

## Exhibit Addition: Loom to Computer

### Punch-Card Programmed Looms as Precursors of Contemporary Computers



1801 Jacquard Loom

As early as 1745, the Frenchman Jacques de Vaucanson had developed an automated loom using perforated cards to select warp yarns.

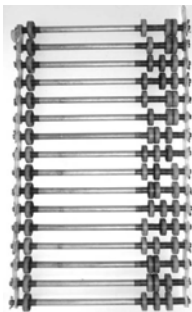
Jacquard improved his design using punched cards with encoded fabric patterns with a binary system, where a punched-out hole represented a "0" and lack of hole represented a "1". The punched-out holes on a series of cards attached by a string controlled the loom parts that wove patterns of intricate designs.

Nineteenth century inventions by Charles Babbage (1791-1871) and Herman Hollerith (1860-1929) incorporated Jacquard's punched-card technology. Ada Lovelace (1815-1852) wrote the primary text explaining computer programming in 1843. In 1980, the Defense Department named a computer language "Ada" in tribute to her.

Hollerith, working on the 1880 U.S. census, examined Jacquard's loom for mechanical ways to tabulate population. He found punch cards an efficient way to store information, enabling the completion of the 1890 census in 3 months versus 2 years of hand counting. His 1896 Tabulating Machine Co. became Computer Tabulating Recording Co. (CTR) in 1911, the year Thomas J. Watson Sr. (1874-1956) joined the company. Watson saw the value of Hollerith's punch card machines; indeed, punch-card technology has had many applications.

As CEO in 1924, Watson changed CTR's name to International Business Machines Corporation (IBM). Watson's management skills and emphasis on research contributed to the later development of contemporary computers which use more sophisticated programming technology.

On the 1910 loom in the Mill Museum, a chain of knobs rotates through the loom, causing the loom frames to raise and lower to achieve various color or weave patterns. The knobs, held in place with cotter pins, can be re-arranged according to a designer's cartoon or design pattern. Contributors to the Loom to Computer exhibit were Manuel Parente, IBM, & IBM Archives, supported by Merlin Acomb.



Joseph-Marie Jacquard (1752-1834)

Jacquard, a silk weaver in Lyon, France invented a programmable loom that revolutionized the textile industry and led to the development of the first computer.

### Review of a 2009 Autumn Tour

My 20 freshmen students and I enjoyed our seminar at the Mill Museum. The course is Due North: An Introduction to Canada. Our main focus is history, but we also touch geography, politics and culture. This session allowed us to discuss the French-Canadian experience in New England in the late nineteenth-early twentieth century.

We began at the panoramic photo/circa 1920 in the hallway to get our bearings on industrial Winooski, then walked on down to the lower falls to chat through the importance of the falls/power source in the settlement/development of the town across the years. Rich fall color and a perch on the ledge below the falls made for a lovely way to spend part of a late afternoon. We began at the panoramic photo/circa 1920 in the hallway to get our bearings on industrial Winooski, then walked on down to the lower falls to chat through the importance of the falls/power source in the settlement/development of the town across the years. Rich fall color and a perch on the ledge below the falls made for a lovely way to spend part of a late afternoon.

Back at the museum, I gave the students 20 minutes to wander through the exhibits. They gravitated to the power model and the many fine photos of mill work, and they enjoyed trying their hands at the hand looms.

Then it was an hour's discussion of the French-Canadian experience in New England, while seated on the museum floor (which was perfectly comfortable). Our discussion focused on primary sources I had handed out the week earlier, and on which the students had written papers.

I remain very grateful that a corner of the Champlain Mill has been set aside to remember the original use of this old brick structure and the life and times of a Vermont mill town. *David Massall, UVM associate professor of history*

### New Members Join Héritage Winooski Board

Larry Williams, co-owner of the Chace Mill and the former carbonizing plant on West Canal St., has joined the Advisory Board. Other newcomers: Jeff Badillo, Saint Francis-Xavier history teacher; Dona Brown and Willard Randall, history professors at UVM and Champlain College respectively. Other board members represent Saint Michael's College, the Woolen Mill, Winooski Historical Society, City of Winooski, Winooski One Hydroelectric Station and Winooski Public Schools.

### From the Notebook:

MY MOTHER, PRISCILLA PARENT HAWLEY  
SHE WAS A WEAVER SHE STARTED  
AS A VERY YOUNG GIRL AT 11 YEARS OLD  
AND WORKED FROM 6 OR 6:30 AM UNTIL  
2:30 PM. MY BROTHERS USED TO BRING  
HER LUNCH AS THEY HAD TO WORK  
STEADY. SHE RAN 4 LOOMS  
(MACHINES AT ONE TIME) AND  
EVERY THING HAD TO BE PERFECT  
MAKING ARMY BLANKS. ANY MISTAKES  
THEN IT HAD TO BE UNDONE AND  
RE-STARTED FROM BEGINNING.  
DAVID HAWLEY

Mill Museum Hours

Tues - Fri 10 a.m. - 6 p.m. Sat 10 a.m. - 1 p.m.