The commencement speech didn’t last long, but it remains one of the most memorable in academic history. If he spoke slowly, it might have lasted three to four minutes. William Barton Rogers, conceptual founder of the Massachusetts Institute of Technology, was not exactly known for his brevity, but then again few could have predicted how the day was to turn out.

He had come to talk about the origins of MIT at its commencement ceremony of 1882. It was a typical audience. There were soon-to-be graduates, most of them anxious to get their degrees. Some of them squirmed in their seats at the thought of presenting an abstract of their senior theses, as required for graduation. There were supporting family members who came to watch their sons and daughters present their research and receive their diplomas. The ceremony attracted members of the community as well. Many were curious to know more about this emerging institution located then in Boston’s Back Bay. Joining this crowd were friends and admirers of the speaker who had come just to hear him talk. Rogers knew he wanted to focus on the foundation of MIT and the resistance he had initially faced from leaders in traditional higher education. But as with most of his speeches, he left plenty of room for improvisation. After being introduced by the Institute’s president, Francis Amasa Walker, Rogers stood before the gathering in Huntington Hall and began to speak with pride about what MIT had become. He shared with the audience the early struggles, the mixed reception it had gotten from educational leaders, and the founding mission of offering a comprehensive program of scientific and engineering studies. “Formerly a wide separation existed between theory and practice,” he reminisced. “Now in every fabric that is made, in every structure that is reared, they are closely united into one interlocking system—the practical is based upon the scientific, and the scientific is solidly built upon the practical.” Partway into the speech he paused, briefly glanced at his notes, and then foundered at the knees. By the time he fell to the platform, Rogers was dead.¹
It could hardly be more appropriate that his life came to a close in this way, not necessarily for the drama of it but more in that it captured the seriousness of his life-long passion for science, enthusiasm for higher learning, and relentless work ethic. The title of a well-known Isaac Newton biography, *Never at Rest*, could just as easily work for Rogers, who had a long and productive career as a scientist and educational reformer. His commitment to science drove him, and many others of his generation, to do things we could rarely imagine doing today. He conducted Virginia’s first state geological survey by foot, horse, and buggy from 1835 to 1842. For those seven years Rogers climbed mountains and cliffs, waded through swamps, and endured many hardships and one tragic death among his small team of assistants, all the while collecting samples and constructing a comprehensive geological map that retained its scientific value for decades. The survey was one of many projects he undertook during the first half of his career in Virginia and second half in Massachusetts. To the very end he continued to prepare papers and presentations and showed few signs of slowing down.

The same is true of his educational reform efforts. As early as his first full-time teaching appointment in Maryland, Rogers experimented with ways of communicating scientific ideas to his students. Traditional, lecture-based modes of science instruction bothered him like pebbles in his shoes. When he went to teach at the College of William and Mary, he tried out some alternative methods there and later at the University of Virginia. What he learned, or at least believed, as a result was that a new kind of institution was needed to educate American scientists and engineers. The classical colleges of the first half of the nineteenth century failed to satisfy his desire for getting scientific breadth and depth, theory and practice into the curriculum. For decades he turned over in his mind the ideas that led to the establishment of MIT. In the process he wrote proposals for politicians, philanthropists, and educational leaders to consider the kind of educational reform he believed was necessary for the advancement of American science. After several attempts, “sometimes met not only with repulse but with ridicule,” as Rogers described in his commencement speech, he eventually found a home for his ideas in Massachusetts. Boston politicians gave into the concept of an institute of technology in the 1860s.

He wrote convincingly on scientific matters and for the cause of educational reform, but perhaps his greatest asset was his public speaking ability. That’s why his final moments seem so appropriate. It only makes sense that his last words would be about these passions. Rogers had a way of persuading others through conversation, lectures, and debates. In the legislative halls of Richmond he knew how to sell the idea of a geological survey to Virginians; in Boston his way with words forged connections between powerful interests and the idea of progress through an institute of
technology. Victorian society generously rewarded those with golden tongues. His was at least silver.

Rogers’s most enduring reward, the Massachusetts Institute of Technology, stands today in Cambridge, just across the Charles River from where it first began. The classical dome-like structures can be seen from Boston and can’t be missed when traveling across the Harvard Bridge. Its physical presence is unmistakable, with over 150 acres along the Charles. Its presence in the higher education landscape is equally striking. While it has long been a relatively small campus in terms of enrollment, it’s had a significant impact through its research and outreach educational programs. At the start of the twenty-first century MIT received approximately a half-billion dollars for sponsored research. These dollars helped support projects that tackled basic and practical problems in areas such as energy, defense, health, and industry. Likewise, at the start of the century the Institute took notable steps toward having an equally visible impact on education and outreach. Through the OpenCourseWare initiative MIT has made course content and materials available online and free of charge. Scholars around the world have commented on the resources provided by this initiative and the long-term impact it will likely have on the advancement of science curriculum and pedagogy.

As significant as these achievements are in their own right, there’s nothing all that new about the basic ideals undergirding them. We can see the ideals over 150 years ago, fueling Rogers’s lifelong passion for the advancement and diffusion of scientific knowledge that led to the founding of MIT in the first place. Rogers followed closely European advances in science; he read widely to keep current with the geological and natural philosophical works of the French, German, and British. His own papers incorporated their insights and looked for ways to build on the latest developments. Not surprisingly, he made sure student and faculty research stood at the center of the Institute’s mission. At the same time, he had an egalitarian, some might say American, drive to bring these advances to the public. A generation earlier Thomas Jefferson had unsuccessfully attempted to give expression to this sentiment with his characteristically democratic Bill for the More General Diffusion of Knowledge. Rogers shared with Jefferson a similar Enlightenment belief that direct improvements in the lives of all would occur through the diffusion of knowledge. To this end Rogers’s plan for the institute included a push for faculty to offer free lecture hall classes for the general public in such areas as mathematics, chemistry, and physics. His desire for an institution that would balance advancement and diffusion through research, teaching, and service seems largely out of place in an era when even the best colleges in the nation had, as one nineteenth-century scientist put it, “more the character of a high school than a University.”4
With the establishment of the Institute, Rogers and his circle of reformers helped usher in a new era in higher education history. Historians have paid much attention to the English and Germanic influences on American colleges and universities and they have long described how the British classical system was adopted nearly whole-sale at the first undergraduate colonial institutions: Harvard, William and Mary, and Yale. Some accounts continue the story of British influence from the seventeenth century until the arrival in the nineteenth century of German research and Wissenschaft. The institution most strongly associated with this change is the Johns Hopkins University, which began offering graduate-level education in 1876. Less attention, however, has been paid to the French and their polytechnic systems of science education. Rogers was profoundly influenced by French scientific and engineering education, and the influence figures prominently in the conceptual organization of the institute. MIT offers a compelling case with which to rethink our British-German paradigm.

This biography offers an account of the wide-ranging scientific and educational values Rogers sustained throughout his life, values that made the institute what it was in its early years and continue to guide it to this day. To bring together these diverse strands of his life, this study presents Rogers in a largely thematic form, each theme placing Rogers within the social and intellectual context of his era. His experiences in Virginia, activities in science, and vision for higher learning each receive attention separately, although at times the points converge. His life spanned nearly the entire nineteenth century, including such social transformations as the onset of industrialization, the spawning of reform movements, the hardening of southern civilization, the Civil War, the reconstruction of the South, the maturation of industrialism, and the start of Progressivism. Revolutions in American intellectual life were equally dramatic. Rogers lived through a fundamental shift experienced by virtually all scientists of his generation, a shift marked by the decline of the generalist and the rise of the specialist. At the start of Rogers’s career in science his teaching and research reflected a generalist approach to science, as demanded by colleges and universities. Science professors of the first decades of the century could be found teaching everything from algebra to zoology. By the end of his career, however, Rogers pointed toward a model of higher learning that required its faculty to specialize. Coupled with this shift was the publication of Charles Darwin’s On the Origin of Species, a work that appeared at the peak of Rogers’s professional career. After the book’s publication in 1859, virtually no field in science, whether general or specialized, escaped the implications of natural selection.

Owing to the diversity of Rogers’s interests, readers may find some themes more compelling than others. Historians of education are likely to focus on the dilemma
of southern higher learning or the origins of MIT. More important to historians of science is the treatment of geology and natural philosophy, the professionalization of science, and the conflicts Rogers had with the Lazzaroni. Still other scholars with interests in higher learning and instruction may gravitate toward the discussion of Rogers’s ideas about reform or the diffusion of innovations, especially with regard to the laboratory. Readers interested in the interrelationships between these themes, however, should allow themselves to wander with the subject to the shores, mountains, and lecture halls of Virginia, to the bustle of Boston and the Back Bay, and on occasion to Europe.

Biographies, of course, are not the best place to settle long-standing squabbles among historians, and this study makes no pretenses to the contrary. One life can illuminate a case study, but it hardly makes a conclusive argument. The pages that follow will not provide definitive answers to questions about slavery’s impact on science and higher education. Rather, Rogers’s experiences in the antebellum South trumpet a call for further research about others in similar positions who shared his views. Likewise, these pages do not attempt a complete history of MIT’s origins, much less a history of technological institutes. One scholar’s decades-old protest that “the history of technical education in America remains to be written” deserves repeating.5

What this study does contain is an analysis of the way Rogers went about the business of science and higher education. It tracks a life that began in Pennsylvania, matured in Virginia, and culminated in Massachusetts. The analysis presented here portrays a life governed by a conviction about the value of both theory and practice, rather than an exclusive interest in one or the other, as many of his generation tended to do. The conviction is described in this study as the ideal of the useful arts.

This biography relies on many general histories to develop the theme of the useful arts in Rogers’s life. The reader should take seriously the notes and bibliography provided, for this study could not have been possible without the insights derived from the historians listed there. As for works directly related to Rogers, very little exists. An uneven assortment of articles and book chapters have recited a chronology of milestones in his life. But with the exception of Emma Savage’s Victorian-style Life and Letters of William Barton Rogers, no extended inquiry into his life has been published. This study owes much to Savage’s two-volume compendium of her husband’s letters and to her patient deciphering of Rogers’s notorious scrawl. Like the scores of other Life and Letters compilations, however, Savage’s could not escape the distortions and omissions expected of such volumes. The genre, committed to casting the best light on their subjects, reflects the didactic tendencies of Victorian era life writing. Where possible, this study relies instead on the rich collection of his pa-
pers located at the MIT archives as well as the less plentiful repositories in Virginia and elsewhere.  

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William Barton Rogers and the Idea of MIT
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