

Application Specific Punched Cards

By Douglas W. Jones

A Burlington Northern Detail Card

LOCALLY PRODUCED DETAIL CARD

BURLINGTON NORTHERN INC. 17002

STATION TO STATION CARD

The Burlington Northern began operation in 1970, when use of punched-cards was the expected tool for data processing. Use of punched cards in the railroad business predates the use of computers. It was common to punch one card for each car or truck trailer being hauled by rail. These cards indicated everything about the car or trailer that was relevant to the make-up of the train, and the deck of cards describing the train, the train-list, was routinely hauled in the caboose. On arrival at a railroad yard, the train-list was sorted on an electromechanical sorter in order to determine which cars should be delivered to what track in the yard, and then additional sorting procedures were followed in order to select cars from the various tracks to be made up into outgoing trains. A high resolution scan is available.

A Conrail Movement and Route Card

CONRAIL REV. 1-77

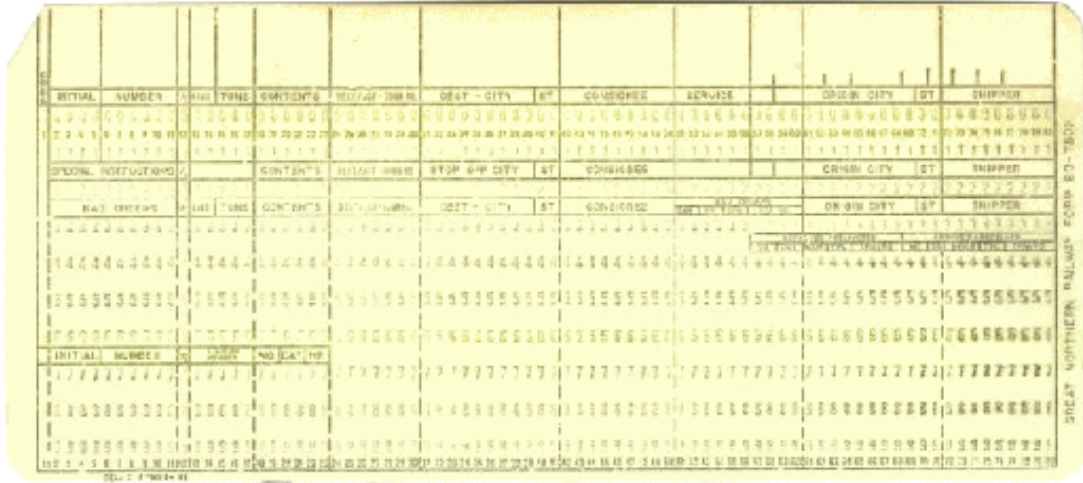
Conrail corporation began operation in 1976, somewhat late in the punched-card era. Punched cards were such an effective approach to train-list maintenance that as computers replaced

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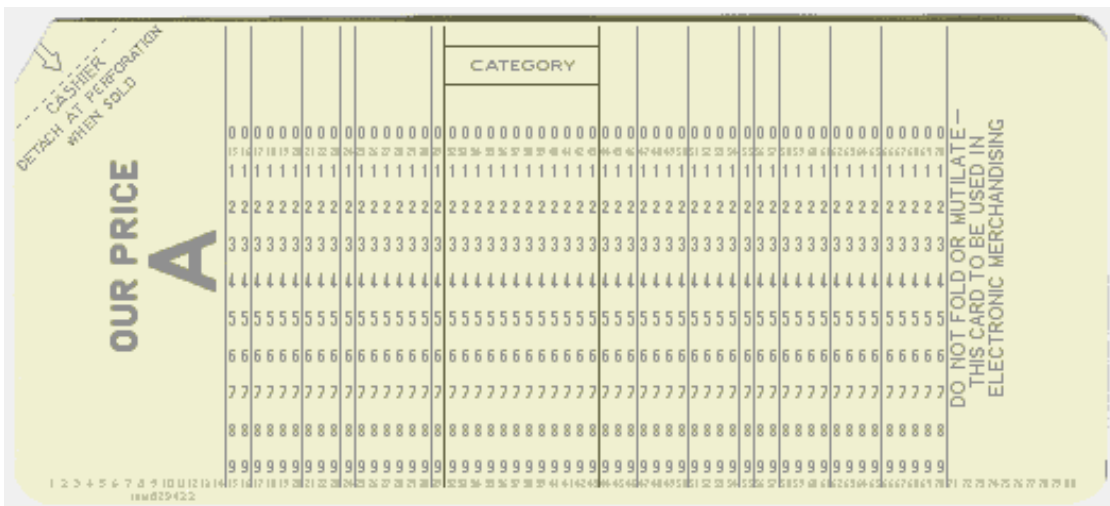
electromechanical equipment, the underlying procedures remained almost unchanged until networking eliminated the need to physically haul the train-list along with the train. A high resolution scan is available.

A Great Northern Railway Form



The Great Northern was an ancestor of the Burlington Northern, so this card must predate the 1970 merger that created the BN. As such, this card dates from the era when punched-card data processing was unquestioned as the symbol of high-technology as applied to the railroads. A high resolution scan is available.

A generic retail sales card

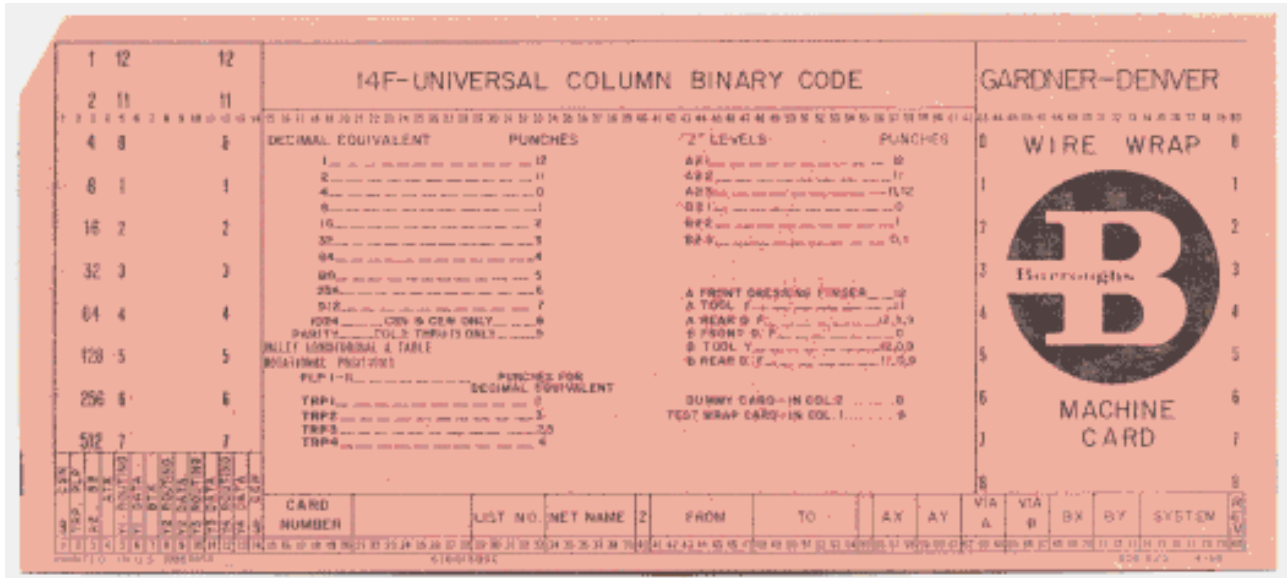


This card was apparently sold for a generic retail application. The legend "Do not fold or mutilate" makes it clear that the card was not intended for the sheltered world of the data-processing center, but was to be handled by untrained members of the public. A card with the upper left corner removed along the perforated line, following the instructions to the cashier in the upper left, would read as if it had been punched in column 1 row 12.

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A Gardner Denver automatic wire-wrap machine card



Gardner Denver Corporation, founded in 1859, is a major manufacturer of heavy industrial equipment. In the early 1960's, Gardner Denver developed the wire-wrap machine. In the decade following 1965, wire-wrap technology was probably the dominant technology for wiring the backplanes of both mainframes and minicomputers. Burroughs, Digital Equipment Corporation and IBM were among the major users of wire-wrapped backplanes. One of the last major systems to use wire-wrap technology was the Patriot anti-missile system that was the center of much publicity during the Persian Gulf War.

In use, the wiring pattern of a backplane would be specified by a deck of punched cards, where each card gave the coordinates of the start and end of one wire. The Gardner Denver 14F wire-wrap machine was fully automatic, but not always successful -- the operator was responsible for noticing when it miswrapped a connection and correcting the problem. Earlier wire-wrap systems were semi-automatic; in those, the wire-wrap machine would automatically cut and strip the wire and position the wire-wrap tool over each pin to which the wire was to be connected; the operator would then handle the fine details of pressing the tool onto the pin before the machine finished wrapping the wire in place. However wire-wrap connections were made, the result was a highly reliable solderless joint.

Mike Depot, maintained Gardner-Denver wire-wrap machines in the late 1980's and early 1990's, sent me the attached images of the manual for the model 14F wire wrap machine. The cover, the the card reader. It is worth noting that the card reader shown is a model 026 keypunch with the numeric-only keyboard option; this keypunch dates from the early to mid 1960's, yet the manual was still in use over 20 years later! Heavy industrial machinery frequently has a useful lifetime far longer than that we usually associate with computer systems.

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A UNIVAC Customer Engineering Service Report card

The image shows a single punched card from a UNIVAC system. The card is yellow with green text and features 45 columns of round holes. The card is divided into several sections. At the top, there are fields for 'OFFICE NO.', 'CUSTOMER NO.', 'ADDRESS', 'CITY & STATE', 'TYPE', 'DATE', and 'TIME'. Below these are fields for 'METER READING (SCALE 100)' and 'TOTAL BILL'. The central part of the card is a large area for reporting, with the text 'CUSTOMER ENGINEERING SERVICE REPORT' printed in large green letters. At the bottom, there is a 'SIGNATURE' line. The UNIVAC logo is visible on the left side. The card is numbered '100-498' on the right edge.

This card is punched using 45 columns of round-holes, the original Hollerith format, as adapted by Sperry/UNIVAC to store 90 columns of 6-bit data. In this case, the card is designed to hold a report of a service call by a Sperry/UNIVAC field-service engineer to a customer site, so the card has spaces for the engineer to report on expenses and parts required to fix the customer's computer. A high resolution scan is available.