

NCR Corporation

Address:

1700 South Patterson Boulevard
Dayton, Ohio 45479
U.S.A.

Telephone: (937) 445-5000

Fax: (937) 445-1682

<http://www.ncr.com>

Statistics:

Public Company

Incorporated: 1900 as National Cash Register Company

Employees: 33,100

Sales: \$6.51 billion (1998)

Stock Exchanges: New York

Ticker Symbol: NCR

NAIC: 333313 Office Machinery Manufacturing; 334111 Electronic Computer Manufacturing; 334119 Other Computer Peripheral Equipment Manufacturing; 51121 Software Publishers; 541512 Computer Systems Design Services; 811212 Computer & Office Machine Repair & Maintenance; 339944 Carbon Paper & Inked Ribbon Manufacturing; 323110 Commercial Lithographic Printing; 323116 Manifold Business Form Printing

Company Perspectives:

With over 100 years of experience meeting the needs of consumer-oriented businesses, NCR partners with businesses to transform transactions into relationships.

Company History:

When National Cash Register Company was formed during the last two decades of the 19th century, it had one product--cash registers. Today NCR Corporation, as it is now known, develops and markets a wide range of computer and terminal systems; office automation products; automated teller, data warehousing, and telecommunications services; semiconductor components; software; and business forms and supplies. Among NCR's claims to fame are its introduction of bar code scanning in 1974, its position as a world leader in paper roll products for cash registers, and the fact that fully 40 percent of the checks issued around the globe are cleared with NCR equipment.

Origins

NCR's first years were shaped in large part by John Henry Patterson, who was president from 1884 to 1921. Patterson's early emphasis on sales, his initiation of business practices that became standards for other companies and industries, and his pioneering efforts in industrial welfare made NCR a role model for other companies during the late 1800s and early 1900s.

While running a dry goods operation in Ohio during the early 1880s, Patterson found he was losing money because not all sales were being reported by his clerks. When Patterson learned of a device called a cash register, he ordered two from James and John Ritty, who had recently established a Dayton, Ohio-based company called National Cash Register. In

1882 the Rittys sold part of their company and renamed it the National Manufacturing Company.

Patterson, meanwhile, was reaping such financial rewards from the use of his cash registers that he bought stock in the Rittys' company. He eventually joined the board of directors and suggested that the company use nationwide marketing techniques to sell its cash registers. Patterson's ideas met with opposition, and in 1884 he bought additional stock and took control of the company. Once president, Patterson again named the company National Cash Register Company and moved quickly to change NCR's emphasis from manufacturing to sales. His interest in sales led to the concept of quotas and guaranteed sales territories for agents. Patterson also provided his agents with sales seminars, training brochures, and scripted sales pitches, and required them to wear white shirts and dark suits. All of these practices were new at the time but soon became widespread at other companies.

Cash register sales responded almost immediately to Patterson's techniques. Sales more than doubled to 1,000 machines a year by 1886, while by 1888 the number of NCR employees had grown from 12 to more than 100. About this time Patterson also began to produce various forms of printed advertising. Beginning in the late 1880s, prospective customers were inundated with weekly or monthly advertising circulars and direct-mail letters describing products. Employees' publications were introduced to bolster communication and enthusiasm about meeting sales quotas. *Output*--the first employee newspaper--listed sales, discussed the benefits of cash registers, and printed encouraging words from satisfied customers.

Poor economic conditions in the 1890s affected many companies in the United States, including NCR. Between 1892 and 1897 the company's production was reduced and employees worked scaled-down weeks. The company also looked more closely at the manufacturing side of business: a system of interchangeable parts for cash register models was introduced, streamlining production and trimming overhead.

In 1894 NCR constructed a new and larger "safety-conscious" facility in Dayton with the aid of bank loans. The following year Patterson hired Thomas J. Watson, who rose quickly through the sales ranks to become a sales manager in New York and later became part of an inner circle of Dayton executives. It was Watson who led the campaign to reduce competition, including a massive advertising blitz as well as an adamant defense of patents. By 1897 NCR's competition had been reduced to three companies, down from more than 80 a decade before.

In 1900 NCR reported the sale of its 200th cash register. It now employed a record 2,269 people. That same year the company was chartered as a New Jersey corporation for the purpose of selling stock. Construction of a ten-building facility began in 1906, and overseas operations, which had been established in the 1880s, were growing as well. In a company publication, NCR boasted that its sales force extended from Norway and Alaska to New Zealand and China, with nearly 1,000 agents in more than 270 offices.

First Electric Cash Register in 1906

In 1906 a young inventor named Charles F. Kettering gave the company its first electric cash register. Kettering, who had been hired just two years earlier, also developed NCR's Class 1000 machine, a low-cost redesigned register that remained in production for nearly 40 years with only minor changes. Kettering left the company in 1909 to join the automotive industry.

Spurred by the success of Kettering's cash register and the Class 1000 machine, sales continued to climb throughout the early 1900s. By 1911 NCR had sold a million machines. The company's aggressive battle to secure patent rights and fend off competition led the American Cash Register Company to file an antitrust complaint based on the Sherman Antitrust Act, a federal law prohibiting the monopolistic restraint of trade or commerce. In

1912 the government brought NCR to trial and presented 32 cases of alleged trade interference. The following year Patterson, Watson, and 20 other officers were found guilty of trade restraint and unlawful monopoly in three of those cases. (The decision would be reversed two years later by a higher court.) In 1913, however, Watson left the company after a falling out with Patterson.

The Dayton Flood of 1913 brought more attention to NCR. Under Patterson's leadership, the company responded to the flood by suspending all operations and providing relief shelter in company facilities.

Shortly thereafter, during the early stages of World War I, NCR continued to make cash registers while involved in wartime production contracts with the government. By 1919 the company was operating almost solely on a wartime production basis.

The 1920s marked NCR's gradual entrance into its accounting machine era. NCR already had proved its dominance in the cash register field, having controlled more than 95 percent of that market prior to the outbreak of the war. In 1921 NCR announced its Class 2000 itemizer, which provided 30 totals and embodied what the company believed were the best features of all previous registers. John Henry Patterson passed the reins of the company presidency in 1921 to his son Frederick Beck Patterson, who also assumed the duties of the chairman of the board after his father's death a year later.

Frederick Patterson exercised voting control over NCR after the death of his father, while comptroller Stanley C. Allyn and director John H. Barringer led the company's first major diversification drive. NCR's profits rose from \$2.8 million in 1921 to \$7.8 million in 1925. Because of its success, the company went public with stock sales for the first time.

The 1920s were good years for office equipment firms. After 1925 competitors made inroads into the cash register market, while NCR failed to introduce new products. Sales flattened for NCR, and by 1928 Remington Rand topped the list of business machine companies, taking in \$59 million to second-running NCR's \$49 million. Young IBM was fourth at the time with \$19 million reported in sales.

Struggling During the Great Depression

In attempts to hasten the diversification drive, NCR purchased the Ellis Adding-Typewriter Company in January 1929. That same year the company announced the Class 3000, NCR's first hybrid machine, which represented an advance in the area of payroll, billing, and accounting operations. The promise of the new machine was dampened by the Depression later that year. Sales and earnings plunged while the company began a four-year process of cutting the number of its employees in half. With NCR nearly bankrupt by 1931, New York bankers Dillon, Read and Company, who had set up the 1925 stock sales, were ready to invade the company. In response, NCR's board of directors sought out Edward Deeds to take control of the company, and Frederick Patterson agreed to step down as chairman in 1931. Patterson remained as president until Deeds assumed that additional post in 1936; it was Deeds who turned things around for NCR.

Joining the company at the beginning of the century, Deeds had been put in charge of engineering and construction for a new factory. By 1910 he had become vice-president. Deeds left NCR for Delco in 1915 and later helped found the Wright Airplane Company with Orville Wright, Charles Kettering, and H.E. Talbott. Deeds's success by 1931 was evident, as he sat on the corporate boards of 28 companies.

Shortly after Deeds took control, the company purchased the Remington Cash Register Company, whose assets strengthened NCR's position. In 1934 the company moved back into the black. Despite broad price fluctuations, by mid-decade sales were stabilizing and overseas operations were expanding in Great Britain, Europe, Central America, South America, and the Middle East and Far East. By the end of the decade NCR was third in the

business machine field behind Remington and fast-climbing IBM. NCR in 1939 earned \$12 million less than it had the year prior to the Depression. In 1940 Stanley Allyn assumed the post of president, while Deeds continued to serve as chairman and chief executive.

Effects of World War II and Its Aftermath

World War II had a significant impact on NCR, as well as on other data processing and business machine companies, spurring the conversion from office tabulating equipment to data processing. By the time the United States entered the war in 1941, NCR's expansion into Central America and South America in the 1930s had gained importance, helping to offset the wartime reduction or elimination of operations in Japan, Germany, and Australia. For the next few years the sale of rebuilt machines was the only business NCR continued in countries directly involved in the war. By 1942 the U.S. War Production Board halted the manufacturing of all cash registers to conserve metal.

Wartime contracts for such items as bomb fuses and rocket motors covered NCR's overhead during the war, while reconditioning of machines provided modest profits. The company's in-house electronics research program, established prior to World War II, was utilized by the U.S. Navy during the war years. NCR built a computerlike device to calculate bombing navigational data. It also worked on a secret operation to assist the Navy in breaking the German ENIGMA communication cipher. Dubbed "the Bombe," the mechanism was actually a high-speed electromechanical decrypting machine; about 120 Bombes were built during the course of the war.

By the war's end a pent-up market for cash registers and accounting machines resulted in a hiring surge for NCR in Dayton. Business boomed after the war. Between 1946 and 1949 NCR reestablished itself in war-torn areas of the United Kingdom, West Germany, and Japan. Improvements and expansion continued into the early 1950s, with a rebuilt plant in Australia, a new factory in Toronto, and new office buildings in Hawaii and Mexico.

Entering the Computer Business in the 1950s

NCR continued its electronics work after the war and in 1952 secured a defense contract for a bombing navigational computer. That same year the company entered into a stock purchase agreement with Computer Research Corporation, which became its electronics division the following year. Development of a computer designed for scientific work had limited impact, and the company's role in the computer industry remained conservative in the mid-1950s. But the 1956 introduction of the Post-Tronic, an electronic posting machine for banking, was successful. Sales of the Post-Tronic eventually passed the \$100 million mark before the machine passed out of use near the end of the 1960s.

With NCR on the edge of a new era, the aging Deeds retired as chairman in 1957 and was succeeded by Allyn. Robert S. Oelman, who had been instrumental in procuring wartime contracts as a company vice-president, became president. Later that year NCR announced the 304, a general purpose computer based on solid-state technology. A few years later, in 1960, NCR's first "small" computer--the 390, manufactured by Control Data Corporation (CDC)--made its debut.

In the early 1960s NCR increased its development of computers, as well as peripheral devices and software. In 1962 Oelman became chairman of the board, and R. Stanley Laing was named president two years later. Mid-decade saw NCR continue to operate under a split sales strategy, targeting its old customer line as well as new customers in the data processing market. NCR's computer-related products were successful, but its innovations still remained conservative; the company's marketplace continued to revolve around banking and retailing.

By the end of the 1960s NCR often was referred to as one of the "Seven Dwarfs" because of its relative position of inferiority to IBM. Joining NCR in these ranks were General Electric

(GE), RCA, Burroughs, UNIVAC, CDC, and Honeywell. With GE and RCA bowing out of the computer field in the early 1970s, the five remaining companies became known as the BUNCH, an acronym made up of the first letter of each name.

NCR announced its third generation of computers in 1968 with the introduction of the Century Series, which included a variety of business applications and allowed NCR to market its wares to a broader customer base. NCR's failure to take advantage of new conditions calling for terminals and software cost it some market share and resulted in a trend of declining profits from 1969 to 1972.

The first half of the 1970s marked the greatest transition period in the history of NCR as it attempted to move full force into the computer market. The period was marred by a number of setbacks that were worsened by an inflationary economy and poor business climate. Labor costs to produce older technology products were enormous, and the company also had marketing problems. Layoffs followed declining earnings, and the company was hit by a three-month strike at its Dayton plant in late 1971. The strike idled 8,500 production and maintenance employees, sharply reduced equipment deliveries, and cost the company millions of dollars in lost orders.

In 1971 NCR entered into a cooperative agreement with CDC to establish a computer peripherals company. The following year NCR established its microelectronics division. Declining profits continued through 1972, and the company posted its first net loss since 1933.

With revenues on shaky ground, William S. Anderson was named president in 1972 and chairman of the board in 1974. Anderson, who had been successful in heading up NCR's Far East operations and NCR Japan, was the first president to come from outside the parent company. His success in Japan was due in part to the revamping of the company's marketing organization there, and as president, Anderson quickly moved to modify NCR's marketing structure through a similar "vocationizing" system. The branch manager system, in which a branch manager was responsible for sales from a number of different industries, was replaced by a system whereby a district manager oversaw one major marketing area and marketing personnel were trained to specialize in a single vocational area. Areas of specialization included retail, finance, commercial business, industrial, medical, educational, governmental, and media. In 1974 NCR reported that its computer business was finally out of the red. That same year the company's name was changed from National Cash Register to NCR Corporation.

Growth in the Late 1970s

NCR began making great strides in the computer field after naming Charles E. Exley, Jr., president in 1976. A 22-year veteran of Burroughs Corporation, Exley oversaw the introduction of a new series of computers and related equipment during the later part of the decade. NCR's 1976 announcement of the 8000 series was well received, and improvements were made throughout the remainder of the decade.

NCR's push into computers resulted in strong earnings, while the company began a series of smaller company acquisitions that boosted expertise in factory data systems, microcards, and IBM-compatible data systems. In fewer than five years NCR revamped its entire product line. During this time the company withdrew from the mainframe computer arena and moved closer to its traditional core industries such as banking and retailing. In 1979 the company passed the \$3 billion revenue mark.

NCR came into the 1980s strong, posting its first double-digit increase in revenues in 1980, but growth stalled in 1981, and earnings dropped. Product lines besieged by bugs in the late 1970s resulted in user lawsuits being filed against NCR in the early 1980s. In 1980 a lawsuit was filed by Glovatorium, a small Oakland, California dry cleaning firm. Glovatorium, a first-time computer user, had purchased an NCR Spirit/8200 system to do routine

accounting, but the system failed to work. NCR defended its case on the grounds that contracts with Glovatorium had contained limitations of liability and disclaimers. The California judge ruling in the case in 1981 said NCR had targeted first-time computer users and was under a special obligation to be fair in dealing with the user. Punitive damages totaling \$2 million were awarded along with compensatory damages for breach of warranty and intentional misrepresentation. The following year NCR agreed to a \$2.6 million settlement with Glovatorium.

In 1983 Exley was named chief executive officer, and in the following year he became board chairman. Under his leadership, NCR underwent a corporate restructuring process, made a push back into personal computers, began reemphasizing fiscal control, and started a long-term plan of repurchasing its own stock. The Tower family of microcomputers, which was introduced in 1982, became one of the keys to NCR's success in the mid-1980s. By 1986 the company was again posting double-digit increases, while most of the computer industry was suffering from a market recession.

NCR's revenues had grown to \$6 billion by 1988, as the company developed customized products that generated significant indirect sales. Meanwhile NCR's microelectronics division became a leading producer of semiconductors, and the company surpassed IBM as the largest worldwide supplier of automatic teller machines (ATMs). Personal computers and the Tower microcomputers also saw significant sales gains in the emphasis switch from mainframes to distribution processing.

In 1988 Gilbert P. Williamson was promoted from executive vice-president to president, while Exley remained chairman and CEO. The following year overall sales began to dip, although foreign sales were rising. The company closed out the decade as the last thriving member of the BUNCH that had avoided a merger or sellout of interests.

NCR expected to keep its products on par with the computer industry's powerhouses. In late 1989 it announced that it was jumping into the market for microcomputers that were based on a powerful new microchip. The announcement helped NCR land an agreement with Businessland, Inc. to begin selling the new line in 1990.

According to Exley, NCR entered the 1990s with a goal to "reach all markets." The company had operations in nine countries, with products sold in more than 120 countries. NCR expected continued success in the ATM and semiconductor markets and expanded sales in technology and information processing markets. The company also expected indirect sales to increase, with a number of NCR-manufactured products being sold bearing other companies' labels.

NCR looked for benefits from the implementation of "concurrent engineering," to keep its operations on a par with Japanese competitors through a more timely and less costly manufacture of products. Concurrent engineering eliminated a number of independent steps of production, some of which had been contracted out, and replaced that system with one in which design engineers and manufacturing personnel collaborated in a closer working environment, thereby reducing the time needed to correct glitches. NCR had introduced concurrent engineering in 1987 in its new Atlanta, Georgia plant, and by the 1990s the concept was implemented to some degree in all of NCR's manufacturing facilities.

The 1990s started with great promise for NCR. As the result of an April agreement with California-based Teradata Corporation to develop parallel-processing computer technologies, NCR received 1.4 million shares of Teradata stock. In May the J.C. Penney retail chain announced that it would buy \$45 million worth of workstation systems from NCR; two months later, NCR negotiated a \$10 million contract to automate the branch offices of the Fleet Norstar Financial Group.

Hostile Takeover by AT&T in 1991

Then NCR ran into a formidable adversary, the American Telephone & Telegraph Company (AT&T). Seeking to bolster its failing computer division, AT&T issued a bid for NCR in December 1990, placing the purchase price at \$90 a share, or \$6.1 billion. The bid was met with instant hostility by NCR and over the next five months the tug-of-war was played out in the media. NCR Chairman Charles Exley publicly expressed his disdain at the thought of helping AT&T become profitable in the computer field and vowed to quit if the takeover were successful. AT&T countered with a proxy fight to unseat the NCR board of directors. Both sides hired high-powered advisers--takeover lawyer Martin Lipton and Chemical Bank for AT&T, and investment bankers Goldman-Sachs for NCR.

NCR fought hard by taking out full-page newspaper advertisements to turn public opinion its way and by asking the FCC to investigate AT&T's bid. In the end, AT&T agreed to pay the \$110 per share, or \$7.4 billion, that NCR was demanding, stipulating, however, that payment be made in AT&T stock. The merger was completed in September 1991. In July NCR announced plans to create a new division to market computer products to telephone companies. NCR's market position was slowed by the hostile takeover and subsequent adjustment period. Exley retired in February 1992 and Gilbert Williamson, NCR president, succeeded him as CEO. Elton White, executive vice-president, moved into the president's spot.

Incorporating NCR, with its superior product development capabilities and focused marketing plan, into AT&T, whose computer products were not as sophisticated but whose market was universal, proved to be a challenging task. To counter the market drop, a restructuring of NCR occurred almost immediately. In August 1992, even before the merger was completed, plans to close NCR's Cambridge, Ohio plant were announced. In November NCR's Workstation Products Division was split into smaller groups that would function as independent corporations. A number of AT&T employees and products were moved into the division at this time. That same month, AT&T announced that 120 workers would be released from NCR's Network Products Division in St. Paul, Minnesota.

Despite the internal upheaval caused by the hostile takeover bid, NCR continued to develop new products. A pen-based notepad computer, the NCR System 3125, was introduced in June 1991. The computer was the first of its kind to use an electronic stylus instead of a keyboard. The alliance with Teradata was solidified in December when NCR purchased the company for \$520 million in AT&T stock. Ironically, Teradata's biggest customer had been AT&T.

In early 1993, after initially keeping a "hands-off" attitude toward NCR, AT&T installed one of its executives, Jerre Stead, as NCR CEO. Stead's casual, "open-door" approach was one that clashed with NCR's conservative corporate culture, and his desire to broaden NCR's focus and step up the company's production of PCs was not popular in all quarters. In 1994 NCR also was renamed AT&T Global Information Solutions (GIS).

Under AT&T's management NCR/GIS was not performing up to par, however, and Stead jumped ship in 1995. The company found a replacement in Lars Nyberg, a Swede who had successfully turned around the fortunes of Philips Electronics N.V.'s computer division. Nyberg immediately began to make serious changes, announcing a restructuring that included the layoffs of 20 percent of the company's workforce. NCR was reportedly losing almost \$2 million a day for AT&T, and Nyberg also made the decision to get out of the PC business, in which NCR seemed to have few prospects for long-term success. The company also dropped the unpopular GIS name and became known as NCR once again.

In early 1996 AT&T announced that it would spin off NCR as part of a massive realignment, issuing to its shareholders NCR stock worth nearly \$4 billion, or about half of what it had invested in the company four years earlier. NCR became independent in January 1997, and its stock resumed trading on the New York Stock Exchange. Nyberg continued his efforts to

restore NCR's fortunes and reorganized further during the year, cutting another 1,000 jobs and reconfiguring the company's structure into five large divisions from 130 smaller ones. He also sold three of the company's manufacturing plants to Solectron, Inc., who would continue to make computer hardware for NCR at the facilities. Two acquisitions were completed as well, those of Compris Technologies, Inc. and Dataworks, companies that made software for the food service and retail sectors. The company posted a small profit in 1997, its first in five years.

NCR's fortunes were on the upswing in part because of the company's focus on the relatively new field of data warehousing. Sifting through the vast amounts of data generated when millions of consumers used ATMs or made purchases, businesses could discern patterns that allowed narrow targeting of product pitches to individual customers. NCR had half of the market in this field, and analysts estimated that most *Fortune* 1000 companies would double the size of their data warehouses within the next several years. NCR was also the top maker of ATMs worldwide, with about 27 percent of the international market.

As it continued to fine-tune operations in 1998, the company eliminated 5,200 more jobs and also repurchased \$200 million worth of stock. Revenues for the year dropped by one percent but earnings increased more than 15fold, to \$122 million. NCR also acquired half ownership of Stirling Douglas Group, Inc., a maker of software for retail businesses, and announced a partnership with Microsoft to develop advanced data warehousing systems. In early 1999 NCR's board approved a further \$250 million stock buyback. Freed from the stranglehold of AT&T, NCR appeared to be making a remarkably swift recovery and was positioned for further growth with its command of the expanding data warehousing and ATM markets.

Principal Subsidiaries: NCR Nederland NV (Netherlands); NCR Australia Pty. Ltd.; NCR Canada Ltd.; NCR France, S.A.; NCR GmbH (Germany); NCR Japan Ltd.; NCR Espana, S.A. (Spain); NCR (Switzerland); NCR Ltd. (U.K.); NCR Danmark A/S (Denmark); NCR Argentina SAIC; NCR de Mexico, S.A. de C.V.; Data Pathing, Inc.; Compris Technologies, Inc.; International Investments, Inc.; National Cash Register Co.; North American Research Corp.; Old River Software, Inc.; Quantor Corp.; Sparks, Inc.; Microcard Corp.; NCR Overseas Trade Corp.; Scott Electronics Corp.; Dataworks; Stirling Douglas Group, Inc. (50%).

Principal Operating Units: Retail; Financial; National Accounts Solutions; Systemedia.

Further Reading:

Allyn, Stanley C., *My Half Century with NCR*, New York: McGraw-Hill, 1967.

"AT&T Bares Its Teeth," *Business Week*, December 17, 1990.

"AT&T Buying Computer Maker in Stock Deal Worth \$7.4 Billion," *New York Times*, May 7, 1991.

"AT&T Deal for NCR Final," *New York Times*, September 20, 1991.

"AT&T to Buy Teradata Corp. in Stock Swap," *Wall Street Journal*, December 3, 1991.

Bernstein, Mark, "John Patterson Rang Up Success with the Incorruptible Cashier," *Smithsonian*, June 1989.

Beyerlein, Tom, "Foreign Sales Vital to NCR," *Dayton Daily News*, November 25, 1996, p. 1A.

Boudette, Neal, "New-Look NCR Picks Up the Pace," *PC Week*, March 1991.

Byrne, Harlan S., "NCR Corp.: Ringing Up Profits," *Barron's*, December 7, 1998, p. 22.

Celebrating the Future, 1884-1984, Dayton, Ohio: NCR Corporation, 1984.

Crowther, Samuel, *John H. Patterson, Pioneer in Industrial Welfare*, New York: Doubleday, Page & Company, 1923.

Davis, L. J., "When AT&T Plays Hardball: NCR Was on a Roll, Its Strategy Was Paying Off, So Why Did It Have to Be Sold?," *New York Times Magazine*, June 9, 1991.

Dillon, Jim, "AT&T GIS--What Went Wrong?," *Dayton Daily News*, July 27, 1995, p. 2A.

----, "Rebirth of a Company Series: NCR--The Company," *Dayton Daily News*, November 24, 1996, p. 1A.

Dillon, Jim, and Laura Bischoff, "After Almost Four Years of Struggle, NCR Corp. and Its Chief Executive Lars Nyberg Are ... Sittin' Pretty," *Dayton Daily News*, January 24, 1999, p. 1F.

Drummond, Mike, "Under a Microscope--Proponents, Critics Grade NCR on Its Performance and Speculate on Its Future," *Dayton Daily News*, February 8, 1998, p. 1F.

Keller, John J., "Why AT&T Takeover of NCR Hasn't Been a Real Bell Ringer," *Dayton Daily News*, September 20, 1995, p. 1A.

"A Lawyer's Switch to Aid a Hostile Takeover," *New York Times*, April 21, 1991.

McClellan, Stephen T., *The Coming Computer Industry Shakeout*, New York: John Wiley & Sons, 1984.

Miller, Annetta, "Does This Deal Compute?," *Newsweek*, May 20, 1991.

"NCR Arrives First with a Powerful Pen-Based Computer," *New York Times*, June 30, 1991.

"NCR Planning New Sales Unit," *New York Times*, July 31, 1991.

"NCR to Buy Data Company for \$520 Million," *New York Times*, December 3, 1991.

"Raising Computers to the Power of Two," *U.S. News & World Report*, May 20, 1991.

"Rocky Road Ahead for AT&T-NCR Merger," *PC Week*, May 13, 1991.

Teresko, John, "Charles Exley: After Burroughs, NCR and AT&T," *Industry Week*, February 17, 1992.

Upbin, Bruce, "Too Little and Probably Too Late," *Forbes*, October 5, 1998.

Zuckerman, Lawrence, "NCR to Build Its Comeback with Care," *Cincinnati Enquirer*, October 27, 1996, p. 11.

Source: *International Directory of Company Histories*, Vol. 30. St. James Press, 2000.