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EARLY SURVEY WORK AND THE ROOTS OF GEOLOGICAL EDUCATION
IN THE CAROLINAS
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ABSTRACT

Since the birth of the first state geological survey in 1823, the United States have funded projects related to geology at all fifty of one time or another. Most states operate vigorous geological surveys today. The first state-sponsored survey in the United States was conducted in North Carolina from 1823 to 1825 by Denison Olmsted and from 1825 to 1827 by Elisha Mitchell. Both were on the faculty of the University of North Carolina at Chapel Hill. The second state survey was carried out by Lardner Vanuxem in South Carolina from 1824 to 1826. At the same time, of South Carolina in Columbia. Vanuxem was professor of geology at the College. These individuals were among the first to teach college-level courses related the southern states. Indeed, to geology anywhere in Vanuxem occupied the first chair in geology to be created at a state school in the United States. Summer involvement with state survey work opened new opportunities for active field research, student associates, and the enrichment of the school-year curriculum. Although the initial Carolina surveys were modest, unsophisticated efforts by comparison with projects only a few years later, the general pattern was clearly set for the close, association mutually beneficial of state survey agencies and universities today. commonly found today.

EARLY MEDICAL DISSERTATION RESEARCH ON TENNESSEE GEOLOGY
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ABSTRACT

Unpublished doctoral dissertation that predate American Ph.D. programs are an underutilized source of information on the geology of Tennessee, and on other geological topics. The nature of early doctoral research is briefly described and four pioneer dissertations, submitted in M.D. programs, are reviewed. The first dates from 1822 and the last from 1840. Each has continuing academic value, but must be viewed within the context of nineteenth century culture.

GEOLOGICAL EDUCATION IN GEORGIA
BEFORE 1861

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ABSTRACT

Before the war there were private and "old schools, and also private, individual- field" public elementary academies, seminaries, or institutes and church-supported high-schools called and mineralogy taught Some even used the word college. in some of Geology were availability of teachers; the academies, depending upon the most had the typical classical education of the day.

There were four colleges: Franklin [Baptist], the University of Oglethorpe [Presbyterian], and Emory [Methodist]. Georgia, Mercer All had geology in the curriculum, either as a distinct one-semester course [combining the present- day physical and historical geology] or as part of a course in natural None history. was a center of great scientific strength, although both Franklin and Oglethorpe had the services of Joseph LeConte for a short while.

Brief biographies of John R. L. Jones, Joseph LeConte, Cotting, James Jackson, Joseph Jones, William Joseph Willett, Alexander Means, Josiah Meigs, George W. W. Stone, and James Woodward are included.

EUGENE W. HILGARD AND SCIENTIFIC
EDUCATION IN MISSISSIPPI
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ABSTRACT

Hilgard is renown as the Father of Soil Science, and the founder of that scientific discipline. Born in Bavaria, he was brought to America as a child. He returned to Europe for university education at Freiburg and at Heidelberg, where he received his Ph.D. in Chemistry in 1853. In 1855, he came to Mississippi as Assistant State Geologist and Professor at the University of Mississippi. He came at the behest of Chancellor F. A. P. Barnard, who was trying to build a great scientific center at Oxford.

Hilgard remained for 18 years, through the drama of the Civil War when he put his scientific talents to the use of the Confederacy. He sought out nitrate and salt sources, and tried to build calcium flood lights for the batteries at Vicksburg. Hilgard was a kind, gentle, patient man of extraordinary intellect, beloved by students and associates. In 1873 he moved to the University of California where his fame grew.

Hilgard was the first to delineate the field of soil science. In that discipline most of the long-used definitions, concepts, physical parameters, standard units, and techniques originated with him. He bridged the gap between theoretical science and practical farming.

THE CAREER OF CLARENCE KING
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ABSTRACT

As the first director of the U.S. Geological Survey Clarence King had significant influence on the development of American geology. From his first professional work, in 1863, until he died, in 1901, King was a leading figure within the American geological community. Although he was

always interested in geology, King's career reflects personal concerns that had little, if anything, to do with science. Some of these personal factors and personal values can be identified. Examining them provides insight into the complexity of scientific careers in the late nineteenth century.

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ABSTRACT

James Merrill Safford (1822-1907), famous for geological investigations of Tennessee, taught chemistry and biology, as well as geology, for 52 years. He held administrative posts in medicine, and his teaching, even of geology, was mostly to would-be physicians, engineers and pharmacists. His education in Silliman's laboratory at Yale, during 1847, probably was the key to his success.

From 1848 to 1873 he taught full-time at Cumberland University in Lebanon, Tennessee, except for leave in 1854-56 to work for the geological survey of Tennessee. During the Civil War hiatus, 1862-1866, he taught preparatory on a private basis, operated his farm, and investigated oil and gas properties.

After 1875, Safford held part-time teaching posts. He was a half-time Professor of Geology and Biology at Vanderbilt University and taught chemistry as a proprietor in a Medical Department jointly operated by Vanderbilt and the University of Nashville. He was also secretary of the Medical Faculty and Dean of the Pharmacy Department at Vanderbilt.

Safford was a pleasant, friendly man, who quoted classical poetry and led early morning prayers. Through 1869, his professional contributions mainly consisted of survey work in geology. Later he mainly applied geology to health, agriculture, and resource development.

FROM APPRENTICESHIP TO PROFESSION, NATHANIEL SHALER AND THE FIRST
SUMMER SCHOOL OF GEOLOGY

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ABSTRACT

The Harvard-Kentucky Geological Survey Summer Schools in 1875 and 1876 represent a significant turning point in the method of educating geologists. The transition from apprenticeship to group field experience originated in the fertile mind of N. S. Shaler, Harvard Professor and Director of the Kentucky Geological Survey. By means of the first summer school of geology Shaler influenced high school teachers, formed the standard pattern for field education, and promoted the careers of several late nineteenth century geologists. The rigors of the site and the need to avoid damaging the work of the Kentucky Geological Survey forced the end of the

school at Cumberland Gap, but in two short summers the course of geological education permanently changed.

TENNESSEE DIVISION OF GEOLOGY, 1831-PRESENT

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ABSTRACT

The Tennessee Division of Geology has a close, long-term relationship with the educational establishment in Tennessee that has changed in nature over the years but remains strong. Gerard Troost, the first State Geologist, was a college professor, as was his successor, James M. Safford, and, more recently, L. C. Glenn. From 1909 to 1923 the affairs of the State Geological Survey were overseen by a Geological Commission that included, ex officio, the President of the University of Tennessee, the Chancellor of Vanderbilt University, and the Vice Chancellor of the University of the South; then, from 1923 to 1937, the Division of Geology was administratively part of the State Department of Education.

Since becoming part of the Conservation Department in 1937 the Division has served an educational function by publishing both scholarly and popular works on the geology of the state; by answering inquiries on every subject from paleontology to water-witching; by advising news media on stories; by giving talks to school, geology-related museum, and other groups; and by close cooperation with university geology departments on research projects. The Division has had a strong role in graduate education, particularly at the Master's level, by conducting field excursions for students, financing theses through student mapping projects, by loans of field equipment, and serving as informal thesis advisors. Long-term assistance to geology departments has also included part-time employment of professors as consultants, publication of studies by professors and students, and part-time teaching by Division staff members. Most of these forms of educational assistance have suffered in recent years, due to budget cuts and loss of staff positions.

THE GEOLOGICAL SURVEY OF ALABAMA AND THE UNIVERSITY OF ALABAMA: A
COORDINATE HISTORY

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ABSTRACT

For almost 140 years geological education at the University of Alabama and the work of the Alabama Geological Survey have been closely tied together. The Survey and the University utilize overlapping personnel and at times in the past have shared the same space. They are so intimately related that they have one coordinate history.

A STATE-WIDE EARTH SCIENCE INSTITUTE IN MISSOURI
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ABSTRACT

One-hundred-fifteen secondary school science teachers in Missouri were trained in 1969-70 in an NSF-funded, state-wide institute in which eight colleges and universities participated. An inquiry approach to teaching and learning, in contrast to lecturing and reciting, was to be used by the teachers. Because of this, special attention was given, newly trained teachers during the training period, to teacher attitudes and attitude change in relation to students and classroom situations. Evaluation showed that the greatest positive change in teacher attitude came during the early, very intensive part of the year-long program.

HISTORY OF THE EARTH SCIENCES AT SOUTHEAST MISSOURI STATE UNIVERSITY
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ABSTRACT

The history of Southeast Missouri State University parallels that of other teacher education institutions. It started as Southeast Missouri Normal School in 1873 and reached university status in 1972. A department of Geology and Geography was established in 1909, becoming the Geography Department in 1915. In 1924, the sciences were combined into the Science Department. In 1960, this became the Division of Science and Mathematics and the Department of Earth Sciences was formed.

An earth science major began in 1937, with separate geology and geography majors established in 1958. Recently the Department has developed more specialized, job-oriented programs in mining geology and in cartography. Since 1983 the Department has also operated a field camp, headquartered on the campus of Dixie College, St. George, Utah.

THE EARTH SCIENCES IN A SMALL UNIVERSITY
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ABSTRACT

Austin Peay State University is a small school, founded 56 years ago. While geology has long been taught, major programs are less than a decade old. Despite small size and shallow historical roots, the earth science faculty have been able to participate in the evolution of American geology through publication and through work on NSF projects. Many small colleges have comparable histories.

JOHN LEONARD RIDDELL: FROM RENSSELAER TO NEW ORLEANS (1827-1865)
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John L. Riddell, though primarily interested in chemistry, botany, and medicine, made considerable contributions to geology. From 1827-1829 he was a student at Rensselaer under Amos Eaton, the first American teacher of geology. Riddell's first scientific lecture, A new theory of the earth, was delivered at Rensselaer in August 1829. It dealt with geological formations and the fossil remains contained therein.

From 1830-1832 Riddell presented public subscription lectures in New York, Ontario, Pennsylvania, and Ohio. Late in 1832 he became professor of chemistry and botany at the Ohio Reformed Medical College, where he began to study the geology of the state. Geology of Ohio, his first formal paper on geological subjects, appeared in 1833. Others papers soon followed. He worked with Samuel P. Hildreth on Survey of the geology of Ohio, which was completed in 1836. Soon afterwards, Riddell married and moved to New Orleans, becoming professor of chemistry at the New Orleans Medical College, now Tulane University. He remained in New Orleans until his death nearly thirty years later.

In 1839 Riddell attempted to secure state authorization to conduct a geological survey of Louisiana. Also in 1839, he made two excursions to Texas, resulting in his Geology of the Trinity Country, Texas, published in 1839. Finally, in 1841, the Geological Committee of the State of Louisiana was formed, with Riddell as Chairman. There were five other members. Tragically, the result of their work was lost before being published, and no trace of the manuscript is known to exist today. In his later years, Riddell continued to do geological work, including studies of Mississippi River dynamics. He also continued his long teaching career in New Orleans.