IVAN PUGH. FIRST PRESIDENT OF PENNSYLVANIA STATE UNIVERSITY, 1859-1864.

This portrait, a gift of the first graduating class, is in the Board room in Old Main.
Evan Pugh of Pennsylvania State University and the Morrill Land-Grant Act

By Margaret Tschan Riley*

The approaching centennial of the first Morrill Land-Grant Act, signed by President Lincoln on July 2, 1862, gives particular timeliness to a review of the career of Evan Pugh. His administration as the first president of the Pennsylvania State University coincided with this climax of the movement toward democratic higher education in the United States. Of all the institutions which owe their existence to the momentum provided by the Morrill Act, none can attribute its initial strength to a single individual more than the state university of Pennsylvania. What the land-grant universities have contributed to our present American educational philosophy is, in principle, what Evan Pugh had in mind when he turned from the personal rewards of a career in scientific research to help his native state.

The Pennsylvania State University was fortunate that its first president was a man qualified to cope with the academic and administrative demands of this much discussed but then comparatively uncharted endeavor. The misfortune of the University and of Evan Pugh was that he died at the age of thirty-six in 1864, the fifth year of his presidency. His early death deprived him of

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Extensive source material is filed in the Penn State Collection of the Fred Lewis Pattee Library at University Park. Gathering of the Evan Pugh papers and memorabilia was begun about 1895 by George Gilbert Pond (later dean of the University’s College of Chemistry and Physics) and Erwin W. Runkle (professor of philosophy, librarian, and the University’s first official historian). “Evan Pugh: The Education of a Scientist, 1828-1859,” by Jacqueline M. Bloom (Master’s Thesis, Pennsylvania State University, 1960) contains an analysis of the Evan Pugh papers. The Penn State Collection is the source of illustrations and references associated with the University.
the opportunity for continuing achievement and the wider recognition that might have resulted, if he had enjoyed the longevity of many of his colleagues. Similarly, his death interrupted the University's progress toward the goals set for it by the Morrill Act, thus obscuring its role in promoting public-supported, practical education.

The national observance of the Morrill Act centenary in 1962 should bring honor, however belatedly, to Evan Pugh and to the University he did so much to establish among the pioneers of democratic, scientific, higher education. Preliminary publicity about the occasion issued by the Association of Land-Grant Colleges and State Universities has not been reassuring, but Pennsylvania should receive credit for substantial contributions. Moreover, it should be remembered that while the ideal which Evan Pugh espoused has come to dominate education west of the Alleghenies, it still has to fight for recognition in the east. To focus almost exclusively on Jonathan B. Turner of Illinois and Justin Morrill of Vermont, as the Association has been doing in retelling the story, may lead to a distortion of history which is most unfair to Evan Pugh and to other notable contributors.

Without minimizing Professor Turner's role, it should be emphasized that two institutions, one in Michigan and one in Pennsylvania, were successfully operating before, though in anticipation of, federal aid to education through the sale of public lands. While Turner was promulgating his plan for industrial education at the turn of the 1850's, Michigan's agricultural leaders were

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Samuel W. Johnson (1830-1909), a fellow-student in Europe and lifelong friend, became professor of agricultural chemistry at Yale's Sheffield School and was responsible for the establishment of America's first agricultural experiment station. George C. Caldwell (1834-1907), another fellow-student abroad, was Cornell University's first agricultural chemistry professor and did much to develop this science during his long service there. Frederick Watts (1801-1889), first president of the University's board of trustees, became U. S. Commissioner of Agriculture in 1871, and helped foster what is now the American Association of Land-Grant Colleges and State Universities. See Alfred Charles True, *A History of Agricultural Education in the United States, 1785-1925* (U. S. Department of Agriculture Miscellaneous Publication No. 36, Washington, D. C., 1929).

“memorializing” their legislature to petition an unheeding Congress to endow such a college, hoping this would lead to similar moves in other states.⁴

Pennsylvania, too, was developing plans. One was outlined by Superintendent of Schools A. L. Russell in January, 1851,⁵ and others were made by the Pennsylvania State Agricultural Society, which was organized in that year through efforts of the venerable Philadelphia Society for Promoting Agriculture. The eventual selection of Chester County’s Evan Pugh as the first president of the resulting institution can be taken as a tribute to the persevering stand for education made by the “gentlemen farmers” of southeastern Pennsylvania, such as A. L. Elwyn, James Gowen, and other members of the “first great agricultural society in America that continues to serve to the present day.”⁶

The demand for more education for more people was led by these agricultural leaders and their counterparts in Massachusetts, New York, and Maryland, among other states, because agriculture still dominated the national economy and its interests were politically important. They emphasized agricultural education, but their concern extended also to the so-called “mechanical arts.”

Their aspirations were affirmed, expanded, and defended by Congressman Justin S. Morrill of Vermont, who first introduced his bill on education in the House in December, 1857. His purpose was, through the establishment of publicly supported colleges, providing both liberal and practical education, “to bring all the resources of modern science into direct relation to modern industries, and to emancipate aspiring and talented youth from the necessity of patronizing only one type of college and entering only one restricted class of professions.”⁷

⁷ George W. Atherton, The Legislative Career of Justin S. Morrill (address at New Haven, Conn., Nov. 14, 1900, for the American Association of Agricultural Colleges and Experiment Stations, which is now the American Association of Land-Grant Colleges and State Universities), 21 f. Dr.
Sensitivity to the need of the nation for an educated citizenry was instinctive in Evan Pugh because of his own circumstances. Born of a Quaker family which had come from Wales soon after William Penn’s time, he quickly learned that more than brawn would be needed in a rapidly changing world. His will power and mentality, nurtured by the teaching of the feminine side of the family, dictated a desire to do more than merely follow his forefathers as farmer and blacksmith.

Evan Pugh, written Evan ap Hugh in the Welsh form by earlier bearers of the name, was the fourth child and first son of Lewis and Mary Hutton Pugh, both natives of East Nottingham Township in Chester County, Pennsylvania, where they were married in 1822. When Evan was born, February 29, 1828, they probably had already built their large stone house above Jordan Creek on the farm given to Lewis by his father, Jesse Pugh, a few miles south of Oxford, Pennsylvania.

The boy was twelve when the family was broken up as a result of the father’s death. Evan and his older sister Elizabeth were sent to the neighboring farm of their widowed grandfather Jesse, where their schooling was directed by their teacher-aunts. At sixteen, in accordance with family custom, he was apprenticed to a local blacksmith, whose failure to comply with the educational obligations of the contract finally caused Evan to buy his way out of it.

In 1847 both his grandfather and his sister died, and the house

Atherton mentions Morrill’s insistence that a filing clerk gave his bill the title “Agricultural Colleges.” William H. Brewer also records this statement made by Morrill at a conference in 1867 at Yale’s Sheffield Scientific School. True, History of Agricultural Education, 106 f.

This leap year birthdate was noted by George Swetnam, Pittsburgh Press staff writer, in “Prodigious President,” article in the Sunday edition, Nov. 29, 1959. No full scale biography of Evan Pugh has been published. Short accounts include the Dictionary of American Biography sketch by Fred Lewis Pattee; one adding genealogical details in J. S. Futhey and Gilbert Cope, History of Chester County, Pa. (Philadelphia, 1881); an estimate by W. George Waring written for Benjamin Silliman’s article, “American Contributions to Chemistry,” published for the Priestley Centennial in American Chemist, Aug.-Sept., 1874; and, more detailed, Erwin W. Runkle’s “The Pugh Centenary” (address before Central Pennsylvania section of the American Chemical Society, published in the Penn State Alumni Nexus, March, 1928). The most recent and best documented study is Bloom, “Education of a Scientist.”

"He had to resort to physical persuasion, according to George Gilbert Pond in “Dr. Pugh’s Career as a Chemist” (address at University’s Semi-Centennial, June, 1905, in the Penn State Alumni Quarterly, Jan., 1915, 73-78)."
was taken over entirely for a boarding school conducted by two of his aunts. Evan went off to a manual labor seminary, where work helped defray tuition, at Whitestown (now Whitesboro) near Utica, New York. During this two-year period of formal education the young blacksmith studied chemistry, geometry, calculus, botany, astronomy, geology, physics, and shorthand, which was then called "phonography."

An ardent student, he delighted in using the Pitman shorthand, and also a form of phonetically spelled longhand taught at Whitestown, to take copious lecture notes and to record his impressions as a traveler. An 1848 diary, never transcribed, is the earliest evidence of this journalistic talent. Clues to an August entry about a trip to Niagara Falls are found in a passage of the phonetic longhand and a detailed drawing of a bridge. He adds an expense account—with obvious pride in economy, which he also showed in his later descriptions of walking tours in Germany and mountain climbing trips in Switzerland. Home newspapers and agricultural journals began to receive articles and letters from the pen of "E.P." as early as 1850. Editors, perhaps dismayed by their length, nevertheless welcomed the clear and vividly expressed reports of events, ranging from the New York Exposition to a Baltimore trial of runaway slaves.

After a year of teaching in a district school, while managing his father's Chester County farm in 1849, Evan Pugh followed his aunts' example and opened his own academy as a means of combining teaching, private research, and farming in a more convenient and remunerative manner. The blacksmith shop became a classroom and the farmhouse served as living quarters, with his mother in charge.

At the Jordan Bank Academy for boys, additions to the usual program reflected Evan Pugh's great interests—besides training in the "art of photographic [sic] reporting," he offered laboratory and field work in analytical chemistry, geology, mineralogy, and botany. His scientific lectures and demonstrations were open to pupils of his aunts' school, the Misses Pughs' Pleasant Valley Seminary for Girls.10

10 The Chester County Historical Society has an advertisement and a few programs of the Jordan Bank Academy among its Evan Pugh items. Pugh expressed approval of the "new idea" of co-education in a letter to S. W. Johnson, Mar. 16, 1854.
Encouraged by the success of the venture, the restless headmaster became impatient to move toward a more consequential career, which evidently was already shaping in his thoughts. As a well-informed farmer and teacher, he shared the convictions of those who were seeking better educational opportunities for the agricultural and industrial classes. Like them, he was aware that new concepts in chemistry were expanding the study of scientific agriculture in Europe and Great Britain. These developments were far in advance of anything yet attempted in America—though the support of such activities by the government had been urged by men like Franklin and Jefferson, and others after them.

Evan Pugh further recognized that education along these lines would require specially trained teachers who would also have to develop, through research and experimentation, the body of knowledge that should be taught. He knew, too, that these basic sciences and their applications were then receiving the most thorough scholarly investigation in the German universities.

Determined to qualify for teaching in this new field by studying abroad, he closed the academy, sold the farm to his uncle for $2,800, packed some books and collections of mineral specimens and pressed flowers to sell and exchange, and sailed from New York in September, 1853, on the month-long voyage to Hamburg. The passport described him as twenty-five years of age, an inch over six feet tall, of fair complexion, with bluish gray eyes, a broad regular face, and prominent forehead and chin. A later German travel permit adds that his beard and hair were brown.

After studying Evan Pugh's journals and letters of this period, C. A. Browne, former chief chemist of the United States Department of Agriculture, wrote:

It is doubtful if any American chemist ever prepared himself so thoroughly for his future career as did young Pugh in the six years between 1853 and 1859. . . . It is also probably true that no American chemist has left a more complete record of his activities in foreign lands than is found in his correspondence. His letters to friends and to newspapers give a most complete and fascinating picture of the teaching and practice of chemistry in European countries. . . . The personalities of the famous chemists whom Pugh met in his travels are also portrayed most vividly so that we seem to have before us
breathing likenesses of the men. . . . What particularly impressed me on reading his letters was the maturity of his mind. His observations and opinions are those of a man of ripe experience far beyond what one would expect in a person of his youthful age.\textsuperscript{11}

Beginning with three semesters devoted to chemistry, microscopy, geology, mineralogy, and botany at the University in Leipzig, he next matriculated at Goettingen's Georgia Augusta University to add work in mathematics, and start a doctoral program in chemistry and physics. With Samuel W. Johnson of Connecticut, a fellow-student who became his closest friend, Evan Pugh soon was planning to found an agricultural college in America, but the idea was sidetracked when Johnson went home in 1856 to teach agricultural chemistry in the scientific school at Yale, his alma mater.\textsuperscript{12}

His friendship with Johnson brought Pugh into correspondence with Dr. A. L. Elwyn, a Harvard medical graduate active in the affairs of the Philadelphia Society for Promoting Agriculture and its efforts to organize a state society. By this time Elwyn had become secretary of the first board of trustees of Pennsylvania's newly chartered (1855) Farmers High School.\textsuperscript{13} Through him Pugh received the formal offer of the presidency of the institution which has now become the Pennsylvania State University.

In March, 1856, Evan Pugh earned his doctor's degree \textit{summa cum laude} at Goettingen, writing his thesis on miscellaneous chemical analyses under the renowned Friedrich Woehler.\textsuperscript{14} He insisted

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\item \textsuperscript{11} C. A. Browne, "European Laboratory Experiences of an Early American Agricultural Chemist—Dr. Evan Pugh (1828-1864)," \textit{Journal of Chemical Education}, March, 1930, 499-517. Contains abstracts of letters from Pugh to Johnson and various newspaper editors.
\item \textsuperscript{12} Elizabeth A. Osborne, \textit{From the Letter-Files of S. W. Johnson} (New Haven, Conn., 1913), 139 f.
\item \textsuperscript{13} The University's founders chose the term "high school," which was not then defined in its present sense, to avoid the farmers' prejudice against the designation "college," connoting a "place where boys only contract idle habits." Evan Pugh, \textit{The Agricultural College of Pennsylvania, Embracing a Succinct History of Agricultural Education in Europe and America, etc.} (published as a preliminary edition of the 1862 catalog). Three name changes were made in 1862, 1874, and 1953. The official history is Wayland Fuller Dunaway, \textit{History of The Pennsylvania State College} (Lancaster, Pa., 1946). See also Runkle, "The Pennsylvania State College," and Robert K. Murray, "Centennial of an Idea: The Pennsylvania State University, 1855-1955," \textit{Pennsylvania History}, October, 1955, 307-327.
\item \textsuperscript{14} Runkle, "The Pugh Centenary," quotes Pugh's letters and a diary giving a lively account of his choice of a dissertation topic.
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on taking the examinations, though it was then the practice to grant the degree without them to Americans who could arrange to be "unavoidably" absent. He did obtain permission to write his dissertation in English. The paper was dedicated to Dr. William Darlington, Chester County physician and botanist, whose interest in science and agriculture had long been an inspiration to him, and whose signature was on his passport.

Studying next at Heidelberg, the young scholar joined students from many nations attracted to that place by Bunsen's gas analysis laboratory, and there he impressed the group with his ability and his intense Americanism. Meanwhile, he had taken time to catch up with family correspondence, ship home books for which he had bargained all over Germany, transcribe his diary, and write articles about persons and places he had visited. Among the varied subjects which he described were a walking tour through the Harz Mountains, visits to Justus von Liebig at his Munich laboratories and to the Luther hideaway at Wartburg Castle, a guillotine execution, and his descent into an ancient salt mine. The exhilaration of Alpine mountain climbing especially thrilled him. "It was want of money and not of will," he wrote, "that kept me from standing on the summit of Mont Blanc. Swinging the cradle in the harvest field or the sledge at the blacksmith's anvil is not to be compared with the labor of ascending mountain after mountain, to a height above the clouds. Mountain climbing is instructive, and man can wear out his body in no nobler effort than in instructing his mind."  

He then spent a few months in Paris attending classes in mechanics at the University, and observing French educational methods, intending this to be a finale to his European studies in 1856. It plunged him, instead, into a major research project which made him a prominent figure among the young scientists of the day. In a controversy then current over the direct assimilation by plants of the free nitrogen of the air, he favored the negative theory which had just been advanced by the eminent Boussingault after seventeen years of experimentation. Suspecting the validity of research methods used by Ville in opposing Boussingault's conclusions, young Dr. Pugh outlined an investigation of his own.

15 Evan Pugh, Scrapbook: Clippings from Chester County papers: a journal of experiences abroad, 1853-1859.
and secured the privilege from Dr. Joseph Gilbert of conducting it at Rothamsted near London. This famous laboratory, directed by Gilbert and endowed by Sir John Lawes, was the immediate forerunner of America's agricultural experiment stations, which Congress formally launched with the Hatch Act in 1887.

The painstaking accuracy and manipulative ability shown in his research work as a student in Germany were fully demonstrated in the two years of "incessant labor" spent on this project. Dr. George Gilbert Pond, another chemist who came to Penn State from Goettingen, hailed it as a display of masterful skill in the construction of apparatus, brilliant ingenuity in arranging details, every caution against error, "sterilized" apparatus and materials, though he knew neither the word nor the thought which it carries today, and a wonderful gift of penetration to discover the many kindred problems involved, and of acuteness in their solution.16

When Perry W. Wilson, University of Wisconsin authority on biological nitrogen fixation, commemorated the centennial (in 1957) of the famous experiments, the execution of which he calls "classic," he reviewed their history in the style of the original Rothamsted Memoirs.17 The names of Lawes, Gilbert, and Pugh appear on the title page in that order because of rank and seniority, but the experiment actually was conceived, proposed, and executed mainly by Evan Pugh, as his notebooks and letters testify.

Although the results of his research at Rothamsted on the sources of the nitrogen of vegetation, and on the quantitative analysis of nitric acid, were not published until 1860 and after, the work had established his scientific reputation by early 1859. At this time he had to make the decision which shaped his life and the history of the Pennsylvania State University. Attracted as he was by the invitation of Lawes and Gilbert to continue his research at Rothamsted, he recognized that the Pennsylvania Farm School

16 Pond, "Dr. Pugh's Career as a Chemist," 77.
presidency would enable him to indulge both of his major interests in a single educational experiment that could well have important consequences. He therefore accepted the offer extended by the president of the board of trustees, Judge Frederick Watts of Carlisle, when the trustees complied with his request for time to finish his work in England, and for an advance of $1,000 with which to purchase materials in Germany for the chemistry laboratories he insisted the school should have.18

Thus, Evan Pugh arrived at the Centre County "campus" on October 26, 1859—just ten days after John Brown's raid on Harpers Ferry. The school had been in session since February of that year under the direction of William Griffith Waring, a local teacher and horticulturist, whom the trustees had appointed in 1856 to supervise all operations preparatory to its opening. One of three units of the contemplated main building housed the entire college. This six-story section, of native limestone quarried on the grounds, towered above the excavated foundation of the remainder, on which work had been suspended for lack of funds. A large barn, a cluster of sheds for farm purposes and for construction, and two simple dwellings completed Penn State's earliest physical plant. It was surrounded by farmland, much of which had once provided timber for Centre County's iron furnaces.

An early snow was falling when the long-awaited executive reached his destination, escorted by Hugh N. McAllister of Bellefonte, lawyer and gentleman farmer, chairman of the trustees' building committee, and equally dedicated in his own way to the cause of agricultural education. In the shack serving temporarily as a dining hall, Dr. Pugh greeted the student body of 110 men and the faculty of four at the midday meal, and then immediately tackled the many administrative chores that had been accumulating.

Even for a man of his mental and physical vigor this assignment was formidable. The experimental school had to be more soundly organized, its building completed, public recognition and support developed, and all this with the Civil War threatening and the aftermath of the Panic of 1857 undermining promised financial

18 From his annual salary of $1,500 President Pugh contributed $500 each year to provide adequate laboratory apparatus for the use of the students. E. D. Eddy, Colleges for Our Land and Time, 70, attributes this generosity to William Griffith Waring, mistakenly quoting Dunaway, History of The Pennsylvania State College, 38.
assistance. From the beginning he worked with urgency to shape a type of educational institution new to America, based solidly on science, to benefit Pennsylvania's agriculture and industry, and to serve as a model for others. The sense of urgency shows in the dashed-off look of his many handwritten letters, especially in the almost daily notes exchanged with the equally hurried McAllister. Today these messages would be telephoned and historians would miss the richly personal touches that enliven this correspondence.

Before the trustees officially recorded his appointment at their December meeting, Evan Pugh had taken steps to improve the housekeeping and general atmosphere of the rough, rustic, all-male institution by engaging an elderly woman of the neighborhood and her three mature daughters for the "culinary" department. He had worked out comprehensive "College Rules and Regulations," and had begun work on the 1859 catalog, which actually was a detailed announcement of the 1860 term that would open in February, with a brief summary and student register of the 1859 term then ending. In editing the annual catalogs through 1863, he sought to inform the general public as well as prospective students. As a preface to the 1859 publication, he wrote a 15-page statement concerning agriculture's great need for science and education, and the merits of the school's version of required manual labor as an accompaniment to classroom study. The object of the Farmers High School, he said,

is to afford a system of instruction as extensive and as thorough as that of the usual course of our best colleges . . . which shall embrace to the fullest extent possible those departments of all sciences which have a practical or theoretical bearing upon agriculture, and agricultural interests. . . .

The manual labor of the student, while it preserves health and maintains habits of industry, and makes him acquainted with the manipulative details of the farmer's life, will serve to reduce the expenses of his education so as to bring the means of obtaining it within the reach of nearly every farmer in the State. It will enable him to take advantage of a system of instruction embracing all the auxiliaries (apparatus, scientific collections, etc.) to study of our best colleges at a much less cost than is required by the latter. . . .
... all labor which is in any way useful to mankind is honorable ... it can never be inconsistent with genuine dignity nor manly worth.

[This] will be an institution in which the State appropriations to collegiate education will be made available, both as a means of education and of diffusion of knowledge upon agricultural subjects, to almost all the people of the State ... if the citizens of Pennsylvania will but give this cause an efficient helping hand, there is no doubt but that in a few years Pennsylvania may have upon her own soil one of the best Agricultural Schools in the world."

He amplified these thoughts in two published addresses that were given a few months later. One was his inaugural speech entitled "On the Mutual Relations of the Teacher and the Taught," delivered apparently without ceremony at the opening of the school's second year on February 16, 1860. The second, "What Science Has Done and May Do for Agriculture," was a lengthy discourse before the Cumberland County Agricultural Society at Carlisle. In this he contrasted agricultural development in Europe and America and called for national and state bureaus, with chemists and statistical services, as well as the establishment of scientific investigation stations, experimental farms, and extension services, as part of a true agricultural college.

The failure of the General Assembly in 1860 to approve an appropriation of $50,000 to complete the college building delayed President Pugh's curriculum plans and forced him to turn away students. With the aid of trustees and discerning legislators the bill finally passed the 1861 Assembly (sessions were annual then) on April 10—two days before the shelling of Fort Sumter. Wartime problems slowed construction, however, so that more than two years elapsed before all of Old Main was ready for use, complete with chapel, dining hall and kitchen, library and museum, three chemistry laboratories, classrooms, offices, dormitories, several faculty apartments, and a bell in the tower.

Many events important to Penn State and to Evan Pugh occurred before Old Main was completed. In December, 1861, eleven survivors of a class of fifty-five, who finished the course in three years because they had entered with advanced standing, re-

"Catalog of the Farmers High School for the year 1859, 14 f."
OLD MAIN IN 1863, PHOTOGRAPHED BY DR. PUGH.
This building was replaced in 1930 by the present Old Main, constructed on the same site from the same stone. Henry Varium Poor's fresco interpreting the Land-Grant Act is in the foyer.

The President's House as it looked when completed after the death of Dr. Pugh. Remodeled several times, it has been the residence of all other Penn State presidents.
ceived the degree of Bachelor of Scientific Agriculture. The president had no diplomas ready, but he did designate these men as "the first class that graduated at an Agricultural College in the United States, and they graduated upon a higher scientific standard than is required at any other Agricultural College in the world."20

Graduation requirements included the writing of a literary paper or a report of an original investigation, most frequently in agricultural chemistry, regional geology, or mineralogy. As a professor in these three fields, Dr. Pugh lost no time in informing himself about Centre County's geography and its iron and limestone industries. One authority he consulted was Abram Valentine, a Chester County Quaker like himself, who was a founder of Bellefonte's largest charcoal iron furnace, an inventor, and an expert in local geology. The young president soon became a regular caller at Willowbank, the Valentine mansion in Bellefonte. The attraction was Abram's daughter Rebecca, who shared his abolitionist sympathies and whose gentility, intellectual interests, and ability to converse in German were a refreshing change from his busy daily routine.

This friendship which shortly became courtship inspired Dr. Pugh's suggestion to the trustees that a president's house ought to be built in conjunction with work on Old Main. Approved in 1862 on the basis of his contributing a third of the cost, the large stone house which he designed was still unfinished when he died in 1864, three months after he and Rebecca were married. It has been the residence of all his successors.

An ambitious program of advanced study began in 1862 and drew at least a dozen students during the remaining years of Dr. Pugh's presidency. The first two resident graduates were C. Alfred Smith '61 and a young New Yorker, Augustus King, son of the president of Columbia College.21 Students, sometimes sent

20 Pugh, Succinct History, 43. Dr. Pugh based this assertion on correspondence with agricultural leaders in America and observation of European educational systems while abroad. Actually, Michigan State's first graduation was set for November, 1861, but members of this class were permitted to leave before completing their work to enter Civil War service. For this and for Dr. Pugh's statement that the Michigan school "for some cause . . . has been obliged to suspend operation" see Madison Kuhn, Michigan State; The First Hundred Years, 56-67.

21 Mr. King, brother of Gen. Rufus King of the Army of the Potomac, died midway through the term while visiting his father in New York. The Uni-
by friends like Johnson and Caldwell, came because of Dr. Pugh’s scientific reputation. This was enhanced by the publication of his Rothamsted papers and by his membership in the Chemical Society of London and the American Philosophical Society in Philadelphia.22

The personality of Evan Pugh made a forceful impression both on the students and on his associates. Letters and reminiscences which they wrote, and his own letters to them, provide abundant evidence of the magnetism of the young professor-president as teacher and scholar, and of the fairness and understanding with which he firmly enforced college regulations. The average student held him in awe; the able responded to his direction with affectionate respect. A. A. Breneman ’66, who followed him as a Penn State chemistry professor, observed:

Science seemed to him a single structure so correlated in all its parts that he needed its widest outlook even in his most specialized studies. . . . Through all of his life he was familiar with the development of these co-ordinated studies, and would turn from a geological tour with students over the neighboring mountains to a chemical experiment or blackboard demonstration in calculus with the same easy familiarity that marked him in the lecture room or on the public platform. He was a chemist because he was first of all a philosopher and because he saw in chemistry the most fundamental of the sciences.23

University’s first graduate degree, Master of Scientific Agriculture, was earned by C. Alfred Smith, who received a certificate handwritten by President Pugh in 1863.

22 Dunaway’s statement (History of The Pennsylvania State College, 33) that he was elected a Fellow of the Royal Society of Great Britain appears to be a misinterpretation. Earlier accounts list membership only in the societies mentioned. Writing to Johnson (March 14, 1858), Pugh says he attended all meetings of the Chemical Society that winter, and some of the Royal, and that after business sessions both groups and the Linnean Society held joint social meetings. His paper “On a New Method for the Quantitative Estimation of Nitric Acid” appeared in the Quarterly Journal of the Chemical Society of London, vol. 12, 1860. “On the Sources of Nitrogen of Vegetation; with Special Reference to Whether Plants Assimilate Free or Uncombined Nitrogen” was published in the Philosophical Transactions of the Royal Society, vol. 151, part 2, 1861, and reprinted in John B. Lawes and Joseph H. Gilbert, The Rothamsted Memoirs on Agriculture and Chemistry, vol. 1 (London, 1890).

23 A. A. Breneman, “Dr. Evan Pugh, Chemist and Philosopher” (paper read before Phi Kappa Phi, State College, June, 1908), 4. Among other estimates by students are those of C. Alfred Smith, W. George Waring, and Tellico Johnson, who also wrote of the school’s part in the Civil War.
PENN STATE'S FIRST GRADUATES, THE CLASS OF 1861, included eleven of these men, all Pennsylvanians. From left to right, front row: Milton S. Lytle of Spruce Creek, C. Alfred Smith of Reading, Lynn C. Troutman of Philadelphia, Addison C. Church of Kingston, and Charles E. Troutman, twin of Lynn; back row: James Miles, Jr., of Girard, John D. Isett of Spruce Creek, John W. Eckman of Cornwall, George Wetmore of Warren, Samuel Holliday of Springfield in Erie County, John N. Banks of Mifflintown, Edward P. McCormick of Lock Haven, and J. Henry Isett of Yellow Springs. Wetmore and J. D. Isett left early for Civil War duty.
Established as a leader in scientific agricultural education, President Pugh was among those whose advice was sought when attempts were underway to organize the bureau which became the United States Department of Agriculture in May, 1862. He sent suggestions and twice rejected offers to join the staff, writing in 1863:

I refused to accept the head of that department (chemistry) when it was offered me two years ago—because I wanted to devote myself to agricultural education, in the State Agricultural College called or to be called into existence by the Congressional Appropriation. The best way to do this I conceive is to make our own college a model which other Agricultural Colleges will adopt.... to do this I am resolved to stay with our College, while God gives me strength to perform my duties there, whatever may be the pecuniary inducements or prospects of honor elsewhere.

It is my duty and my destiny to do so, and I shall seek honors in the path of duty and of destiny rather than at Washington.24

President Pugh did go to Washington in line of duty, however, as did Penn State’s trustees and leaders from other states, notably Illinois, Massachusetts, New York, Michigan, and Connecticut. These men helped exert influence on the formulation and passage of the Morrill Act which donated “public lands to the several States and Territories which may provide colleges for the benefit of Agriculture and the Mechanic Arts.”25

In May, 1862, the Farmers High School became the Agricultural College of Pennsylvania, a change of title approved by the Trustees and the Centre County Court on the recommendation of Dr. Pugh, who had used it even earlier. His reason for this strategic move, which called attention to the obvious qualifications of the institution for the forthcoming Morrill Act benefits, was that the course of study, stressing mathematics and the natural sciences, actually had been on a collegiate basis from the start and was “more extensive than that of any European agricultural college.”26

With the passage of the Morrill Act in July, 1862, the president

24 Evan Pugh to Prof. David Wilson, Sept. 18, 1863.
25 Title of the Morrill Land-Grant Act of 1862.
26 Pugh, *Succinct History*, 43.
and trustees directed their efforts to persuading the state legislature that prompt acceptance of the congressional grant would enhance its value to Pennsylvania, which, as one of the older states, would derive its funds from the sale of land scrip. On April 1, 1863, Governor Andrew Gregg Curtin, who was one of the Bellefonte friends of the school and an *ex officio* trustee, signed the act of the Pennsylvania legislature accepting the land grant, pledging “the faith of the state . . . to carry the same into effect,” and assigning all funds from it “to the Agricultural College of Pennsylvania.”

Fulfillment of this goal promised a bright future, but June of 1863 brought new troubles. While returning from a call on friends near Bellefonte, Dr. Pugh and his fiancee were severely injured in an accident. Frightened during a sudden thunderstorm, his horse backed the buggy over a steep embankment into Spring Creek, pinning Rebecca beneath it. Dr. Pugh, who had been thrown clear, succeeded in pulling her free, though his left arm was broken in two places. Unskilled setting of the broken bone eventually necessitated surgical treatment which kept him in Philadelphia and Chester County from July until October.

Meantime the classwork of the students, already disturbed by his absence, was completely disrupted when most of the boys and two of the faculty volunteered for emergency service in Pennsylvania's defense against General Lee's invasion. The president's return in October, with Professor George Caldwell to assist him in the new chemistry laboratories, finally restored order and salvaged the work of the term.

Activity elsewhere in the Commonwealth, however, soon absorbed him in a bitter struggle that cost him his life because of his relentless determination to secure the future of the college. The efforts of several other institutions to share the land-grant funds forced him into a strenuous defense of the wavering faith of the state, which had been pledged to his college in the Acceptance Act. His wedding during the school's vacation period provided only a brief respite from this pressing chore. After the

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ceremony at Willowbank on February 4, 1864, the young couple left for a short trip to Philadelphia, but had to cancel their plans to visit the Johnsons in New Haven because the president had to get back to Harrisburg.

Writing and addressing legislative committee hearings, Dr. Pugh maintained that the Agricultural College of Pennsylvania was “designed to occupy a place not before occupied, rather than come into competition with any other institution.” He argued that the specific intent of the Morrill Act was to establish this type of educational institution, that acceptance of the Morrill Act obligated the state to assume responsibility for its support, and that its operation on a scale large enough to be efficient and of maximum value to Pennsylvanians required the entire and undivided land-grant fund. His writings show that he fully appreciated the role of the private colleges, the so-called literary or classical institutions, and deplored their difficulties in obtaining resources, but felt that their interest in the land-grant funds was unwarranted and incompatible with the spirit of co-operation that should exist among all institutions of higher education.

While writing his arguments against the various bills introduced to “deprive the College of its endowment,” and publishing his comprehensive Plan for the Organization of Colleges for Agriculture and the Mechanic Arts, President Pugh was attending to school business as usual, meeting classes, and preparing for a gala reception. This event marked the completion of Old Main and served to honor members of the legislature and their wives. Tellico Johnson, a student at the time, reports the excitement of the boys over the rare feast they were to share and quotes Dr. Pugh’s rueful prophecy that the dinner would probably cost more than the college would get out of it.

President Pugh was writing another reply to proposed legislation when illness overtook him in the form of typhoid fever on April 22. The strain of overwork and incomplete recovery from his accident of a year earlier weakened his struggle against the fever, and he died at Willowbank a week later, on April 29, 1864, exactly two months after reaching the age of thirty-six. The Agricultural College students came in a body to attend the funeral service and burial in Bellefonte’s Union Cemetery. Tributes and

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28 Catalog of the Farmers High School for the year 1861, 17.
resolutions of condolence were sent from far and near to comfort the young widow.  

The document President Pugh was writing when he collapsed at his desk was a scathing denunciation of a state Senate bill, introduced on April 14, which proposed division of the land-grant benefits among six institutions. "The effect of the bill," he wrote, "is virtually to squander the entire proceeds for all time to come of the magnificent grant of public lands from Congress to this state for the purpose of industrial education." Contrasting the private, sectarian, and even local character of most of the other colleges with the obvious qualifications of the Agricultural College of Pennsylvania, he emphasized that it alone was "a bona fide State Institution, originating under State Patronage, built by the State, and now owned by the State as truly as are the Legislative halls in which this monstrous act was passed."

The bill, amending the 1863 Acceptance Act, had passed the Senate on April 21, the day before President Pugh's illness began. Debate had opened in the House on the 27th, with Cyrus T. Alexander, representative from Centre County, defending the cause of the Agricultural College against the onslaught of legislators favoring the others: Philadelphia's Polytechnic College, Allegheny College, Pennsylvania College at Gettysburg, the University of Lewisburg, and the Western University at Pittsburgh.

The vote, which was called for on May 2, was delayed because the Centre County representative was absent to attend President Pugh's funeral. During another heated debate on May 4, the day before adjournment, it was pointed out that the bill would have to pass the House by a two-thirds majority and be approved the next day by a two-thirds vote of the Senate. A motion for indefinite postponement was carried, 47 to 44.

The Agricultural College had to wait another three years (until 1867) to be designated the permanent and sole recipient of Pennsylvania's benefits from the Morrill Act, but Evan Pugh, through his drive and vision, had given the institution a base firm enough

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29 Mrs. Pugh, who had no children and who never remarried, died at Bellefonte on July 7, 1921. She is said to have visited the campus only twice after her husband's death: in 1890 when the Class of 1861 presented his portrait at a reunion, and in 1905 when he was eulogized at the University's observance of its fiftieth anniversary.

30 Martin, "Pennsylvania's Land-Grant," 100.
to survive both the ill-effects of prolonged legislative neglect and the shock of his loss, a little over four years after his inauguration. The loyal trustees, particularly Judge Watts of Carlisle, Moses Thompson of Centre Furnace, Bellefonte's McAllister, E. C. Humes, Congressman James T. Hale, and Governor Curtin, keenly missed the dynamic and articulate leadership he had provided. Yet in the ensuing struggle most of those who might have gone forward with his plans were unequal to them, and many failed even to remember what he had accomplished.

The institution waited fifteen years more, and underwent another name change, before President George W. Atherton came in 1882 to rescue it from poverty-induced aimlessness. A lawyer and political science professor, Dr. Atherton shared Pugh's active concern for practical education. He was Evan Pugh's sixth successor and probably the first with whom Pugh would not have been at odds. Together with the trustees, led by General James A. Beaver of Bellefonte and Cyrus T. Gordon '66, Atherton supported and developed the faculty's reorganization plans advanced by Professors I. Thornton Osmond, William A. Buckhout '66, James Y. McKee, C. Alfred Smith '61, John Hamilton '71, and Whitman Jordan—all key figures over a long period of the institution's history. Gradually the original foundations laid by Evan Pugh were restored so securely that only lack of adequate means has slowed the realization of the university's full potential.

The goals which Evan Pugh never doubted would be attained, the state government willing, were pursued over the years by Atherton and his followers—Edwin Erle Sparks, John M. Thomas, Ralph Dorn Hetzel, Milton S. Eisenhower, and now by the University's twelfth president, Eric A. Walker. What President Pugh conceived to be his task in the 1860's has basic parallels with that of the land-grant university executive today—when a new succession of discoveries and inventions accentuates once again society's dependence on education. The hesitation of government in authorizing public support continues to check the ability of edu-

\[31\] Atherton's papers are filed in the Penn State Collection. Often called the University's "second founder," he was a Yale graduate, member of the first faculty of the University of Illinois, and a professor at Rutgers for fourteen years before his administration at Penn State, 1882-1906. He was a founder of the American Association of Land-Grant Colleges and State Universities, and was elected its first president in 1887.
cation to serve all classes of the people, and thus to promote democracy's defense, but this is not new. Almost a century ago Evan Pugh wrote:

The spirit of the present age, moulded by the investigations of science, proclaims the necessity of scientific researches in every department of industrial pursuits, from the peaceful operations of the Agricultural Bureau at Washington, to the death-dealing avengers of treason in Charleston Harbor. Our Industrial Colleges, to meet the demands of the age, must be experimental institutions no less than for teaching what is already known in science. . . . There is scarcely any limit to the amount of means that may be advantageously spent in scientific investigations in all the experimental sciences.\(^{22}\)

With a few topical substitutions, these words and much of his writing would be pertinent today. Taken with what we know of his life and his ambitions they clearly reveal the thinking of this exceptional man who enabled Pennsylvania to become a pioneer in democratic education, and who helped to achieve the objectives of the Morrill Land-Grant Act, which, as its fourth section states,

shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.

\(^{22}\)Evan Pugh. *A Report upon a Plan for the Organization of Colleges for Agriculture and the Mechanic Arts* (addressed to the Board of Trustees at Harrisburg, January 6, 1864, with a supplement dated January 14, 1864). These documents were printed and widely circulated by the Board.