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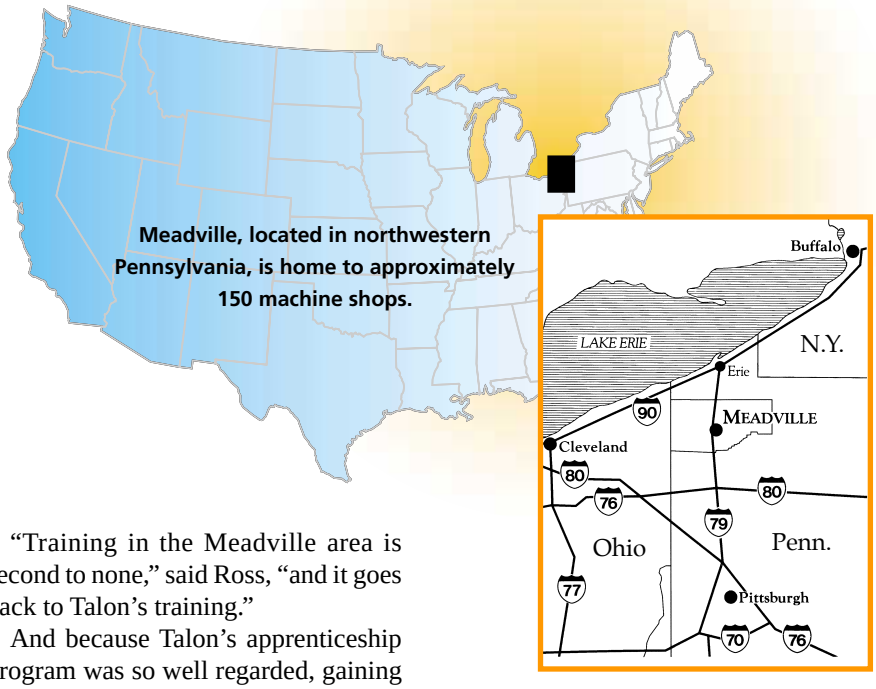
Pennsylvania town is a hotbed of precision manufacturing.

Tool, Mold & Die City

▶ BY ALAN RICHTER, ASSOCIATE EDITOR

Some people might find it hard to believe that the loss of a major employer could make a city more prosperous. But that's what happened to Meadville, Pa., after the Talon Zipper Corp. began moving out of town in search of low-cost labor in the 1970s.

Left in the wake of Talon's departure was its celebrated tool and die making apprentice program, which produced a slew of top-tier tool and die makers. Many of them went on to start their own shops and, in the process, they developed a highly skilled workforce that manufactures tools and dies sold around the world.



Entrepreneurial Breeding Ground

The intricacy and complexity of zippers requires manufacturers to work to tight tolerances, especially when producing them to meet military specifications for space suits, tents and uniforms. Shortly after World War II, Talon's tool and die making apprentice program was ranked as one of the best in the U.S., along with Ford Motor Co.'s program, said James Ross, vice president of general sales for Pennsylvania Tool & Gages Inc.

Like many of the approximately 150 precision tooling and machining shops in and around Meadville (population 14,318), PT&G was started by former Talon apprentices. Today the company has 96 employees and specializes in producing molds and dies primarily used to make connectors for the electronics and communications industries.

"Training in the Meadville area is second to none," said Ross, "and it goes back to Talon's training."

And because Talon's apprenticeship program was so well regarded, gaining admittance was exceedingly difficult, said Dennis Frampton, president of C&J Industries Inc., a contract manufacturer of precision injection molds that employs about 425. If there were two openings available in the program, 55 workers might take the test, Frampton recalled, adding that he was among the unfortunate majority when he vied for an opening.

Talon did more than just train its apprentices to become toolmakers. It also "bred them to run their own businesses," said Brian Deane, vice president of marketing for NuTec Tooling Systems Inc. "Talon firmly believed in exposing their tool and die apprentices to the entire spectrum of operations," he explained. "In addition to the usual apprenticeship rigors of classroom training, milling, turning and grinding instruction, apprentices were required to spend time in Talon's own metallurgy lab, learning how to heat-treat tool steels; in the engineering department, designing tools and equipment; and in the toolroom's planning and routing office, learning how to quote, plan projects and order material.

"You can see how broadening apprentices' experiences throughout the Talon organization taught them the ropes of the manufacturing business," said Deane.

After working 12 to 15 years as jour-

Martin Hamilton, president of Hamilton Tool Co., worked for Talon Zipper, McCrosky Tool Corp. and Greenleaf Corp. before starting his own cutting tool company in 1971.

Doug Peters, owner of Peters Heat Treating, heat-treats many of the precision parts produced in Meadville.

Dennis Frampton is president of C&J Industries, which was founded in 1962 and now is the 13th largest employer in the county.

PMI President Bill Wallis (left) discusses a milling operation with applications engineer Bill Matteson.

neymen, tool and die makers often left Talon to start their own companies, Deane said. He mentioned his father, Ken, as an example of a journeyman who stayed on at Talon for over a decade before starting NuTec in 1983. NuTec's main business function is designing and building automated machine systems for material handling and parts assembly, inspection and testing. The company produces dies, tools, jigs and fixtures, too.

Talon also contracted out some work to its toolmakers who had set up shops at home, said Martin Hamilton, president of Hamilton Tool Co. Inc. Hamilton, who worked full time at Talon in the late 1950s, said this helped give some people the confidence "to eventually break off from Talon and start their own shops."

William Miller, president of Wemco Precision Tool Inc., is another example of someone who went through Talon's toolmaking apprenticeship program and eventually started his own shop after working as a foreman for PT&G. He said that when he started working at Talon in the late 1950s there were only about a half-dozen job shops in town.

Miller said he started Wemco in 1979 with a mill, lathe and grinder in his garage as a "temporary" facility. Twenty-one years later, that temporary facility has been expanded and Wemco now employs eight people who produce precision parts, plastic injection molds, mold and die components, assembly tooling, fixtures and gages.

All photographs by A. Richter

A duplicate of the 1962 Mercury mission space suit that was donated by NASA to Talon Zipper Corp. in recognition of the company's innovative vacuum-type zippers. The suit is on display at Meadville's tooling museum.

Competitors and Comrades

Although Meadville has one of the

A Working Museum

While most machine shops in Meadville were started by graduates of Talon Zipper's tool and die making apprenticeship program, Foriska's Machine Shop distinguishes itself as a living relic from a time before CNC and high-speed machining, when belt-driven machine tools were the norm.

Frank Foriska, 89, is the owner and sole operator of the company. And although he no longer produces parts, he still runs the shop's belt-driven machines and does general repair work.

"I started working at the shop (then called Davenport Manufacturing) in 1926, earning $10 a week. Eventually I saved up enough money to purchase the place, in 1962," recalled Foriska.

The building that houses the shop dates back to at least 1882, and during the 1950s, the workforce peaked at 11 machinists.

Frank Foriska changes a machine's speed by manually moving the leather belt.

A truck engine converted to operate on natural gas previously powered the primary driveshaft that ran all the machines connected to it. Now a 5-hp electric motor powers the driveshaft.

The tooling museum in Meadville approached Foriska about acquiring his belt-driven machinery for exhibition, said Albert Foriska, Frank's son. The elder Foriska said no. Like him, the equipment is still productive.

—A. Richter

highest job-shop-per-capita ratios in the U.S., the city doesn't have a reputation for cutthroat competition. If anything, the opposite is true.

"Camaraderie is high among the shops," said William Miller's son, Ron. "Most everybody gets along even though they're competitors. There are no bitter rivalries."

Each shop has developed its own market niche, so there's less direct competition, according to Hamilton.

Frampton noted, "We work together because our competition isn't in northwestern Pennsylvania—it's overseas."

Another reason for the fellowship is because many shops are partners with their competitors, said C&J's Frampton. "Sometimes they're our customers and, sometimes, vice versa."

He added that shops share a good deal of information about customers with one another. And because partnering and networking exists between shops with different specialties and areas of expertise, Frampton said a lot of customers are drawn to the area's "one-stop-shopping" capability.

An example of area shops not only working together but side by side can be found at the Precision Manufacturing Institute. PMI trains novice through master machinists. Bill Wallis, the institute's president, said PMI leases time on its machining centers to local shops, which sometimes results in personnel from different shops working next to each other while making parts.

"It's the only successful shared-use factory in the country," boasted Wallis.

Started 14 years ago as the National Institute of Flexible Manufacturing, the combination technical school and machine shop changed its name to PMI in late 1998. Wallis said that PMI trained 510 students during its previous fiscal year, with about three-quarters attending night classes to receive on-the-job training.

In addition to PMI students training on the "state-of-the-market" equipment that suppliers primarily provide on consignment, Wallis said that equipment suppliers can use the facility to show prospective buyers how to run their machines. The machines remain at PMI for 6 to 18 months. As a result of PMI partly functioning as a hands-on showroom, over 100 local companies have purchased nearly 200 machines that were once at PMI.

"If companies train on them, that's what companies will buy," said Wallis. "Builders want to make sure their machines are represented here."

He added that manufacturers donate most of PMI's cutting tools and grinding wheels, and the institute will occasionally test new cutting tools.

Wallis credits the institute's success to the local industry's commitment—in terms of time and money—to making it work. The lack of support from local industry is the main reason these types of facilities fail in other parts of the country, he said.

"PMI is successful because local industry created us, backs us and supports us," Wallis said.

Culture of Manufacturing

A museum is a repository of what a culture considers important. Not surprisingly, Meadville is home to a tooling museum.

Doug Peters, owner of Peters Heat Treating Inc., and Starn Tool & Manufacturing Co.'s Tim Mullen were instrumental in establishing the tooling museum at the Greater Meadville Area

Cutting Tool Manufacturers Also Have a Presence

The Meadville area is best known for its precision machine shops, but a number of cutting tool manufacturers also call the area home. A few of the more prominent ones are Hamilton Tool Co., McCrosky Tool and Saegertown-based Greenleaf Corp.

Similar to the area's job shops that were often started by tool and die makers who worked together and continue to interact, the cutting tool manufacturers have intertwined histories.

Martin Hamilton started Hamilton Tool in 1971, after working for McCrosky Tool in the 1950s, serving a stint at Talon as a journeyman toolmaker and rising to the position of managing engineer for Greenleaf.

Hamilton Tool focuses on designing special tools suited to specific customer needs. Hamilton said the main applications for his company's cutting tools are deep-hole and cross-hole drilling, primarily for military/ordnance equipment.

McCrosky Tool is a significantly older company, with its origins in Meadville dating back to 1904, said John Shaffer, company president. He added that F.B. McCrosky initially started making cutting tools, such as reamers, in Cincinnati around 1902. Unfortunately, Shaffer said that after relocating to Meadville, the company went bankrupt in 1906 and McCrosky promptly left town—never to be heard from again.

Despite the setback, the company and the McCrosky name were revived, and McCrosky Tool continues to produce inserted-blade reamers, turret-tool posts, milling cutters, quick-change tooling and other cutting tools and machine tool attachments for the automotive, aircraft, aerospace, construction, mining and metalworking industries.

Shaffer said that all of the cutting tools McCrosky makes are larger than what shops in Meadville usually require, so the company doesn't sell much locally. He noted, though, that the town's tool and die business keeps high-paying jobs in the community.

Greenleaf Corp. was founded by Walter Greenleaf Sr. in 1945 and continues to thrive as a leading manufacturer of carbide and composite ceramic inserts, such as silicon-nitride, whisker-reinforced ceramic inserts, as well as toolholders, milling cutters and boring bars.

Current president, Jim Greenleaf, son of the founder, explained that part of the area's entrepreneurial spirit stems from its small-farm culture, which fosters a strong work ethic. He added that people growing up in a farming community often work on various types of machines, which proves useful in learning how to operate machine tools and other precision-manufacturing equipment.

"Customers come to the region for virtually any manufacturing need," Greenleaf said. "Any type of part, made of any type of material, can be produced here."

—A. Richter

Tooling Center. The museum illustrates the contrast between old and modern manufacturing technology, and showcases local industry legends who did something to change the machining trade for the better.

Peters said school and community groups are given tours so they can see what actually happens in the precision manufacturing trade, how the trade touches every part of their lives and as a way of encouraging young people to consider a career in machining.

"Since the facility opened in the fall of 1997, it's attracted at least a dozen people to the trade," Peters said.

He said that 35 percent of the city works directly or indirectly in the tool and die industry, and that every business benefits from the wealth the industry generates.

Because the tool and die trade permeates the community, Peters said an appreciation of it passes from generation to generation.

The region perpetuates a culture of manufacturing, said Jim Greenleaf, president of Greenleaf Corp., located just outside of Meadville, in Saegertown. He added that working in a job shop is admired because of the high skill level required.

Frampton concurred that many people in the community respect tool and die makers, who generally earn about $50,000 a year—or more. The average household income for Meadville in 1999 was $38,713, according to Pennsylvania's Center for Workforce Information and Analysis.

A common refrain heard in Meadville is that if you see someone in his early 20s tooling around town in a new vehicle, he's probably a tool and die maker.

"Tool and die makers have a better standard of living," said Frampton.

Sustaining the Trade

Even though its denizens respect tool and dies makers and machinists, Meadville, like other regions of the country, is challenged by attracting, training and retaining qualified workers.

"The local industry needs at least 400 new people each year to keep up with growth and attrition," said PMI's Wallis.

But Frampton, who's also on PMI's board of directors, said only about 50 new workers are trained each year. To compound the problem, Meadville has an aging demographic, with many workers retiring from the workforce each year.

"Having a skilled workforce will be a challenge in the future," said PT&G's Ross. "Our aging workforce is a reality."

Ross said another challenge for local shops will be acquiring the necessary technology to remain competitive and on the leading edge. The larger shops will remain strong, but he said there might be a decline in the number of smaller shops that can't afford new equipment.

But for now, precision manufacturing and tooling remains a vital part of the economic health and community spirit of Meadville, where shops compete—and work—with each other as friends and family, said Wallis.

"It's very unique—working together and trying to promote each other," he said. "I've never seen that elsewhere."