Annotation
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Educator and Researcher, Administrator and Public Servant

Joseph Henry's Career as a Scientist

By Marc Rothenberg

On May 13, 1878, Joseph Henry, the Secretary of the Smithsonian Institution, and "the most eminent and distinguished scientist in the United States,"[1] died in Washington, DC. His funeral three days later was attended by official Washington, including the leadership of all three branches of government, led by President Rutherford B. Hayes.[2] Academicians and scientists from around the country were also in attendance to honor the man.

On January 16, 1879, a memorial service for Henry was held in the United States Capitol. Among the speakers was Gen. William T. Sherman, a regent (trustee) of the Smithsonian, who eulogized Henry as a "hero" who had mastered the laws of nature and harnessed them for the good of the human race. Sherman also praised Henry for elevating science in the United States into an important career path. Other speakers praised Henry's integrity, his scientific contributions, and his public service.[3]

In some ways, the man who was being honored was the stereotypical American success story. He overcame the poverty of his youth to achieve greatness through hard work, dedication, and the help of his friends. Born in Albany, New York, in 1797, he spent his youth with his uncle and maternal grandmother in the village of Galway, 36 miles from Albany.

According to Henry's own recollection, the turning point in his life occurred when he was 16, when he accidentally came upon a popular exposition of science. He later wrote that reading this book "opened to me a new world of thought and enjoyment, invested things before almost unnoticed with the highest interest, fixed my mind on the study of nature and caused me to resolve at the time of reading it that I would immediately commence to devote my life to the acquisition of knowledge."[4]

Between 1819 and 1822 Henry attended the Albany Academy as an overage student. He worked for some years as a tutor and surveyor before returning to the Albany Academy in 1826 as professor of mathematics and natural philosophy. It was here that his scientific career began. By utilizing many layers of insulated wire, he produced an electromagnet of previously unmatched power.

Portrait of Joseph Henry by Henry Ulke, 1875. Photograph courtesy of the National Portrait Gallery.

The announcement of this discovery in 1831 first brought Henry national and even international attention. He also demonstrated how such magnets could be electrically activated over long distances, in essence creating an electromagnetic telegraph. Most importantly, he discovered (independently of Michael Faraday in England) mutual electromagnetic induction (the generation of an electric current by magnetism) and electromagnetic self-induction.

On the strength of these discoveries, Henry was named professor of natural philosophy at the College of New Jersey (now Princeton University) in 1832. At Princeton he lectured on geology and architecture as well as natural philosophy and astronomy.

Henry's research program broadened considerably while he was at Princeton. He continued to explore electromagnetic phenomena, including lateral discharge, the transformer, and the oscillatory nature of the discharge of a capacitor. He also experimented on ultraviolet light, molecular cohesion, and capillarity, and observed geophysical and astrophysical phenomena, including solar temperature, terrestrial magnetism, and auroras. Most of his discoveries during this period in his life were first publicly announced at

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From the Editor

The March 2004 issue of *Annotation* focuses on projects relating to science and technology. Our featured articles are

"Educator and Researcher, Administrator and Public Servant: Joseph Henry's Career as a Scientist," by Marc Rothenberg

"Rescuing the University of Florida College of Medicine Records," by Nina Stoyan-Rosenzweig and Carl Van Ness

"Michigan's Records Management Application (RMA) Project: Managing Electronic Records in the 21st Century," by Caryn Wojcik, Deborah I. Gouin, and Mimi Dionne

"The Challenge of Editing the Edison Papers," by Paul Israel

"The Center for History of Physics Begins Study of Corporate R&D Records," by Joe Anderson

"The Carnegie Legacy Project: Shaking the Dust from 100 Years of Scientific Discovery," by Charles Hargrove and Jennifer Snyder

"A Half-Century of the Albert Einstein Papers Project," by Diana Kormos Buchwald

This is Dane Hartgrove's last issue as editor of *Annotation*. He thanks all those who have provided articles for the newsletter during his tenure, and especially those who have allowed him to benefit from their wisdom and experience while he served in this capacity. He wishes Keith Donohue well as *Annotation*'s new editor.

NHPRC Application Deadlines

The Commission's meetings follow the fiscal year of October 1 to September 30. Consequently, the first meeting of the fiscal year is in November and the second is in May.

June 1 *(for the November meeting)*

Proposals addressing the following top priorities:

- The NHPRC will provide the American public with widespread access to the papers of the founders of our democratic republic and its institutions by ensuring the timely completion of eight projects now in progress to publish the papers of George Washington, John Adams, Benjamin Franklin, Thomas Jefferson, James Madison, and papers that document the Ratification of the Constitution, the First Federal Congress, and the early Supreme Court.

October 1 *(for the May meeting)*

Proposals not addressing the above priorities, but focusing on an activity authorized in the NHPRC statute as follows:

- collecting, describing, preserving, compiling, and publishing (including microfilming and other forms of reproduction) of documentary sources significant to the history of the United States
- conducting institutes, training and educational courses, and fellowships related to the activities of the Commission
- disseminating information about documentary sources through guides, directories, and other technical publications
- or, more specifically, documentary editing and publishing; archival preservation and processing of records for access; developing or updating descriptive systems; creation and development of archival and records management programs; development of standards, tools, and techniques to advance the work of archivists, records managers, and documentary editors; and promotion of the use of records by teachers, students, and the public.

Application guidelines and forms may be requested from NHPRC, National Archives and Records Administration, 700 Pennsylvania Avenue NW, Room 111, Washington, DC 20408-0001, 202-501-5610 (voice), 202-501-5601 (fax), *nhprc@nara.gov* (e-mail), or by accessing our Web site at *www.archives.gov/grants*

THE EXECUTIVE DIRECTOR'S COLUMN

This issue of *Annotation* describes some of the many projects the NHPRC has funded to help preserve and to increase utilization of the records of American science and technology. Scientists and engineers working in America's university, government, and corporate laboratories and research institutions have contributed to making the 20th century the American Century. The NHPRC is pleased to play a part in bringing about successful archives documentation strategy, preservation and access projects, and documentary editions of some of the most important of these records. We congratulate those who contributed articles to this issue, and thank them and the many others who have worked on similar projects.

The Commission's commitment to technology, of course, goes beyond its interest in supporting history-related projects. It has encouraged projects that use technology to make documentary resources more easily used by larger audiences. It has supported projects to microfilm historical records. Back in the days of SPINDEX, it supported automation projects. These, in turn, led the profession to create the SAA's National Information Systems Task Force (NISTF), the group that, in partnership with the Library of Congress, created the MARC format for Archives and Manuscripts Control. The Commission has supported MARC-related projects, and strongly recommends that records access projects report their collections to one of the national bibliographic networks using MARC. Even the smallest and poorest repository can report collection-level detail to the National Union Catalog of Manuscript Collections, found online through the Library of Congress.

The Commission has also supported work related to the development and implementation of a new professional standard, one aimed at focusing on the content (and not just the layout) of archival finding aids. EAD (Encoded Archival Description) is the Society of American Archivists' standard for capturing electronic versions of finding aids. It is now being used throughout the country by a large number of repositories. The NHPRC encourages its projects to use EAD. Many repositories contribute copies of their EAD finding aids to RLG's Archival Resources, potentially a place for one-stop-shopping for the more detailed information about America's archival holdings. Researchers may search across the entire library of finding aids to improve their chances of finding records related to their topics of study.

NISTF was established with the goal of searching for historical records across repositories. MARC partially fulfilled that dream, but EAD takes it one step closer to reality. This is but one of the advantages of EAD; it is clear to me that the ability to easily extract—or "repurpose"—data in EAD finding aids will someday be seen as its advantage, once we imagine it as more than a tool to build a series of standard finding aids.

Naturally, in today's Internet-based society, users want more than collection-level descriptions; they want more, even, than thorough descriptive finding aids. Indeed, they want more than item-level descriptions: they want both images of primary sources AND their full text. And they want it all online, fully searchable, and NOW.

Perhaps I'm overstating expectations, but obviously we will not even begin to meet them anytime soon. The National Archives, for example, estimates its holdings at over one million cubic feet of paper records. At roughly 3,000 pages/cubic feet, that's at least three *billion* pages. And there's at least that much more material in state and local archives, college and university archives, special collections, historical societies, and corporate archives, just in the United States.

We tend to see this problem as a technological one, but the real issues are strategic. They have to do with decision-making and assigning priorities and resources to what is most important, and seeking solutions that are cost effective. We must rely on the cooperation of users, perhaps even asking them to share in the expenses. The Commission, as you may know, has chosen not to support projects to digitize archival collections. However, staff is beginning to consider whether it can support strategic and innovative projects that may develop and demonstrate the applicability of good practices in this area.

At the same time, however, the Commission continues to support publication projects that use combinations of hard-copy publications, microfilm, and electronic editions (CD-ROM, DVD, and Internet). Electronic editions include the texts of transcriptions and annotations (electronic versions of the hard copy), digital images of original documents, and sometimes both. The Commission, in fact, encourages documentary editors to find ways to increase the use of their works through electronic publishing. It sponsored the Model Editions Partnership, and funded a recent conference with these goals in mind.

Finally, the Commission has for over a decade supported an electronic records research agenda aimed at identifying and addressing the major issues related to records "born digital" (contrasted, I suppose, to those mentioned above that are "born-again" digital). These are records now produced in every government agency, school and college, nonprofit organization, and corporation, as well as in many homes, in the act of doing business, aided by computers. Word processors, e-mail, spreadsheets, databases, geographic information systems, digital cameras and recorders, and many other tools that make our lives easier have created opportunities and great challenges. The NHPRC remains committed to supporting institutional electronic records projects, especially those that are built upon cross-disciplinary and inter-institutional collaboration.

These are exciting and challenging times. Clearly, this is not your father's NHPRC. Science and technology continue to change society. We continue to document the history of these changes, including the history, sociology, and philosophy of the underlying research and development. Yet we, like the rest of the world, ponder how to take advantage of technology to preserve and increase use of our national documentary heritage.

Rescuing the University of Florida College of Medicine Records

BY NINA STOYAN-ROSENZWEIG AND CARL VAN NESS

Two years from now, the University of Florida's College of Medicine will celebrate its 50th anniversary. It first opened its doors to 40 students in 1956. The existence of this group of medical students at UF's medical school (the second to open in Florida after the University of Miami's in 1953) was only one milestone in a process begun much earlier. The school was part of a larger Health Science Center that would expand to include six colleges, as well as a major hospital system and research initiative.

Florida was a rapidly growing state in the 1930s and 1940s, albeit one lacking a medical school. A growing population, the need for more doctors, and a desire for better postgraduate training led Florida physicians to agitate for a medical school within the state. Interestingly, the postgraduate education issue played a major role in this process. Jacksonville-based physician T. Z. Cason, who in the 1930s worked to develop a course for physicians interested in keeping abreast of recent developments, was among the most vocal proponents of a medical school.

Once Florida decided to create a college of medicine, a number of locations competed for the honor of housing it. These included Tampa, Tallahassee, Jacksonville, and Miami, in addition to Gainesville, where the University of Florida is located. The state legislature appointed a commission, chaired by Dr. Vernon Lippard, to pick a site. When the commission recommended Gainesville in 1949, tempers ran high. Dr. Cason agreed to abide by that decision, and one of the state legislators from Jacksonville accordingly called him a "Judas Iscariot."

Most accepted the site decision, and the university began to plan for the medical school. But not everyone. Competition continued, because the first medical school would receive state funding for its students. As noted above, the University of Miami opened a medical school in 1953. Meanwhile, University of Florida planners began to implement the Medical Center Study, a complex research project that carefully assessed Florida's current and future health needs, population trajectory, research potential, and social issues. UF's College of Medicine opened as the second medical school in Florida, but the careful planning that preceded its opening was extremely important.

Photograph of the ceiling of the basement room where the dean's office records were stored showing the leakage from the morgue. Photograph courtesy of Nina Stoyan-Rosenzweig.

The Medical Center Study resulted in the hiring of Dr. Russell Poor as the first provost of the Health Science Center, and also brought in Dr. George T. Harrell, who first served as a consultant and then became dean of the College of Medicine. Dr. Poor focused especially on working the academic medical community into Gainesville's existing medical practices. Dr. Harrell, formerly a physician at the Bowman Gray School of Medicine in Winston-Salem, NC, was a true visionary whose ideas about training physicians in the art as well as the science of medicine were both ahead of his time.

Florida's first colleges of medicine opened in a decade when the public's perception of medicine, and its image of physicians generally, had perhaps reached its apex. It also was a time when drugs were universally regarded as effective in curing diseases, when doctors were revered, and when it seemed that western medicine was well on its way to conquering infectious disease permanently and worldwide. Dr. Harrell focused on training physicians as humanitarian practitioners for whom the patient's story was the most important aid to diagnosis. Certainly, his focus on training physicians in research and critical thinking was an important aid to diagnosis, just as his emphasis on the importance of the case history prefigured the current development of narrative medicine. Dr. Harrell's staffing plans involved bringing in rising young research stars who had the potential to bring

Florida into the first ranks of research.

The Medical Center Study planned not just for the current needs of physicians. The Health Science Center it envisaged would eventually include colleges for related specialties. The College of Nursing opened under the innovative leadership of Dean Dorothy Smith, M.Ed., in 1956. The college quickly grew under her leadership, starting with 25 graduates in the first class of 1960 and increasing to 183 in 1964. Additionally, the College of Health Professions opened in 1959, and the College of Pharmacy (which had opened in 1923) completed its move across campus in 1961. The College of Dentistry opened its doors to students in 1972, with six departments and an Office of Dental Education. Its innovative curriculum made it an educational leader in the 1970s. The College of Veterinary Medicine was the center's most recent addition, matriculating its first students in 1976.

Because the Health Science Center colleges have, in relative terms, brief histories, material documenting those histories is still readily available. Many members of the original faculties still live in Gainesville. One goal of the archives has been to continue an oral history project, initiated by Dr. Samuel Proctor, and to that end 11 interviews have been added to the collection. The fact that there are still-living individuals who remember the beginnings of the Health Science Center adds richness to the historical materials. However, efforts to preserve departmental, dean's office, and vice president's office records have tended to be spotty.

Several years ago, alumni and faculty emeritus from the College of Medicine donated money to fund hiring an archivist to create a history of medicine center and to accumulate and protect materials pertaining to the history of the college. An archivist, Nina Stoyan-Rosenzweig, was hired and began to create the archives and to determine project priorities. The Health Science Center donated space for storing the materials, and paid for renovations and for installing compact shelving. With physical space procured, the next priorities were to find funding to pay the archivist for a period of time long enough to rescue and process administrative records, and to find monies for a permanent salary line in the budget.

Consultation with the university archivist, Carl Van Ness, revealed that the National Historical Publications and Records Commission (NHPRC) had previously funded a project to inventory stored records in the College of Medicine and the Health Science Center. Thus, the NHPRC seemed the ideal source of funding for preserving and processing these records. Mr. Van Ness worked on defining the project, helped to write the proposal, and has continued a close collaboration on this project, which has focused on what amounts to rescuing the college's records.

Prior to 2001, and to funding from the NHPRC, there was no effort to gather historical records, let alone process, preserve, or make them accessible to researchers. Many of the earliest records were in danger of being lost. The NHPRC-funded project to process records dating from this early period includes rescuing the materials from basement storage rooms that have been repeatedly flooded and creating an archives in which to preserve the material.

The records were stored in two separate basement rooms. One held the College of Medicine dean's office records, the other records from the provost and later vice president for Health Affair's office. Because these rooms were in different parts of the basement, the quality of storage and preservation of these materials has been uneven.

Photograph of the basement storage area that held the vice president's records showing boxes that have been soaked by leaking pipes. Photograph courtesy of Nina Stoyan-Rosenzweig.

The room containing the dean's office records was subject to flooding, and many boxes were coated with dust and dirt from construction and installation of various pipes and fixtures. The room also is located beneath the morgue, and fluids from work with cadavers have, over the years, soaked through the ceiling and dripped down onto the records.

This room had also become a storage center for many different departments, as well as dumping ground for old equipment. Most of the old equipment and some newer records were placed there after the older files. It was therefore necessary to move out these materials before it was possible to access the older records. Project personnel are still in the process of cleaning this particular room and reaching the appropriate records.

The other storage room is in better shape. It also contains some of the earliest records from the Health Science Center, including the complete records of the original Health Center Study. It also contained other additional records that reflect the integration of the medical school into the larger Health Science Center administrative unit. For instance, the chairman of the Department of Medicine became Provost of the Health Science Center, a position that was later renamed Vice President for Health Affairs. Various deans of the Colleges of Medicine and Dentistry served simultaneously in this latter capacity.

The archives, then, started with hundreds of boxes of materials that, after being removed from the basement, had to be sorted. In addition, archival procedures for dealing with these and all other materials acquired by this archives are being established, as well as for collecting materials related to the formation and history of the College and the Health Science Center. The project also involves establishment of a web site and a searchable database for the archives, and for interfacing with the university library's photograph digitization project.

Records processed thus far include those from the College of Medicine dean's office, the Department of Medicine, and the vice president's office, as well as portions of Dr. Cason's papers, the Health Science Center architect's papers, and papers from the Medical Center Study. Manuscript collections processed include personal collections of papers

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Managing Electronic Records in the 21st Century

BY CARYN WOJCIK, DEBORAH I. GOUIN, AND MIMI DIONNE

Introduction

Implementing new software that changes the way people do their jobs is a big challenge. The software vendor, the IT support staff, and the project managers all have important roles, and they need to communicate effectively with each other. The State of Michigan's Records Management Services Michigan (Michigan RMS) wanted to address the problems that we had identified with e-mail retention by pilot testing Records Management Application (RMA) software. However, this project taught us about much more than how to use new software. It also taught us some important lessons about software selection and deployment.

In 1999 the National Historical Publications and Records Commission (NHPRC) awarded Michigan RMS a two-year grant (beginning May 1, 2000) to pilot test RMA software. This grant helped Michigan purchase software, hire staff to handle the software implementation in two different environments, conduct business process analyses, and evaluate whether RMAs could solve our electronic records management problems.

Michigan RMS recently joined the State Archives of Michigan as part of the Department of History, Arts and Libraries, Michigan Historical Center. However, our programs have a long tradition of partnership and collaboration.

In 1998 we collaborated to create a Michigan Government Electronic Records Committee (ERC), with representation from a variety of professional disciplines. One of our first concerns was to formulate some type of policy or guideline about the retention of e-mail. We were aware of the lawsuits involving the National Archives, we knew what other states were doing, and yet we were not confident that anyone had a real solution to the problem.

At one of the ERC meetings we circulated a draft e-mail policy proposing that official e-mail be printed out and retained in a hard copy format. The information technology community rejected this proposal, saying we needed a technology solution. The ERC recognized that even among its membership, some individuals currently retained every e-mail message they sent and received, while others destroyed a majority of their e-mail immediately.

We considered this inconsistency to be an archival/records management problem, a technological problem and a liability for the state. We also recognized that other common desktop applications are used to create records that are treated in a similar fashion. The ERC challenged the archivists and records managers to propose an automated process for classifying records and implementing retention requirements that would be both seamless and systematic.

It was not clear at first what this automated solution would look like. We did not know if we needed to custom-design something, or if commercial products were available. We did not know what functionality we needed, or what we could expect to find.

Fortunately, we were not alone in our attempt to solve these problems. The U.S. Department of Defense (DoD) had already completed its development of standard 5015.2 for Records Management Applications (RMAs), and several commercial products were on the market that complied with this standard. The more we learned about the DoD standard and the various RMAs on the market, the more we realized that the first step in finding a solution had already been done for us.

While not perfect, the DoD standard had already answered the question about desired functionality. In addition, there clearly was not a need to custom-design a product with the necessary functionality. Two questions remained: Would the commercial products work? Would people use them? Our research concluded that many state and Federal agencies were using these products to manage paper records, but only a few Federal Government agencies had actually tested these software products on electronic records.

With no other real solutions available to us, we decided to pursue RMAs further. The ERC endorsed a pilot project that would test the ability of an RMA to provide a systematic process that was user-friendly and could be implemented across the entire enterprise. However, ERC members urged the archives and records management staffs to include a business process analysis with our proposal for enterprise-wide re-engineering.

The ERC also recommended that the pilot be conducted using Department of Management and Budget (DMB) offices. At the time, DMB was responsible for issuing information technology policies and standards with which the entire executive branch was required to comply. DMB's ability to use the RMA would assist the ERC and the Chief Information Officer when they attempted to promote the concept of enterprise-wide implementation to other executive branch agencies, because they would have already tested the product in their own offices.

What Is an RMA and How Does It Work?

A Records Management Application (RMA) is a software application that provides a centralized repository for electronic records such as e-mail, word-processed documents, spreadsheets, digital images, and more. This repository is stored on a networked server. Users create the same electronic documents that they have always needed to support their various business functions. However, instead of storing these documents in a wide variety of places, the documents are stored in the RMA's repository. Users are taught to file, search for, and retrieve electronic documents using the RMA software.

When electronic documents are filed using an RMA, they are classified according to a pre-defined file plan. We chose to assign each organizational unit a file plan that would be shared by all of the employees of that unit. Each file in the file plan is linked to a retention and disposal schedule, so the RMA software can automatically calculate when a document's retention period has expired. Using the file plan ensures that the electronic documents that are stored in the repository remain organized in a manner that is consistent for all of the unit's employees, and that they are retained according to appropriate procedures (without relying upon individual people to properly implement retention requirements).

Once electronic documents are stored in the repository, they cannot be altered. Copies can be retrieved and viewed, printed, or edited. If an electronic document is edited, the new version is filed into the RMA repository, and the RMA automatically assigns a new version number to the document, linking it to the original.

All users of the RMA are assigned specific access rights that ensure that each person only has access to the files and documents in the repository they need. These access rights also allow groups of users to share documents and files that are stored in the repository. This reduces the need to store duplicate copies of the same document and promotes collaboration among co-workers. Furthermore, all of the documents in the repository are full-text searchable, which means that they are very easy to find after they have been filed, even if you don't know in which file they are stored.

Implementation

Personnel

Initially, the project team consisted of Jim Kinsella, the project director; Doug Case, the electronic records analyst; and Caryn Wojcik, the electronic records archivist. We had collaborated on many electronic record projects before the RMA Project, such as a pilot project for scheduling electronic records, developing a guideline for e-mail retention, and rules for imaging systems.

We approached this project with enthusiasm because we saw it as an opportunity to find a real solution with concrete results. The NHPRC grant provided us with funds to hire two additional people for the project team who would be responsible for training participants, developing file plans and administering the software. The project analysts we hired were Mimi Dionne and Deborah Gouin. Mimi began working on the project on May 15, 2000, and she remained with the project team until October 19, 2001. Deborah began working on the project on June 26, 2000, and she remained with the project team through September 2002.

Project Participants

When the project team designed the plan of work for the grant proposal, we decided that we wanted to install and evaluate the software in two different administrative settings. This allowed us to compare the project participants' reactions to the RMA software. The Director of the Office of Support Services (OSS) volunteered to purchase the RMA software and allow her employees to be recruited as the Phase I participants. The project team decided that the Phase I participants would use the RMA software for the entire duration of the grant project (and, we hoped, beyond).

In January 2002, OSS was reorganized along with the rest of the Department of Management and Budget. However, when Phase I was initiated, OSS was the parent agency to the Records and Forms Management Division. It also consisted of Print and Graphics Services, Mail and Delivery/Materials Management Services, and the Consolidated Print Center. Approximately 60 people from OSS were selected to serve as project participants for Phase I.

The project team also received permission from the DMB Director to recruit the department's executive office staff for Phase II of the project, which would start one year after Phase I commenced. Approximately 20 people were selected to participate in Phase II. Acceptance of the RMA software by the Phase II participants was considered crucial for development of a business case for implementing RMA software throughout state government.

A few months after the project started, however, various personnel changes and reorganizations resulted in the decision not to use the DMB Director's Office for Phase II of the project. Instead, 40 people from the Director's Office of the new Department of History, Arts, and Libraries (HAL), the parent agency to the State Archives of Michigan, were recruited to serve as the Phase II project participants.

Vendor Selection

In October 1999 we began the process of selecting an RMA product for the project. The vendor selection team included records managers, archivists, information technology professionals, and a user representative. We received proposals from five software vendors, and three were invited to provide demonstrations of their product. Some of the major issues that the vendor selection team considered were e-mail integration (the State of Michigan uses GroupWise software, and many RMA products only integrate with Microsoft Outlook); customer support; and ease of use. We actually counted the number of steps required to file an e-mail message and a word-processed document. By April 2000 the vendor selection team agreed to purchase ForeMost Enterprise (recently acquired by Documentum, but formerly Provenance and TrueArc). The team believed that ForeMost would be the most user-friendly RMA product.

Software Installation

Unfortunately, installing the software was frustrating and complicated. When the vendor selection team chose ForeMost, we were told that Enterprise Version 2 would be released on June 1, 2000. We believed that this release date would work well with the project since it was scheduled to begin in May. We wanted to purchase Version 2 because it contains significant technical improvements to Version 1 that make it easier to administer and deploy.

By the time we finalized our contract, the release date for Version 2 was moved to June 29. Nevertheless, we moved forward and scheduled installation and training for July. On July 10, several people from Provenance Systems, Inc., visited to conduct the official kickoff of the product installation and testing. During the remainder of that week, their staff worked with DMB's Information Technology Services Division (ITSD) to install ForeMost.

The base product installation was successful. However, ForeMost is designed to use activators that integrate the software with other applications used by the participant (such as Microsoft Word or Novell GroupWise). These activators allow the participant to file documents directly into ForeMost's repository from the native application. None of these activators

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The Challenge of Editing the Edison Papers

BY PAUL ISRAEL

When Thomas Edison died at the age of 84 on October 18, 1931, he seemed to be a figure from a by-gone era, an untutored genius whose cut-and-try method of invention had given way to organized scientific research. It had been more than 50 years since Edison had created the nation's first industrial research laboratory at Menlo Park, New Jersey, and more than a decade since he had developed a significant invention at the larger laboratory he later built in West Orange, New Jersey.

During the intervening years, 19th-century inventions had come to be seen as the work of lone geniuses drawing on innate Yankee ingenuity, while modern technology was thought to be the product of the new science-based industrial research laboratories established by such companies as General Electric, AT&T, and DuPont. Spurred by the publications of the Thomas A. Edison Papers project, recent scholarship has challenged this older interpretation and forged a new appreciation of Edison as the inventor who became the first director of industrial research and made invention part of a larger process of innovation.

Edison is best known as the most prolific inventor in American history, the holder of a record 1,093 U.S. patents. He began his career in the late 1860s as an inventor of telegraph technology, including improvements to stock tickers and the simultaneous transmission of multiple messages. His career reached an inventive peak during the five years (1876-1881) he worked at his first large laboratory in Menlo Park, New Jersey, where he invented the telephone transmitter, the phonograph, and the first incandescent electric light and power system.

After spending several years commercializing electric light and power, Edison opened a new and larger laboratory in West Orange, New Jersey, in 1887. There he worked on improved sound-recording technology, devised the first motion picture camera, developed the first successful alkaline storage battery, created a system for processing low-grade ores, and improved cement-manufacturing technology.

As significant as any of Edison's inventions was his reorganization of inventive activity. Besides establishing the first industrial research laboratory at Menlo Park, he broadened the notion of invention to encompass what became known in the 20th century as innovation–invention, research, development, and commercialization. In the process, Edison established numerous companies to manufacture and market his inventions. His skills at marketing included a canny sense of the influence of the popular press, and helped to make him one of the most famous people in the world.

As an inventor, Edison was careful to preserve records of his inventive work in order to demonstrate his priority in patent disputes. But he also kept careful cost accounts so he could charge the work to the appropriate company and know how much an invention cost to manufacture. Edison's laboratory records, ranging from carefully kept notebooks to rough sketches and measured drawings, along with accounting and other financial documents, provide an unparalleled record of the process of invention.

Equally important are the manufacturing and business records that can help us understand how new technologies are introduced into the market and how they are used and modified once they leave the laboratory. Because his inventions and businesses bore Edison's name, he paid close attention to his public image, and his staff maintained extensive clipping collections that provide additional insights into the public perception of both the inventor and the new technologies associated with him.

The Thomas A. Edison Papers is both blessed and cursed with the enormous paper legacy left by Edison, his laboratories, and his business enterprises. When the project was being planned in the mid-

Thomas A. Edison (seated center) and his experimenters at the West Orange Laboratory. Photograph courtesy of the Edison Papers project.

1970s, a feasibility study conducted by Professor James E. Brittain of the Georgia Institute of Technology estimated that the holdings at the Edison National Historic Site (Edison's home and laboratory in West Orange, New Jersey) and additional material scattered in other repositories amounted to approximately 1.5 million pages of documents.

By the time the Edison Papers finished its first inventories in the early 1980s, that estimated volume had grown to 3.5 million pages. A few years later, as the archives staff at the ENHS continued to inventory and process collections, the number rose to over 5 million pages. As a consequence, what was originally conceived as a 20-year editing project has grown into a much more complex project slated to be completed nearly 50 years after it began.

The Edison Papers began in 1978 when Reese V. Jenkins was selected to head the project at Rutgers, the State University of New Jersey. Dr. Jenkins established the original goals of the project, which remain central today: (1) to publish a selective six-part image edition of approximately 10 percent of the total documents in the ENHS archives, along with additional documents from outside repositories; (2) to publish an even more selective 15-volume book edition of transcribed and annotated documents; and (3) to disseminate other interpretive and educational materials that will be of interest to a broad segment of the American public as well as to students, general historians, and specialized scholars.

By the time Dr. Jenkins retired in 1995, Parts I-III (1850–1898) of the image edition had been published on microfilm, along with the first three volumes of the book edition, covering the years 1847–1877. Part IV (1887–1898) of the microfilm was published in 1999 under the project's second director, Robert Rosenberg. Formerly the managing editor of the book edition, Dr. Rosenberg also oversaw the publication of Volume 4 (1878).

At the time Dr. Jenkins retired, planning was underway to develop an online digital image edition, which was produced under the direction of Dr. Rosenberg. Launched in September 2000 on the Edison Papers website (*http://edison.rutgers.edu*), the online edition made available approximately 175,000 images from Parts I–III of the microfilm edition. In March 2002, another 5,000 images from 64 repositories and private collections were added.

Users of the online edition are able to search for authors, recipients, and names mentioned in a database of 121,000 document records and 19,250 names, and to search for words and phrases appearing in the approximately 4,000 targets (descriptive introductions) to the folders and volumes. Through the series notes, the edition provides links to targets at the series, subseries, and folder or volume levels. It also provides a list (with linked images) of all records in a particular folder or volume when the associated target is brought to the screen.

Eventually the digital edition will include all of the images of the six-part microfilm edition and material from outside repositories, as well as the texts and annotations of the book edition linked to their images. Among the features of the digital edition not available in the book or microfilm editions are PDF files of all of Edison's 1,093 U.S. patents, which can be listed by execution date, patent number, or subject; index entries for the clippings from Edison's scrapbooks; a comprehensive chronology and bibliography; and links to related resources on the Web.

Also included is a collection of essays, images, and patents concerning the African American inventor and Edison associate Lewis Howard Latimer. As funding and staff time permits, the project plans to add other materials, such as biographical sketches, and to work with educators to add educational materials for K–12 students.

Since I became director in 2002, the project has had to grapple with how to complete the last two parts of the microfilm edition in a timely fashion. Nearly two-thirds of the 5 million pages of material at the Edison National Historic Site date from the period 1911–1931. We decided that we would be much more selective in dealing with the voluminous record groups that document the corporate divisions of Thomas A. Edison, Inc., and select only material that explicates Edison's own involvement in company operations.

We thus undertook a comprehensive survey of the corporate record groups and other Part V (1911–1920) collections and developed a much more manageable set of materials to edit that is comparable to earlier parts of the collection. We will undertake a similar survey for Part VI (1921–1931).

Although the period documented in Part V is not as thoroughly covered in the secondary literature as the Menlo Park and early West Orange periods, it was a time of intense activity for Edison, his laboratory, and his recently organized company, Thomas A. Edison, Inc. Several new inventions—the disc phonograph, the Ediphone dictating machine, the Home Projecting Kinetoscope, and the Kinetophone (motion pictures with synchronized sound)—were developed and marketed.

During World War I, Edison was also a major figure in war preparedness. His ideas spurred the creation of the Naval Consulting Board, on which he served as president, and he conducted research for the U.S. Navy. To overcome shortages of chemicals previously obtained from Germany, he developed plans for rapidly building new manufacturing plants and became a major supplier not only to U.S. industries but to the European allies and Japan as well. During this period, Edison forged a longstanding friendship with industrialist Henry Ford, with whom he embarked on a series of highly publicized camping trips that included industrialist Harvey Firestone and naturalist John Burroughs.

The book edition, too, has required some rethinking as we deal with an ever more voluminous document base. Volume 5 (January 1879–March 1881), which covers the research and development phase of Edison's electric light and power system, was completed in the summer of 2002 and includes 422 documents selected from over 9,000 documents. A similar number of documents have been selected from more than 12,000 documents for Volume 6 (April 1881–June 1883), which examines the early commercialization of Edison's system and is now at the halfway point.

Fortunately, the online digital edition has expedited selection and annotation for the book edition by enabling editors to readily look at groups of related documents by date or name that would otherwise require using several different reels of microfilm. Beginning with Volume 5, we are citing the online digital edition as well as the microfilm edition. Because so much of the annotation refers to other material in the Edison Papers, we are planning to simplify our method of citation, referring readers to relevant names and document folders wherever possible, instead of individually citing dozens of related items.

In order to ensure the stability of the digital edition, we have begun working with the Rutgers University Library to plan and implement the integration of the Edison Papers digital edition into the

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THE CENTER FOR HISTORY OF PHYSICS BEGINS STUDY OF CORPORATE R&D RECORDS

BY JOE ANDERSON

The Center for History of Physics has recently initiated a Project to Document the History of Physicists in Industry. We are studying communications patterns and documentation practices at a number of major high-tech firms in the United States. A primary goal of the study is to help develop a national documentation strategy for identifying, appraising, and preserving historically valuable research and development (R&D) records in large corporations.

Efforts to document and study the history of corporate research have generally been narrow in scope, and a collaborative documentation strategy promises to lay the groundwork for corporate laboratories and archival repositories to work together to preserve a greater range of the history of R&D across many different economic sectors.

Beginning with the founding of the research laboratory at General Electric in 1900, American big business began institutionalizing R&D to rationalize technological innovation and reduce market competition. In a recent review, economist and biographer Sylvia Nasar noted that unlocking "the secret of turning inventions into economic growth" and instituting continuing innovation are unique achievements of the American economy.[1]

Corporate R&D has played a central role in these innovations, but the history of American industrial R&D is largely undocumented. Both the archival resources and the historical literature are principally restricted to a few companies in the communications, chemical, and electrical industries. Approximately one-third of Ph.D. physicists in the U.S. today are employed in corporate R&D.

This three-year study, which is being funded by the center's parent institution, the American Institute of Physics (AIP), and by grants from the National Historical Publications and Records Commission (NHPRC), the National Science Foundation (NSF), the Andrew Mellon Foundation, the Avenir Foundation, and the Research Corporation, represents the first systematic investigation of records-keeping practices and needs in high-tech industry for a significant group of participants.

Project historian Tom Lassman (left) interviews senior IBM physicist Praveen Chaudhari at the Thomas J. Watson Research Center in March 2003. Dr. Chaudhari is now director of Brookhaven National Laboratory. Photograph courtesy of the author.

The project, which got underway at the end of 2002, builds on earlier documentation research that the Center has undertaken, especially our ten-year Study of Multi-Institutional Collaborations, which was also supported in part by the NHPRC.[2] We have targeted a sample of 15 companies for the study: 3M, Boeing, Corning, Eastman Kodak, Exxon Mobil, General Atomics, General Electric, Hewlett-Packard, Honeywell, IBM, Lockheed Martin, Lucent Technologies, Raytheon, Texas Instruments, and Xerox.

These 15 companies represent a judgment sample from among the largest employers of physicists in corporate life. They include companies with a diverse product mix, as well as from a broad spectrum of economic sectors. We have also included some companies that currently have or have had in-house archives, along with two that have placed at least some corporate records at public archives.

Working to document science and technology requires ongoing effort, in part because the records and papers that record America's growth as a major scientific power were largely ignored through the first half of the 20th century. For example, Philip Hamer's *A Guide to Archives and Manuscripts in the U.S.* (1961) includes only one collection of a 20th-century physicist, the papers of Enrico Fermi at the University of Chicago.

Things began to slowly change in the late 1950s as a few archivists, historians, and scientists realized that the history of 20th-century science was an important and neglected field and that the raw materials that document it were being lost as the pioneer scientists passed from the scene. Concrete efforts to address these problems were fueled by the NSF, which created an office of social science in 1958 to support history and related disciplines.[3]

The Center for History of Physics grew out of an AIP "Project to Document the History of Recent Physics in the United States," funded by the NSF and begun in 1962. The center was created by AIP in its present form in 1965 to work cooperatively with scientists, archivists, and historians to help preserve and make known the history of modern physics and allied fields.

The concept of archival documentation research and documentation strategies was conceived at the History Center and at a few other U.S. repositories, specifically to develop collaborative strategies to identify, appraise, and preserve historical records and papers in areas of science that are traditionally difficult for archivists and historians to address, such as multi-institutional collaborations and corporate research As a result, these materials are often overlooked and eventually lost.

Documentation strategies are planning tools that allow archivists to work together with their colleagues at other repositories, as well as with records creators and records users, to develop coordinated, cooperative approaches to documenting the past. After first focusing on the papers of academic physicists, next adding records created at the U.S. Department of Energy laboratories, and then examining the documentation of big collaborations, we began to turn to industrial research in the late 1990s, conducting an initial survey of major high-tech companies and visiting some of the small number of in-house corporate archives.

Appreciable progress has been made in documenting the history of physics, astronomy, geophysics, and related fields during the past 40 years, primarily in academic institutions but also in government labs. One measure of progress is the resources represented in the History Center's online International Catalog of Sources for the History of Physics and Allied Sciences at *http://www.aip.org/history icos*, which now includes more than 7,600 collections of archival records, personal papers, and oral history interviews, held at more than 500 different repositories here and abroad. However, the International Catalog of Sources contains relatively little information on archival records or manuscript collections that document corporate R&D.

The Project to Document the History of Physicists in Industry, like other documentation research work that the History Center has undertaken, is designed to help develop strategies and recommendations for saving hard-to-preserve records in the history of science by working with the people who create and use them. Because the corporate world largely lacks the archival infrastructure that academic and Federal institutions possess, we are also including work to identify and fill some of the gaps in the existing historical record, work that we hope the Center and others will continue and expand after the study is completed.

The three-year study includes 1) standardized question-set interviews with more than 100 current corporate scientists, R&D managers, and information professionals at 15 major industrial laboratories, to determine how records are created, used, and stored and the extent to which they are preserved and made accessible once their active use ends; 2) identification and cataloging of extant corporate records, laboratory notebooks, and other sources in the History Center's online International Catalog of Sources and RLIN; 3) study of existing public and private archival programs that document the history of science-based industry in the United States and Europe; 4) career-length autobiographical interviews with 15 or more leading industrial physicists; and 5) a review essay on the history of American industrial research to provide context for the analysis of the companies in the study.

During the first year of the Project, we concentrated on selecting the companies to include, developing the standardized question sets, and conducting initial site visits and interviews. Over the year, staff completed visits to nine corporate labs and interviewed 70 bench scientists, R&D managers, and information professionals.

Project director Joe Anderson reviews laboratory notebooks with Laura Tucker, manager of information at Xerox's Wilson Center for Research and Technology, in April 2003. Photograph courtesy of the author.

Using standardized questions, we are probing how research projects get started, how scientists and science managers communicate and work with one another, what kinds of records are created in the course of doing research and how scientists use them, and what becomes of records when they are no longer active. We are placing special emphasis on studying the effects of e-mail and other electronic media on communications and records keeping and on learning the contemporary role of the once ubiquitous laboratory notebook and other traditional records in documenting research. These standardized interviews average about two hours in length. We are also asking scientists and science managers about their education and career paths and inquiring into such issues as how R&D organization and funding have changed in recent decades.

As we currently move into the second year of the study, we are expanding our range of activities. In addition to continuing site visits and structured interviews at laboratories, we will start conducting the first of the longer, autobiographical oral history interviews with a small group of especially influential industrial physicists and R&D managers. We will also begin visiting and studying public and private archival programs that currently collect and preserve the history of industry, and the project historian will continue work on a historiographical essay on American industrial research.

We are pleased by the interest and spirit of cooperation that we have encountered during the first year. All nine of the firms that we have contacted so far have agreed to take part in the study, and the scientists, science managers, and information professionals whom we've invited to participate in interviews have devoted many hours of time to sharing their knowledge and experiences with us.

While it's too early to draw any concrete findings, the initial interviews have been informative, and some initial patterns are beginning to emerge. Some scientists and information professionals have described a breakdown in records-keeping practices as electronic records supplant paper ones. In some labs, the laboratory notebook and other traditional records have fallen by the wayside without being replaced by effective electronic equivalents, and only one of the companies that we've visited has instituted an electronic laboratory notebook system.

Many researchers also describe another effect of electronic communications, and especially e-mail: although there has been a decrease in face-to-face interaction with coworkers, long-distance collaboration has become easier. Differences are as prominent as similarities. As just one example, most high-tech companies have experienced a tough economic environment in the last two years, but the effects of the economic malaise on the companies that we're studying and on their R&D programs vary markedly.

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The Carnegie Legacy Project

Shaking the Dust from 100 Years of Scientific Discovery

BY CHARLES HARGROVE AND JENNIFER SNYDER

The Carnegie Institution, one of the nation's first privately funded basic research organizations, houses an irreplaceable archive documenting the progress of American science in the 20th century. Funded by a generous grant from the National Historical Publications and Records Commission (NHPRC), the Carnegie Legacy Project began in July 2003 as a unified approach to preserving, organizing, and making accessible the institution's historic records at its Washington, DC, headquarters and each of its six research departments.

The Legacy Project Committee coordinates the current phase of the project (scheduled to last until July 2005) to process and reference material, and to initiate outreach activities at both its administration building and its earth and space science research campus in northwest DC. John Strom, Carnegie's Web manager, directs the Carnegie Legacy Project Committee. Key personnel include project archivists Charles Hargrove and Jennifer Snyder, Rachel Ban of History Associates, Inc., and Shaun Hardy, librarian at Carnegie's Department of Terrestrial Magnetism and Geophysical Laboratory.

Charles Hargrove exits the "penthouse" in the Broad Branch Road facility where most of the materials are currently stored. The space opening is 1½ feet wide and 4 feet tall. Photograph courtesy of the author.

At the Carnegie Administration Building, Jennifer Snyder is responsible for over 700 linear feet of historical records dating back at least from the inception of the Institution. These records are primarily administrative. For example, there is an essentially complete financial record of the Institution; documents chronicling the inception and creation of Carnegie's various research departments; and thousands of grant applications, research proposals, pieces of correspondence, and reports on funded research, many from prominent figures in the scientific community. These records help to draw a complete picture of the Institution from its founding by Andrew Carnegie in 1902.

The records are connected to a number of Carnegie research topics, from the fascinating (a 1901 proposal for a patented machine to "travel on the air") to the mundane (correspondence thanking the Institution for grant money, the Institution acknowledging the thank you, the grantee acknowledging the acknowledgment) to the socially outmoded (eugenics research in the opening decades of the century).

It seems as though anyone who was anyone in the scientific community has sought a research opportunity under the auspices of the Carnegie Institution. Roy J. Britten carried out seminal research on repetitive DNA and its evolutionary origins; Earnest W. Brown worked out his theory of the Moon's motion; and, of course, Barbara McClintock discovered mobile genetic elements—work that led to a Nobel Prize in 1983. Also found here are the records of Robert Goddard's rocket propulsion work, as well as those of Mesoamerican archaeologist Sylvanus Morley, who did some of the first large-scale work at the Mayan site of Chichén Itzá.

The preservation of these records is a huge undertaking. While an "archive" exists in the basement of the building, the records are crudely organized and suffer from years of poor environmental conditions and incorrect archival housing. Much of the material is quite brittle, due to a number of factors. The records have been housed mainly in acidic, brown file folders. Before they were stored on compact shelving, many records were stored in wooden filing cabinets.

Once the records were moved onto the compact shelving, no boxes were used to store them. There are literally rows and rows of folders on the shelves. As a result, the materials are extremely dirty. In many cases, the labels on the folders have fallen off or are in the process of coming loose; with no other indicator on the folder, identification can be tricky. Luckily, all the folder titles had been input into a database. The environmental conditions in the storage room are currently being monitored using a digital thermometer/hygrometer.

The records will be placed in archivally acceptable folders and eventually into document boxes. Fragile documents are being placed in Mylar L-sleeves or photocopied onto acid-free paper. Photographs in the folders are put into polypropylene sleeves for protection. Larger items are noted and eventually will be removed and organized into oversize flat boxes. The database has been converted into Microsoft Access, and these files incorporate additional notes made during processing. When complete, the database will be re-mounted on the Carnegie web site, and finding aids for separate entities will be created.

Once the processing of the historical records is complete (around July 2004), Jennifer Snyder will join another archivist, also hard at work, at the Broad Branch Road campus. At that site, 1,000 linear feet of records and 37,500 photographic images are currently the responsibility of Charles Hargrove. The records at Broad Branch Road are significantly different in form and content from the administrative records at P Street.

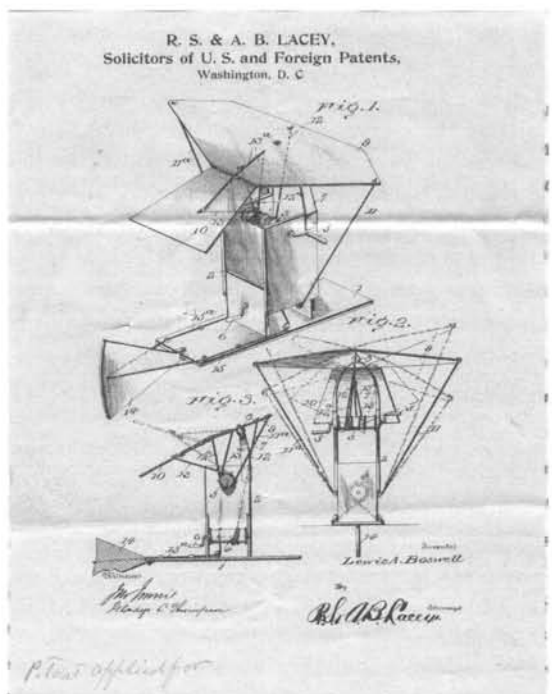
Although there are administrative records relating to the running of Department of Terrestrial Magnetism (DTM) and the Geophysical Laboratory, the majority of records here are directly related to the scientific research carried out by the Carnegie scientists of these two departments. The records consist of such diverse materials as laboratory notebooks, expedition logs and maps, experimental observation cahiers, film, instrument standardizations, and many, many boxes of instrument tracings.

The first collection to be processed was the James Percy Ault Collection. The collection consists primarily of letters exchanged by Ault and his wife, Mamie Totten Ault, from 1904 to 1929. Ault joined DTM in 1905 as a magnetic observer with the department's world magnetic survey. Although he led or participated in expeditions to Canada, Mexico, Bolivia, and Peru, he is best remembered as the Commander of the non-magnetic research vessel *Carnegie*.

The *Carnegie* was built in 1909, and Ault became her captain in 1914. From 1909 to 1929, the *Carnegie* circled the globe on seven scientific cruises, four under the command of Ault. He wrote almost daily to his wife while on board, and his voluminous letters provide insight into the working of the ship, the often strained relationship between Ault and then DTM director Louis Bauer, and the sensitive and sincere love between Ault and his wife.

The letters stop, predictably but abruptly, with the tragic destruction of the *Carnegie* due to a gasoline explosion in 1929. Ault and the cabin boy were the only fatalities. In addition to the letters, the collection also includes photograph albums of Ault's travels through Canada and South America and aboard the *Carnegie*, newspaper clippings relating to the *Carnegie* and DTM, and ephemera such as passes to the New Zealand Jockey's Club. In addition to Ault's personal papers, there are 19 linear feet of original scientific records comprising literally hundreds of thousands of observations made during the seven cruises of the *Carnegie* and the three cruises of its predecessor, the *Galilee*.

The vast majority of these records are presently stored in the attic (locally known as the "penthouse") in a space behind the air handling units that can only be reached through a small gap $1\frac{1}{2}$ feet wide and 4 feet tall. The records were initially put into the penthouse during a building renovation project in 1990, and have been stored there on metal shelving in record center boxes ever since. Although the records have been stored in boxes with tops, many of these boxes are torn and haggard from moving. Most of the records are extremely dirty.



This is the 1901 drawing that accompanies Lewis A. Boswell's patent for a machine to "Travel on the Air." Also included in the file are Boswell's passionate application letter to the Carnegie Institution and the institution's rejection letter. Photograph courtesy of the author.

The first task was a survey of all of the boxes to supplement the box/folder list that was compiled by Carnegie Librarian Shaun Hardy during the initial move to the penthouse. The survey also helped the archivist to understand what exactly is meant by such unfamiliar words as "anemogram" or "barogram." The next step is to determine how the various records fit together as discrete collections. The collections will be processed, re-housed, and described with finding aids so as to allow researchers to access the materials more easily.

In addition to basic appraisal of the records for physical condition, the scientific records also need appraisal by experienced researchers. There are at least 200 linear feet of records containing original observations in various fields, including geomagnetism, atmospheric electricity, seismology, meteorology and cosmic ray research. We have had preliminary discussions with scientists at the Broad Branch Road campus, but we have found that a good deal of the data is in disciplines no longer being studied by Carnegie staff. We are attempting to identify subject specialists outside DTM to help us evaluate the scientific value of the data. During our preliminary assessments with department scientists, we have had indications that improvements in instrumentation may have rendered at least some of the historic data unusable. We are exploring the possibility of transferring other data to national data centers serving the scientific community.

The photographic images consist of prints, negatives, and lantern slides. Most of these images come from the many magnetic surveys that the Carnegie Institution financed around the world, both on land and sea. Many images are contained in a series of well-captioned albums put together by the surveyors themselves. Duplicate photographs and some negatives are stored in wooden filing cabinets in labeled paper envelopes. The envelopes are old and rather fragile. We plan on eventually re-housing all of the images in modern, acid-free containers. Currently, no finding guides to the photographic collections exist. Access is limited to chronological browsing. Our future goal is to create an image database that will allow users to browse by keyword and year.

The DTM and Geophysical Lab records are to be moved into a new archives being built at the Broad Branch Campus during 2004. The records will be re-housed in acid-free boxes and folders and stored on compact shelving far away from the dusty penthouse. Concurrent with this re-housing, finding aids will be prepared for all of the

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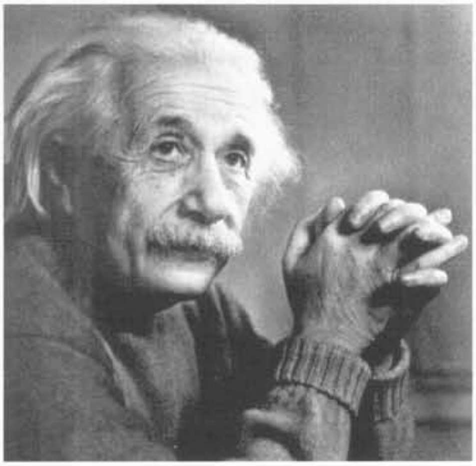


Albert Einstein. Photograph courtesy of the Center for History of Physics, American Institute of Physics.

A Half-Century of the Albert Einstein Papers Project

BY DIANA KORMOS BUCHWALD

The Collected Papers of Albert Einstein, begun in 1955, is fast approaching its 50th anniversary. Eight volumes (including one double volume) of Einstein's collected writings and correspondence have been published since 1987; they cover Einstein's life and work from 1879 to 1921. The ninth volume of correspondence is due to appear in the fall of 2004.

Albert Einstein (1879-1955), whose 125th birthday we celebrate on March 14, lived in Germany, Switzerland, and eventually the United States, through six major epochs of modern history: the Wilhelmine Empire, World War I, the Weimar Republic, Fascism, World War II, and the postwar period. He was the prime mover of the transformation of modern physics, starting with the publication of his revolutionary papers on the photoelectric effect and on the special theory of relativity in what we call "the miraculous year 1905." Einstein is arguably the most important scientist since Isaac Newton. He never wished for a memorial, and insisted that his ashes be scattered at an undisclosed location. The Einstein Papers Project is our intellectual memorial to his life and work.

Although its first volume appeared more than 30 years after Einstein's death, plans for such an edition were initiated early. In his last will and testament, Einstein bequeathed his entire literary estate, with no stipulations or strings attached, to the Hebrew University in Jerusalem, an institution that he helped establish and on whose behalf he had begun working as early as 1919. Upon his death, the task of organizing his written legacy was entrusted to the executors of his literary estate, his longtime assistant Helen Dukas and his friend Otto Nathan, a lawyer living in New York.

Dukas and Nathan decided that a publication plan should be initiated with dispatch, yet the process ultimately turned out to be arduous and at times painful. Not only did various complications arise in the process of collecting material, but Einstein's various family branches disagreed with the executors regarding the status of physical and intellectual ownership of material that was variously held by private individuals, libraries, and archives, as well as in Einstein's former home and office.

Other aspects of the envisioned project needed to be clarified and implemented, such as the project's work site, funding sources, editorial policies, and management. In the early 1980s, John Stachel, a professor of physics at Boston University, officially began the work of planning for what was already a highly challenging enterprise. By that time, Helen Dukas and Otto Nathan, with assistance and advice from a number of historians of science, had organized Einstein's manuscripts and letters at the Institute for Advanced Study in Princeton, where Einstein worked from 1933 to 1955.

Dukas and Nathan corresponded with hundreds of individuals, institutions, libraries, former friends, colleagues, and family members over a period of three decades. By the mid 1980s, they had collected more than 40,000 items, either in the original or in photocopy, from the United States and Europe, and had established an impressive card catalog that Dukas had typed up. Between 1979 and 1981, with assistance from Princeton University staff, the catalog was entered into a computerized database.

The Einstein materials themselves were reproduced on microfilm, and several hard copies were produced, while the original Einstein Archive, as it was known by then, was crated and shipped to the newly established Albert Einstein Archives at the Jewish National and University Library at the Hebrew University in Jerusalem, where it has resided ever since. Helen Dukas died shortly thereafter, having devoted almost six decades to Einstein and his legacy. A biography of this remarkable woman is still to be written!

The editorial project was established at Boston University. Princeton University Press, whose director Herb Bailey had been an early and enthusiastic supporter of the project, took on the responsibility of publishing the large-format bound volumes, as well as a paperback companion translation project. The editors decided that all of Einstein's scientific writings, both published and unpublished, as well as drafts, notebooks, scientific and personal correspondence would appear in chronological order.

Unpublished materials would be faithfully transcribed, no silent corrections of typographical or other errors would be applied, and punctuation and style would be reproduced, while errors of fact or calculation would be explained in the annotation. Published items would appear in facsimile, while comparisons to drafts or versions would be examined and detailed in the footnotes. An introduction and various editorial headnotes analyzed major themes in Einstein's life and work. It was to be a project that combined the most rigorous American and European editorial standards, whereby historical events, places, and names, as well as scientific developments, would form the core of the detailed scientific-historical annotation.

The first volume of Einstein's papers was the most challenging to produce. Little material documenting his childhood and youth was extant, and, most distressingly, manuscripts of his early work, among them one of his most remarkable papers on the special theory of relativity, published in 1905 when he was only 26 years old, were not available. Nevertheless, the editors embarked on an ultimately highly successful hunt for unknown letters and documents, so that by 1987 the deeply personal and revealing letters between Albert Einstein and his classmate, sweetheart, and first wife Mileva Maric could be included in a volume that also contained copies of his school certificates, his final leaving examinations, his university notebooks, and other highly illuminating and never before examined materials.

This achievement of the first editorial team at Boston University, consisting of John Stachel as senior editor, together with David Cassidy (now at Hofstra University), Robert Schulmann (with the Project at Caltech, residing in Bethesda), and Juergen Renn (now at the Max-Planck Institute of the History of Science in Berlin), was followed by a series of important analyses of Einstein's scientific development. Among them are the volumes documenting his most revolutionary scientific contributions between 1905 and 1916, included in Vols. 2–4, and most significantly, Einstein's strenuous path towards his greatest achievement, the general theory of relativity.

Over the years, the editorial team, consisting of historians and philosophers of science whose specialty was the complex physical, mathematical, and conceptual foundations of modern physics, included Martin J. Klein (Yale), A.J. Kox (now at the University of Amsterdam), Michel Janssen (now at the University of Minnesota), and many other associated and contributing editors, graduate students, and editorial staff. Einstein scholarship has benefited immensely from new insights gained over the past 18 years. With almost every volume, new biographies for the general public are published, and our received view of Einstein deepens and changes.

The four first volumes covering Einstein's writings were followed by the first volume devoted exclusively to correspondence. Since then, the published volumes have been divided into a *Writings* series and a *Correspondence* series, a division that was dictated by the rising number of letters after 1915. Thus Volume 5 covered Einstein's correspondence from 1902 to 1914, a significant time period, while Volume 9, to be published this year, only covers a period of 16 months.

This dramatic increase in Einstein's correspondence was due in large part to his rising fame shortly after the end of World War I, his many additional administrative responsibilities, his status as Germany's pre-eminent scientist, and his gradual engagement in social, political, and humanitarian causes. It was in the spring of 1919, only a few months after the end of the war and the dissolution of the German empire, and before the Versailles Treaty had even been concluded, that two British astronomical expeditions set sail for the northeastern coast of Brazil and the northwestern coast of Africa to observe a solar eclipse.

The expedition's major goal was to test one of the three fundamental observational predictions of the theory of general relativity, namely, that light from distant stars is deflected when it passes the strong gravitational field in the vicinity of the Sun. The official report on the results of the expeditions was published in England in the fall. As a consequence, Einstein, who had eagerly awaited the results of the expedition, became known worldwide. He was besieged by reporters, and his face began appearing on the covers of popular magazines and newspapers.

The great physicist became a celebrity in Berlin and elsewhere, was asked for popular renditions of his most recent work, and was invited to lecture not only at home but also abroad. As the only prominent German scientist identified with opposition to World War I, and one of the few German intellectuals who had not signed the Manifesto of the 93 in defense of Germany's war aims, Einstein became a spokesman for international reconciliation among scientists and intellectuals, and an increasingly public figure rather than a simple private savant.

The project moved in the summer of 2000 from Boston to the California Institute of Technology in Pasadena when I was appointed the new general editor. Einstein had been a visiting scientist at Caltech during three winter terms in 1931, 1932, and 1933. He had come here to consult with the astronomers and physicists who, during the late 1920s and early 1930s were making some of the most revolutionary advances in our understanding of the structure of the universe. He met extensively with Edwin Hubble, who had shown that, contrary to Einstein's initial assumptions, we live in a dynamical and expanding universe of a much larger scale than Einstein had known when he developed his theory of generalized relativity in the first two decades of the century.

The project, now housed in its own rather charming villa on the campus of Caltech, consists of a staff of seven full-time equivalent editors (Robert Schulmann, Jozsef Illy, Daniel Kennefick, Tilman Sauer, Virginia Iris Holmes, A. J. Kox, and Ze'ev Rosenkranz) with varying areas of expertise and experience on the project. The editors receive assistance from gifted undergraduate students, an editorial and technical staff, visitors, and a number of researchers in Europe, the United States, and Israel who contribute material from local libraries and archives.

Over the past two years, our infrastructure has changed significantly, especially in that we have moved to a Web-based database consisting of more than 60,000 items (or more than half a million photocopied pages in our collection). We work from copies, in particularly close cooperation with the Albert Einstein Archives in Jerusalem, with which we have launched a highly intense and successful collaborative web site containing high-quality images of 900 digitized scientific and nonscientific manuscripts in Einstein's hand, as well as a finding aid and database. The web site, launched in May 2003 on the occasion of a symposium at the Museum of Natural History in New York celebrating 25 years of editorial work on the Collected Papers, was accessed during its first few week by several hundred thousand users (*www.alberteinstein.info*).

The challenges of selectivity are one of the most significant issues with which the current editorial team is struggling. While Einstein's writings for the period 1922–25 would probably fit into no more than one volume of the *Writings* series, his complete correspondence of incoming and outgoing letters for the same period would probably necessitate several *Correspondence* volumes. A decision was thus made to calendar administrative items pertaining to Einstein's activities as a member of the Prussian Academy of Sciences and as the Director of the Kaiser-Wilhelm-Institute of Physics. The calendar took up 80 pages in Volume 9.

We are now publishing approximately 50 percent of Einstein's correspondence and are debating ways of reducing the number even further without prejudicing certain aspects of his life and work. We want to present a fair representation of the broad incoming correspondence from publishers, students, colleagues, and public figures without imposing the historian's judgment too severely onto extant material. ◆

Diana Kormos Buchwald is the general editor and director of the Einstein Papers Project, California Institute of Technology, Pasadena.

Joseph Henry's Career as a Scientist
(continued from page 1)

meetings of the American Philosophical Society in Philadelphia.

In 1846, Henry was elected Secretary (chief executive officer) of the newly established Smithsonian Institution, a position he held until his death. While Secretary, he focused on applied research. For example, his work on the acoustics of public buildings and on fog signals marked the birth of the field of applied acoustics in the United States.

When Henry became Secretary of the Smithsonian, he also became de facto science adviser to both the executive and legislative branches of the Federal Government. His effectiveness as an advocate became as important (perhaps more important) than his skills as an experimental physicist. His correspondence demonstrates that the careers of individual scientists, the livelihoods of inventors, and the future of certain government scientific activities came to depend in part upon his support and his ability to sway members of Congress or cabinet members. Such was his reputation that, according to Henry, one secretary of the interior assured him that "if the request was . . . backed by myself that would be sufficient!"[5]

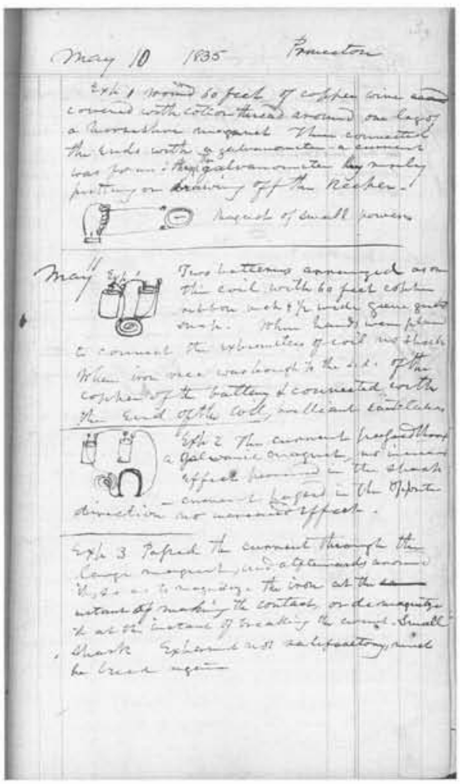
From 1868 until his death, Henry also served as president of the National Academy of Sciences. His efforts probably saved the Academy from extinction by recasting it into a symbol of impartiality and scientific excellence. He also served as president of the American Association for the Advancement of Science (1849–50), as president of the American Association for the Advancement of Education (1854), and as a member (1852–71) and later chair (1871–78) of the United States Light-House Board.

Henry's status and stature in the history of science ebbed and flowed in the century following his death. At first, he was a symbol of American accomplishment in science, recognized by both the American and international communities. When an 1893 international scientific congress established names for the various fundamental units in electricity, the unit of inductance became the "henry." The American joined Watt, Volta, Faraday, and other Europeans as honorees.

Four years later, 16 representatives of human development and civilization in eight areas of human endeavor were immortalized by statues in the Rotunda of the Jefferson Building of the Library of Congress. Most of the men selected were of international fame: Ludwig Van Beethoven, William Shakespeare, Plato, and Michelangelo. Representing science were Isaac Newton and Joseph Henry.

Fifty years later, however, no historian or scientist would consider Henry to be on the same level as Michael Faraday or Newton. During the intervening half century, the history of American science had been reexamined. Henry was recognized as perhaps the best of what was a mediocre American physics community. His scientific contributions placed him no higher than the second tier of his European contemporaries. According to this view of American scientific history, American biologists and geologists made important contributions to international science in the mid-19th century, but not American physicists.

In the 1960s, however, a new generation of historians of science arose who focused on the institutional development of American science. Henry was recognized as one of the great institution builders. It was within this environment that the Joseph Henry Papers Project was formally established in 1966 under the joint sponsorship of the Smithsonian Institution, the National Academy of Sciences, and the American Philosophical Society.


May 10 1835 Princeton

"Record of Experiments" entries for May 10 and 11, 1835, from the Joseph Henry Collection, Smithsonian Institution Archives. Photograph courtesy of the author.

The project has always been housed at the Smithsonian (currently, it is part of the Institutional History Division of the Smithsonian Institution Archives), with funding having come from all three sponsors, as well as from the National Science Foundation, the National Endowment for the Humanities, the National Historical Publications and Records Commission, foundations, and individuals. Originally conceived of as a selective edition of 20 volumes, the project has, over the intervening years, responded to financial considerations by increasing the selectivity and reducing the number of volumes to eleven.[6]

When Nathan Reingold, the original editor, began collecting Henry materials, he assumed that there were approximately 50,000–60,000 extant Henry documents. In fact, the staff has gathered copies of over 125,000 Henry items from 35 states and 17 countries. Over 80 percent of the documents come from the Smithsonian Institution Archives, most of these from Henry's personal papers and from the official secretarial correspondence. The National Archives and Records Administration is a distant second in importance, with 10 percent of the documents, coming from 35 different record groups.

Perhaps the most important editorial decision made by Reingold was to integrate the various types of Henry documents into one chronological edition. In addition to letters, Henry left behind diaries, lecture notes, notebooks, and his "Record of Experiments" (from the title on the spine of one of the three manuscript volumes of his laboratory notebook). It is common for documentary editions to publish diaries in volumes separate from correspondence. Reingold rejected this approach, interspersing Henry's detailed record of his work in the laboratory with diary entries, correspondence, and other documents. He felt that it would be a mistake to separate
(continued on next page)

Joseph Henry's Career as a Scientist
(continued from previous page)

the social history evident in the letters and diaries from the technical history documented in the "Record of Experiments."

The laboratory notebook, more than any other form of documentation, distinguishes the papers of a scientist from those of a politician or general. The "Record of Experiments," maintained by Henry as an official record of his work, in part in anticipation of possible priority disputes, was compiled from notes Henry made at the laboratory bench. Profusely illustrated with drawings of scientific apparatus and of the conduct of experiments, the "Record of Experiments" supplies details about Henry's work not obtainable from published scientific papers.

The Henry Papers Project is coming to a close. Nine of the eleven volumes have been published (the first eight by the Smithsonian Institution Press; the ninth and succeeding volumes by Science History Publications). Volume 10, which documents the Civil War years, will appear early in 2005. Editorial work has begun on the last volume. Looking back on the reviews of and the citations to the published volumes, as well as the articles and monographs that have appeared based on both the published volumes and the larger collection of documents gathered by the project, the staff of the Henry Papers Project are reassured that the project has reestablished the centrality of Henry for the history of American science. ◆

Marc Rothenberg is the editor of *The Papers of Joseph Henry.*

[1] *Philadelphia Ledger and Transcript*, May 14, 1878.

[2] The most accurate biography of Henry, and the first to be based on the material gathered by the project, is Albert E. Moyer, *Joseph Henry: The Rise of an American Scientist* (Washington, DC: Smithsonian Institution Press, 1997).

[3] *A Memorial of Joseph Henry* (Washington, DC: Government Printing Office, 1880)

[4] Inscription to son William, May 1837, in George Gregory, *Lectures on Experimental Philosophy, Astronomy, and Chemistry* (probably London, 1808).

[5] Joseph Henry to Alexander Dallas Bache, Otober 25, 1851, Bache Papers, Smithsonian Archives.

[6] Volume 1 documents the Albany years (1797–1832); the Princeton years are covered in volumes 2 through 6 (1832–1846); volumes 7 through 11 document the Smithsonian period of Henry's life (1847–1878).

Center for History of Physics Begins Study
(continued from page 11)

The end products of the Project to Document the History of Physicists in Industry will include published recommendations and appraisal guidelines that offer cooperative strategies for documenting industrial R&D, along with the question-set interviews, records surveys, oral history interviews, and a historiographical essay. The records surveys and interviews will be cataloged online in RLIN and the International Catalog of Sources, and the interview tapes and transcripts will be available to researchers with the permission of the subjects.

Project recommendations will be based on an analysis of the interviews and other findings, including the needs of users and an evaluation of best practices in the United States and abroad. While we hope to encourage the few companies in the study with in-house archives programs to expand their coverage of R&D records, we don't expect to convince companies that don't have archival programs to initiate them. Instead, we intend to emphasize cost-effective approaches that incorporate existing records-keeping programs (e.g., records management programs, technical libraries) and public-private partnerships.

The recommendations will also reflect the new opportunities provided by maturing electronic records systems and increasingly stringent contractual requirements for documenting corporate contracts in the United States. By bringing attention to poorly documented areas in the history of physics and allied sciences, identifying specific problems, and developing recommendations and collaborative strategies for addressing the problems, we expect that the study will continue to expand the knowledge base that scientists, archivists, and historians can use to preserve the full history of scientific research.

For questions or additional information on the study, please contact project director Joe Anderson (*rja@aip.org*, 301-209-3183) or project historian Tom Lassman (*tlassman@aip.org*, 301-209-3167). ◆

Joe Anderson is director of the Project to Document the History of Physicists in Industry.

[1] Sylvia Nasar, "A Textbook Case," *The New York Times Book Review*, September 15, 2002, p.17.

[2] *AIP Study of Multi-Institutional Collaborations: Final Report* (American Institute of Physics, 2001) provides an overview of the ten-year study and summarizes the study's findings. For information on individual reports, including online versions of most of them, see *http://www.aip.org/history/pubslst.htm*

[3] George T. Mazuzan, "The National Science Foundation: A Brief History," File: nsf8816, July 15, 1994 (available on the Web at *http://www.nsf.gov/pubs/stis1994/nsf8816/nsf8816.txt*).

Keith Donohue Joins NHPRC Staff

Keith Donohue has joined the NHPRC staff in the newly created position of Director for Communications. He will direct public information efforts, special events, print and electronic publications; edit *Annotation*; and assist the Executive Director on strategic directions, policy, and partnerships.

Prior to joining the staff in February 2004, he was most recently Creative Director at the Center for Arts and Culture. From 1984 to 1998, he worked at the National Endowment for the Arts as a speechwriter for Chairs John Frohnmayer and Jane Alexander, and as Director of Publications. At the Arts Endowment, he wrote extensively on arts education. He also edited a history of the agency and an anthology of literary works from fellowship recipients. Donohue holds a Ph.D. in English from The Catholic University of America and an M.A. from Duquesne University in Pittsburgh.

Dr. Donohue has created four major web sites, has been cited in two editions of Representative American Speeches (LSU Press), authored *Preserving Our Heritage* (Center for Arts & Culture, 2001), and edited over a dozen publications on Federal cultural policy. His most recent work is *The Irish Anatomist: A Study of Flann O'Brien* (2003).

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worked correctly. Provenance promised to fix the problem in time for our mid-August user training sessions.

On August 2, Provenance informed us that the problems with the activators would not be fixed in time for our user training. They promised to have the problems fixed by August 30. On August 31 Provenance informed us that testing and development of the activators was not going well, and they could not deliver the product as promised.

Needless to say, the project team was disappointed by this additional delay. On September 8, Provenance informed us that the problems were fixed and that we could resume the project. On September 25-28, Provenance staff uninstalled and reinstalled Version 2. However, ITSD soon discovered that the activators were causing problems with our existing software. As a result, the software could not be installed on participant computers. Nevertheless, the project team decided to have ForeMost installed in the computer lab without the activators and to complete our own training.

On October 11-13, the project team attended administrator and end-user training. We learned how to create user accounts, how to input file plans and retention schedules, how to assign access rights. We also learned how to file, search for, and retrieve documents. On October 17-18, the project team attended train-the-trainer training. Provenance staff demonstrated tips and techniques for teaching others to use ForeMost.

During this time, ITSD continued working with Provenance to correct the problems with the activators. By October 24, everyone believed that the problems were fixed. We installed ForeMost on four computers and began to test its functionality. At this time, the project team discovered other problems. Once again we were forced to postpone the implementation for our project participants that had been scheduled for October 31.

On November 27, Provenance delivered a patch to fix the problems we were experiencing with the ForeMost integration with our e-mail software, GroupWise. The project team then evaluated our installation of ForeMost and determined that it was operating at a satisfactory level to go ahead with the deployment of the software.

However, we continued to have concerns that some of the software's functionality needed to improve for widespread deployment to be successful. We shared these concerns with Provenance, and they informed us that they would fix most of the functional problems when they released a service pack in January 2001. Again there were delays. The new version finally arrived on May 25.

Version 2.1 was installed on July 18, but it contained only one of th suggestions for improvement that we submitted to TrueArc (note: the company changed its name in May 2001) after our initial installation of the product. On January 23, ITSD installed ForeMost Enterprise 2.5. This version of the software included several features that our project team suggested. We are pleased with these improvements because they make the software more user-friendly. We hope that other suggestions we have submitted will be included in future releases.

In mid-June 2001, we discovered that the version control feature in ForeMost had stopped working properly. It took ten months to resolve the issue. This was a very frustrating experience for the project team, for ITSD, and for TrueArc. Unfortunately, we do not know how to prevent it from happening again.

Access to documents in the repository has been interrupted on several occasions since we installed ForeMost. Some of these incidents only lasted a couple of hours, but some lasted for days. These interruptions were caused by problems with the ForeMost indexing function or with the search function.

The project team worked diligently each time to resolve these interruptions quickly, but often the repairs were beyond our expertise and control. We simply acted as a mediator between ITSD and TrueArc. After each interruption was resolved, the project team made an effort to identify the cause of the problem, as well as tactics for preventing or quickly resolving future problems.

Software Deployment

Getting ForeMost to function properly was difficult, but it was not the only technical challenge we faced. Once we confirmed that ForeMost was working properly, we authorized ITSD to deploy the software to the first group of participants we wanted to train. At this time, we determined that each participant's computer must be configured in multiple ways, after the deployment, for ForeMost to work. The project analysts would be responsible for this configuration work, and ITSD gave them instructions. This was a bad idea.

The first Phase I deployment to approximately 30 participants experienced several configuration problems. ITSD tried to resolve these problems, but it took a considerable amount of time to identify the cause of each problem and the appropriate solution. As a result, we had several frustrated participants, IT staff, and project staff.

A meeting between the project team and ITSD was held in early January 2001 to try to prevent these problems with the second deployment to an additional 20 participants. At this time, we believed that all of the configuration issues were identified and resolved. However, the second deployment was also problematic.

Another meeting with ITSD was held in late January. ITSD decided to have its technicians configure the computers after software deployment. The third deployment in February to approximately 10 participants went smoothly. Finally, all 60 project participants for Phase I had ForeMost working on their computers.

The project team originally hoped to complete the installation of the ForeMost software on the computers of the Phase II participants by January 2002. Using that timeframe as a guide, the team worked to orient the new participants and develop their file plans. Unfortunately, several factors caused delays with the Phase II software deployment.

Before the creation of HAL, the HAL IT staff had worked for the legislature, which operates on a completely different network than the executive branch. The ForeMost servers are maintained by DMB ITSD. The two IT departments spent a considerable amount of time getting the two networks to communicate.

In addition, approximately half of the Phase II users needed computer upgrades with new network connections, operating systems, and e-mail software. HAL IT installed ForeMost on these computers after the upgrades were completed. The software deployment to the Phase II users was completed in July 2002.

Conclusion

The project team learned a lot from installing and deploying the ForeMost software. For example, we learned that software development is unpredictable, so it is important to wait until you have a new product installed and tested before anything else is scheduled. Also, do not ask a vendor if their product can perform a particular function,

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Managing Electronic Records
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because the answer will always be "yes." Instead, get the vendor to demonstrate how the feature works.

It is also important to get your IT support staff involved in software selection. They need to ensure that the product will work in your technology environment, and they need a realistic understanding of their role in installing and maintaining the product. Finally, focus on the user interface. If the product is not user friendly, it will not get used. We found that most of ForeMost's features were very easy to learn and to use. However, it is those few features that are not user friendly that our users tend to dwell on.

Caryn Wojcik is the electronic records archivist for Records Management Services at the Michigan Historical Center. Deborah I. Gouin and Mimi Dionne served as analysts for the project. For more information about this project, please visit the project web site located at *http://www.michigan.gov/recordsmanagement/*. ◆

Rescuing the College of Medicine Records
(continued from page 5)

from medical school faculty members, including those of Dr.Thomas Maren, whose work included the development of the glaucoma treatment Trusopt. The patents for Trusopt at one point brought in more money annually than those for Gatorade, another UF College of Medicine invention.

The NHPRC-funded project has succeeded, after a period of intensive work, in clearing the rooms of all materials stored therein, and gaining access to the records. These materials have been removed to a processing center. Additionally, the archives has established manuscript collections based on materials in the collections or donated by faculty members, and has created hundreds of vertical biofiles. The archives has taken shape as a distinct unit in the Health Science Center, and is now listed by the National Library of Medicine. It has produced a number of exhibits on departmental and health center histories, and on topics in the history of medicine.

Materials processed through this project have been incorporated into a paper on Dr. Cason written by a medical student, which will be submitted for publication in a historical journal. Other materials have been used in creating a book on the history of women at the University of Florida. The archives also has been involved in planning historical activities and exhibits for the 50th anniversary of the Colleges of Medicine and Nursing. The project will continue to process the remaining records, which still amount to at least 100 large boxes, and to make materials incorporated into the archives available to researchers. ◆

Nina Stoyan-Rosenzweig is archivist of the University of Florida's College of Medicine. Carl Van Ness is the university archivist.

Editing the Edison Papers
(continued from page 9)

Rutgers Repository, an Open-Architecture Repository Infrastructure being created by the Library to house digital collections and make them available over the Internet. This is part of the National Science Foundation's Digital Libraries initiative, designed to create standard metadata for digital collections so that users can search across collections.

The digital edition has made the Edison Papers accessible to a larger number, and a much wider range, of users than ever before, with over 40,000 individual visits per month. Even scholars for whom Edison, his laboratories, his technologies, and his businesses are of only peripheral interest are finding significant materials for their research.

Since its launch, the online edition of the Edison Papers has been used in a variety of books, articles, and papers on historical and contemporary subjects, including current debates about the nature of technological innovation, historical studies of electrification and the adoption of electrocution as a more humane method of executing criminals, analyses by contemporary scientists of the development of brain imaging and vacuum technology, and studies of new media and telecommunications technologies. These recent studies suggest the richness of this document trove, which is only just beginning to be tapped. ◆

Paul Israel is director and editor of the Thomas A. Edison Papers.

The Carnegie Legacy Project
(continued from page 13)

collections.These finding aids will contain background information on the creation of the records, descriptions of the series of records within the collections, and box and folder lists of the collections so that materials can be located easily.

The Broad Branch Road collections have been used by historians of science and technology, graduate students in history, scientists (including geophysicists, astronomers, and physicists), museum curators, maritime historians, and genealogists. All these users, and others, will benefit from the finding aids. The finding aids will greatly enhance access to the materials, because for the first time we will have a clear idea of just what materials we have and where exactly they are located.

Now that trained archivists are working at the Institution, "professionalization" of the management of the archives is underway. The development of a policies and procedures manual and of complementary forms has been completed.The Legacy Project web site has grown with leaps and bounds, especially with the recent addition of an inquiry database to facilitate the reference process. Also, there will soon be an online exhibit about Captain Ault and his journeys on the *Carnegie* featuring his letters and photographs. Please visit the Legacy Project web site at ***http://carnegieinstitution.org/legacy***. ◆

Charles Hargrove and Jennifer Snyder are the archivists for the Carnegie Legacy Project.

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Groundbreaking for the University of Florida's Medical Sciences Building, June 1954. From left to right, Jefferson Hamilton, university architect; Dr. George T. Harrell, dean of the College of Medicine; and Dr. Russell Poor, provost of the Health Science Center. Photograph courtesy of the University of Florida College of Medicine Archives. For a related article, see p.4.