

FINANCING SCIENCE



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Maine's Tradition of Innovation

\$50 Million in New Grants Can Drive R&D

By Hannah Pingree

UP UNTIL THE MID-1800S, paper was made mostly out of rags. The paper industry lived and died on the availability of discarded clothes and other cloth materials that could be beaten into a pulp and poured into molds to make paper.

Papermaking began in Maine in the 1730s, as the state's rivers provided power and clean water for the papermaking process. The industry in general was successful—and Maine papermakers, like those in many other states with clean rivers, made a good living.

But the state's paper boon didn't really begin until a rag shortage in the 1850s, along with increasing demand for paper, forced European and American inventors to search for new resources to make pulp. They quickly discovered that wood was an efficient resource for paper, and new wood-based paper mills began to spring up, primarily in the Northeast.

Developers saw an opportunity in Maine, the nation's most densely-forested state. The first wood pulp in Maine was produced in the basement of a sawmill in 1868, where the workers made one ton of pulp per day. By 1875 the S.D. Warren mill in Westbrook was blending wood fibers with rag pulp, and five years later it was the largest paper mill in the world.

It was one of those rare confluences of a need, an idea, an abundance of resources, and the money to make it happen all meeting in the same place at the same time—the perfect formula for innovation to flourish. That confluence allowed the paper industry to serve as the primary driver of Maine's economy for the next 150 years.

But times change. As globalization makes it more and more difficult for Maine to compete as a paper producer, the state is looking to preserve the industry of the past while moving to a new

economic driver for the future. Other traditional Maine industries—like fishing and farming—are struggling, and rely on innovation to remain competitive and to grow into the 21st century.

Last year, the Maine Legislature passed a historic bond package to send out for ratification by voters in three separate elections, and Maine voters then approved one of the largest single investments in the package—\$50 million in competitive grants for research and development, to be issued through the Maine Technology Institute.

MTI will award a mix of large and small grants to both entrenched and fledgling research firms that can prove that their investment will provide the biggest return. With a total of \$50 million available to the best and the brightest—and at least \$50 million in matching funds expected for winning grants—there will be no shortage of fresh ideas and innovative pitches. Some of these ideas will venture boldly into uncharted new territory; others will improve old technology to preserve traditional state industries like pulp making, fishing, and farming.

Historically, state investments in research and development have paid off. The Jackson Laboratory, based on Mount Desert Island in Penobscot Bay, is now the world's largest mammalian genetics research institute. Jackson Labs has been a regular beneficiary of state investment, and it has developed into one of the world's premier biomedical research facilities. Targeted investments in boatbuilding and marine research and development have established the state as an international leader in those industries as well.

To bring the paper story full circle, some new R&D money is likely to fund groundbreaking research happening at the University of Maine on turning wood product waste cellulose into ethanol. Scientists have discovered—and this may sound familiar—that wood ethanol is far cheaper to produce than ethanol made from corn. This research will likely add value to the bottom line of Maine's current paper industry and simultaneously reduce the state's carbon footprint.

In the late 1960s, mothers of students at a prep school in Seattle used proceeds from the school's rummage sale to buy an ASR-33 teletype terminal and a block of computer time on a General Electric computer. For such a small investment, the computer was an enormous hit with the junior high school-aged students, and access time to the GE computer was in high demand—especially for a group of thirteen-year-olds who saw a world open before their eyes.

Among them was one student who discovered an almost supernatural knack for deciphering and writing codes. He founded his first software company at age 14, developed payroll processing and traffic-counting software through his teens, and at age 20 founded Microsoft—which went on to become the biggest software company in the world.

Bill Gates knew that he excelled at science and math from a young age, but he didn't know the potential behind it until a small investment made at the right time with rummage sale proceeds allowed him to realize it. It's one of innovation's most famous success stories, and it's based on the same basic concept of a need, an idea, and a resource all meeting at the right time.

The competitive grants awarded by MTI will go to the people with the best ideas who can prove the best return on the investment. The Maine Technology Institute is tasked with spotting potential—which is a challenging, exciting, and essential charge. Somewhere in Maine could be another Bill Gates, and he or she could be one small investment away from discovering an ability to change the world. Even more likely, somewhere in the state is the next paper industry—a future engine that could drive the economy for centuries.

Somewhere in Maine are a need, an idea, and a resource that are all meeting at the same place at the same time. sp

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