Celebrating Engineering Librarianship: 130 Years of Cornell University Engineering Libraries: 1887-2017

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Introduction

The changing nature of engineering libraries and the engineering library profession has evolved significantly over 130 years at Cornell University. While the current physical building hasn’t changed much on the outside since its founding in 1957, much has changed on the inside – influenced by many things, such as the predominance of digital information, computers, financial downturns, the serials crisis, and student protests. Students occupied the building for 5 days in 1972. Research from archival photographs and early college publications help describe the activities of the earliest engineering librarians and various buildings from 1887 to the present. This article will trace the founding of the Engineering Library in Sibley Hall, the development of other small departmental libraries, the move to a newly built Carpenter Hall where the new engineering quad was being developed, and describe the accomplishments and changes to the libraries by the engineering library directors from 1897 to 2017. A chronology of notable events in Cornell Engineering Library history during the past 130 years is included in the Appendix.

Information for much of this research was obtained from student publications (The Crank, Sibley Journal of Engineering, Cornell Engineer, Cornell Class Book) and staff publications (Cornell Weekly Gazette, Library Annual Reports, Kaleidoscope, Cornell University Announcements, and Cornell Alumni News), which will be referenced throughout the article. Cornell Engineering: A Tradition of Leadership and Innovation is a book with a deep historical perspective on the College.¹

Literature Review

A review of the literature reveals a number of books and articles on the development of science and technology libraries as they were created and some later consolidated. Mount² edited a volume on a hundred year history (1887-1987) of science and technology libraries, with chapters on the development of separate sci-tech academic, public, government, and corporate libraries. Roberts³ provides a historical survey of the administrative structure of academic science and technology libraries with survey results from approximately one hundred libraries. Maugham⁴ describes the planning and construction of the Kresge Engineering Library at the University of Berkeley. In 1999 Poland⁵ describes administrative restructuring and consolidation of science and technology libraries at Cornell, and in 2007 Powell⁶ summarizes the merger of reference and circulation desks. A few years later Powell⁷ and Scharnberg⁸ discuss the transition to virtual, or bookless libraries.

Many universities present information about the history of their engineering libraries on an “about page” or Wikipedia entry. For example, the Lichtenberger Engineering Library at the University of Iowa traces their beginnings to 1896 in a publication called The Transit.⁹ They recorded the first book purchased (“Gardner’s Steam Engine”) and noted early collections originated in the general library decades before and were later moved to a separate engineering library.⁹ The history of the Terman Engineering Library at Stanford University is detailed on
their web page, complete with references to engineering library directors going back to 1942. The McKinney Library at the University of Texas traces their history, including their directors from 1913 to the present. In 2017 they are scheduled to move into a renamed Engineering Education and Research Center. The Linda Hall Library, the world’s foremost library devoted to science, engineering, and technology was established in 1946 in Kansas City and has since acquired several major important collections, including that of the American Academy of Arts and Sciences and Franklin Institute in 1946 and the Engineering Societies Libraries in 1995.

Figure 1. Carpenter Hall when it opened in 1957. It housed the administrative offices of the College of Engineering (Dean, College publications office, student services, admissions, placement) and the Engineering Library.

It Begins with The Crank

The College of Engineering was founded in 1870 as the Sibley College of Mechanical Engineering and Mechanic Arts. It merged with the College of Civil Engineering and was housed in Sibley, Lincoln, Franklin, and Rand Halls on the Arts Quad. In 1883 the college introduced the nation’s first electrical engineering course. The first beginnings of an engineering library collection appeared with the publication of The Crank (see Figures 2 and 3), a student engineering journal that started publishing in 1887. This journal contained both academic articles and news on campus. The articles contain a detailed account of the lives of engineering students in the late 1800s. The first issue starts out “Yes! - we recognize the dubious epithet, but we are not idiots – nor cranks.” See Figure 2

Figure 2. The Crank inaugural issue, vol 1, no 1, March 1887.
The Crank was published from 1887-1891 and later changed its name to the Sibley Journal of Engineering, published from 1892-1935 (Figure 3). There was another name change to the Cornell Engineer, 1935-1994 (Figure 3). The Crank was digitized in the Cornell Historical Monographs Collection. The Sibley Journal of Engineering was digitized by the HathiTrust. Later publications include the Cornell Engineering Quarterly and Cornell Engineering Magazine, some of which are in eCommons, the university’s digital repository.

In the course of research, the author discovered that while most of these publications were scanned and in the HathiTrust, copyright law prevented the searching and viewing of full-text for many issues. While pre-1923 articles are in the public domain, many issues afterwards were restricted. After consulting the university’s copyright office, the author was advised to seek permission from the Dean of the College of Engineering. After consulting with the copyright lawyer, the Dean agreed to sign the HathiTrust permissions forms, and the full text made viewable within two weeks after receipt of the appropriate forms.

Listed under the column “Crank Shafts” was this first comment about an engineering librarian at Cornell in 1889 (Figure 4):
Without librarians, books were likely acquired by faculty for libraries, which were not open many hours to students. This note and others suggest that students valued books but there was no one to organize them. Once the engineering library was formed, it was open during the noon hour (see Figure 9)\textsuperscript{15} and during school hours but not evenings.\textsuperscript{19}

The earliest engineering library was not in Carpenter Hall, but in Sibley Hall, see Figure 5. Mechanical engineering books, classrooms, offices, and labs were housed in Sibley; civil engineering was in Lincoln Hall (Figure 6); electrical engineering in Franklin, and chemical engineering in Olin Hall. It wasn’t until 1957 that these smaller libraries were merged into the newly built Carpenter Hall. See Figure 1.
In *The Crank* there were announcements about classes, committee structure (such as the delinquency committee which oversaw student probation), alumni news, and faculty profiles. There were technical articles, book reviews, bibliographies, and abstracts of the current literature on various topics in a section called “Engineering Abstracts.” It wasn’t until 1897 that a librarian is mentioned. Anson Holbrook Higley was the librarian in Sibley Library for 2 years, 1897-1899. See Figure 7.
The Early Engineering Librarians

Figure 7. Anson Holbrook Higley, likely the first engineering librarian at Cornell.\textsuperscript{20}

A common problem then and now is having enough money for purchases for the library. The article in Figure 8 reveals the entire yearly budget to be $675 and indicates the split between books and journals (2/3 to 1/3). Today (2017) that split is much bigger, with over 90% of the budget being spent on journals.

\begin{center}
\textbf{LIBRARY FUND NEEDED.}
\end{center}

Year before last a library of Mechanical Engineering and allied sciences was established on the first floor of the Sibley "Dome" adjacent to the study room. This library is a branch of the General Library. It is composed of books transferred from the General Library and is supported by the University Library Fund of which the apportionment to Sibley College is $675.00 annually. Of this sum about one-third is needed for periodicals and transactions and the remainder is used for the purchase of books. This amount is found to be entirely inadequate to maintain the branch on an efficient basis. As all efforts to obtain from the Library Council a larger apportionment or special appropriation have failed, funds must be obtained from alumni or friends interested in Sibley College if the library is to be a success. The branch library at the College of Arts and Sciences recently received from Professor Goldwin Smith a donation of which a part is being used to bring the library up to the immediate needs, and the rest will be used for endowment. Similar donations either for immediate use or endowment, or both, are urgently requested for the Sibley Branch Library.

Figure 8. Library budgets in 1910.\textsuperscript{21}
Paul H. Berggreen, M.E., is mentioned as the new librarian in 1914. When his appointment is announced, an interesting article appears describing the characteristics needed in a librarian and the qualities found in Mr. Berggreen, someone “not only familiar with library work, but an experienced graduate engineer with a command of the foreign languages that are rich in engineering literature.” His tasks will be preparing bibliographies, translating articles, and helping students find references in textbooks, periodicals, and transactions. See Figure 9.

Sibley Library.

Although the Sibley Library has been fairly satisfactory in the past, it has been felt that its usefulness could be increased greatly if it were placed under the supervision of one not only familiar with library work, but an experienced graduate engineer with a command of the foreign languages that are rich in engineering literature. This year the Library has been fortunate in securing the services of one who meets these requirements.

The new Librarian, Mr. Paul H. Berggreen, M.E., received his education in Denmark, has spent much time in the more important Libraries of Europe and this country in connection with the preparation of technical bibliographies, has had considerable experience in the various branches of mechanical engineering and has a command of the German, French and Swedish languages. He is prepared to advise students regarding their reading and the use of the library, will assist them in finding references in text books, periodicals and transactions, will aid them in translating foreign literature and will help them in other ways. It is hoped that the students will frequent the Library to a greater extent hereafter and also that they will make use of their knowledge of foreign languages. The Library is now open during the noon hour and is being used by many at that time.

Figure 9. Sibley Journal of Engineering description of librarian activities, 1914.

A description of the library in 1915 indicates “a library of manufacturers catalogues has also been added to the regular stock of magazines and books.” Libraries were meeting places where “an industrial exhibit was held in the Sibley Library under the auspices of the C.U.C.A. (Cornell University Christians’ Association). The purpose of the exhibit was to show the engineering undergraduates what was being done through the Y.M.C.A. for the education, amusement, and general welfare of faculty workers. “Factory workers in Ithaca will be given instruction in English and mechanical drawing.” We can see the library emerging as a place of social interaction among students, as the following article attests. Instead of computers they attracted students with songs, stunts, refreshments, and smoking (see Figure 10).
A very successful meeting of the three engineering societies was held last month and from all indications this method will prove a great success. The scheme as it is now being carried out is to have a technical meeting of the A. I. E. E. and the A. S. M. E. which members of the Sibley Club can also attend. All the members then adjourn to the Sibley Library for a social hour consisting of stunts and songs, followed by refreshments. There is also always plenty of smoking tobacco and cigarettes on hand. The next combined meeting will be held on Friday evening, December 17.

Figure 10. Sibley Journal of Engineering, 1909.

Despite the excellent appointment, neither Mr. Berggreen nor his immediate successors stayed very long. Most graduates with engineering degrees earn far more money working as engineers than as librarians, a similar situation today. The Crank and The Sibley Journal of Engineering mention the following early librarians, who were likely recent college graduates:

- Paul H. Berggreen, M.E., 1914-1916. Spoke German, French, and Swedish. Left to take a “more lucrative position”
- Frederick Gotlieb Baender, Librarian of Sibley College Library, 1916. Graduate student in mechanical engineering and valued for his knowledge of German, left for the University of Arkansas in 1916.
- Frank L. Fairbanks, ’10 of Pendelton, Oregon, 1916

Mr. Baender and Mr. Fairbanks wrote book reviews and summaries of articles in the “Engineering Abstracts” column. Since photocopiers didn’t exist then, the journal states that “The Sibley Journal will mail the magazines containing the articles to its subscribers at cost price.” Sample topics abstracted include the Panama Canal Shops at Balboa in the American Machinist and Installation of Thermometers in the National Engineer. While students and faculty wrote the majority of technical articles, librarians also contributed. An example is “Heat Transmission Through Boiler Tubes” by F. G. Baender.

Other technical topics written by others include electrolysis, alternating current, electric railway industry, aviation, radio-telegraphy, and the relation between physicists and engineers. Figure 11 shows the editorial board of the Sibley Journal for 1902. While formal dress was usually expected note the informal attire for the 1872 freshmen crew, see Figure 12.
Work and Sport. Figure 11 shows the editors for the Sibley Journal in 1902. Figure 12 shows the Freshmen Crew for 1876. Freshmen often had to wear beanies.

Gender and Librarians

While researching for this paper the author wondered about the existence of women librarians in the early years of Cornell and had trouble locating them in the student publications. Cornell University's *Announcement of the College of Engineering* lists the following women librarians under officers in their official publication from 1910-1940 in three engineering schools. The student-published *Sibley Journal* never mentions these librarians. Perhaps the male students overlooked the women working in the library. Or maybe the student editors were focused more on the activities of students and faculty than that of staff and administrators. A librarian wasn’t mentioned from 1916 until 1940 when a man was hired. Without the official listing in the *Cornell Announcements* these women librarians would have been overlooked. Those with a long tenure appear in bold.

- **Gertrude** Marsh Sanford, Librarian of the School of Civil Engineering, 1910-1917
- **Rowena L. Shephard**, Librarian of the School of Mechanical Engineering, 1910-1914
Notable during this period is Lena Gertrude Marsh (Figure 13), who was librarian to the mechanical engineering school for 21 years. She graduated from the Ithaca Conservancy of Music (today Ithaca College) in 1899.

Figure 13. Lena Gertrude Marsh as a member of the Students Concerts Company, Ithaca Conservancy of Music, around 1899. This group performed 175 concerts in 1903, visiting every state in the east.  

Lena Gertrude Marsh, Librarian of the School of Mechanical Engineering, 1918-1939 (She is possibly related to Gertrude Marsh Sanford, but census records show they are not the same person.)

- Louise Whittaker, Librarian of the School of Civil Engineering, 1922-1923
- Mary R. Korherr, Librarian of the School of Civil Engineering, 1924-1928
- Lillian Stilwell, Librarian of the School of Civil Engineering, 1930
- Grace W. Fish, Librarian of the School of Civil Engineering, 1931-32
- Mabel H. Walbridge, Librarian of the School of Civil Engineering, 1933-1942
- L. Wilma Grenolds, Librarian of the School of Civil Engineering, 1944-1945
- Mabel Harker, Librarian of the School of Electrical Engineering, 1925-1926
- Mrs. I.M. Batchellor, Librarian of the School of Electrical Engineering, 1927-1938

There are articles and books on the status of women in librarianship, one such book is The Role of Women in Librarianship, 1876-1976 by Kathleen Weibel and Kathleen Heim. This prejudice against women as professional librarians appears subtle at times. Library of Congress Subject Headings at the time list “women as authors,” “women as physicians” and “women as librarians” instead of women authors, women physicians, and women librarians which is how the male counterparts are listed.

Sometimes the Proceedings of the Board of Trustees reported on resignations and appointments giving us a glimpse of salaries. Mary Korherr resigned in 1942 as secretary to the director of the
school, earning a salary of $1,100 per year.\textsuperscript{35} She had previously served as librarian for the School of Civil Engineering.

Library Mergers and Endowments

Library mergers were discussed in 1936, a theme common again in 2011. In The Cornell Engineer the discussion centered on the consolidation of three engineering libraries (mechanical, electrical, and civil) and the economies of scale gained by merging them into one building. See Figure 14.\textsuperscript{19}

Cornell University Announcements described various college buildings, including the library in the yearly publication. A description from 1930 describes the origins and size of two book endowments, Kuichling for hydraulic and municipal engineering (civil) and Gray for electrical. See Figure 15.

![ANOTHER MERGER](image)

Recently, several mergers and reorganizations have been proposed to make the engineering college a more unified group; to fill any gaps existing between the various schools. Some of these plans have been accepted and are functioning. Others are still under consideration.

There is one consolidation which has not, to our knowledge, been suggested, and we would like to submit it for consideration. This plan consists of the consolidation of the Engineering Libraries.

The advantages of such a movement should, of course, be considered. An important advantage is that the consolidated library would be able to be open in the evening. If the Sibley, Franklin, and Lincoln Libraries were to consolidate, the help required to operate this new library in the evenings, as well as during the day, would be no more than is at present required for their individual operation.

Another advantage is that a consolidated branch would be able to economize on periodicals as duplication could be done away with. This money could be used for more periodicals or books. The overhead required to operate three individual libraries is obviously greater than the overhead which would be required to operate a single, consolidated library.

Figures 14 and 15. Library mergers\textsuperscript{19} and description of the Engineering Libraries and endowments, 1930.\textsuperscript{36}

Post 1940 Engineering Librarians

William Henry Hyde, Jr., 1940-1945. See Figure 16. The engineering student publications report on William Henry Hyde and his influence on the library. He reorganized the library, cataloged books, added many new volumes, and extended the hours. He was chair of the
In 1942 Sibley Library held 10,000 volumes and 200 technical journals. The University Librarian Stephen McCarthy greatly expanded and reorganized the libraries so that many college and department libraries were brought under a single administration. Some faculty and students were reluctant to give up their control and McCarthy’s perseverance brought about this unification to sixteen separate libraries. Evidence of this reluctance is in personal correspondence in files dated 1956 regarding the chemical engineering library.

Carpenter Hall and a New Engineering Quad is Built

In 1957 Walter Carpenter gave funds to build an engineering library to house all the books under one roof. Carpenter had been associated with E. I. duPont de Nemours and Company since 1909 and was chairman of the Board until his retirement in 1962. Carpenter, a mechanical engineering graduate of the class of 1910, had also served Cornell as a member of the Board of Trustees. The College of Engineering, under the leadership of Dean Simon Cady Hollister, gained ten new buildings -- from the completion of Olin Hall of Chemical Engineering in 1942 to Bard Hall in 1963.
Jeanette Poor, hired in 1945, was the first engineering librarian to move the collections from Sibley into the newly-created Carpenter Hall in 1957, see Figure 18. She wrote articles and was active in national library organizations.

From Brookline, Massachusetts, she graduated from Simmons College with a bachelors degree in library science in 1937, and held positions in the John Crerar Library in Chicago and the RCA Victor Division in Harrison, New Jersey before she came to Cornell.\(^{38}\) Figure 18 is from the Simmons College yearbook.\(^{41}\) She remained in her position until 1973.\(^{42}\) She was active in the Engineering School Libraries Committee of the American Society for Engineering Education (ASEE), serving as its chair from 1958-1960. In addition she was a member of the Special Libraries Association. She married in 1960, changing her name to Jeanette Poor Wood.

Jeanette published an article that describes, with photographs, the newly opened Engineering Library in 1959 in College and Research Libraries News.\(^{43}\) Some of those pictures were also published in the Cornell Alumni News, see Figure 19.

![Figure 18. Jeanette Poor, Director 1945-1973](image)

In addition to three floors of stacks, a reading room, and circulation desk, the library included a browsing library named after Alfred W. Smith, Dean of the Sibley School of Mechanical Engineering from 1904-1921. He championed broad cultural interests in his students. Many of these books were of general interest and not engineering-related.
Figures 20 and 21. Left is the Alfred W. Smith Browsing Library, 1957 (Rare and Manuscript Collections, Cornell University); the same room on the right used as a computer lab in 2017. There are four computer labs in Carpenter in 2017, with over 100 machines available for student use. Dean Alfred Smith (Figure 22) wanted students to develop “an appreciation of the intricate relationships of human affairs traditions, motivations, and of the consequent challenge to them as engineers and as citizens.”

SUGGESTIONS FOR FORMING THE READING HABIT

By Albert W. Smith, B.M.E. ‘78
Dean Emeritus of the College of Engineering

It is desirable first to find out one’s inborn preferences in reading, if they are not already known, and then to follow these preferences with growing enthusiasm, and with increasing breadth of outlook on the literature which is the illuminated record of life.

It should be kept in mind always that reading that is to liberalize should stimulate thought and emotion; for it is through exercise of the mind and heart that one grows in power for wise and upright living. The reading which is forgotten overnight may—like playing solitaire—be useful for restful diversion, but it does not help to build character.

To test native taste in reading, a good method is to select an author for trial, with the aid of more experienced readers; if this author has written in several forms of literary art, make a selection from each and read it carefully. These readings will usually make it clear to the reader whether or not he wishes to continue with this author.

Robert Louis Stevenson may be taken for illustra-


George W. Cable: Any of the short stories in “Old Creole Days”.

H. C. Bunner: Any of the stories in “Short Sixes”.


John Galsworthy: Any of the stories in the volume, “Caravan”.

J. M. Barrie: Any of his plays.

Leonard Merrick: Any of his short stories, or “Conrad in Search of His Youth”.

Maurice Hewlett: “Little Novels of Italy”.

James Lane Allen: “King Solomon of Kentucky”, in the volume, “Flute and Violin”.

Dona Byrne: “Blind Rafferty”.

J. A. Mitchell: “The Pines of Lory”.

Jane Barlow: “Stopped on Signal”, in the volume, Figure 22. In 1939 Alfred W. Smith wrote an article in the Cornell Engineer entitled “Suggestions for Forming the Reading Habit,” where he enthusiastically provided a list of books
he hoped students would read. He suggested authors such as Thackeray, Dickens, Virgil, Scott, Homer, Eliot, and Conrad. He wrote “It is desirable first to find out one’s preferences in reading….and then to follow these preferences with growing enthusiasm and with increasing breadth of outlook on literature which is the illuminated record of life.”

In the late 1980s this room became an instructional computer lab, as it was a good size and had a door to block the noise from the rest of the library. See Figure 21.

In the 1960s there were 150,000 volumes in the stacks and over 1,000 journals. There was enough money to actively buy books from many publishers. A crisis was looming, but it wasn’t budget troubles yet. The Vietnam War led to much student unrest; and the library was selected for an occupation.

**Notable Events: Students Occupy the Library**

On April 26, 1972 nearly 100 student protestors seized Carpenter Hall and occupied it for 5 days (see Figures 25-28). They bolted the doors and allowed food, books, and people to pass back and forth through the windows. Their demands, which were against the U.S. involvement in Vietnam, included the following: that Cornell Aeronautical Lab (CAL) cease defense-related work, an end to ROTC, and convince the Gulf Oil Corporation to withdraw from Angola (Cornell was a stockholder). Pictures of the protesting students were posted in Barton Hall where others were encouraged to identify them. 50 students were identified (by faculty as well as students). Damages included 6 broken windows, 4 missing books, and assorted missing office supplies. 17 students were later ordered to pay $250 for not leaving the building when ordered.
Figures 25 (above), 26, and 27. Students occupy the Engineering Library, Carpenter Hall, April 26, 1972.\textsuperscript{46}

\textit{At top, President Corson (back to camera) and other administrators meet with the Carpenter occupants to "talk and listen," before a large and courteous audience. Left center, the President and Lowell T. George, Safety Division director, leave the building. But others seemed to prefer egress and ingress by the windows, for example the girl at right center. At left, on May 1, minutes before the first court proceeding, demonstrators leave Carpenter with arms raised in radical salute.}

Figure 28. Protestors outside Carpenter Hall.\textsuperscript{46}
Other disruptions to the building occurred in February 7, 1972, when Honeywell, a military contractor, came to recruit at the Career Center. Students chanted loudly outside interview doors. 

**Engineering Librarians After 1973**

Below is a listing of more recent engineering library directors, with some major accomplishments:

**Mary McElroy**, Director 1973-1981 (pictured with future director John Saylor)

Figure 29. Mary was co-principal investigator with Professor Leon Dworsky, professor of civil and environmental engineering, to develop the Northeast Water Resources Information Terminal (NEWRIT) an early information retrieval system in 1975. She helped organize a water conference in 1980 sponsored by Environmental Research at Cornell, the Upstate New York Chapter of the Special Libraries Association and the U.S. Department of the Interior's Office of Water Research and Technology. She was an active member in the Engineering Libraries Division of the ASEE in the 1970s.

**Susan Markowitz**, Director 1982-1987

Figure 30. Susan worked as a librarian in many libraries on campus during 34 years of service. Besides the Engineering Library, she worked in Mann, Physical Sciences, and the Veterinary libraries. She was also Director of Library Human Resources. She was responsible for training many staff in NOTIS, one of the first computerized library catalog systems.

Figures 31 and 32. Students in the Carpenter Hall Reading Room circa 1990 and 2000. At left the only digital device is a calculator. At right note the colorful clamshell iBook from Apple
Computer. During the early 2000s laptop computers had come into use, although not everyone owned one. Print journals numbered close to 1,500 (in tall shelves) and the reference collection is in the background. As the stacks filled, pre 1950 bound journals and less frequently used books were sent to the library annex. This allowed more space for new books. (Photos by the author.)

John Saylor, Director 1987-2001; 2006-2008
Figure 33. John came to Cornell in 1973 as a reference librarian in the Engineering Library. He was director from 1987-2001 and 2006-2008; from 2002-2005 he went on partial research leave as Director of Collection Development for the NSF-funded National Science Digital Library Project. In 2009 he was appointed Associate University Librarian for Scholarly Resources and Special Collections. He served as principal investigator on the Kinematic Models for Design Digital Library (KMODDL) involving the Reuleaux Collection of 19th-century kinematic machines. He led the Task Force to examine library-related needs for the Cornell Tech campus in New York City. In the early years under his leadership the Engineering Library had the first library gopher server and Macintosh computers for all staff. He retired from Cornell in Jan 2015 after 42 years of service.

John (and the author, who arrived in 1986) remember heavy reference traffic at the reference desk before we had computers, as patrons needed a lot of help finding conferences, articles, standards, and patents, and using the card catalog. It was easier to meet colleagues, which lead to more collaborations between faculty and staff.

Zsuzsa Koltay, Interim Director, 2002-2006
Figure 34. Zsuzsa oversaw a major remodel of the engineering library in 2005 to include more computers, furniture, and group study rooms. She conceptualized the service desk to include both reference and circulation, and emphasized outreach and evaluation of services. Starting her Cornell career in Mann Library, Zsuzsa went on to become Director of Assessment and Communication.

Steven Rockey, Director 2009-2014
Figure 35. Steve became Director of the Mathematics Library in 1972. Becoming director of the Engineering and Physical Sciences Libraries in 2009, he oversaw the transformation of the Engineering Library into the Carpenter Hall 24/7 study space in 2011, when the physical books were removed. 25,000 volumes and course reserves were moved to Uris Library and other central campus libraries; 157,000 went to the Annex to join the 204,000 engineering volumes already there. He also acquired access to more money for online collections. He will retire January 1, 2018 after 47 years of service.
**Erla Heyns**, Director 2015-2016
Figure 36. Erla came to Cornell in 1999 as the Director of the Veterinary Library. In 2015 she also became the Coordinator of the Engineering, Math, and Physical Sciences Libraries. She conceptualized the new cluster Science and Technology Libraries, and developed two new positions to include a physics, astronomy, and mathematics librarian and entrepreneurship librarian to work with the Center for Technology and Licensing and eHub.  

**Jill Powell**, Acting Director, 2016 -2017
Figure 37. Jill started as reference librarian in 1986 and is now Engineering Librarian and Acting Director of the Science and Technology Libraries. She started the library instruction program in the 1980s. She manages the engineering print and electronic collections, negotiates licenses, serves on publisher advisory boards, and initiates liaison activities with student groups and new faculty. She is liaison to electrical and computer engineering, mechanical and aerospace engineering, and biomedical engineering. Active in ASEE, she has been program and division chair. (Photo by author).
The serials crisis from the 1990s and financial downturn of 2008 affected many libraries, Panitch\textsuperscript{55} describes the serials crisis in a white paper from 2005. The financial crisis of 2008, also called the subprime mortgage crisis, forced more cost-cutting, layoffs, and library closures around the world and is discussed by Holder.\textsuperscript{56} As of 2011 the Engineering Library’s physical collection is no longer on site at Carpenter Hall but consists of approximately 240,000 print volumes with another 150,000 volumes and 2 million technical reports held off-site at the Library Annex and the main Library. Two engineering librarians remain onsite in Carpenter Hall for consultations, collection management, and instruction. There is also a reading room/study space and four computer classrooms, run by Cornell Information Technologies. The Engineering Library's collections serve the 12 schools and departments in the College of Engineering and are described in the Engineering Library collection development policy at http://guides.library.cornell.edu/cdpolicies/engineering.

In 1957 Carpenter Hall housed the following: Dean’s office, Engineering Library, College Publications Office, Student Services, Admissions, and Placement. Some of these have continued and some have been moved or been renamed; now the lists includes the Dean’s office, Computer Labs and Study Space, Human Resources, Cooperative Education and Career Center, Corporate and Foundation Relations, Alumni Association, Facilities, Finance and Budget, Marketing and Communications, and Research and Graduate Studies. Other student services such as Admissions and Advising have relocated to other buildings.

**Conclusion**

After 130 years of engineering libraries at Cornell, including 60 years in Carpenter Hall; there are comparisons we can make about engineering librarianship over 100 years at this academic institution.

Activities that continue to be prominent then and now:

- Quiet study spaces heavily used by students
- Library mergers
- Budgets – not enough funds
- Assisting researchers with finding references and literature searching
• Preparing bibliographies for classes, reference, and document delivery

Activities that are different:

• Then - smoking, stunts, songs, formal clothing
• Translating, abstracting articles – not done very often by librarians today
• Staff – many more employed library staff years ago
• Fewer in-person visits by faculty today
• Today - Internet, digitization, computers, open more hours, more library instruction
• Food and drink tolerated today in the library. Maker spaces and project activity in the library in place of some stacks

Figure 39 and 40. Many activities in the library have changed. Left - Students use the card catalog in 1977. (Rare and Manuscript Collections, Cornell University). Right - students use virtual reality workstations and build robots. Engineering project teams occupy the former stacks in the Engineering Library, 2016. Photo by author.
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Acknowledgements

The author is grateful to the following colleagues who provided pictures, reference help, and comments to improve the paper: Laura Linke, Eisha Neely, Hilary Dorsch Wong, Michelle Paolillo, Theodore Wolf, Evan Earle, Steven Rockey, and John Saylor of Cornell University; Michael White of Queen’s University; Ralph Pugh of Illinois Institute of Technology; and the anonymous reviewers.
Appendix: Chronology of Engineering Librarianship at Cornell University

1887 The Crank, an engineering student publication begins, signifying the beginning of an engineering library. (The College of Engineering started in 1870 as the Sibley School of Mechanical Engineering and Mechanic Arts.) Franklin Hall, site of Electrical Engineering, was built in 1882.

1888 Lincoln Hall was built, where the civil engineering library was started.

1897 First mention of an engineering librarian (civil) at Cornell is Anson Holbrook Higley, who stayed until 1899.

1910 Rowena L. Shephard is the first officially-listed Librarian of the School of Mechanical Engineering, 1910-1914.

1910 Gertrude Marsh Sanford is Librarian of the School of Civil Engineering from 1910-1917; Lena Gertrude Marsh (not the same person according to census records but perhaps a relative) becomes Librarian of the School of Mechanical Engineering 1918-1939.

1940 William Henry Hyde, Jr. engineering library director, did a major reorganization of the library, added many new volumes, and extended the hours. He stayed until 1945.

1942 Olin Hall was built, site of the Chemical Engineering Library.

1957 Carpenter Hall is built. Smaller departmental libraries from civil, electrical, chemical, and mechanical are consolidated in the new Engineering Library. Jeanette Poor (Wood), engineering library director 1945-1973, managed the library during this major transition.

1972 Student protestors lock the front doors and occupy Carpenter Hall for 5 days.

1975 An early information retrieval system was developed by engineering library director Mary McElroy and Professor Leon Dworsky. Search results took one week to be processed and sent via postal mail.

1978 COMPASS (Computer-Assisted Search Service) was a new fee-based service offered by librarians. It included searching databases on Dialog and STN.

1988 The library implemented the first online catalog system NOTIS, which started to replace the card catalogs from 1973. A computer lab was established in the former Alfred W. Smith browsing library. The Browsing Library had around 1,400 books on popular topics.

1989 NTIS was the first CD-ROM to arrive in the library; Science Citation Index was the 2nd.
1990 Massive barcoding project undertaken in the stacks during the summer led by Mary Patterson, engineering librarian. Online circulation of books began the same year. First engineering database on the Internet offered – EI Page One (Engineering Village, 1986 to present), which was included next to RLIN (Research Libraries Information Network).

1991 Keyword searching arrives for the online catalog.

1993 The Engineering Library introduces the first library Gopher server on campus.

1994 The Engineering Library introduces their first Web server.

1996 Air conditioning is added to the reading room and 2nd floor. In 1991 it had been added to the stacks. Librarians teach workshops on HTML, Endnote, and online resources, which were very popular.

1997 Laptop loans are introduced, and grow from 2 to 10 in 2002.

1998 Hollister Computer Lab moves to Carpenter, bringing 64 new computers. Books and serials are moved to the Library Annex to make room.

2001 Books24x7 and Knovel are the first ebook collections offered by the library.

2004 Under the leadership of Zsuzsa Koltay remodeling of the library took place, with the addition of more comfortable seating, furniture, group study rooms, and more computers. The reference desk was integrated with the circulation desk. Under the leadership of John Saylor, engineering librarian 1987-2001; 2006-2008 and Professor Francis Moon, Kinematic Models were digitized and made available online with an NSF grant. They are developed from the Reuleaux Collection of Mechanisms and Machines, an important collection of 19th-century machine elements held by Cornell University’s Sibley School of Mechanical and Aerospace Engineering. Kmoddl.library.cornell.edu

2006 The library moves to e-only journal subscriptions for much of the collection.

2011 Due to financial constraints and changing use patterns, the space was changed to a 24/7 computer study space, with two engineering librarians remaining onsite for reference and research assistance. 25,000 books were moved to on-campus libraries; the rest moved to the annex. More online collections were acquired, notably SPIE, ASTM, SAE, Access Engineering, and CRC EngNetbase collections.

2017 Carpenter Hall and the Engineering Library celebrate 60 years. Engineering librarianship celebrate 130 years at Cornell. The extensive engineering collection, including more than 50 specialized databases, more than 700 journals and hundreds of thousands of ebooks, is mostly online, but also comprises more than 388,000 books and other print materials. Two engineering librarians remain onsite for consultations, collection management, and instruction.