The year 2002 marks the centennial of one of Minnesota's most successful firms, Minnesota Mining and Manufacturing Company (3M). The Minnesota Historical Society's Library and Archives Division has held the company's historical records since 1996, when the first donation arrived. These records are a treasure trove for social and business historians. Early correspondence, financial volumes, and stockholding records describe the company's founding and early struggles. Laboratory records and product advertising—including print ads, product brochures, promotional materials, and radio and television commercials—illuminate the development, promotion, and growth of 3M's many different industrial and consumer product lines. The advertising materials are also a rich source of graphic images. Other records document the company's expansion into worldwide markets; employee programs, activities, and milestones; and the distinctive corporate culture of a diverse research and manufacturing firm. Product samples and other artifacts in the Historical Society's museum collections add to the depth of the 3M records.

Mining the Archives

Loralee J. Bloom

From its beginnings as a mining operation on the North Shore of Lake Superior to the Fortune 500 multinational manufacturer it has become, 3M has had a tremendous impact not just on the lives of Minnesotans but on people worldwide. Committed to research and innovation, the company has developed a vast array of industrial and consumer products—among them the ubiquitous and indispensable Scotch® Tape and Post-it® Notes.

Not bad for a company that was founded on a mistake. Minnesota Mining and Manufacturing was incorporated in June 1902 in Two Harbors by five local businessmen who thought to mine the mineral corundum from a Crystal Bay site along Lake Superior. Corundum was in demand for grinding wheels, sandpaper, and other industrial abrasive purposes. But the mineral at the mine site turned out not to be corundum; it was anorthosite, a low-grade substance useless for abrasives. Somehow, this botch-up did not spell the end of 3M. Instead, the company struggled on, purchasing the corundum it needed.

By 1905 Minnesota Mining and Manufacturing Company had moved its operations to Duluth to focus on manufacturing sandpaper, but it was struggling. Prominent Two Harbors attorney and company secretary John Dwan, one of 3M's founders, shared the dire news of near insolvency with stockholder Edgar B. Ober and proposed that stockholders might be willing to sell 60 percent of their stock to an investor who would accept the company's debts and provide some working capital. Ober took this proposal to St. Paul businessman Lucius Pond Ordway and convinced him to become that investor. Ordway agreed to pay the company's indebtedness not to exceed $13,250 and to provide the $25,000 needed to equip a new sandpaper-manufacturing plant. In exchange, he received controlling interest in the company. The deal between Dwan,

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Ober, and Ordway was completed by May 1905, the date of the third annual meeting. There, Ober became president, Dwan continued as secretary, and Ordway was made vice-president, although he wanted no involvement in actual operations. Ordway did, however, make one more decisive move for 3M Company—he relocated the headquarters to St. Paul in 1910.

3M set up sandpaper manufacturing on the city's East Side, where the main plant still exists today. In an effort to improve the product, sales manager William L. McKnight encouraged sales representatives to talk with customers about how well it was working. McKnight, who had been hired as a bookkeeper in 1907, went on to serve as company president from 1929 to 1949 and board chair from 1949 to 1966. Among his many principles that shaped the company was this recognition that research among customers was critical to product success. McKnight persuaded the company to open its first product-research laboratory in 1916 for the sum of $500, a considerable amount for an undertaking that most businesses at the time discounted. The first brand-name product, Three-M-Ite™ coated abrasive cloth, was developed there, and in 1916 3M paid its first dividend: six cents a share.

The company's sandpaper products ultimately succeeded in partnership with the growing automobile industry, where 3M's experimental abrasives were in demand for sanding metal parts all along the assembly line. This experience taught the company the benefits of designing

Lab assistant Richard G. Drew developed adhesive masking tape in 1925 and Scotch® Tape in 1930. Over the years, this technology blossomed into 700 kinds of adhesive tapes for both industrial and consumer markets.

Manufacturing Scotch® Tape at 3M's main plant, St. Paul, 1931. The original tape was adhesive on cellulose, but 3M soon switched to cellophane (developed by the DuPont Company in 1927), and Scotch® Tape began to resemble the product we know today.

Brochure for household "scratchless sandpaper," 1925, a consumer product among 3M's initial lines of abrasives for industrial use

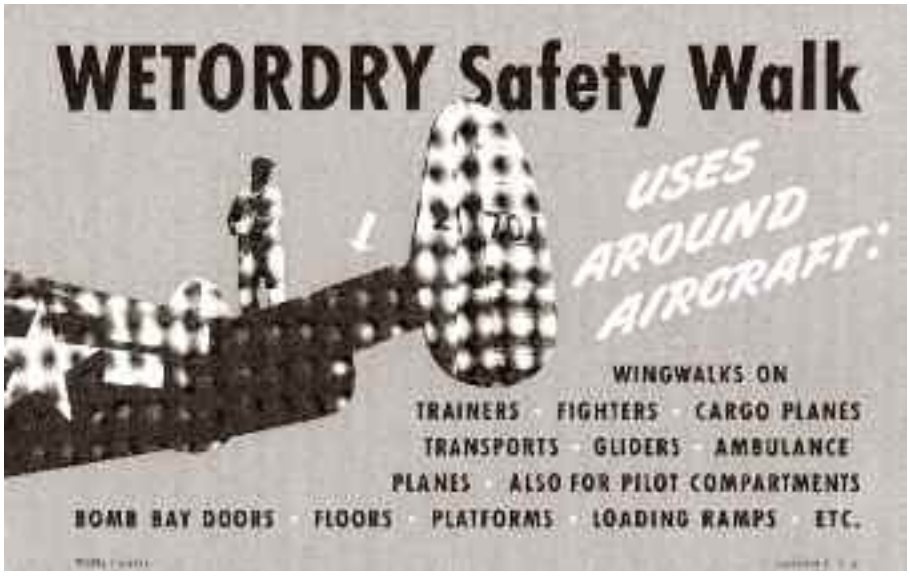
products specifically for the needs of an industry, a practice that continues today.

In 1921 the company released a groundbreaking new product, Wetordry,™ the world's first waterproof sandpaper, invented by Philadelphian Francis G. Okie. 3M bought Okie's patent rights and brought him to St. Paul to further develop his sandpaper with the company. Waterproof sandpaper revolutionized abrasives and made 3M an industry leader for the first time. Other Wetordry™ products followed.

The company's next major product milestone came a few years later. Testing abrasive properties, lab assistant Richard G. Drew took sandpaper samples to a St. Paul automobile body shop where he saw workers masking off sections of autos to create two-tone paint jobs. There were no reliable adhesive tapes on the market, and the employees were using gummed paper tape for masking. While Drew waited for the results of his sandpaper tests, cursing grabbed his attention. When the workers removed the gummed paper, it frequently took the paint off with it. This gave Drew an idea for a new product: masking tape that would seal and still be easily removable. He returned to his lab and developed the first masking tape in 1925. He followed that with cellophane Scotch® Tape in 1930, which marked 3M's first significant entry into the consumer market.

Over the years, Scotch® Tape has become useful in so many ways that we take its invention for granted. But in the tape's early life, 3M had to demonstrate its many uses to a skeptical public. Early advertisements carefully suggested multiple uses for the innovation, which could fix virtually anything around the home and farm. Over the years, Drew's tape creations have evolved into 700 kinds of 3M adhesive products—everything from electrical and industrial tapes to hair-setting and medical tapes.

Brochure, 1945, for slip-proof deck covering, one of many wartime applications of 3M products



Following World War II, 3M added new products to its abrasive and adhesive lines. Scotchlite,™ a special light-reflective coating made of glass beads, provided better nighttime visibility on signs, highway markings, and tapes. Then came magnetic sound-recording tape, which grew out of the 3M adhesive-tape lab. This tape revolutionized sound recording for the radio, motion-picture, and phonograph-record industries. Its early success owes much to singer Bing Crosby, who insisted on recording his weekly radio show rather than broadcasting live. Later on, Scotch®

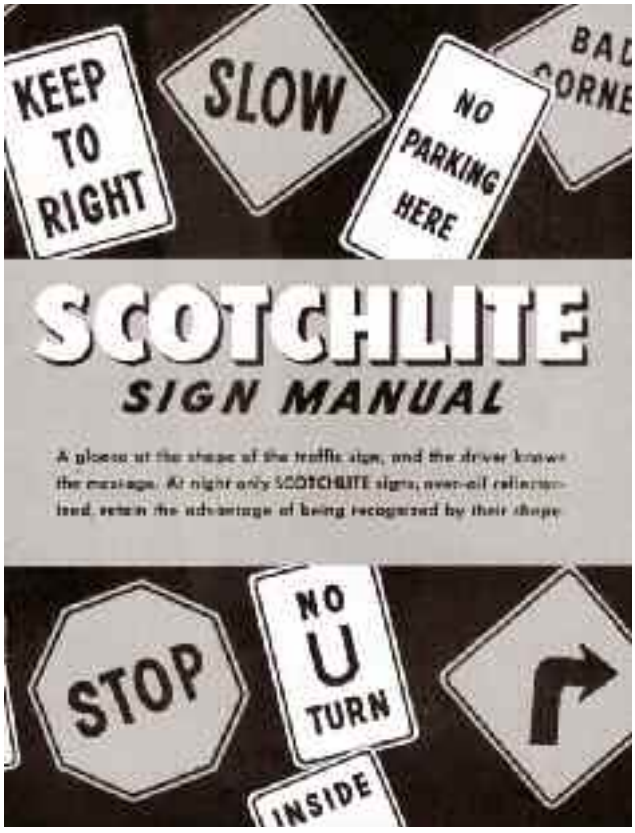
recording tape led to 3M's successful lines of magnetic video-recording tape and computerized magnetic media.

Another major 3M innovation began to take shape in the 1940s: non-woven fiber technology. Pioneered by Alvin W. Boese, this process used a heat-bonding technique to cure combed fibers into a material that was developed into products as diverse as lens tissue, decorative ribbon, scrubbing pads, dusting fabric, and filter facemasks. Mistlon,™ Lacelon,™ and Sasheen™ ribbon, marketed as 3M's first decorative products, became enormously popular. The filter facemasks marked an early success in 3M's entry into the medical field that today represents billions of dollars in sales and a multitude of products.

In the 1950s 3M significantly expanded its global operations, starting with companies in Australia, Canada, France, Germany, Mexico, and the United Kingdom. (Today, overseas sales from more than 60 countries account for over half of total sales.) Office workers, however, will remember the 1950s for the introduction of the Thermo-Fax™ machine, the first commercial one-step office copier. Before this invention, the only way to make multiple copies was to type originals on layers of paper and carbon paper—messy to use and difficult to correct. Developed by Carl Miller, the Thermo-Fax™ applied a heat process to temperature-sensitive and infrared transparent paper.

In the 1960s 3M introduced dry-silver microfilm, photographic products, carbonless papers, and

Auto-body worker using Wetordry™ masking tape, the first reliable masking method for two-tone painting. Its success helped launch the company's tradition of product development for industry needs.



Promotional material, 1945, for Scotchlite™, a light-reflective coating made of glass beads and used for highway markings, signs, and clothing. The product was first field-tested on a Minneapolis traffic sign in 1939.

Brochure, 1948. In 1947 3M introduced magnetic recording tape, developed for broadcasting stations and other high-fidelity users, enabling playback of live radio for the first time.

Playback of video recording, 1963. Developed from magnetic audiotape, 3M's videotape first recorded television broadcasts in 1954.

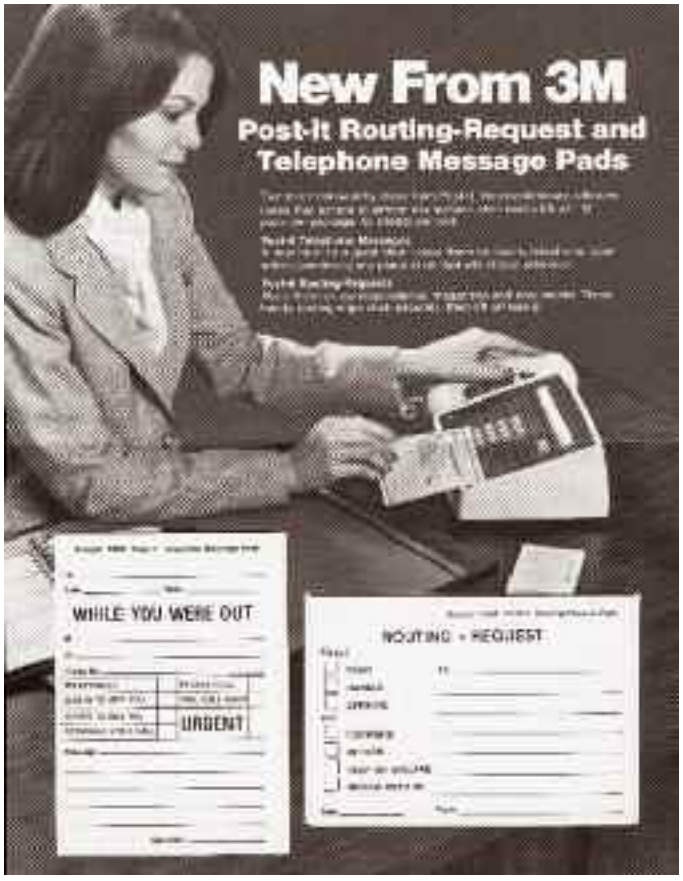
Adapting magnetic-recording-tape technology, 3M made digital recording media in many formats, including computer tape and diskettes, dictating cassettes, and magnetic cards; product literature, 1980s.

overhead-projection systems. Markets further expanded in the 1970s and 1980s into pharmaceuticals, radiology, energy control, and office products.

In 1980 a new product as significant as Scotch® Tape hit the market—the Post-it® Note, 3M's repositionable message pad. It was invented by product-development researcher Arthur Fry, who wanted something for marking pages in his church choir hymnal. Fry was aware of an adhesive developed by research scientist Spence Silver. This special adhesive was removable and reattachable, but a successful application had yet to be found for it. It took Fry a while to show skeptics at the company how useful the sticky note was. Then, there was the dilemma of how to market the new product. As with Scotch® Tape 50 years earlier, promotional efforts had to demonstrate its many uses in order to convince people that this little notepad was indispensable. The Post-it® went on to revolutionize modern message communication.

Looking back over 100 years, it is remarkable that 3M survived its early setbacks, let alone became a homegrown multinational corporation. As the collection at the Minnesota Historical Society attests, the company has been a major innovator, employer, business presence, and civic contributor to Minnesota and especially the Twin Cities, where its headquarters remain. With a myriad of products used daily around the world, its influence has reached far beyond its beginnings on the North Shore of Lake Superior. ❑

The Thermo-Fax™ copying machine, the first one-step office copier, about 1955



Invented in 1980, the repositionable Post-it® message pad has become 3M's most visible consumer product; advertisement, 1981.