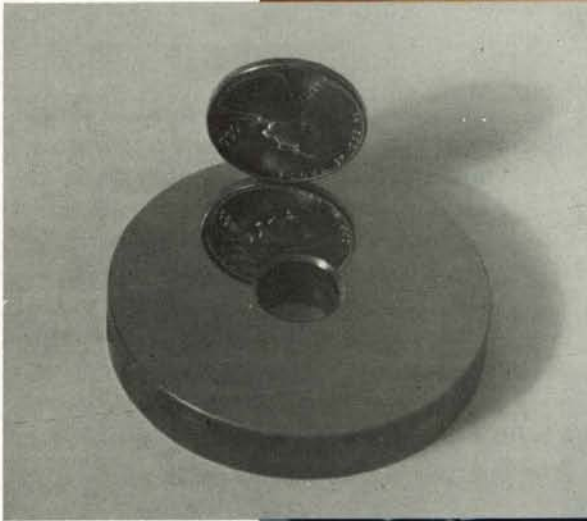
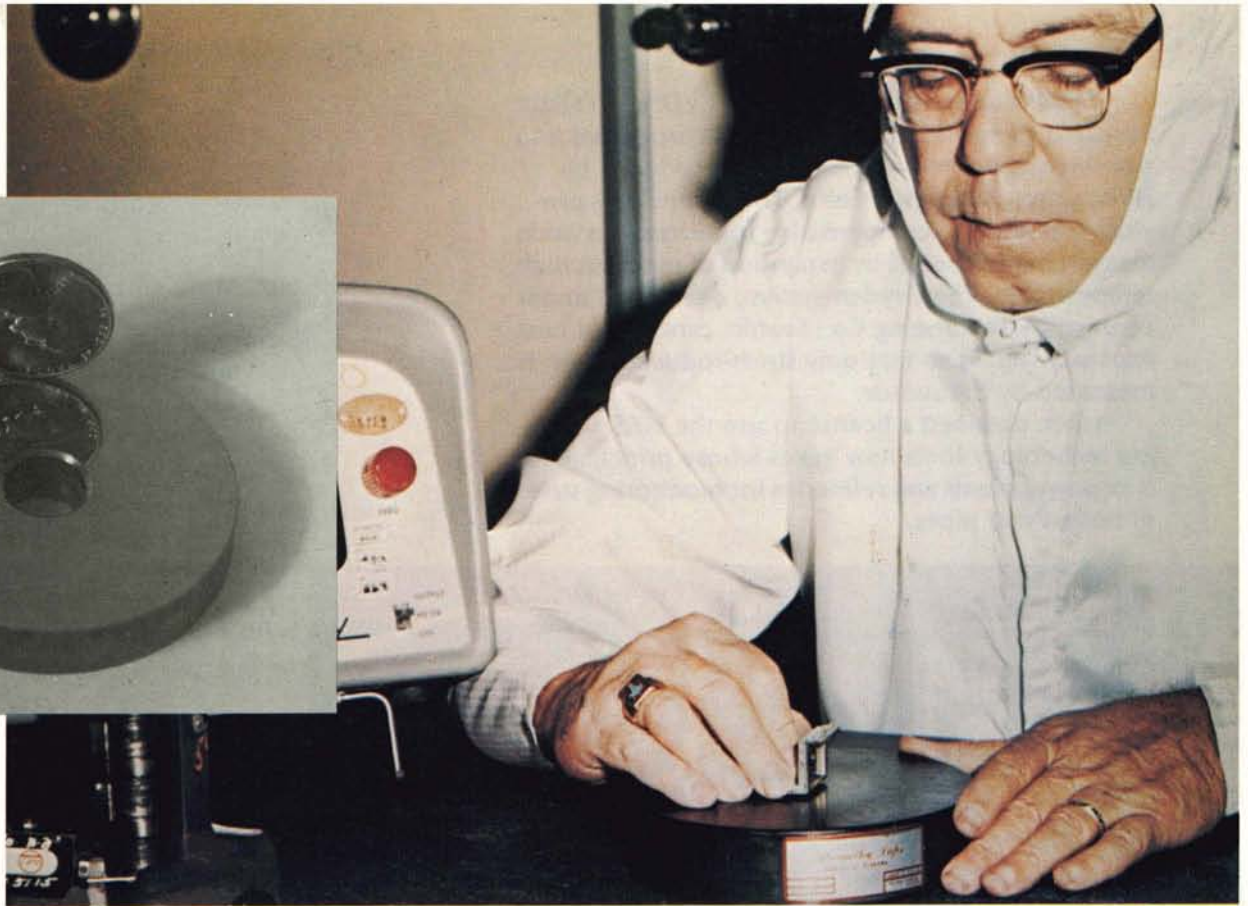


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Abernathy's Lap

You probably have never heard of Abernathy's Lap. It's an interesting story of how small business, as well as big industry, benefits from aerospace spinoff. In this case the business is very small in terms of personnel—one person—but substantial in output.

A lap in this instance is not a midriff but a tool for precision polishing and grinding. During the Saturn V moonbooster program, Marshall Space Flight Center found a need for a better lap. The need arose from the exquisitely precise tolerances required for parts of the launch vehicle's guidance and control system. So William J. Abernathy, a former Marshall employee, built a better lap; he invented a method for charging aluminum lap plates with diamond powder, then hard-anodizing them. The resulting lap produces a high polish on materials ranging from the softest aluminum to the hardest ceramics. It operates faster, wears longer and requires less reworking.

Abernathy got NASA's permission to obtain a personal patent and he formed the one-man Abernathy Laps Co. in Huntsville, which produces a variety of laps. One of Abernathy's customers is Bell Aerospace Textron, Buffalo, which uses the laps to finish polish delicate instrument parts produced for NASA's Viking and other space programs. Says a Bell official: "Time needed (with the Abernathy lap) is a fraction of that required by conventional methods. The result is extremely accurate flatness and surface finish."

A Bell Aerospace Textron technician is "lapping"—fine polishing—a delicate space instrument part to get precise tolerance. The polishing device, first developed for precision grinding needs of the Saturn V moonbooster's guidance system, is the Abernathy lap, which allows extremely accurate finish polishing in a fraction of the time required by earlier methods. In photo at left a penny is balanced on a lapped copper disk.

Abernathy is providing laps for other manufacturing applications and for preparation of metallurgical specimens. The business is small but steady, and Abernathy plans expansion into other markets.

Other Industrial Aids

In another industrial spinoff, O. Z. Gedney Co., Terryville, Conn., found the answer to a problem in a NASA Tech Brief describing research in adhesive bonding for the Space Shuttle. Gedney, which makes electrical fittings for industrial plants, was developing a new "fire stop," a device that prevents the spread of fire through holes where cables and pipes penetrate fire barriers in buildings.

The company wanted to bond a metal disc on the fire stop to a layer of "intumescent" material—material that swells under heat and fills the gap caused by melted cable insulation, thus blocking passage of fire and smoke. At the company's request, NASA supplied a technical information package which identified the best adhesive and the proper bonding technique. The fire-stop fitting is now in production.