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Above right, Tulipe des jardins. *Tulipa gesneriana* L. [*Tulipa gesneriana* Linnaeus, Liliaceae], stipple engraving on paper by P. F. Le Grand, 49 × 32.5 cm, after an original by Gerard van Spaendonck (Holland/France, 1746–1822) for his *Fleurs Sessinées d'après Nature* (Paris, L'Auteur, au Jardin des Plantes, 1801, pl. 4), HI Art accession no. 2078.

Below left, Parrot tulips [*Tulipa* Linnaeus, Liliaceae], watercolor on paper by Rose Pellicano (Italy/United States), 1998, 56 × 42.5 cm, HI Art accession no. 7405.

News from the Art Department

Duets exhibition opens

The inspiration for the exhibition *Duets* began with two artworks of trumpet vine, which were created by the 18th-century, German/English artist Georg Ehret and the contemporary Italian artist Marilena Pistoia. Visitors frequently request to view a selection of the Institute's collection of 255 Ehret and 227 Pistoia original paintings. One day we displayed side-by-side the two paintings (*above left and right*) and noticed not only the similarity of composition but also the contrast of two masterly styles: Ehret's graphic compositions and bold use of opaque color and Pistoia's graceful portrayal and fluid application of transparent watercolor. Looking into their history gave us a better understanding of the professionalism and practicality of two artists surviving on patronage, commissions and teaching who also have impacted generations of botanical artists.

Carrie Roy and I began to consider other "duets" in the collection that were visually harmonious by subject, composition, technique or purpose. This idea led us on a journey through the treasures of the Institute's Art and Library collections. As we whittled our selections down to 24 pairings, the associations between works also began to show the trajectory that botanical art has taken over the last five centuries and the influence of historical botanical masters on the work of contemporary artists. The subjects of these pairings explore the parallels between works created for numerous botanical applications. They include classical botanical illustrations painted during expeditions and in native environs; plants of the Americas and introductions now cultivated for horticultural and economic purposes and purely aesthetic or experimental representation with evocative intent.

Both artists (*cover*) have captured the gestural form and exuberant energy of the tulip in a style that is simultaneously 18th century and modern. Gerard van Spaendonck (Holland/France,

1746–1822) has done so with the subtle tonality of a monochromatic stipple engraving and Rose Pellicano (Italy/United States) with rich layers of watercolor. The former inspired a legion of botanical artists while teaching at the Jardin des Plantes in Paris, and the latter, whose work is inspired by French 18th- and 19th-century artists, carries on this tradition of exhibiting, instructing and inspiring up-and-coming botanical artists.

Another duet of watercolor paintings compares John Tyley's (Antigua/?England, fl. early 1800s), traditional depiction of the passion flower with slightly, and fully, open blossoms viewed from varying angles to Martin Allen's (England), monumentalized bud about to burst open. Tyley creates visual movement with sinuous vines, leaves and flowers, and Allen creates anticipation by bringing our attention to the crisply rendered, centralized area of the bud, while the rest of the structure, slightly out of focus, quietly enfolds this energy. This pairing became the exhibition's publicity image.

Both of the drawings (*below left and right*) are by artists whose work centered on the documentation of grasses native to the United States and Canada. Although the ink drawing by an unknown artist (United States, fl.1900s) was made for a scientific journal, it has similar visual impact to Marcel Jomphe's (Canada) lyrical wash drawing, intended as a fine art piece. For visual interest both artists used the compositional device of bending and crossing the grass stems within the confines of the paper.

Other pairings include contemporary watercolors by Ruriko Kato (Japan), Anne Marie Trechslin (Italy/Switzerland, 1927–2007) and Claus Caspari (Germany, 1911–1980), respectively, with horticultural serials from the Institute's Library and Art collections. Included are hand-colored engravings in *Edwards's Botanical*



Above left, Bignonia; Americana... [*Campsis radicans* (Linnaeus) Bureau, Bignoniaceae], gouache on vellum by Georg Dionys Ehret (Germany/England, 1708–1770), 53.9 × 37.2 cm, HI Art accession no. 2648.

Below left, *Eragrostis sessilispica* Buckl. [*Eragrostis sessilispica* Buckley, Poaceae alt. Gramineae], ink on paper by an unknown artist (United States, fl.1900s), 41 × 28 cm, for Frank Lamson-Scribner (1851–1938), "American grasses (illustrated)" in *Bulletin, Division of Agrostology, United States Department of Agriculture* (1897, vol. 7, p. 268, fig. 250), Hitchcock-Chase Collection of Grass Drawings, on indefinite loan from the Smithsonian Institution, HI Art accession no. 6010.1135.





Above right, Bignonia Trumpet vine: *Campsis radicans* (syn. *Bignonia radicans*, *Tecoma radicans*) [*Campsis radicans* (Linnaeus) Bureau, Bignoniaceae], watercolor on paper by Marilena Pistoia (Italy), 35 × 25.5 cm, for Laura Peroni, *Il Linguaggio dei Fiori* (The language of flowers; Milan, Arnoldo Mondadori, 1984, p. 41), HI Art accession no. 6773.14.

Below right, *Eragrostis hypnoides* (Lam.) Britton, E. E. Sterns & Poggenb. [*Eragrostis hypnoides* (Lamarck) Britton, Sterns & Poggenburg, Poaceae alt. Gramineae], oriental brush and ink on paper by Marcel Jomphe (Canada), 1987, 38 × 25.5 cm, HI Art accession no. 6795.



Register, or Ornamental Flower-Garden and Shrubbery (1830); *Curtis's Botanical Magazine* (1820) and a bound album of original watercolors for volume three of *The Botanist* (1838) showing a watercolor by Augusta Innes Withers (England, ca.1793–1860). Other books from the Institute's Library include a color stipple engraving of corn that is the last technical illustration made by Pierre-Joseph Redouté (Belgium, 1759–1840) in Matthieu de Chevalier Bonafous (France, 1793–1852), *Histoire Naturelle, Agricole Et Économique du Maïs* (1836). It is paired with a delicate, linear, colored-pencil drawing of yellow dent corn by Timothy Angell. A woodcut of rosemary by Leonardo Parasole (also Norsino; Italy, fl. late 1500s–early 1600s) in Castore Durante (Italy, 1529–1590), *Herbario Nuovo* (1585), is paired with a linocut of the same subject by Elliot Offner (United States, 1931–2010).

We hope that you will gain a new perspective of our collections through this exhibition, which is on display through 30 June. Please don't hesitate to contact the Institute if you would like to schedule a group tour. Also, place on your calendar the date, Sunday, 29 June, and return for our annual Open House, which will feature an exhibit tour and related talks (*see page 12*).

Image permission

As part of a multi-year photography initiative at the Hunt Institute for Botanical Documentation, we are working to photograph our entire Art collection. These photos are primarily for in-house purposes, but we would like to add small, 100 dpi thumbnails of the artwork to our Catalogue of the Botanical Art Collection at the Hunt Institute database, which is accessible on our Web site. These thumbnails will be of low-resolution, unable to be reproduced and still protected by copyright where applicable.

Because this is a use not covered in the original donation or purchase

agreement prior to 2010, we would like to contact all living artists (or their heirs) who have work in our collection to request permission to include thumbnail images in our database. We ask that any artist who has participated in our *International Exhibition of Botanical Art & Illustration* series prior to the 13th International in 2010 and whose work is in our collection please contact Assistant Curator of Art Carrie Roy via email (croy@andrew.cmu.edu), phone (412-268-3035) or mail (Hunt Institute for Botanical Documentation, 5th Floor, Hunt Library, 4909 Frew Street, Carnegie Mellon University, Pittsburgh, PA 15213), stating either "Yes, I grant permission for a thumbnail of my artwork to be included on the Web site" or "No, I do not wish for my artwork to have a thumbnail on the Web site." Be sure to include updated contact information so that we can include it in our private records and contact you should there be any request involving your work.

Feel free to contact us with any questions you have about this issue, and please note that this is a multi-year project involving both a Web site re-design and extensive photography. Photos will be uploaded to the Web site in stages, and we cannot give an exact date for when any single artwork will appear.

—Lugene Bruno, Curator of Art

Fall 2014 exhibition

Proudly displaying their violent defensive structures, the plants in our fall show illustrate the battle to protect delicious fruit and delicate flowers against the wicked intent of pests and predators. *Dangerous Beauty: Thorns, Spines and Prickles* includes artworks and books featuring thistles, teasels, cacti, roses, berry brambles and citrus trees. The exhibition will open on 18 September with a reception from 5 to 7 PM and run through 18 December.

—Carrie Roy, Assistant Curator of Art

Back Shelf

Tales from the Archives

William Andrew Archer (1894–1973)

William Andrew Archer was a man of many titles, trades and travels. Known as “Andy” to his close friends, Archer was a man of diligence, intelligence and overall passion, but he was notorious for his challenging character. Those who knew him personally, however, attribute his difficult nature to his many successes in the botanical world. As Archer’s friend and fellow colleague Donovan Correll (1908–1983) described, he was “... one of the most individualistic botanists ever to grace the profession...” (1974, p. 755). Correll later continued, “Andy was much too sensitive and the victim of an emotional instability... shouldered with a pride that left him somewhat unbending...” (1974, p. 755). This “unbending” temperament, nevertheless, proved valuable to each occupation Archer held. Being an expert botanist and plant explorer with specializations in places like Latin America, Nevada and Ethiopia, he was employed within the United States government for an impressively extensive career.

Archer was born on 7 November 1894 into a family of farmers in Torreón, Mexico. While he was a young boy, Archer and his parents moved to Brazito, New Mexico to find new farming opportunities. It was here in New Mexico that he became inspired by a teacher in preparatory school to explore the field of entomology. This exploration, however, was interrupted from 1916 to 1917 while he served as a member of the New Mexico Infantry in an American Expeditionary Forces Base Hospital located in France during World War I. Following this service, he received his bachelor of science degree from New Mexico State University in 1920. Although his studies were focused on mycology, he showed great interest in other subjects such as botany, biology, plant pathology, bacteriology, ornithology, genetics and entomology. Thus he served as assistant biologist at New Mexico State University in 1921. He then moved on to become the assistant botanist at the University of Michigan from late 1921 until 1925. During his time at the University of Michigan, he received his Ph.D. in mycology.

Archer began his professional career as an instructor at Oberlin College, Ohio in 1926. From there he initiated his career in the United States government as the assistant plant pathologist within the United States Department of Agriculture (USDA) from late 1926 until 1929. As assistant he focused on researching plant diseases in West Virginia, Missouri and Iowa. Due to his language skills in both Spanish and Portuguese, Archer was employed at the Escuela de Agricultura as head of the Department of Botany and Plant Pathology from 1929 until 1931. During this time Archer organized a botanical laboratory, initiated a botanical garden and herbarium in Medellín, Colombia, taught botany and researched coffee plant diseases. Throughout the years of the Great Depression, he performed his greatest personal research on a one-man backpacking expedition throughout the Andes and Chocó region from 1931 until 1934. Here he collected

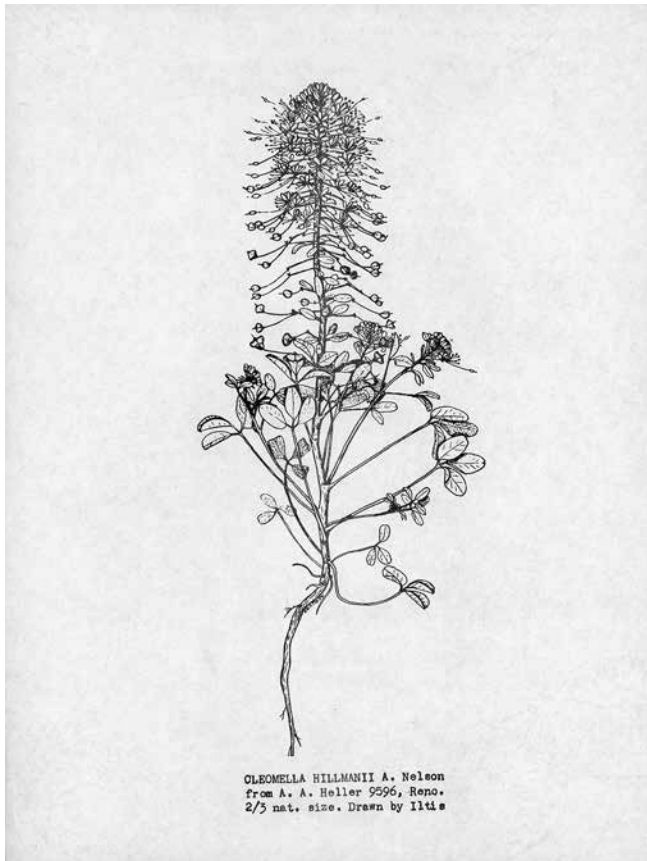


William Andrew Archer (1894–1973), unknown location, 1934, 18 × 13 cm, photograph by Robert Taylor, HI Archives portrait no. 1.

and studied the fish poison plants of South America. This trip, along with many others, solidified Archer’s expertise in the Colombian jungles and Latin America.

Following this period of exploration and after performing a number of odd jobs including working as a cashier at a brewery in Washington, D.C., Archer was finally employed for a short period of time as an editor of translation for the USDA Division of Forest Pathology. He continued his government career as a plant explorer within the Division of Plant Exploration and Introduction in the USDA. His tasks included looking for economic plants throughout British Guiana (Guyana), Colombia, Venezuela and Suriname from late 1934 until 1935, in addition to locating tobacco seed in Mexico and Central America from 1935 until 1936, and finally to trace the *Arachis Linnaeus* (peanuts) in Brazil, Argentina, Uruguay and Paraguay from 1936 through 1937.

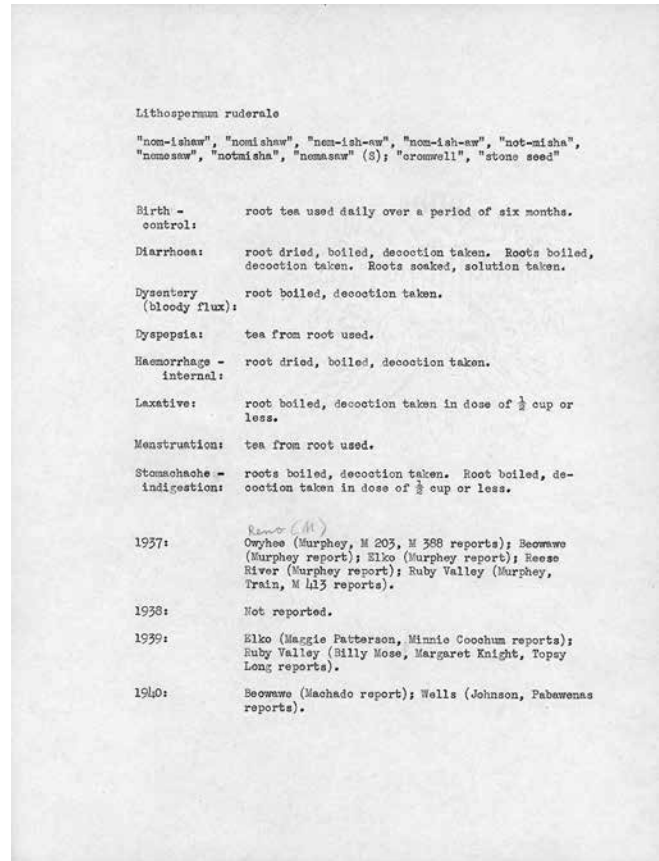
Arguably Archer’s greatest accomplishment came in 1937 when he was made director of the Nevada Indian Medicine Project. This project was a direct result of the public demand to complete a survey of the plants that were thought to have medicinal properties by the Native American tribes



Cleomella hillmanii [*Cleomella hillmanii* A. Nelson, Capparaceae], drawing by Hugh Hellmut Iltis (1925–), undated, for his *Capparidaceae of Nevada* (Beltsville, Md., 1955, frontispiece, *Contr. Fl. Nevada* 35), HI Library call no. DS70 NV C764.

of Nevada. With an agreement among the USDA, the University of Nevada and the Works Project Administration (WPA), Archer was given forty people and four years to complete what was to become the series *Contributions toward a Flora of Nevada*. After an interruption in 1942 by World War II, the project was continued in 1954 but was stopped shortly after in 1955 due to a change in policy. As a result only two-thirds of the Nevada plant species were published. In the end 16,000 specimens were collected and transferred onto 25,000 reference cards that described each medicinal use of most native plants to the tribes of Nevada. Over 900 pages of this collected information were summarized in Train, Henrichs and Archer, *Medicinal Uses of Plants by Indian Tribes of Nevada* (1941, *Contr. Fl. Nevada* 33). This publication remains one of the best models for treatments of medicinal plants used by native peoples.

Additionally, pharmacological investigations of the native plants were performed at the University of Minnesota from 1939 until 1943. These investigations resulted in two major discoveries: that of the contraceptive value of *Lithospermum ruderales* Douglas ex Lehm and the benefits of the acidic properties of *Larrea tridentata* (de Candolle) Coville. Offered by a Shoshone woman in Owyhee, Nevada, *L. ruderales* is known as the predecessor of modern-day birth control. In fact the Ortho Foundation in Raritan, New Jersey alone



Lithospermum ruderales [*Lithospermum ruderales* Douglas ex Lehm, Boraginaceae] entry, Nevada Indian drug plant data, volume 4, 1937–1940, HI Archives William Andrew Archer collection no. 3.

had a budget of \$800,000 in 1956 dedicated to researching the value of this natural contraceptive. *L. tridentata* was also an important finding for its acidic properties were used to prevent rancidity in lard, potato chips and other commercial products. Today it is commonly known as creosote bush and covers millions of acres in Texas, New Mexico and northern Mexico. These and other medicinal findings were edited by Archer and published in Train, Henrichs and Archer, *Medicinal Uses of Plants by Indian Tribes of Nevada* (1957, *Contr. Fl. Nevada* 45).

With the previously mentioned interruption of war during the Nevada Indian Medicine Project in 1942, Archer was given the chance to return to the Amazon basin to work at the Instituto Agronómico del Norte. Before returning to Nevada, he traveled to Ethiopia to explore native crops, seeds of cereals, forages and vegetables. After helping to edit *Contributions* 45, Archer became plant taxonomist and curator at the United States National Arboretum Herbarium from 1947 until 1964. During this time he proved his innovative and diligent nature yet again when he developed a new plastic aid used in mounting herbarium specimens in 1950. Archer's position as curator ended with his official retirement from the United States government; however, he volunteered to organize the botanical archives of the Smithsonian Institution and the Carleton Ball (1873–1958)

(continued on page 11)

Fungi, a puzzle in the golden age of botany: Illustrated mushroom books, part 2

In the 25(1) *Bulletin* we presented a group of floristic studies of fungi from our Library, focusing on illustrated works. In this article we present a selection of scientific studies from approximately the same period. This is not a history of mycology but a selection of illustrated mycological literature in our collection.

Major themes in the study of fungi represented in this selection of books include but are not limited to morphology, reproduction and classification. Fungi were obviously different from herbaceous plants, but researchers were not sure what this meant. In early floras fungi were often treated as plants. As time went on researchers began to differentiate them as some sort of special group. Morphology was part of the reason, and illustrated works provided engraved images, some more detailed than others, showing general form and particular features of various fungi, which included parts that seemed to be completely different from or lacking in herbaceous plants. Also, fungi did not seem to have structures comparable to sexual organs in herbaceous plants. This puzzlement emphasized the need for good quality illustrations in works that discussed morphological issues and classification.

The question of reproduction gave another reason to separate these life forms from herbaceous plants. From ancient times, mushrooms were thought to generate spontaneously. One theory was that lightning was the cause since mushrooms often popped up after thunderstorms. Another theory was that they arose spontaneously from the rotting matter upon which they grew. All that was needed was a little heat! It took study and experimentation by many scientists to establish the reproduction of fungi by spores. Looking at these and other aspects of fungi, researchers proposed classification systems in which to organize fungi, often enhancing systems already proposed by others.

Following the first published illustration of mushrooms in the herbal *Hortus Sanitatis* (1491), a number of 16th-century books, many of them herbals, included illustrations and descriptions of fungi. In our collection these include *De Stirpium...* (1552) by Hieronymus Bock (1498–1554), *New Kreüterbuch* (1563 and later eds.) by Pietro Andrea Mattioli (1500–1577), *Phytognomonica* (1588, 1591, 1608 eds.) by Giambattista della Porta (ca.1535–1615) and *The Herball, or General Historie of Plantes* (1597, 1633, 1636 eds.) by John Gerard (1545–1612). Porta's *Phytognomonica* contained the first published observations of fungal spores, in which he wrote,

From fungi I have succeeded in collecting seed, very small and black, lying hidden in oblong chambers or furrows extending from the stalk to the circumference... the seed is sown and sprouts with perennial fertility (Ainsworth 1976, p. 14).

Looking beyond these early sources, we present a handful of later works documenting scientific study of fungi.

In the previous article we mentioned mycological floristic studies by the Dutch botanist Carolus Clusius (1526–1609). He traveled and botanized in Europe, exchanged plants and information with a vast network of friends and correspondents and helped to introduce many exotic plants to European gardens. He also studied fungi, collecting in the region of Hungary, Austria, Yugoslavia and the former Czechoslovakia (the old Roman region of Pannonia) in the late 16th century. When his mushroom studies were ready to be published, his publisher lost the 87 original paintings of fungi Clusius had provided, which are thought to have been made by his nephew, Esaye le Gillon. Clusius had 33 substitute woodcuts made, edited the text and published them together in *Rariorum Plantarum Historia* (1601). This was the first substantial published study of fungi, “Fungorum in Pannonis observatorum historia,” in which he documented 105 species organized in

47 numbered genera. Clusius' missing paintings eventually resurfaced and were published nearly 75 years after his death—mostly without reference to Clusius or Gillon—by Francis van Sterbeeck. They disappeared from view again until the 19th century, and now are held by the library of Leiden University and referred to as the Clusius Codex.

Francis van Sterbeeck (1631–1693), a Flemish priest and botanist, spent most of his life in Antwerp. Following his ordination in 1655, he suffered a chronic illness and turned his attention to botany, becoming a recognized expert on fungi. In 1672 his friend Adriaan David, an Antwerp pharmacist and amateur botanist, brought to Sterbeeck Clusius's Pannonian fungus paintings, which had gone missing during Clusius's lifetime and were currently owned by Dr. Syen or Sijyen of Leiden University. Sterbeeck copied at least 70 of the images for *Theatrum Fungorum* (1675), noting that they were drawn from direct observation (which was true, although not by him). His book also contained images copied from published works by others including Matthias de L'Obel (1538–1616), Johann Bauhin (1541–1613) and Robert Hooke (1635–1703). Sterbeeck's text, written in vernacular Flemish rather than the usual Latin, was his own, and with it he hoped to popularize interest in fungi among his countrymen, writing of culinary and medicinal uses and distinguishing between edible and poisonous mushrooms.

Our copy of *Theatrum Fungorum* is unique in that, for nearly every uncolored engraved plate, there was bound next to it a watercolor copy of the same plate (not printed). The first engraving in this book was signed “pet. Van Sickeleers. ad viuum delini. et sculpsit.” The first accompanying watercolor was inscribed “peeter van sickeleers fecit ad viuum 1675.” According to the *Catalogue of Botanical Books in the Collection of Rachel McMasters Miller Hunt*, this was

“apparently the original for pl. I” (1958, vol. 1, p. 364). However, we were unable to find any information on the circumstances in which these watercolor drawings were created.

In this plate from Sterbeek (Fig. 1) the fungus depicted in the top left corner (Fig. 1A) today is known as *Pleurotus cornucopiae* (Paulet) Rowland, a pale-colored, branching oyster mushroom. Sterbeek took this exact arrangement from the Codex, whereas in *Rariorum Plantarum Historia* Clusius did not illustrate this particular variety, which he called “Szilw alya.” Two more watercolors in the Codex depicted the same species (though Clusius and Sterbeek classified them as a distinct species, “Szilfan termewt Gylwa” or “Szilfa Gilwa”), which Sterbeek also replicated in his book. Clusius’s woodblocks for the “Szilfa Gilwa” look similar, but not identical, to the Codex watercolors. The “Szilfa Gilwa” from the Codex and Clusius’ woodblock are available on Harvard’s Web site, “A brief history of mycological illustration.”

Stepping back ten years before Sterbeek, Robert Hooke (1635–1703), English natural scientist, microscopist and secretary of the Royal Society, published his *Micrographia, or Some Physiological Descriptions of Minute Bodies Made by Magnifying Glasses* (1665). Hooke outfitted his compound microscope with a light, which allowed him to make superior images of the organisms that he observed; he is said to have made most of the drawings for *Micrographia*. Plate 12, figure 1 depicted “blue mould,” described and discussed in seven pages of text under his Observation XX, “blue Mould, and of the first Principles of Vegetation arising from Putrefaction” (1665, p. 125). This figure was the first illustration of microfungi (and was copied by Sterbeek), and the text included the first description of the internal structure of mushrooms, i.e. the tangled filaments (hyphae) of the mycelium: “The filaments I could plainly enough perceive to be even,

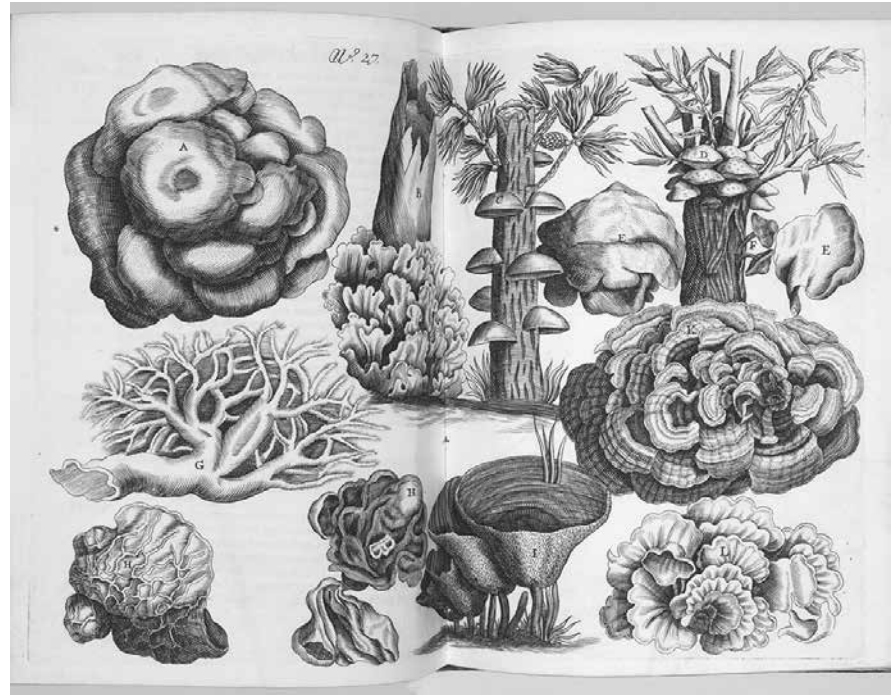


Figure 1. Boom fungi, A.–L. [A. *Pleurotus cornucopiae* (Paulet) Rowland, Pleurotaceae], copper-plate engraving by Peter van Sickeleers (dates unknown) after a watercolor possibly by Esaye le Gillon (dates unknown) intended for Carolus Clusius (1526–1609), *Rariorum Plantarum Historia* (1601), for Francis van Sterbeek (1631–1693), *Theatrum Fungorum* (Antwerp, Joseph Jacobs, 1675, pl. 27), HI Library call no. DT9 S814t.

round, cylindrical, transparent bodies and to cross each other every way...” (1665, p. 139). Hooke also wrote about and illustrated rose rust. He realized that mold was akin to mushrooms, but he still thought, like many of his contemporaries, that mushrooms arose spontaneously from decaying matter.

Joseph Pitton de Tournefort (1656–1708), a French physician and professor of botany at the Jardin des Plantes in Paris, published an early monograph, *Éléments de Botanique* (1694), for which he was credited with taking a big step towards modern classification by defining exactly what a genus and a species were in the classification hierarchy. Tournefort gave each of his genera a Latin name and then designated species by using short descriptions of a few words. He recognized six fungus genera in *Éléments de Botanique* and added a seventh in the Latin translation, *Institutiones Rei Herbariae* (1700). His clear descriptions with beautiful illustrations by Claude Aubriet (1665–1742) made his work an important advancement in the classification of fungi. Aubriet was often credited as being the best botanical illustrator of the 18th century and

had a close working relationship with Tournefort, illustrating several of his publications and traveling with him to the Levant as his botanical artist.

Tournefort gave the first description of fungus culture in “Observations sur la naissance et la culture de champignons,” a paper submitted to l’Académie Royale des Sciences and published in 1707. His account dealt specifically with the method used in Paris of growing mushrooms in horse dung and included a description of mycelium, which he guessed, without proof, were the “germs of mushrooms.” He was ahead of his time, and proponents of spontaneous generation held sway for years to come. The plate shown here (Fig. 2) was from that paper. It was based on a drawing done by Aubriet before June 1699. In another paper for l’Académie on plant disease, Tournefort also guessed, without proof, that fungi caused moldiness in plants and that the condition was exacerbated by moisture.

The largely self-educated Italian botanist Pier Antonio Micheli (1679–1737) was curator of the Florence botanical garden, founder of the Societa

Fungi, a puzzle

Botanica Fiorentina and botanist to the grand duke of Tuscany. He was also an important pioneer in mycological studies, whose experiments or observations others would strive to replicate for years to come. For his groundbreaking *Nova Plantarum Genera* (1729), with 108 plates engraved by Giuseppe Filosi, Micheli enlisted nearly 200 subscribers to underwrite the cost of publication. This book covered all groups of plants and listed fungi from his home region. In it Micheli also discussed his experiments, begun as early as 1718, on growing agaric mushrooms and various molds from spores, refuting the idea of spontaneous generation. He wrote, "...it is sufficient for me that I have sown the seeds and have seen fungi arise from them" (Ainsworth 1976, p. 88). He noted that Tournefort showed exactly how heaps of dung and/or earth were prepared in order to cultivate fungi from "seeds" (Fig. 2A).

Micheli was the first to describe and illustrate gill hairs and cystidia, to show the quaternary arrangement of basidiospores and to describe and illustrate asci containing ascospores. He named, described and illustrated a number of slime molds (myxomycetes). He was also the first to observe and report hyperparasitic fungi, fungi living as parasites on other fungi, and the first to record and illustrate the puffing of spores from the ascocarps of discomycetes, which are now grouped as sac fungi (ascomycetes). He recorded spores for all of the groups of fungi that he studied. He was greatly influenced by Tournefort, whose classification system he used for plants, fungi and lichens; he also created several new genera of fungi, listing 38 "orders" of lichens, and devised a schematic key for classifying them. He described approximately 900 different fungi, which Carolus Linnaeus (1707–1778) thought were too many kinds. Micheli's herbarium and annotated drawings of fungi are held at the Botanical Institute in Florence.

Johann Gottlieb Gleditsch (1714–1786), a German botanist and sylviculturist

who studied at Leipzig and Frankfurt an der Oder, lectured in botany and medical botany and later became the first director of the Berlin Botanical Garden at the Academy of Sciences. He experimented with both plants and fungi and published several important botanical works, including *Systema Plantarum a Staminum Situ* (1764). His interest in fungi led him to experiment with growing fungi on rotting vegetable matter. He successfully repeated Micheli's spore germination experiments in 1740 and did his own in 1748–1749 on airborne spores and their possible role in spontaneous generation and the decomposition of organic matter, using preheated pieces of ripe melon in sterilized vessels. He concluded that spores were everywhere in the air, that they attached to animals and plants and that they grew on decomposing plant matter. Corresponding with Linnaeus, Gleditsch based *Methodus Fungorum* (1753, published in the same year as Linnaeus's *Species Plantarum*) on 10 genera recognized by Linnaeus but grouped them according to his own classification, which Ainsworth (1976) considered to be an advancement over both earlier and contemporary work by others. Gleditsch was an early defender of the Linnaean system, and, although he used phrase names in *Methodus Fungorum*, he later adopted Linnaeus's binomial nomenclature. Six uncolored plates showed specimens, airborne spores and possible culture experiments; they were drawn by Thalhämmer and engraved by I. E. Gericke of Berlin.

Casimir Christoph Schmidel (1718–1792), Bavarian physician, professor of medicine and pharmacy and amateur botanist, worked primarily in Erlangen but also in Bayreuth and Ansbach. In mid-life he took a few years to study botany and geology in Saxony, Holland and Switzerland, returning to academic life as a professor of medicine and natural history at Erlangen. His *Icones Plantarum*, of which we have two copies, was a rare work in three manipuli with extensive colored engravings after drawings by Nürnberg

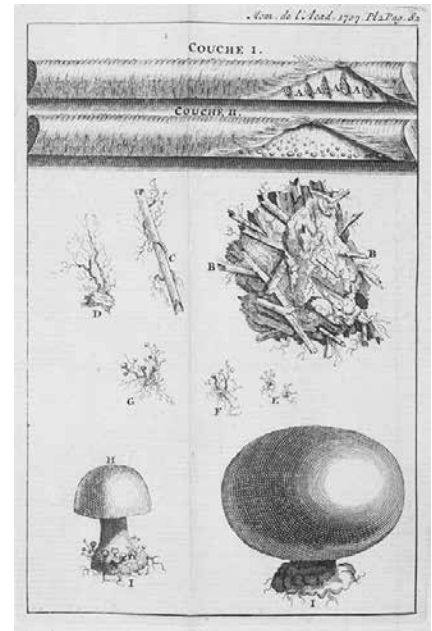


Figure 2. Mushroom culture, engraving by an unknown engraver after a sketch by Claude Aubriet (1665–1742), ca.1699, for Joseph Pitton de Tournefort (1656–1708), "Observations sur la naissance et la culture de champignons" in *Histoire de l'Académie Royale des Sciences, Année 1707: avec les Mémoires de Mathématique et de Physique*, ed. 2 (1727, pl. 2), HI Library call no. B9 A168h 727.

artists Nicolaus Gabler, Johann Christoph Keller (1737–1796), Valentin Bischoff (1740–ca.1800) and others. Many plates featured microscopic dissections of a quality not seen before. Christiaan Hendrik Persoon used some of Schmidel's illustrations to write his generic descriptions in *Synopsis Methodica Fungorum* (1801). Persoon's definition of the genus *Geastrum*, or earth stars, is still used to define that fungus today, and so Schmidel's illustrations are essential to understanding it.

According to *Taxonomic Literature*, ed. 2 (1985, vol. 5, p. 238), there were four editions of Manipulus I, three of Man. II, but, from what we gather, just one edition of Man. III. Our first copy contains Ed. Keller of Man. I (Nürnberg, 1762); Ed. Palm of Man. II (Erlangen, 1793); and the sole Ed. Palm of Man. III (Erlangen, 1797). This copy has 75 hand-colored plates. Our second copy consists entirely of the Ed. Palm manipuli (Erlangen, 1793–1797), with pp. 199–230, 233–234 as photographic reproductions. The plates in our second copy are uncolored. Volbracht

(2006) noted that, while not strictly mycological, these works contained 19 fungi plates.

Romanian botanist Johannes Hedwig (1730–1799), best known for his studies of mosses, was the first to “give a proper analysis of the microscopical structure of fungi,” according to Ramsbottom (1941, p. 339). Hedwig spent most of his life in Leipzig, Germany. He started his career as a physician but poured much of his free time into botanizing, earning recognition, a professorship of botany in Leipzig and the directorship of the botanical garden. At age 40 he took drawing lessons so that he could learn to draw his specimens accurately. Using a powerful microscope for the time (300× magnification), he was able to make the most detailed and accurate illustrations yet seen for the microscopic structures of cryptogams. Schmidel may have provided Hedwig with this very microscope. Hedwig’s *Descriptio et Adumbratio Microscopico-Analytica Muscorum Frondosorum* ([1785]–1787–1797) was the first publication to show correctly the formation of the spores in the ascomycetes, and he was the first to use the term “spora” for what he still thought of as the seeds of the fungi, though he also used the term interchangeably with “semen.” Nevertheless, he clearly showed that the cryptogams were sexual, making it yet a little harder for the mycological community to deny. In addition, by showing that some lichen also had “thecae” (asci) containing eight spores, he established that there was a relationship between fungi and lichens.

Many of his illustrations, like the one here (Fig. 3), clearly showed the eight spores found in fungi of the genus *Octospora*, the name Hedwig created and that remains in use today. The figures showed each fungus at varying powers of magnification. In the detail (Fig. 3E6) one can see the spores being released (he used the Latin *explosis*) into the air. Hedwig called the spores “semina” in the text for this plate, engraved by Gustav Georg Endner (1754–1824) of Nürnberg.

Our Library contains five botanical publications by German botanist and lichenologist Georg Franz Hoffmann



(1761–1826), including several on fungi and lichens. Hoffmann studied and then taught botany at the University of Erlangen, later becoming chair of the Botany Department at Göttingen University and director of its botanical garden. Eleven years later he went to Moscow University and was named head of the Botany Department and the botanical garden there. He was a great collector, amassing a herbarium of almost 9,000 specimens, including many type specimens. The collection is still at Moscow University. Hoffmann made most of the drawings for his many publications, including *Vegetabilia Cryptogama* (1787–1790), which contained slime molds (myxomycetes) and lichens. The illustrations were small, elegantly set within large page margins. We have cropped the image of plate three (Fig. 4) to show the beautiful details of these *Hypoxylon cornutum* (Hoffmann) S. F. Gray and *Rosellinia mammiformis* (Persoon) Cescti & De Notaris, engraved and signed by J[ohann] Nussbiegel of Nürnberg. The *Hypoxylon cornutum* is one of the larger images, measuring approximately seven centimeters tall. With a hand lens, the tiny spheres, complete with shading, are visible.

Christiaan Hendrik Persoon (1761–1836), generally regarded as the father of systematic mycology, was born in South Africa and raised in an orphanage after his mother’s death while his father remarried. In 1775 he was sent

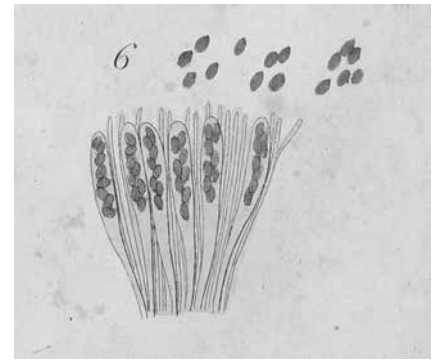


Figure 3. *Octospora*, A.–E. [*Octospora* sp. Hedwig, Pezizaceae], hand-colored, copper-plate engraving by Gustav Georg Endner (1754–1824) after an original drawing by Johannes Hedwig (1730–1799) for his *Descriptio et Adumbratio Microscopico-Analytica Muscorum Frondosorum nec non Aliorum Vegetantium e Classe Cryptogamicæ Linnaei Novorum Dubiisque Vexatorum* (Leipzig, I. G. Mülleriano, [1785]–1787–1797, vol. 2, pl. 6), HI Library call no. +DT19 H457d.

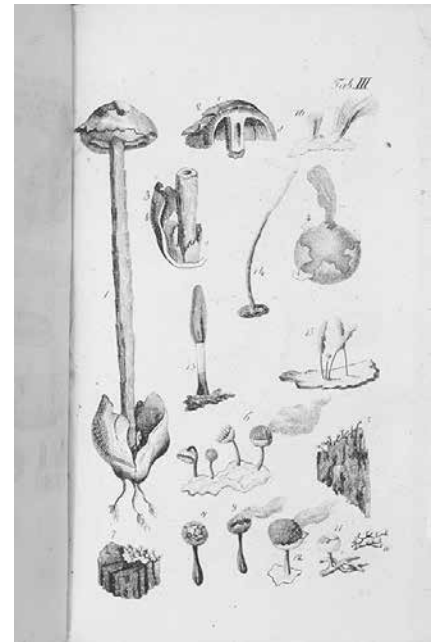
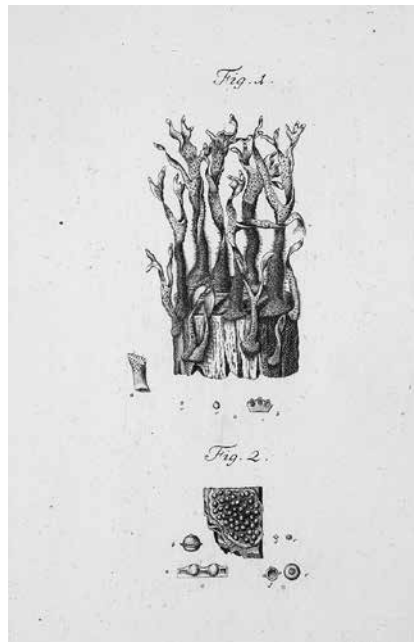
to Europe to be educated, studying at Halle, Leiden, Göttingen and finally Erlangen where he earned a doctorate in 1799. He moved to Paris in 1803 and lived there reclusively for the rest of his life, never having enough money or holding any official appointment and yet corresponding regularly with botanists and other scientists from various countries. As the years passed he was increasingly impoverished, but in 1825 he secured a government pension in exchange for his herbarium, which eventually ended up at Leiden. Subsequently, Persoon willed his library, manuscripts and newer specimens to be joined with his herbarium among the collections of the Rijksherbarium.

While Persoon also published on plants in general, he did pioneering work on fungi. Ainsworth wrote, “What Linnaeus and Jussieu did to integrate the systematics of the flowering plants in the mid-eighteenth century Persoon and Fries did for fungi some fifty years later” (1976, p. 255). Persoon’s most important botanical publication was *Synopsis Plantarum* (1805–1807), which used the Linnaean system to describe some 1,200 plants. He published several mycological works including *Synopsis Methodica Fungorum* (1801). His work on fungi classification, begun in 1794 and lightly refined in later works, was later assessed by mycologist Jean Paul Vuillemin (1861–1932) as being comparable in its broad groupings of fungi to Antoine-Laurent de Jussieu’s

Fungi, a puzzle

Figure 4. *Right*, Fig. 1. *Sphaeria cornuta* and Fig. 2. *Sphaeria mammiformis* [Fig. 1. *Hypoxylon cornutum* (Hoffmann) S. F. Gray, Xylariaceae and Fig. 2. *Rosellinia mammiformis* (Persoon) Cescti & De Notaris, Xylariaceae], engraving by Johann Nussbiegel (dates unknown) after an original drawing by Georg Franz Hoffmann (1761–1826) for his *Vegetabilia Cryptogama* ([Erlangen, I. I. Palm], 1787–1790, pl. 3), HI Library call no. DT2 H699v.

Figure 5. *Far right*, Fungi, 1.–16., engraving by an unknown engraver after an original by an unknown artist for Christiaan Hendrik Persoon (1761–1836), *Synopsis Methodica Fungorum* (Göttingen, Henrik Dietrich, 1801, pl. 3), HI Library call no. DT9 P467s.



first natural arrangement of flowering plants, both aiming to replace Linnaeus's earlier method.

Persoon based his scheme on the gross form of the fruiting structures rather than on microscopic detail. In *Synopsis Methodica Fungorum* (Fig. 5) he first divided his six orders into two classes in which fruit bodies were closed or open, a primary division also used earlier by others. He grouped the rusts and smuts together, and almost all of the 100 genera and subgenera he recognized are universally accepted today. He also accurately described many microfungi (mostly using a hand lens), and the specimens on which he based his descriptions and nomenclature are still available for study. His *Synopsis Methodica Fungorum* (1801) is the starting point for nomenclature of the Uredinales, Ustilaginales and Gasteromycetes.

Persoon is often mentioned together with Elias Magnus Fries (1794–1878). Ainsworth (1976) wrote that before 1800 mycologists generally used regional floras as textbooks, and after that there were taxonomic handbooks aiming to treat all fungi then known. The two classical examples of the latter cited were Persoon's *Synopsis Methodica Fungorum* and Fries's *Systema Mycologicum* (1831–1832).

Our Library has more historical mushroom literature than was represented here and in our previous article. This has been a fruitful exercise, examining our holdings and learning about their place in the rich history of mycology. Perhaps a follow-up article on 19th-century illustrated mushroom literature will appear in a future *Bulletin*. We also have books in this field that are without illustrations, but the importance of botanical illustration in the history of science and particularly of mycology has led us to highlight illustrated works.

Sources

- Ainsworth, G. C. 1976. Introduction to the History of Mycology. Cambridge: Cambridge University Press.
- Blunt, W. and W. T. Stearn. 1994. The Art of Botanical Illustration, new ed., rev. and enl. Woodbridge, Suffolk: Antique Collectors' Club in association with the Royal Botanic Gardens, Kew.
- Brill. 2012. Herbarium G. F. Hoffmann (1761–1826). <http://www.brill.com/herbarium-gf-hoffmann-1761-1826>.
- Clusius, C. 1983. Fungorum in Pannoniis Observatorium Brevis Historia et Codex Clusii, Stephan A. Aumüller and József Jeanplong, eds. Budapest: Akademiai Kiado; Graz: Akademische Druck- u. Verlagsanstalt.
- Frah, J. P. and J. Eggers. 2001. Lexicon Deutschsprachiger Bryologen, ed. 2. Norderstedt: Books on demand.
- Fuchs-Eckert, H. P. 1973. Die Icones Plantarum et Analyses Partium des Casimir Christoph Schmidel. In: E. Geck and G. Pressler, eds. 1973. Festschrift für

Claus Nissen: zum Siebzigsten Geburtstag, 2. September 1971. Wiesbaden: Pressler. Pp. 185–276.

- Hooke, R. 1665. Micrographia, or Some Physiological Descriptions of Minute Bodies Made by Magnifying Glasses. London: Printed by J. Martyn and J. Allestry.
- Money, N. 2007. The first book of mycology: Theatrum Fungorum by Franciscus van Sterbeeck (1675). *Inoculum* 58(5): 1–2.
- Morton, A. G. 1981. History of Botanical Science. London; New York: Academic Press.
- Nissen, C. 1966. Die Botanische Buchillustration, ed. 2. Stuttgart: A. Hiersemann.
- Quinby, J. and A. H. Stevenson. 1958–1961. Catalogue of Botanical Books in the Collection of Rachel McMasters Miller Hunt. 2 vols., vol. 2 in 2 pts. Pittsburgh: Hunt Botanical Library.
- Ramsbottom, J. 1941. The Expanding Knowledge of Mycology since Linnaeus. London: Taylor and Francis.
- Stafleu, F. A. and R. S. Cowan. 1976–1988. Taxonomic Literature, ed. 2. 7 vols. Utrecht and Antwerp: Bohn, Scheltema and Holkema; The Hague and Boston: W. Junk.
- Stafleu, F. A., E. A. Mennega, D. H. Nicolson and L. J. Dorr. 1992–2008. Taxonomic Literature, ed. 2. Supplement. 8 vols. Königstein: Koeltz Scientific Books.
- Volbracht, C. 2006. MykoLibri: Die Bibliothek der Pilzbücher. Hamburg: [s.n.].
- Volbracht, C. 2013. MykoLibri: Library Christian Volbracht. <http://www.mykolibri.de>.

—Jeannette McDevitt,
Assistant Librarian and
Charlotte Tancin, Librarian

Back Shelf: Archer

(continued from page 5)

willow and archival collections from 1964 until 1973. In other words, the life of William Andrew Archer from beginning until end was devoted to the study and progress of botany.

Scope and contents

The William Andrew Archer papers (ca.1906–[1929–1964]–1972), HI Archives collection no. 3, consists of seventeen boxes of materials and four bound volumes. The majority of the collection includes reports, printed and mimeographed items, certificates and correspondence. The correspondence contains conversations with other influential botanists like Benjamin Yoe Morrison (1891–1966), J. T. Baldwin (1910–1974), H. H. Bartlett (1886–1960), Agnes Chase (1869–1963), Lincoln Constance (1909–2001), James R. Henrichs (1910–1943), Hugh H. Iltis (1925–), David D. Keck (1903–1995), Ellsworth P. Killip (1890–1968), Bassett Maguire (1904–1991), Mildred E. Mathias (1906–1995), Olga Reifschneider (1900–1977), William J. Robbins (1890–1978), Reed C. Rollins (1911–1998), Richard E. Schultes (1915–2001), Percy Train (1876–1942), Agnes Train (1905–1991) and Edgar T. Wherry (1885–1982). Archer's publications and the published materials of fellow botanists, such as a listing of botanical paintings and drawings by Helen Joslin (dates unknown), are also available throughout the collection.

Much of the collection concerns Archer's international influence as head of the Department of Botany and Plant Pathology at the Escuela de Agricultura, as botanist at the Instituto Agronómico del Norte and as a plant explorer within the Amazon and the Colombian jungles. These explorations and occupations led to publications, reports and photographs that are included within the collection. Specifically, during his exploration of fish poison plants and economic plants in British Guiana, Suriname, Colombia, Mexico, Brazil, Paraguay, Ethiopia and other areas, Archer



William Andrew Archer (1894–1973), collecting in Villarrica, Paraguay, 17 December 1936, photograph by an unknown photographer, HI Archives portrait no. 3.

produced photographs that can be appreciated by users of the collection at the Hunt Institute.

Archer's collection also encompasses materials relating to his more domestic occupations. These resources focus on the topics of his curatorial career within the National Arboretum Herbarium, his years of volunteering with the Smithsonian Institution archives and his work with the Nevada Indian Medicine Project. The Hunt Institute holds four bound volumes related to the project under the following names: "Nevada Indian drug plant project: Reports of interviewers, volume 1, Mrs. E. V. A. Murphey, 1937"; "Nevada Indian drug plant project: Reports of interviewers, volume 2, Archer, W. A., Breene, T. L. & Sampson, H., Parks, W. D., Stewart, O. C., Train, Percy & Agnes, WPA compilation, 1937–1939"; "Nevada Indian drug plant project: Reports of interviewers, volume 3, Train, Percy and Agnes, 1940, WPA compilation 1938–1940"; and "[Nevada] Indian drug plant data: 1937–1938–1939–1940, [volume 4,] combined medical plant reports." In general these volumes include data and correspondence from the Native American informants, the University of Nevada, the WPA

Cabinet of curiosities

Institute Archivist J. Dustin Williams is the curator of the latest Cabinet of curiosities exhibit on display in the Institute's lobby through June. It features E. Lucy Braun (1889–1971), a renowned botanist and a pioneer in plant ecology and conservation. Her sister donated Braun's field notebooks to the Institute's Archives, which contain the raw material of her 25 years of fieldwork and 65,000 miles of travel resulting in her still-relevant *Deciduous Forests of Eastern North America* (1950).

and the University of Minnesota that code and identify the native plants that were thought to have medicinal properties. In addition volume 4 offers a compilation of data that was received from the chemical and pharmaceutical studies that were performed on these plants.

Biographical sources

- Anonymous. 1973. Dr. W. Andrew Archer, botanist at Arboretum. *Washington Post* 11 May, sec. C, p. 11.
- Anonymous. 1973. Federal botanist Archer dies; researched Indian medicines. *Nevada State Journal* 27 May, p. 34.
- Anonymous. 1973. W. A. Archer, botanist for National Arboretum. *The Evening Star and Daily News* (Washington, D.C.) 11 May, sec. C, p. 5.
- Correll, D. S. 1974. William Andrew Archer, November 7, 1894–May 7, 1973. *Taxon* 23(5/6): 755–758.
- Reifschneider, O. n.d. William Andrew Archer: U.S. National Arboretum, Washington, D.C. Depository: Biographical Files, Archives, Hunt Institute for Botanical Documentation, Pittsburgh, Pa.
- Reifschneider, O. 1964. *Biographies of Nevada Botanists, 1884–1963*. Reno: University of Nevada Press. Pp. 134–136.
- Stieber, M. T. and A. L. Karg. 1981. Guide to the botanical records and papers in the Archives of the Hunt Institute, part 1. *Huntia* 4(1): 27–28.

— Abigail Kirstein, Archival Intern, Duquesne University, spring 2014

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Open House 2014

In conjunction with *Duets*, the Hunt Institute will hold its annual Open House on Sunday, 29 June, from 1 to 4 PM. We will offer a talk, a gallery tour and opportunities to meet one-on-one with our staff to ask questions and see items in

the collections. We encourage everyone to consider visiting us during this Open House. It will be a good time to see the exhibition before it closes and to have an inside look at our collections and our work.

Schedule of events

Sunday (29 June)

- | | |
|-----------|---|
| 1:00 | Registration (continues all afternoon) |
| 1:15–1:30 | Welcome and Introduction in Reading Room by Publication and Marketing Manager Scarlett Townsend |
| 1:30–2:15 | Walking tour of Reading Room furniture by Publication and Marketing Manager Scarlett Townsend |
| 2:15–3:00 | Exhibition tour of <i>Duets</i> by Assistant Curator of Art Carrie Roy |
| 3:00–4:00 | “Botanical exploration in the Americas” by Assistant Librarian Jeannette McDevitt, Curator of Art Lugene Bruno and Archivist J. Dustin Williams |

This presentation will include curatorial conversations about three explorers to the Americas who were interested in medicinal and economic plants and ethnography. Displayed will be related publications, original artwork and archival materials from the Hunt Institute collections. McDevitt will feature Spain's 16th-century court physician Francisco Hernández (1514–1587), the first scientific explorer in the New World (1570–1577), with resulting publications; Bruno will discuss the physician Martín de Sessé y Lacasta (1751–1808) and his work with Jose Mariano Mociño (1757–1820) during the Spanish Royal Expedition to New Spain (1787–1803) that explored the Caribbean, Mexico and northern Central America, showing the resulting illustrations intended for a published flora; and Williams will talk about the botanist and plant collector William Andrew Archer (1894–1973) and his explorations in Mexico and Central and South America for the USDA in the 1930s, with field diaries, reports and photographs.

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|-----------|---|
| 4:00–4:30 | Enjoy exhibition and displays; talk with curators and staff |
|-----------|---|