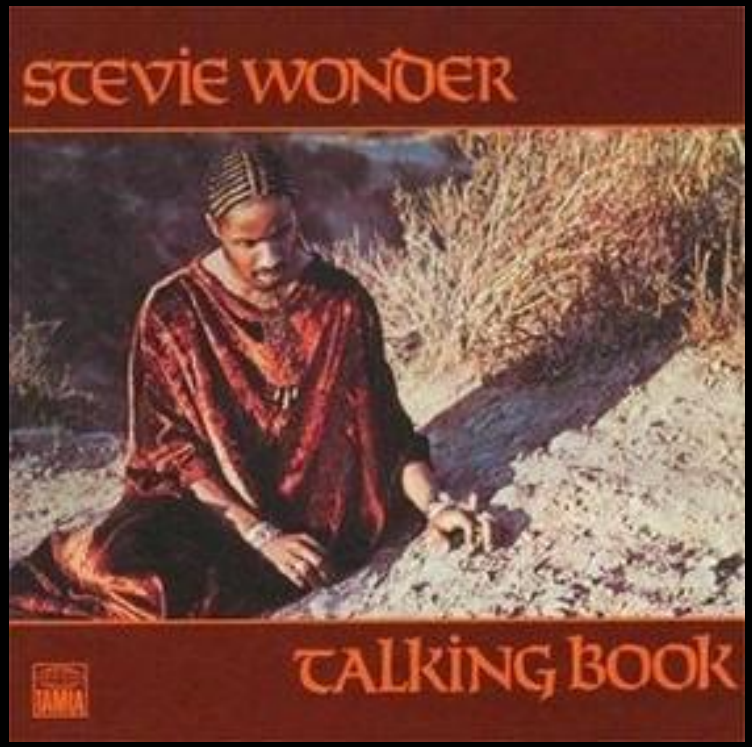


# Digital Desktop Video Magnifiers





# The Talking Book




In 1882, the PA Home Teaching Society and Free Circulating Library for the Blind were founded in Philadelphia and in 1899 was incorporated with the Free Library of Philadelphia.

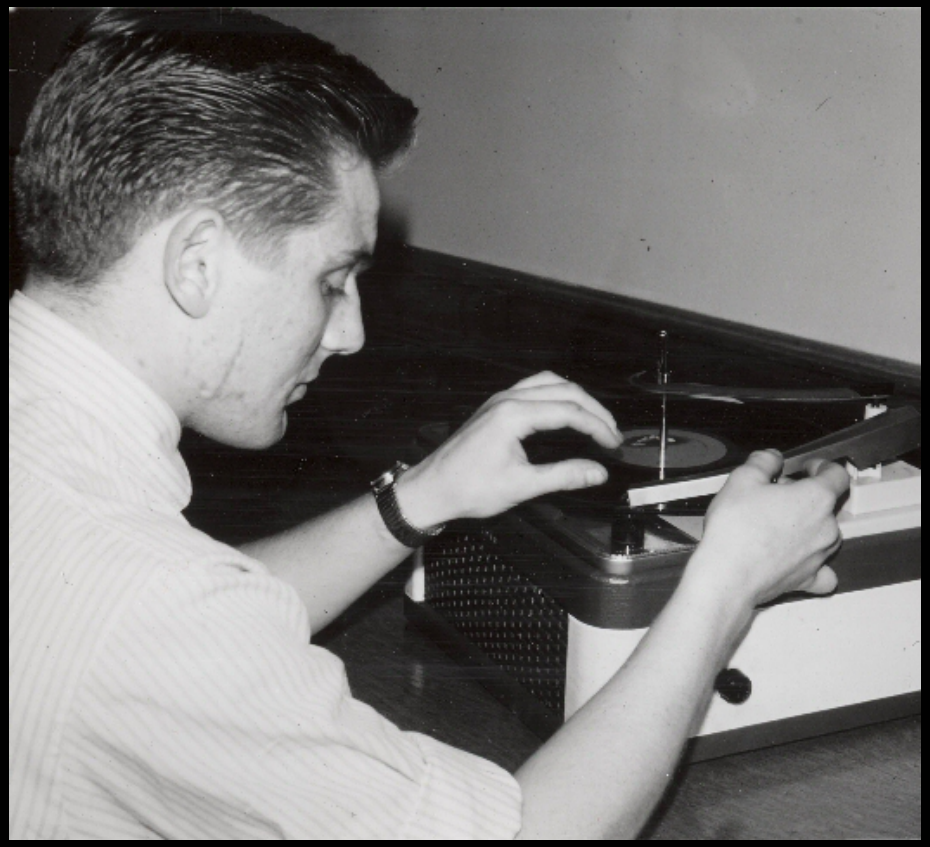
# The Talking Book Program

- Starting in 1934
- A typical book was 3 or 4 dozen 12 inch disks
- Turntable speed: 78 rpm.

Overbrook - 1954

- Playing time: 9 minutes

# **The Talking Book Program -** By 1963

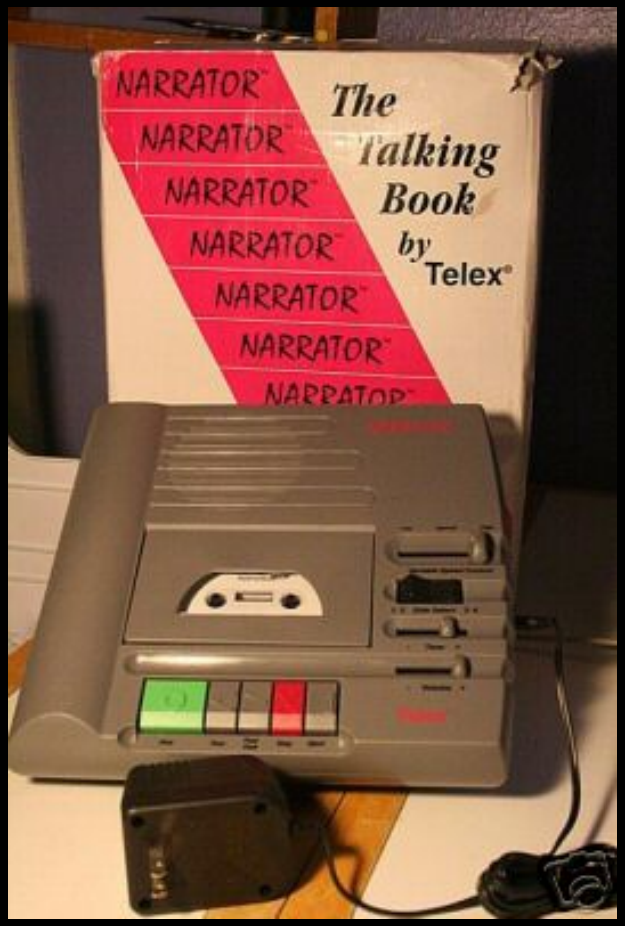


- 10 inch disks
  16 2/3 rpm
  90 minutes
  of playing time

- 12 inch disks
  8 1/3 rpm
  6 hours
  of playing time

# Tape Talking Book

- **1969**: Cassette Pilot program using 2 tracks
- **1977**: The first cassette title recorded at 15/16 ips on four tracks was put in circulation.
- This first title, ***Roots*** by Alex Haley, requires five cassettes. Each four-track tape cassette held 6 hours of playing time.



# Book on Compact Disc

Books such as **RFB&D's** AudioPlus have more than 40 hours of recorded material.

That means that a book traditionally recorded on 10 cassettes will now fit onto a single CD.

# DAISY formatted digital talking book CD player

- plays specially formatted 'Talking Books' CDs
- accepts standard CDs
- MP3 CDs

# $32 Million grant to expand digital books

- The online community enables book scans to be shared.
- Bookshare.org will cease charging schools and students to join as members.
- Immediate plans are to add more than 100,000 new educational books and materials to their existing collection of over 34,000 titles.

# 1976: Kurzweil Computer Products

- The first Kurzweil Reading Machine was around **$67,000**
- 64 Kb of memory

**1980's:** Kurzweil PC/KPR scanner, dedicated DECtalk synthesizer board, and DOS-based software

# 1992 - The Reading Edge

- A stand-alone and almost-portable reading machine was launched.
- $6,000
- A Kurzweil reading machine was finally falling into the range of possibilities for many consumers who were visually impaired.

# The Kurzweil today

- Kurzweil 1000 **$995**

- **KNFB Reader**
  Combining a digital camera with a personal data assistant (PDA)
- The Reader combines character recognition with text-to-speech technology, all in the palm of your hand - and it's completely mobile!
  **$2,595**

# Where we are going?

# The Teaching of typing and writing

# Vocational Training

# Career Development

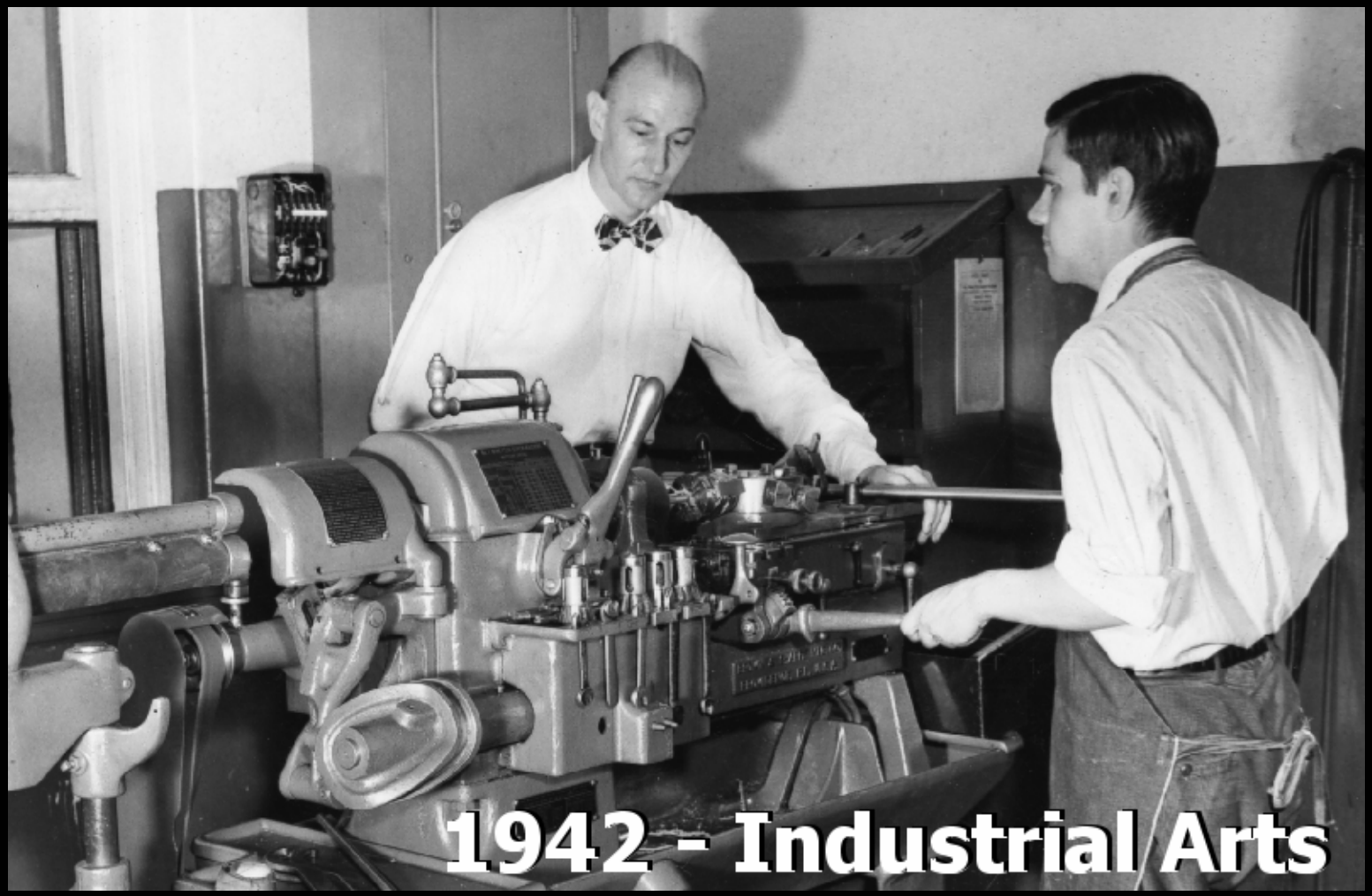
# College Preparation

**Valid goals of schools for the blind since their inception and today.**

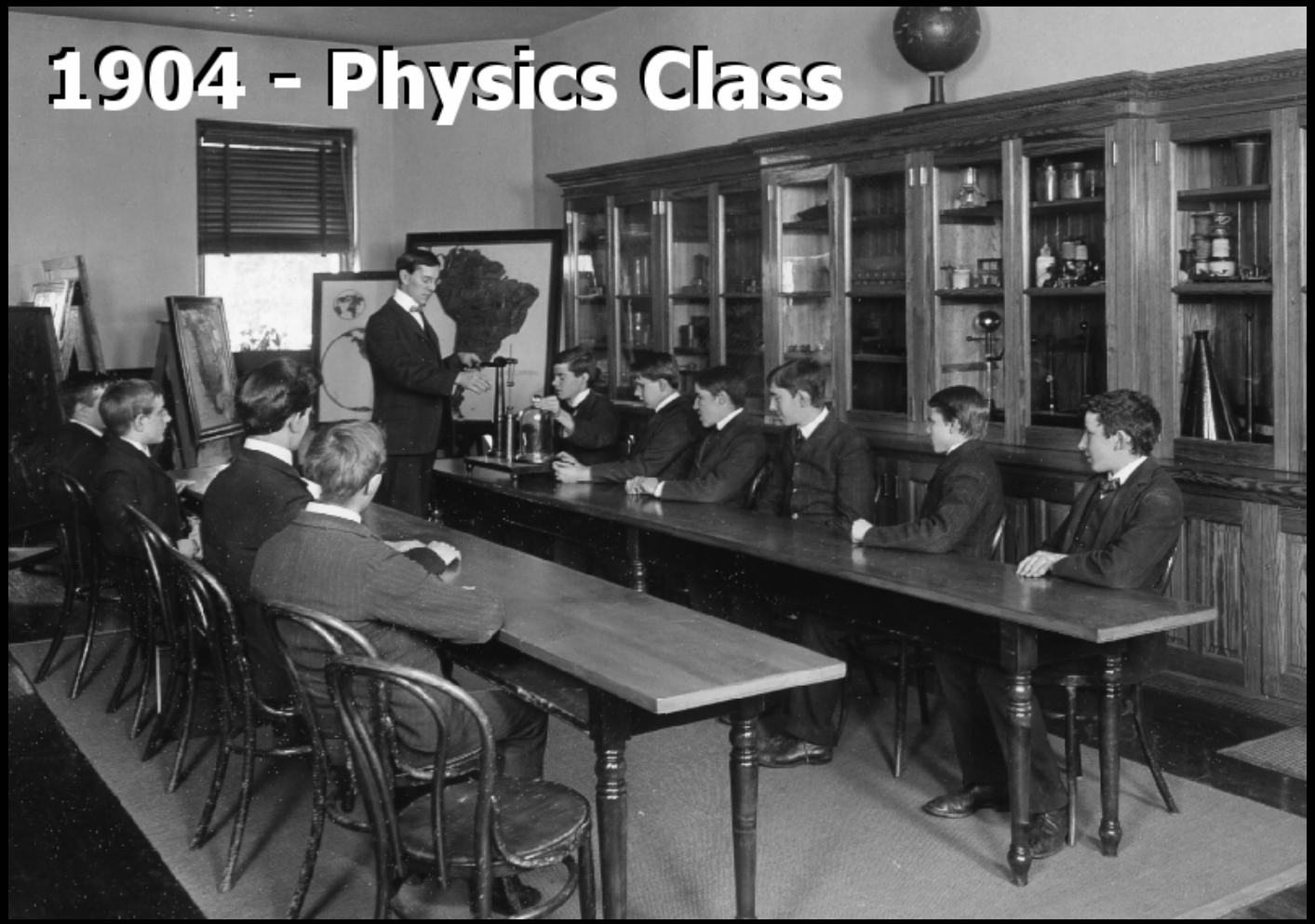
# Vocational Training

# Vocational Training

# Career Development



# College Preparation



# A Classroom from the past ...

**...was about preparing for the future.**

# A Classroom Today…

**…is for preparing for the future.**

# Learning from the past


# Looking to the future

# Keeping ahead of the curve


# Networking

## What will the future bring?

- Smaller! – faster! – cheaper?
- Disposables – trends come and go
- Transparency

# myReader

**$4995**

# Opal

**$795**


OPAL
Bacon, lettuce
roast beef on
or Swiss chees
Freedom Scientific

# Talking Graphics

**The Talking Tactile Tablet from TouchGraphics**



**IVEO tactile-audio system from Viewplus**

# Kurzweil–NFB Reader as featured on CNN, "Seeing is Believing".

# GPS Systems

Trekker Bluetooth
Humanware

BrailleNote GPS
Humanware

StreetTalk GPS
Freedom Scientific

# Where to Get More Information

This presentation is available at:
**http://www.nyise.org/osb175**

Blindness Resource Center
**http://www.nyise.org/blind.htm**

**Presenter: John Hernandez**
**jhernandez@nyise.org**

# References


- National Library Service for the Blind and Physically Handicapped . "NLS: That All May Read." . 30May2006. Library of Congress. 19Oct2007 <http://www.loc.gov/nls/about_history.html>.
- Stadelman, Joseph M. . "Catholic Encyclopedia: Education of the Blind ." The Catholic Encyclopedia. 1909 . Trinity Consulting. 19Oct2007 <http://www.newadvent.org/cathen/05306a.htm>.
- GPS Technology for the Blind, A Product Evaluation http://www.nfb.org/Images/nfb/Publications/bm/bm06/bm0602/bm060206.htm
- Clark, Leslie L.. Proceedings of the International Congress on Technology and Blindness. New York: American Foundation for the Blind, 1963.
- Willoughby, Edith. Overbrook School for the Blind (The Campus History Series). : Arcadia Publishing, 2007.
- Kurzweil, Ray. "Why I am Building Reading Machines Again by ." Braille Monitor Article. June 19, 1998. Kurzweil Educational Systems, Inc. . 19 10.2007 <http://www.ccs.neu.edu/home/elan/ray.html>.