



**Newsletter of the Society of American Archivists  
Science, Technology, and Health Care Roundtable**

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**Summer 2016**

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**Message From the Co-Chairs**

**Nora Murphy  
Massachusetts Institute of Technology**

**Todd Kosmerick  
North Carolina State University**

Dear STHC Roundtable Members,

Connect with colleagues at this year's Science, Technology, and Healthcare (STHC) Roundtable meeting during SAA's Annual Meeting. Be sure to mark it on your calendar! This year the roundtable meeting is on Friday, August 5, 7:30 am to 9:00 am (check the SAA program/website/app to confirm room information).

STHC Roundtable 2016 Meeting  
Friday, 5 August 2016, 7:30 - 9:00 a.m.  
Grand Ballroom West, Hilton Atlanta Georgia

Business Meeting, 7:30 – 8:30  
Program Presentation, 8:30 – 9:00  
Adjourn, 9:00

Our program this year will be made by Mary Hilpertshauer, the Historic Collections Manager of the David J. Sencer CDC Museum at the Centers for Disease Control and Prevention. She will give a general overview of the museum, its collections (which include the Global Health Chronicle), and its educational programming (teacher workshops, the Atlanta Science Festival, and The Disease Detective Camp for high school students). It should be very interesting!

We want to ensure that the STHC Roundtable reflects the interests of its member, so we welcome your input for agenda items that you would like to see addressed at the meeting.

Please feel free to contact us:

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## Conferences, Meetings, and Workshops

### **SAA**

July 31-August 6, 2016

For the full SAA program, please see the following:  
<https://archives2016.sched.org/>

### **STHC-Themed Programs:**

#### **STHC Roundtable Meeting**

7:30 – 9:00 a.m., Friday, August 5th  
Grand Ballroom West

#### **103. Deal With It: Working with Difficult Media and the Art of Making It Accessible**

11:00 a.m. - 12:00 p.m., Thursday, August 4  
Salon D

#### **105. Bettering on Archival Futures: What's on Your Restructuring Wallet**

11:00 a.m. - 12:00 p.m., Thursday, August 4  
Salon C

#### **111. Archives and Digital Inequality**

11 a.m. - 12 p.m., Thursday, August 4  
Room 202

#### **SGA/SFA**

<http://soga.org/annualmeeting>  
October 12, 2016

#### **NEA**

<http://www.newenglandarchivists.org/meetings>  
October 14, 2016

#### **MARAC**

<http://www.marac.info/upcoming-conferences>  
November 3-5, 2016

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## Around and About Archives

### **A Community Fieldbook from Belize**

**Lesley Parilla**  
**Smithsonian Institution**

More than five years ago, a botanist, a librarian, and an archivist came together to try to solve a challenge. How can an institution make primary source field documentation, all the materials that a scientist creates while in the field collecting specimens and recording observations of flora and fauna, easier to discover and search? One of the driving motivations has been to enable researchers to discover field notes that overlaps and informs

the content from other disciplines. This can be particularly important for understanding a geolocation's environmental changes over the decades. The project recently cataloged a field book unique among 8,000 field books cataloged by the Project to date—a research logbook that holds the observations of numerous researchers for one geolocation, all in one volume. This logbook comes from a Smithsonian research station off the coast of Belize at Carrie Bow Cay. It is a unique and striking volume containing detailed observations and numerous watercolors and sketches. It also documents a fundamental shift in the way field research is conducted as seen in the 200 years of field notes in the Field Book Project's cataloged materials.

Early field books cataloged as part of the Field Book Project were often the result of major expeditions that were federally or privately funded such as: the Hayden and Powell surveys of the western United States territories, work of the U.S. Bureau of Fisheries, and individuals like J. Bruce Bredin who financed multiple Smithsonian sea voyages. usually focused on describing Recent decades have of documentation one is like nations are more restrictive borders but there is more environment as whole. As a the 1980's forward are more

Like many other institutions, research stations in the Florida, Maryland, and Belize document a location's provides a wealth of data for relating to ecology.

Carrie Bow Cay Research Smithsonian's Caribbean Program, a long term field coral reefs and associated and sandy bottoms. The Program's field operations are based at the Carrie Bow Cay Field Station on the Meso-American Barrier Reef in Belize. The Carrie Bow Cay logbook contains the observations of volunteers, researchers, and staff from 1999-2010. It documents the island's flora and fauna and the changing nature of field research. It includes regular entries from the station managers about facilities, field entries from family members of visiting researchers, notes to future visitors, and informal discussions of current work and challenges.



Their field books and logbooks collected specimens. produced a major shift in the type to find in field notes. Not only are about specimens leaving their emphasis on documenting the result, many of our field books from likely to include field observations.

Smithsonian has developed several twentieth century in Panama, that offer the opportunity to environment over decades which studies studying changes over time

Station is managed by Coral Reef Ecosystems (CCRE) site dedicated to investigations of mangroves, sea grass meadows,

Field books are primary documents offer a wealth of information about the natural world and how we interact with it. Smithsonian Field Book Project is a joint effort of the Smithsonian Institution Archives, Smithsonian Libraries, and Biodiversity Heritage Library to increase access to natural sciences documentation. To learn more about the Smithsonian Field Book Project, we encourage you to visit our website <http://naturalhistory.si.edu/rc/fieldbooks/> and see our digitized collections on Biodiversity Heritage Library.

## University Hospitals of Cleveland Celebrates 150 Years of Healing, Teaching and Discovery

**Margaret Burzynski-Bays**  
**Stanley A. Ferguson Archives of the University Hospitals of Cleveland**

The story of University Hospitals of Cleveland (UH) began 150 years ago, on May 14, 1866. From its humble beginnings as a single hospital in a two-story wooden house in Cleveland, University Hospitals has grown into a multihospital health system that includes a thriving academic medical center in Cleveland's renowned University Circle neighborhood. The system also includes 18 regional hospitals, 40 health centers, and dozens of medical practices – all working together to serve 1 million people throughout Northeast Ohio.

As University Hospitals took shape over the years, it distinguished itself within the Northeast Ohio community and across the country. Its national reputation for providing high-quality care, direct involvement in pioneering medical advancements and clinical discoveries, and a continued commitment to training the next generation of health care providers demonstrate the UH mission "To Heal. To Teach. To Discover." Beginning on May 14, 2016, University Hospitals will celebrate its history through year-long community health initiatives, staff volunteering efforts in their communities, and educational outreach events. To learn more about the history of UH and to view photographs, videos, and other historical content, please view the website celebrating the 150<sup>th</sup> anniversary of University Hospitals of Cleveland at <http://www.uh150.org/>.

The Stanley A. Ferguson Archives of University Hospitals of Cleveland has played a pivotal role in the success of projects to celebrate the 150th anniversary. Founded in 1968, the archives is the central repository for records of enduring value for all entities within the UH system. Research for a book and website on the history of the hospital system was made possible through access to the vast collections of the archives. A documentary film to be shown on the local PBS affiliate will use photographs, films, and documents from the archives. Planning and installation of several exhibits were made possible by archivist Margaret Burzynski-Bays through a partnership with the UH marketing department and the Dittrick Medical History Center. The collaboration of staff from many departments within the hospital system and historical organizations throughout northeast Ohio was key to the success of these projects. Many of the archivists in northeast Ohio who cooperated on these projects were able to build on relationships fostered through Cleveland Archival Roundtable. The UH archives fulfills the mission of the hospital through the discovery of its history and making that history accessible to stakeholders within the hospital system.

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## **Collections from Iowa State University Now Available**

### **Rachel Seale Iowa State University Special Collections**

Iowa State University Special Collections and University Archives (SCUA) recently processed the papers of mathematician and computer scientist Clair George Maple, who served as the Director of Iowa State's Computation Center (1963-1985). He consulted with companies on [crypt-analysis](#) (solving cryptograms or cryptographic systems) and later consulted with colleges and universities on computation centers. The collection documents Maple's work as Director of the Iowa State University Computation Center, work with Ames Laboratory, ISU Extension, and other services to the university; his consulting work both in crypt-analysis for companies and in computation centers for colleges and universities; and his professional service. In addition to documenting Johnson's work here at Iowa State, his papers also include records related to what were called "IBM computer dances." For these dances, the Iowa State Computation Center processed punch cards created from student questionnaires, matching students up for the dances. Read more about the computer dances in our [blog](#). See the [finding aid for the Clair George Maple Papers here](#).

SCUA would also like to highlight some collections related to the Ames Lab and the Ames Project that were processed by temporary project archivists we hired in an effort to reduce the processing backlog. The Ames Laboratory began as a chemical research and development program at Iowa State College (University) to assist the World War II Manhattan Project. The Ames Project developed an entirely new technology for the conversion of uranium ore to high-purity uranium metal and then used that technology to produce more than 2 million pounds between 1942 and 1946. In 1947, the United States Atomic Energy Commission officially established the Ames Laboratory as a national laboratory. [Ames Laboratory](#) is currently a DOE research facility operated by Iowa State University. The laboratory and university share facilities, functions, graduate students, and faculty/principle investigators.

After World War II, the Ames Laboratory specialized in rare metals and methods of achieving chemical transformation without the production of toxic waste. The laboratory has expanded its scope beyond materials research, including research in photosynthesis, hazardous waste analysis, computer programming, quasicrystals, and nontraditional materials.

- [Ames Laboratory Administrative Records](#) documents the administrative activities of the Ames Laboratory beginning with its participation in the Manhattan Project during World War II (1942-1946, as the Ames Project) and continuing from its establishment as an official national laboratory in 1947.
- [Ames Lab Research Notebooks and Reports](#) contains laboratory notebooks, research reports, and patents. The laboratory notebooks were kept by individual scientists or groups of scientists working together and include details about experiments, research notes, and lists of references. The laboratory notebooks were cleared of their "secret" classification status during the 1950s.
- [Harry Svec Papers](#) includes such materials as artifacts, correspondence, papers, interview transcripts, published works, research materials, project records, proposals, notebooks, lectures, and interviews with former Chemistry Department faculty, including Henry Gilman, on audiocassettes. Svec was a chemistry professor, but also associated with Ames Lab and the Manhattan Project.



Students holding punch cards for the IBM Computer Dance in 1963.  
From University Photographs Collection, box 1647

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## **A Life Aquatic: The Photographs of Richard N. Mariscal**

**Rory Grennan**  
**Florida State University**

In December 2015, the Special Collections & Archives of Florida State University Libraries accessioned the Richard N. Mariscal Photographs. Approximately 20,000 film slides and photographic prints tell the story of the life and work of a leading marine biologist of the 20<sup>th</sup> century. Mariscal's underwater camera work in locations including the Pacific and Atlantic Oceans, the Caribbean Sea, and the Gulf of Mexico has produced a comprehensive document of undersea flora and fauna in those areas.

Mariscal, a Los Angeles native, earned his BA and MA degrees in Biological Science from Stanford University and his PhD degree from the University of California at Berkeley in 1966. Mariscal also spent two years as a Naval officer on the USS Manatee between degree programs at Stanford. He performed postdoctoral research in cell biology at the University of Miami and taught invertebrate zoology, marine biology, and marine ecology at the University of California at Santa Barbara, Oregon State University, Bodega Marine Laboratory of the University of California, and the University of Washington. In 1968, Mariscal joined the Department of Biological Science at Florida State University as an assistant professor and later retired from there as a Professor Emeritus of Biological Science. Mariscal edited and contributed images and text to multiple marine biology textbooks, including *Experimental Marine Biology* (2012) and *Introduction to Marine Biology* (1997, 2009, 2012). Mariscal's underwater cameras accompanied him throughout his career as a biologist, and the collection includes images taken between 1960 and 1990. While Mariscal's research focused on cnidarians, such as medusae ("jellyfish") and polyps, his photographs include a wide variety of sea life, including tropical fish, crabs, sea anemones, annelids, octocorals, and sea horses. The collection also includes photos captured during professional and personal visits to parks and historical sites in North America, which document terrestrial insects and arachnids, as well as landscapes and fossils.

FSU Special Collections & Archives expects the collection to open to researchers by early 2017. They will have value to researchers in a variety of fields, including oceanography, marine biology, entomology, archaeology, forestry, and many more. For more information about the Richard N. Mariscal Photographs, please contact Rory Grennan, Manuscript Archivist, at [rgrennan@fsu.edu](mailto:rgrennan@fsu.edu), or visit [http://purl.fcla.edu/fsu/MSS\\_2015-014](http://purl.fcla.edu/fsu/MSS_2015-014)



Tentacled marine annelid, Bermuda, undated, Richard N. Mariscal Photographs, Special Collections & Archives, Florida State University Libraries, Tallahassee, Florida. Image used with permission.

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## Updates from the Tarheel State

### Jay M. Arena Papers

Lucy Waldrop  
Duke University Medical Center Archives

After reviewing its processed collections, the Duke University Medical Center Archives (DUMCA) identified several collections in need of improved arrangement, more detailed description, and preservation in order to improve access. The papers of Jay Morris Arena (1909-1996) were at the top of this list, and the DUMCA is pleased to announce the completion of the Jay M. Arena Papers (MC.0003). The bulk of the collection pertains to Arena's decades long career at Duke University School of Medicine and contain administrative records for the American Academy of Pediatrics, American Medical Association, American Association of Poison Control Centers, and Duke Poison Control Center. Also included is correspondence, subject files, publications, reprints, manuscript materials, photographic materials, biographical materials, and other records documenting Arena's medical career. The collection is 29 linear feet, and the materials range in date from 1931-1995.



Arena, a preeminent physician in the field of pediatrics and toxicology, was born in Clarksburg, West Virginia, in 1909. He received his BA from West Virginia University in 1930 and his M.D. from Duke University School of Medicine in 1932. After residency and a short stint at Vanderbilt University as an instructor in pediatrics, Arena returned to Duke University School of Medicine as a professor of pediatrics. The records document Arena's involvement with the poison control movement; Arena is credited with beginning the first poison control movement in the United States, and his efforts led to the creation of the American Association of Poison Control Centers and the Duke Poison Control Center. In addition to the development of poison control centers, the introduction of childproof safety caps for medicine bottles in the 1950s is a direct result of Arena's efforts to persuade drug companies to manufacture and include them on their medicine bottles.

Furthermore, Arena's efforts also brought about a reduction in the strength of aspirin, as well as the number of tablets per bottle. By the 1980s, these changes resulted in a reduction of incidences of aspirin poisoning in children from twenty-five percent to less than five percent of all poisoning cases.

Another notable element of this collection documents Arena's 1974 trip to the People's Republic of China—only two years after President Richard Nixon's historic trip to normalize relations between the two nations. Arena, and other medical professionals, traveled to the country as part of the American Medical Association delegation to assess the quality of traditional treatments and care along with the goal of implementing modern medical techniques. Materials include Arena's itinerary, a travel diary, articles and writings on the health of China's children, correspondence, photographic materials, and memorabilia.

The Arena Papers have much to contribute to the study of the history of medicine. See the full finding aid [here](#). For more information on the Jay M. Arena Papers or DUMCA email us at [dumc.archives@mc.duke.edu](mailto:dumc.archives@mc.duke.edu) or visit the DUMCA's [website](#).

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## New Collections from the History of Medicine Collections in the Rubenstein Rare Book & Manuscript Library at Duke: Maria de Bruyn Collection

**Meghan Lyon and Rachel Ingold**  
**Duke University Rubenstein Rare Book & Manuscript Library**

As global health programs at Duke University and other institutions continue to grow, librarians and archivists continue to collect, describe, and preserve materials documenting such work. The History of Medicine Collections in the Rubenstein Rare Book & Manuscript Library has recently received the collection of Maria de Bruyn. This is a remarkable collection documenting de Bruyn's work in the field of global health for over twenty-five years.

Maria de Bruyn is a medical anthropologist who worked for non-profit organizations in The Netherlands and United States, as well as international non-governmental and United Nations agencies, in the field of sexual and reproductive health and rights with a special focus on HIV and AIDS and health-related human rights. She served on the Global Programme on AIDS Global Management Committee Task Force on HIV/AIDS Coordination as one of three nongovernmental organization representatives. She was also a co-founder of the ATHENA Network to advance gender equity and human rights in the global response to HIV and AIDS and worked with groups of women living with HIV on sexual and reproductive rights and advocacy.

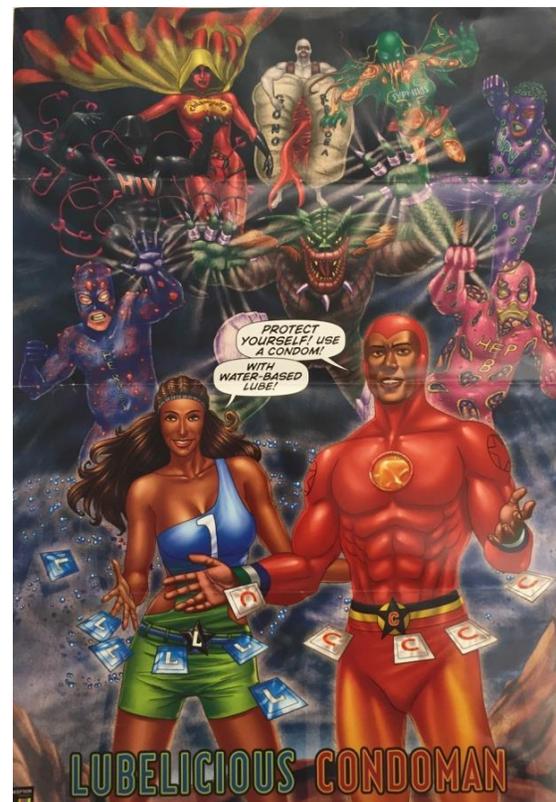


This collection includes de Bruyn's scholarly writings, work from her consultancies and other trainings and workshops, and her subject files. Topics highlighted in subject files include sexual and reproductive rights, HIV/AIDS, sexual and reproductive health, sexually transmitted infections, youth and adult sexual health education, women's health, human rights to healthcare, healthcare law and discrimination, condoms and contraception, and global health policies and advocacy. The subject files are loosely arranged by geographic region, including samples of brochures, literature, flyers, and other items from the United States, Europe, Africa, Asia, and Latin American countries. De Bruyn's files also include public health resources, research articles, published accounts and testimonies, posters, and examples of condoms, lubricant, sexual health artifacts, buttons, and

other ephemera and objects collected from her travels and work around the world.

Please consult the collection guide for further details.

<http://library.duke.edu/rubenstein/findingaids/debruyndaria/>



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## Frank H. Netter Papers

Dawne Lucas and Susan M. Jones  
UNC-Chapel Hill Health Sciences Library

The finding aid for the Frank H. Netter papers is now available on the University of North Carolina Health Sciences Library's [website](#). Frank H. Netter (1906-1991) was an artist and physician whose illustrations depicted many medical conditions, treatments and anatomy of the human body. Before Netter studied medicine and became a physician, he studied art and had established himself as a commercial artist early in his career. After completing medical school, he set up his medical practice but was unable to make a living as a physician because of the Great Depression. It was at this time that he began making medical illustrations for various pharmaceutical companies. His pictures appeared in medical advertisements, pamphlets and books. His relationship with Ciba Pharmaceutical Company (later called CIBA-GEIGY Corporation and Novartis Pharmaceuticals Corporation) encompassed most of his career and resulted in the publication of many anatomy books. The best known of these is the eight-volume set titled the Ciba Collection of Medical Illustrations or the "green books." The first volume of this collection was published in 1953 and the last volume was published posthumously in 1993. This collection is now known as the Netter Collection of Medical Illustrations. Frank H. Netter completed the 'Atlas of Human Anatomy' in 1989 and a large number of his illustrations were used in *Clinical Symposia*, which was a publication of Ciba.

This collection contains correspondence, research materials, slides, sketches and prints. The correspondence consists of letters between Netter and his editor regarding the work he did for Ciba Pharmaceutical Company and the CIBA-GEIGY Corporation. There are also letters between himself and the doctor's he consulted while researching the different medical conditions or procedures he was working on at the time. The research materials consist of photographs, journal articles, manuscripts and x-rays. The slides are of the pictures that were included in the Ciba Collection of Medical Illustrations, *Atlas of Human Anatomy* and *Clinical Symposia*. This collection also contains more than 700 of his original sketches that cover all aspects of human anatomy, medical conditions and procedures. There is also a series of 12 matted prints entitled "Life of a Doctor."

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## *De Humani Corporis Fabrica in Color*

Dawne Lucas  
UNC-Chapel Hill Health Sciences Library

The Health Sciences Library Hill is pleased to announce [De Humani Corporis Fabrica in Color](#), a digital collection of the numerous colored woodcuts in the library's first edition of *De humani corporis fabrica libri septem*.

First published in 1543, *De humani corporis fabrica libri septem* (On the fabric of the human body in seven books), by anatomist and physician Andreas Vesalius, is considered the landmark text of modern human anatomy. In this book, Vesalius corrects many of the errors made by Galen of Pergamon, considered to be the authority on human anatomy for more than a thousand years.

The color was likely added by an early owner. Full-color woodcuts are on pages 1, 2, 163, 164, 165, 474, and the printer's device. The frontispiece is heavily colored. The verso of the frontispiece has a tipped-in portrait of Vesalius heavily colored with a dark black colored border. Other woodcuts have a blue or beige shading. The teeth in many woodcuts have been colored, possibly white but they are now brown or gray. The incipits are not colored.

## National Medal of Technology and Innovation Recipient Donates Papers to NCSU Libraries

### North Carolina State University Libraries

Dr. Jayant Baliga, an internationally recognized leader in electrical and computer engineering, has donated his papers to the North Carolina State University Libraries. Lauded by *Scientific American* as one of the heroes of the semiconductor revolution, Baliga received this year's Global Energy Prize.

In addition to being a distinguished professor of electrical and computer engineering, Dr. Baliga is the director of NC State's Power Semiconductor Research Center. Among his many accomplishments, he is perhaps best known for his invention of a power semiconductor device, the insulated-gate bipolar transistor (IGBT), often used as an electronic switch in modern appliances, from electric cars to air conditioners to portable defibrillators. The IGBT, as he describes it, has had "a major impact on creating a sustainable world-wide society with improved living standards while mitigating the environmental impact."

Baliga has received numerous awards during his distinguished career, some of which include the 2014 IEEE Medal of Honor, the 2011 National Medal of Technology and Innovation from President Obama, the 2012 North Carolina Award for Science, the 1999 IEEE Lamme Medal, the 1998 IEEE Ebers Award, the 1998 O. Max Gardner Award, the 1993 IEEE Liebman Award, the 1992 Pride of India Award (First Recipient), and the 2011 Alexander Quarles Holladay Medal for Excellence.

He is a Member of the National Academy of Engineering, National Inventors Hall of Fame, the Electronic Design Engineering Hall of Fame, the Rensselaer Alumni Hall of Fame, the European Academy of Sciences, and he is an IEEE Life Fellow. Baliga has authored or edited 19 books and over 500 scientific articles and has been granted 120 U.S. Patents.

His papers will be housed in the Special Collections Research Center at the NCSU Libraries, and they will include records from the Power Semiconductor Research Center—meeting documents, vendor information, software agreements, technical working group meeting reports, and related administrative files. Also included in his Papers are Electric Power Research Institute patent applications and other like materials.

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## Articles

### The Ruth Benerito Papers at the Newcomb Archives of Tulane University

**Cara Becker and Chloe Raub**  
**Newcomb Archives, Newcomb College Institute of Tulane University**

The Newcomb Archives, part of Tulane University's Newcomb College Institute, is dedicated to collecting records that document the history of women and gender in the Gulf South, especially those that capture the history of the former women's coordinate college of Tulane. Newcomb College, now the Newcomb-Tulane College, was once home to some of the most influential women scientists of the South. While primarily known for fostering an internationally celebrated artistic ceramics tradition, Newcomb also educated women beyond the fields of the liberal arts. The Department of Science at Newcomb College encouraged not only innovation in the hard sciences, but innovation in those fields by women. Notable alumnae include Clara de Milt, Marion Fay Spencer, and Joan Bennett. Recently, the Newcomb Archives received a donation of archival records reflecting one of Newcomb's greatest examples of women's achievement in the sciences: the Ruth Benerito papers.

Ruth Rogan Benerito enrolled at Newcomb College at the age of 15, graduating with a B.A. in Chemistry in 1935 and almost immediately after earning her M.S. from Tulane University in the same field. Benerito later

received a PhD from the University of Chicago, also in chemistry. Her success was fueled by the camaraderie and encouragement of Newcomb College. She was mentored in the lab by Newcomb alumna Dr. Rose Mooney and later by Clara de Milt, another alumna and then head of the Department of Chemistry, who later hired Benerito to teach at Newcomb and to build up the Department's collaborative research efforts. Benerito worked as a professor of physical chemistry at Newcomb for ten years, simultaneously earning her doctorate over summer breaks and leaves of absence. She rose within the department and upon de Milt's death in 1953 was offered the position of head of the Department of Chemistry.

Benerito declined the promotion, choosing to seek innovation beyond the walls of academia.

Benerito's success as an academic was enough to make her stand out, considering the scarcity of women educated in the sciences in the first half of the twentieth century. However, it was her entrance into the world of textile sciences that made her name widely known. Benerito started working for the U.S. Department of Agriculture's Southern Regional Research Laboratory in 1953, where she began experimenting with cotton fabric. It was there that her most widely recognized contribution to the field of chemistry took place: her research on cross-linking in cotton molecules was one of the prime chemical revelations that led to the invention of permanent press (or wrinkle-free) fabric, as well as stain and flame resistant cotton fabrics. Her achievements in chemistry continued throughout her career, resulting in over fifty patents and numerous honors and awards, including the Lemelson-MIT Award for Invention and Innovation, as well as induction into the National Inventors Hall of Fame in 2008. Benerito remained with the U.S.D.A. until retiring in 1986, after which she joined the faculty of the University of New Orleans and continued teaching until the age of 81.

Benerito died in 2013 at the age of 97. Her nephew, William Rogan, contacted the Newcomb Archives regarding a donation of her lectures, manuscripts, patent files, honors, and awards, with the hope that researchers might find a complete record of Benerito's accomplishments at a single repository. The Archives were honored to receive the donation and are currently working to process the collection, approximately seven linear feet of records. All processing work should be completed by August 2016, at which time a complete finding aid to the collection will be made available to researchers online. Inquiries regarding the collection can be sent to Chloe Raub, Head of Archives and Special Collections, at [craub1@tulane.edu](mailto:craub1@tulane.edu).

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## **The History of Minnesota Chiropractic Education and the Archives at Northwestern Health Sciences University**

**Monica R. Howell, MLS, EdS  
Northwestern Health Sciences University**

Northwestern Health Sciences University (NWSU) is an integrative health university located in Bloomington, MN, just south of Minneapolis. We offer programs in chiropractic, acupuncture and Oriental medicine, therapeutic massage, applied clinical nutrition, undergraduate health sciences, and post-baccalaureate pre-health/pre-med. Northwestern College of Chiropractic (NWCC) was founded in 1941 and merged with the then-Minnesota Institute of Acupuncture and Herbal Studies in 1999 to form NWSU. Additional programs were soon added: therapeutic massage in 2000, undergraduate health sciences in 2011, post-baccalaureate pre-health/premed in 2013, and applied clinical nutrition in 2015.



*Chiropractic students practicing diagnostic skills, 1980.  
Northwestern Health Sciences University, Bloomington, Minnesota.*

### **History of Minnesota Chiropractic Education**

Chiropractic was founded by D. D. Palmer, who performed his first spinal adjustments in 1895 and started the first chiropractic school, the Palmer School and Cure, in 1897, both in Iowa.<sup>1</sup> Diplomas granted to early graduates proclaimed them competent to teach and practice chiropractic, and many of these newly minted chiropractors did just that, often tutoring individuals and small groups in offices and clinics rather than setting up school buildings.<sup>2</sup> For many of these tutorial schools, whether they had any graduates or even any students is unknown, and some schools were known to have been diploma mills<sup>3</sup> (teaching chiropractic by correspondence course seems like a questionable proposition). However, many other schools operated by the standards for a quality course of study as defined at that time.<sup>4</sup>

The earliest school teaching chiropractic technique that is known to have been in operation in Minnesota was the National School of Neuropathy & Psycho-Magnetic Healing, located in Minneapolis in 1899.<sup>5</sup> Including tutorial schools, approximately 30 schools operated in the state from 1899 to NWCC's founding in 1941.<sup>6</sup> The total number of schools operating is difficult to gauge with precision, as some underwent slight name changes and others adopted names nearly identical to those of other schools. Many schools seem to have been in existence for no more than a year or two.<sup>7</sup> Four early Minnesota chiropractic schools are known to have operated for at least a decade: Minnesota Chiropractic College, Carroll School of Chiropractic, St. Paul College of Chiropractic, and Midwest College of Chiropractic.<sup>8</sup> Dr. John B. Wolfe, Jr., and I will be presenting on the history of chiropractic schools in Minnesota at the Association for the History of Chiropractic conference being held at NWHSU in June.

In 1927, a law went into effect in Minnesota requiring students graduating from chiropractic schools to pass a basic science examination in order to be licensed. This law had a chilling effect on student enrollment, resulting in the closure of most of the remaining schools,<sup>9</sup> and leaving only two schools to be visited in national inspections by the Council on Medical Education and Hospitals of the American Medical Association that year: Minnesota Chiropractic College and the Professional Assistants' Training School, formerly Lincoln Chiropractic College.<sup>10,11</sup> The inspectors found no evidence that any students were currently enrolled in chiropractic courses at the Professional Assistants' Training School,<sup>12</sup> leaving Minnesota Chiropractic College as almost the only chiropractic school operating in Minnesota from 1927 to 1941. The one brief exception was St. Paul Chiropractic College (not the St. Paul College of Chiropractic), which operated at two addresses in 1937 and 1938.<sup>13</sup>

### **About the University**

NWCC was founded in 1941 by John B. Wolfe, D.C., who graduated from Minnesota Chiropractic College in 1940. Dr. Wolfe served as a faculty member and college president at NWCC for over 40 years. NWCC was the

second chiropractic school active in Minnesota at the time of its founding, and became the only Minnesota school in 1943, when Minnesota Chiropractic College closed and transferred their charter to NWCC.

NWCC was first located on the sixth floor of the W.T. Grant department building in downtown Minneapolis. The school incorporated as a non-profit in 1949, which was unusual for chiropractic schools at the time, and moved to a historic Minneapolis mansion, opening a public clinic in the adjoining carriage house. In 1955, NWCC became the first chiropractic college in the country requiring two years of college as a prerequisite. In 1973, NWCC moved to a larger location in St. Paul and expanded its off-campus public clinics. In 1983, NWCC moved to its current location in Bloomington.

John B. Wolfe, Jr., D.C., son of founder John B. Wolfe, has been a faculty member at NWCC/NWSU for 27 years and is an avid historian. As a third generation chiropractor, Dr. Wolfe, Jr., has a deep knowledge of the history of chiropractic, particularly in Minnesota. Some of our historical archival and special collections materials, including catalogs for early chiropractic training schools in Minnesota and board minutes from an early school, the Minnesota College of Non-Medicinal Therapy (later called Minnesota Chiropractic College), have been received due in part to his support for our archives.



*Lab Class in Session, 1941.  
Northwestern Health Sciences University, Bloomington, Minnesota.*

## **About the Library and Archives**

The archives and special collections at NWSU are housed in our campus library, Greenawalt Library. As might be expected given the length of time that NWCC taught only chiropractic, our archives and special collections have focused on materials related to chiropractic. In the early years, the school struggled to keep a functioning and accessible library collection. One early library was housed on the front porch of the historic mansion building being used for campus. There were no climate controls on the porch, and the books were cordoned off by a gate, the lock for which was easily picked. Many books went missing in these years, as evidenced by notices in student newspapers pleading for the maintenance of the library collection. In another location, the library could only be accessed through a classroom, trapping unwary students in the library until class let out. Many of the books that survived these years eventually became part of our special collections, and they have since been joined by donations from alumni, faculty, students, and members of the public, in addition to items transferred from the circulating collection.

Our archive has undergone similar sporadic growth, relying on donor-initiated gifts. Our holdings include student, alumni, and university print publications; graduation programs; continuing education workshop and symposium notes; college t-shirts; regalia documenting the image of chiropractic in popular culture, including paintings and decorative objects; and more. We have a pamphlet collection dating circa 1930 to today, with prominent topics including back pain, chiropractic, and exercise. We also have print publications from a number of state, national, and international organizations. Most of these are related to chiropractic, including

many publications from the Minnesota Chiropractic Association. As a member of the Chiropractic Library Consortium (CLIBCON), NWSU is tasked with collecting chiropractic publications from Minnesota, North and South Dakota, and Wisconsin, but the archives also holds chiropractic publications from many other states and provinces.

Archives and special collections often go unacknowledged, even in the library world. As the new archivist at NWSU, I hope to bring more attention to the variety and depth of our holdings in topical areas that have not been widely studied and are ripe for further attention from researchers and health professionals. In this, NWSU's 75<sup>th</sup> Jubilee year, we at the library are expanding our efforts to solicit archives donations from a wider variety of sources, particularly in the areas of acupuncture, Oriental medicine, and therapeutic massage in Minnesota and neighboring states. I have started an Instagram account (@nwhsulib) to share our collections and connect with other institutions, and a blog (<http://nwhsulib.tumblr.com>) documenting our exhibitions and other activities.

Additionally, our cataloger and electronic resources librarian, Susan Vossberg, received a 2015 grant from the Minnesota Digital Library to digitize 50 photographs for Minnesota Reflections, a publicly accessible database of digitized materials from cultural heritage organizations across the state (<http://reflections.mndigital.org/cdm/search/collection/p16022coll56>). Digitization of other photographs is in progress.

The NWSU library and archives welcome members of the public in addition to those affiliated with the university. Archives and special collections materials are available by request; please contact [mhowell@nwhealth.edu](mailto:mhowell@nwhealth.edu) for more information.



*Student gives a spinal adjustment to another student while professor observes, 1974.  
Northwestern Health Sciences University, Bloomington, Minnesota.*

## **NWSU Archives Collections**

- Collection on Sherman College of Straight Chiropractic Court Case
- Collection of Proceedings on State Board of Medical Examiners v. Richard E. Olsen
- NWSU Awards, Certificates, Plaques, and Diplomas Collection
- NWSU Photographs Collection
- NWSU Collection of Posters
- Fred P. Drier, DC, Papers
- Claude O. Watkins, DC, Papers
- John B. Wolfe, DC, Papers
- J. LaMoine De Rusha, DC, Papers and Effects
- Collection of Student Notes from Edith Davis' Classes
- NWSU Collection of Equipment, Instruments, and Other Devices
- NWSU Collection on University Presidents
- NWSU 50<sup>th</sup> Anniversary Collection
- NWSU History Collection

- Women's Auxiliary Scrapbook, 1971-2000
- NWHSU Collection on the History of Chiropractic
- NWHSU Textiles Collection
- NWHSU Collection of Chiropractic Office Forms

## Endnotes

<sup>1</sup>Palmer College of Chiropractic, "The Palmer Family," *Palmer College of Chiropractic*, accessed May 24, 2016, <http://www.palmer.edu/about-us/history/palmer-family/>.

<sup>2</sup>Alana Ferguson and Glenda Wiese, "How Many Chiropractic Schools?: An Analysis of Institutions That Offered the D.C. Degree," *Chiropractic History* 8, no. 1 (1988): 28.

<sup>3</sup>ibid.

<sup>4</sup>ibid., 28-29.

<sup>5</sup>John B. Wolfe, Jr. and Monica R. Howell, "Teaching Chiropractic in the North Star State: 1899-1940" (presentation, Annual Conference of the Association for the History of Chiropractic, Bloomington, MN, June 4, 2016).

<sup>6</sup>ibid.

<sup>7</sup>ibid.

<sup>8</sup>ibid.

<sup>9</sup>American Medical Association, "Medical News: Minnesota," *JAMA* 90, no. 19 (1928): 1577.

<sup>10</sup>American Medical Association, "Schools of Chiropractic and of Naturopathy in the United States," *JAMA* 90, no. 21 (1928): 1733-35.

<sup>11</sup>American Medical Association, "Report of Inspections of Schools," *Minnesota Medicine* 11, no. 3 (1928): 178-80.

<sup>12</sup>ibid.

<sup>13</sup>Wolfe and Howell, "Teaching Chiropractic in the North Star State."

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## Better Living in North Carolina: Bringing Science and Technology to the People

James R. Stewart Jr.  
North Carolina State University Libraries

### Introduction

Wherever and however you are reading this article, chances are you are aided by common innovations in science and technology. Most likely, unseen voltages of electric current are passing over your head, powering light bulbs in the ceiling or the computer screen that is illuminating the text. At the same time, gallons of water rush silently through unseen pipes ready for your next trip to the restroom or the kitchen for cleanliness and overall good health. It is too easy in the information age to disregard the common conveniences of plumbing, electricity, and mass media.

Archival collections have the power to remind us of how much things have changed over time. In the case of the digital project "Better Living In North Carolina," a researcher can look at the impact of new technologies on past generations of America's rural farming households. Many of those families lacked the very basics of electricity and plumbing in the earlier decades of the last century. Interestingly we can appreciate and study those rapid changes via the latest technologies of a library digitization project.

### Overview of Better Living

"Better Living In North Carolina: Bringing Science and Technology to the People" is a two-year LSTA-funded digital project designed to increase access and discoverability of primary source materials from the North Carolina Cooperative Extension Service. "Better Living" is also a two-year partnership between the [North Carolina State University Libraries](#) in Raleigh, NC, and the F. D. Bluford Library at the North Carolina Agricultural and Technical State University in Greensboro, NC. There will be up to 511,631 digital objects created and made available online. These objects represent reports, correspondence, pamphlets, photographs, scrapbooks, and

other media. This project will also promote the historical resources of two universities with a proud history in agricultural innovation.

### **What our collections reveal**

While materials to be digitized date from between 1908 to 2001, the majority of reports made available online to date were completed between 1930 and 1980. They provide a fascinating look into the education and needs of North Carolina rural farm families between the First World War and the Reagan Era. In the 1930s, radio is seen as the latest tool for extension agents to reach farm households. Young children involved in 4-H during World War II are encouraged to grow extra food for the war effort. It is hard to believe that in 1939 only 25 percent of rural NC farms had electricity according to the report for that year. The agricultural extension service was poised, with state and national resources, to address these and many other needs of NC farms.



*Two African-American girls participating in a "Negro 4-H" radio broadcast. From the [1940 Annual Extension Report](#).*

Most of these materials are either annual reports or plans of work. The annual reports were summative and statistical findings made after a year of progress. A plan of work was a statement of intended goals and objectives for the coming year. These reports display the fascinating work of extension leaders and staff working at NC State University and North Carolina A&T State University. Farming conferences, annual (4-H) camps, and home demonstrations were carried out thousands of times each year throughout all 100 counties of the state.

### **Impact of Rural electrification and Home Demonstration on NC farms.**

Using the data from these materials it is possible to monitor the installation of electricity, sewage disposal systems, and plumbing across the state. Visual aids, educational pamphlets and news clippings detail the steps of installing those new technologies into the farm home. One can also view blueprints and reports by agricultural engineers who assisted in advanced construction of farm buildings like swine houses and dairy barns. Recommendations were made by home demonstration agents in obtaining labor saving equipment for the home and proper food storage techniques. Their reports and brochures explained the best type of refrigerator, electric stove, and other devices for a farm kitchen.



A Home Agent demonstrating the use of the pressure canner before a home demonstration club.

From the [1924 NC Cooperative Extension Service Annual Report](#) - Home Demonstration agents brought many new practices and technologies to farm families.

From animal husbandry reports, we notice the increase in refrigeration technologies for the storage and processing of meat following World War II. The extension service aggressively supported the construction of freezer locker plants to hold thousands of pounds of meat.

The following table indicates the development of interest and the actual construction of freezer locker plants which has taken place during the past four years:

	<u>Jan. 1944</u>	<u>Jan. 1945</u>	<u>Jan. 1946</u>	<u>Jan. 1947</u>	<u>Jan. 1948</u>
Plants in Operation	3	16	30	65	97
Plants under construction	5	7	11	16	1
Definite prospects of plants to be constructed	5	5	23	12	4
Total	13	28	64	93	102

Chart on freezer plants operating in NC. [Animal Husbandry Annual 1947](#).

Annual Reports of County Extension Workers show the growing expectations of sanitation and health in the American home. Questions related to sanitation asked of respondents include: "Adopting recommended positive preventive measures to improve health (immunization for typhoid, diphtheria, smallpox, etc.)," "Installing sanitary closets or outhouses according to recommended plans," and "Following other recommended methods of controlling flies, mosquitoes, and other insects." One can also learn that home demonstration extension agents worked to promote clean bathrooms in rural homes and public school buildings. Growing sanitation concerns extended to the proper raising and handling of farm animals, especially poultry. Animal husbandry extension workers urged farms to use good sanitation practices to control the growth of parasites in meat. These services saved farmers from losing hundreds of thousands of dollars in meat production.

### Outreach and new technologies for discoverability

We've also taken measures to promote "Better Living" to researchers. In doing this we have learned more about the potential of digital technologies to impact the use of the Cooperative Extension Service Annual Reports.

On March 15, National Agricultural Day, the NCSU Libraries held a screening of *The Last Barn Dance*, a 30-minute documentary that chronicles a dairy farmer's fight to save his business within an economy that had decimated most other family farms in Alamance County, NC. Prior to the film screening, outside of the auditorium where the film was screened, the Digital Project Librarian for "Better Living" and other NCSU Libraries staff hosted a mini-exhibit of Special Collections materials. These publications, which were similar to materials in "Better Living," highlight small farming and agricultural extension in North Carolina.

Many faculty, staff, students and guests enjoyed browsing these rare items before the film. During the event, it was interesting to discover that among the students most receptive to the materials were Computer Science majors. After learning about the "Better Living" digitization project, they were intrigued about the possibility of extracting statistical information from these collections.

These conversations, along with similar conversations with university faculty and Libraries' subject specialists, led the digital project librarian to investigate the possibility of extracting statistical data from the digitized reports. The opportunities and challenges of this sort of work were presented at the 2016 Texas Conference on Digital Libraries during the conference poster session. The poster, titled "Better Living In North Carolina: Challenges of Presenting Agricultural Statistics From The Past," was well received at the event. Further research conducted for the poster session revealed that the extraction of data from archival collections is desired from institutions with STEM related collections. The full potential of this is that historical land-grant colleges like NC State, NC A&T, and our peer institutions could become clearinghouses of historic agricultural data sets.

Archival resources digitized through the "Better Living In North Carolina" project are available at [go.ncsu.edu/blnc](http://go.ncsu.edu/blnc).

"Better Living in North Carolina" is partially supported with federal Library Services and Technology Act (LSTA) funds made possible through a grant from the Institute of Museum and Library Services, and administered by the State Library of North Carolina, a division of the Department of Cultural Resources.

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## **The Records and Correspondence of Gustav J. Martin at the Gwynedd Mercy University Archives**

**David McAllister**  
**Gwynedd Mercy University Archives**

I knew the name Gustav J. Martin because there was a building on campus named after him. I didn't discover who he was and what he meant to Gwynedd Mercy University and the scientific community until I started an Archives-wide re-appraisal project to regain some needed shelf space. I found his records in a storage box that was never accessioned and not in our database. What I uncovered was a glimpse into the life and research of an accomplished chemist and pioneering computer designer.

Born in Hartline, Washington, Martin received a B.S. from the University of Washington in 1932 and a Sc.D. from the Johns Hopkins University in 1935. He authored two books, *Biological Antagonism: The Theory of Biological Relativity* (1951) and *Ion Exchange and Absorption Agents in Medicine* (1955), edited two more, and wrote or collaborated on over a hundred journal articles. On the lighter side, he edited a book of cartoons on the representation of scientists in the popular press called *Chemtoons* (1955). Martin worked as Director of Research at the National Drug Company in the 1940s and 1950s, and in 1960 became Director of Research at the William Rorer Pharmaceutical Corporation. He received several honorary degrees, was a member of over fifty scientific organizations, and was a faculty member at Gwynedd Mercy from 1964-1967.<sup>1</sup>

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<sup>1</sup> "Gustav J. Martin, Biochemist, 56," *New York Times*, 28 February 1967; "Dr. Gustav J. Martin, Biochemist Was 56," February 1967, Box 1, folder Alcoholism Research Institute Press Clippings, Records and Correspondence of Gustav J. Martin, Gwynedd Mercy University Archives (GMUA).

Before starting his tenure at Gwynedd Mercy, Martin was an integral part of a pioneering attempt to build a computer that could help physicians diagnose disease. In 1955, Martin, Leo Brannick, and William Kleinberg, two Princeton University scientists, incorporated Princeton Science Associates to construct a machine that would diagnose uncommon medical ailments. Physicians needed “no help in diagnosing 90% of the cases they see,” Brannick related to a reporter. The goal of the Diagnostic Computer EP-2, which took six years to engineer, was “to solve 95% or more of the troublesome 10% in which a doctor might seek help beyond his own memory.”<sup>2</sup> When Martin rolled out the EP-2 to Philadelphia-area hospitals in 1960, the machine could only assess and diagnose gastrointestinal disease. Unlike the massive, room-sized digital computers developed at RCA and IBM at the same time, the EP-2 was a desk-sized analog computer more akin to a business machine than a modern computer. The system worked by associating each disease with a specific subset of symptoms. If a patient entered the hospital complaining of left lower quadrant abdominal pain, abdominal distention, diarrhea, an abdominal mass, leukocytosis, bloody stools, nausea, vomiting, malaise, chills, fever, and constipation, a punch card with the symptoms would be fed into the machine and within thirty seconds a diagnosis of diverticulitis would be given with 95% probability



Image 1: Diagnostic Computer EP-2 at Gwynedd Mercy University with Original Punch Card

of being correct (see Image 1).<sup>3</sup> If there were fewer symptoms entered into the computer, the accuracy diminished. The EP-2 was a prototype, and Martin envisioned a more robust machine capable of diagnosing more than 1,500 diseases. “There can be little question,” Martin told the Philadelphia Inquirer in 1960, that a scaled-up EP-2 “can be constructed in the very near future and [it] will go far toward providing confirmation of all diagnoses.”<sup>4</sup>

The EP-2 did not revolutionize medicine the way Martin and his partners assumed, but it did become a constant reminder of Martin’s accomplishments to the Gwynedd Mercy community. After his death Gwynedd Mercy renamed its science building, a structure which originally housed the laundry of the family estate of the ornithologist James Bond, the namesake of Ian Fleming’s spy novels, the Gustav Martin Science Building. And after the Smithsonian Museum declined to accept the EP-2 prototype, his widow, Patricia Martin McGowan, donated the computer to Gwynedd Mercy. “My office was in the Gustav Martin Science Building for 22 years,” one long-time science faculty member recalled, “and I looked at the machine located in the vestibule every day.”<sup>5</sup> It served as a potent reminder of the path-breaking vision of Gustav Martin, for in recent years the field of medicine has adopted computer aided diagnosis in an amazing array of disciplines.<sup>6</sup>

Martin joined Gwynedd Mercy as a visiting faculty member in January 1964. He quickly set up and incorporated the Alcoholism Research Institute in the science building. The Institute was a joint venture between the College and Rorer Pharmaceutical with the school housing the laboratories and Rorer paying much of the research funding. Martin postulated that alcoholism stemmed from physiological defects in brain

<sup>2</sup> David M. Cleary, “The Role of Automation in Diagnostics,” *Current Medical Digest* 26, no.2 (April, 1959): 62.

<sup>3</sup> Punch cards, 1959, Box 2, Folder, Princeton Science Inc., Diagnostic Computer, EP-2, computer cards, 1959, Records and Correspondence of Gustav J. Martin, GMUA; Diagnostic notecards, n.d.

Box 2, Folder: Princeton Science Inc., Diagnostic Computer, EP-2, diagnostic notecards, idem.

<sup>4</sup> “‘Brain’ Aids in Diagnosis of Disease,” *Philadelphia Inquirer* May 29, 1960, Box 1, folder Alcoholism Research Institute Press Clippings, Records and Correspondence of Gustav J. Martin, GMUA.

<sup>5</sup> Bobi McHale, e-mail message to author, March 3, 2016.

<sup>6</sup> For example, see: Jie-Zhi Cheng et al., “Computer-Aided Diagnosis with Deep Learning Architecture: Applications to Breast Lesions in US Images and Pulmonary Nodules in CT Scans.” *Scientific Reports* 6 (2016): 24454; Trafton Drew, Corbin Cunningham, and Jeremy M. Wolfe, “When and Why Might a Computer-aided Detection (CAD) System Interfere with Visual Search? An Eye-tracking Study” *Academic Radiology* 19 no. 10 (October 2012): 1260-7; Lillian S.W. Lai et al., “Computerized Automatic Diagnosis of Innocent and Pathologic Murmurs in Pediatrics: A Pilot Study,” *Congenital Heart Disease*, March 1, 2016.

chemistry not psychological deficiencies and sought to develop a drug to counteract the disease.<sup>7</sup> The breakdown of ethanol, he formulated, created a deficiency in acetyl Co-enzyme A and acetylcholine in the brain of the drinker. Acetylcholine was involved "in basic neurophysiological functions and all nerve conduction processes as a neurohormone."<sup>8</sup> If an alcoholic decided to cut back or stop drinking there was a "period of increased acetylcholine production [which produced] hypersensitivity to stress of any kind."<sup>9</sup> That stress, Martin postulated, "[led] to alcohol intake."<sup>10</sup> Robert Smyth, Martin's laboratory manager at the Institute, summed up the debilitating effects of prolonged decreases in acetylcholine in the brain this way: "the withdrawal of ethanol from the alcoholic mammal does not produce the normal balance ... in the brain but results in a vicious cycle leading to addiction."<sup>11</sup>

Even though in early 1965 Martin wrote to Sister Mary Gregory Campbell, President of Gwynedd Mercy, that "I believe we are beginning to justify your wonderful confidence in us,"<sup>12</sup> the Institute still had to verify two key principles: 1) that chronic ethanol ingestion in mammals decreased acetylcholine levels in the brain, and 2) that the administration of a specific amino acid, cysteine, would stop that decrease and thereby decrease addictive alcohol consumption. If they succeeded, they had a market of approximately 6.5 million alcoholics in the United States alone, and as a letter from Helen Mahoney attests many of their families were actively seeking aid from the Institute: "I need your Help very Bad. My husband is [an alcoholic]. is there Any way I can get help for him now [?] He drank for 43 years. I am married to him 32 years. I can't stand it any longer. ... Please could you Help!"<sup>13</sup> So, in the laundry-cum-laboratory at the small Catholic college ( in 1969 there were less than 600 enrolled students), laboratory technicians, including two students who were Sisters of Mercy from India, Sister Rochey Marie and Sister Januvarius, worked on getting and keeping rats drunk (see Image 2). The results were immediately promising. In the *American Journal of Pharmacology* Martin and Smyth wrote that it is evident "that the chronic oral administration of 10-20 percent ethanol ... produces decreases in specific and total brain tissue COASH activity and concentration."<sup>14</sup> COASH, Coenzyme A-SH, is a substrate of the production of acetylcholine that is inhibited by chronic ethanol consumption. The Institute felt that these results supported Martin's model of the etiology of alcoholism and moved forward by developing a chemical compound based on cysteine to augment acetylcholine levels in alcoholics.<sup>15</sup> Rats fed a diet of 15 percent ethanol showed a marked increase in acetylcholine with administration of the cysteine compound; depending on quantity, acetylcholine levels rose .27 to .88 times greater for the group of rats given the cysteine compound over the control group.<sup>16</sup>

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<sup>7</sup> Gustav J. Martin, "A Concept of the Etiology of Alcoholism," *Experimental Medicine and Surgery* 23, no.2-3 (June-September, 1965): 315-9.

<sup>8</sup> Robert Smyth and Patricia Martin, "Reducing or Eliminating the Compulsive Desire for Ethanol in Mammals," Patent Application Serial 684,572, November 1967, in Box 1, folder "Alcoholism Research Institute Correspondence, 1963-1971, GMUA.

<sup>9</sup> Gustav J. Martin, "Enzymology of Addiction: Alcohol," in *Enzymes in Mental Health*, eds. Gustav J. Martin and Bruno Kisch (Philadelphia: J. B. Lippincott Company, 1966), 22.

<sup>10</sup> Ibid.

<sup>11</sup> Smyth and Martin, "Reducing Compulsive Desire," GMUA.

<sup>12</sup> Gustav Martin to Sister Mary Gregory Campbell, ca. February 1965, Box 1, folder Alcoholism Research Institute Correspondence, 1963-1971, GMUA.

<sup>13</sup> Helen Mahoney to Sister Mary Paul, November 14, 1967 (capitalization in the original), Box 1, folder Alcoholism Research Institute Correspondence, 1963-1971, GMUA.

<sup>14</sup> Robert D. Smyth, Jack Moss, Howard Beck, and Gustav J. Martin, "Brain Coenzyme A Activity in Rats Chronically Ingesting Ethanol," *American Journal of Pharmacy* 139, no. 6 (November-December, 1967): 243.

<sup>15</sup> Gustav J. Martin, J. N. Moss, Robert D. Smyth and Howard Beck, "The Effect of Cysteine in Modifying the Action of Ethanol Given Chronically in Rats" in *Life Sciences* (London: Pergamon Press Ltd., 1966), 2357-2362.

<sup>16</sup> Smyth and Martin, "Reducing Compulsive Desire," GMUA.



Image 2: Robert Smyth and Sister Januarius Work with Rats, 1967

Just as the Institute's scientists were gaining exciting results, tragedy struck. On February 24, 1967, Martin unexpectedly died in Pittsburgh. He was 56. The Institute tried to move forward. They proceeded with the rodent experiments, submitted a patent application for the cysteine compound, and forged a legal agreement giving the College and Institute a considerable part of the profits gained from the production of a marketable drug. Their hopes were dashed when the Patent Office rejected all 14 claims made in the application, and Rorer Pharmaceutical was "reluctantly forced to drop the entire program."<sup>17</sup> One is left to wonder what the results would have been had Martin survived. An able laboratory manager, Robert Smyth was still a graduate student and did not hold the clout to influence executives at Rorer. Moreover, modern advances in treating alcoholism suggest that Martin and the Institute were ahead of their time in conceptualizing the disease and its treatment. Recent studies have determined that acetylcholine receptors<sup>18</sup> are a key pathway in chronic alcohol consumption.<sup>19</sup> Feduccia et al. demonstrated that the drug Varenicline, working on an important site of neural acetylcholine receptors, the ventral tegmental area (VTA), decreased ethanol consumption.<sup>20</sup> Likewise, opioid agonists like Naltrexone are beneficial in reducing chronic drinking by altering GABA<sub>A</sub> receptors in the VTA, which are similar in structure and function to acetylcholine receptors.<sup>21</sup> Both acetylcholine and GABA<sub>A</sub> are part of the cys-loop superfamily of receptors, all formed in part by the amino-acid cysteine, the ingredient the Institute proposed to treat alcoholism.

To open an unknown box and find such rich documents and history is the joy of being an archivist. The Records and Correspondence of Gustav J. Martin at the Gwynedd Mercy University Archives details the creation of the diagnostic computer and the work of the Alcoholism Research Institute. (Other papers about Martin are located at the Gustav J. Martin Collection at the Alan Mason Chesney Medical Archives of the Johns Hopkins Medical Institutions). The Records provide valuable insight into a remarkable polymath whose work, even though it was cut short, influenced modern scientific discovery.

<sup>17</sup> John Eckman to Patricia Martin, 8/18/1970, , Box 1, folder Alcoholism Research Institute Correspondence, 1963-1971, GMUA.

<sup>18</sup> Specifically nicotinic acetylcholine receptors, nAChR.

<sup>19</sup> Suchitra Krishnan-Sarin, Stephanie O'Malley, and John H. Krystal, "Treatment Implications: Using Neuroscience to Guide the Development of New Pharmacotherapies for Alcoholism" *Alcohol Research & Health* 31, no. 4 (2008): 400–407; Pedro Rada, Jessica R. Barson, Sarah F. Leibowitz, and Bartley G. Hoebel, "Opioids in the Hypothalamus Control Dopamine and Acetylcholine Levels in the Nucleus Accumbens" *Brain research* 1312 (2010): 1–9; Zeng-Jian Hu, Li Bai, Yousef Tizabi, and William Southerland, "Computational Modeling Study of Human Nicotinic Acetylcholine Receptor for Developing New Drugs in the Treatment of Alcoholism," *Interdisciplinary Sciences, Computational Life Sciences* 1, no.4 (2009): 254–262; Zuo Jun Ren, Shobha Mummalaneni, Jie Qian, Clive M. Baumgarten, John A. DeSimone, and Vijay Lyall, "Nicotinic Acetylcholine Receptor (nAChR) Dependent Chorda Tympani Taste Nerve Responses to Nicotine, Ethanol and Acetylcholine" *PLoS ONE*, 10 no. 6, (2015).

<sup>20</sup> A. A. Feduccia, J. A. Simms, D. Mill, H. Y. Yi, and S. E. Bartlett, "Varenicline Decreases Ethanol Intake and Increases Dopamine Release Via Neuronal Nicotinic Acetylcholine Receptors in the Nucleus Accumbens" *British Journal of Pharmacology* 171, no. 14, (2014): 3420–3431.

<sup>21</sup> Mary-Anna Enoch, "The Role of GABA<sub>A</sub> Receptors in the Development of Alcoholism" *Pharmacology, Biochemistry, and Behavior* 90, no. 1 (2008): 95–104.

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