



Bulletin

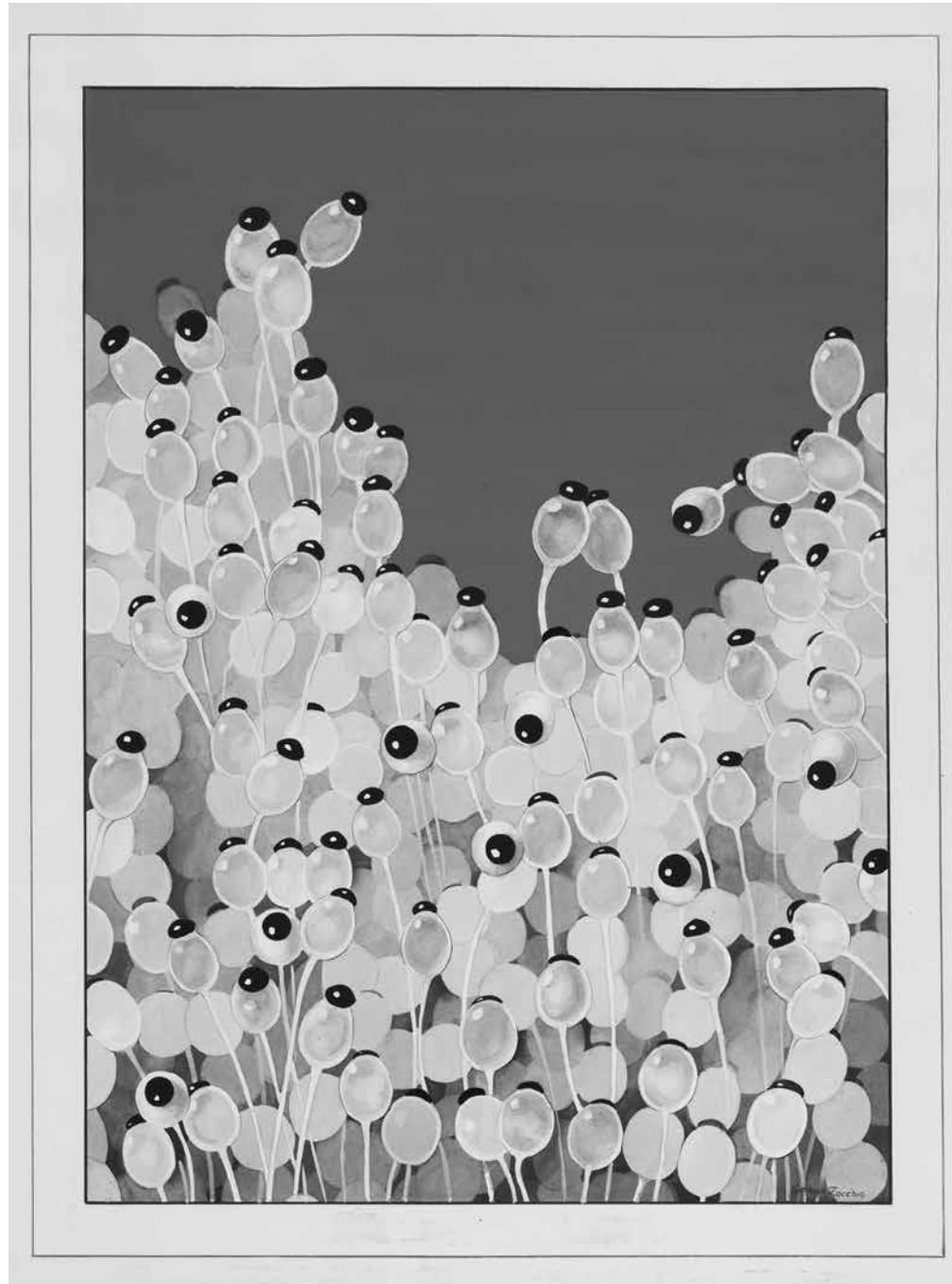
of the Hunt Institute for Botanical Documentation

Carnegie Mellon
University,
Pittsburgh,
Pennsylvania

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[*Pilobolus* Tode, Pilobolaceae], watercolor on paper by Carmen Sylvia Zocchino-Fidalgo (1941–), 54.5 × 40.5 cm, HI Art accession no. 4830.

News from the Art Department

Current exhibition

The Institute's fall exhibition, *The Mysterious Nature of Fungi*, continues through 17 December and highlights original artwork and books from the permanent collection illustrating aspects of these fascinating organisms that are the cause of both bliss and blight. There are many reasons why we should have the utmost respect for fungi. More than 70% of the 5th kingdom of organisms plays an essential role in the survival of vascular plants through the exchange of nutrients and to our existence on the planet through the ability to decompose organic debris. They are used to cure disease but can also cause dangerous infections. Fungi can be culinary delicacies while others are agents of delirium or death. Fungi were kicked out of Kingdom Plantae in 1969 predominantly due to the presence of chitin in the cell walls. This derivative of glucose is the same substance found in the exoskeletons of insects and the shells of crustaceans and gives fungi a "meaty" texture. Many edible fungi are considered so only after cooking because heat breaks down the chitin and existing toxins, making these fungi easier to digest.

Fungi can reproduce sexually and/or asexually. The three largest phyla are featured in the exhibition: ascomycetes, basidiomycetes and zygomycetes. Each phylum is introduced with scientific ink drawings of their reproductive structures and an illustration of a representative species. Ascomycetes include the molds (red, brown and blue-green) that spoil food and are used in antibiotics; powdery mildew and blights that weaken and destroy crops; yeasts that leaven bread and ferment grain; and truffles and morels that are culinary delicacies. Basidiomycetes include the edible and poisonous gilled fruiting bodies (mushrooms), puffballs and stinkhorns, shelf or bracket fungi, as well as the plant pathogens, rusts and smuts. Zygomycetes include common black bread mold and pilobolus and a few that are parasitic on insects and infectious to humans and animals.

The fruiting bodies of fungi are produced in a multitude of fascinating forms, textures and colors and illustrated are the scaly capped *Agaricus augustus* Fries, the scarlet-stemmed *Boletus calopus* Persoon, the brain-shaped *Gyromitra esculenta* (Persoon) Fries, the cup-shaped *Peziza Dillenius* ex Fries species and the coral-shaped *Ramaria botrytis* (Persoon) Ricken. Also featured are ceramic fungi by Martha Gene Pierson Williamson (1915–1993) that represent several genera including *Coprinus* Persoon, *Hygrocybe* (Fries) P. Kummer, *Morchella* Dillenius ex Persoon, *Mycena* (Persoon) Roussel and the potent *Amanita* Persoon. *Amanita muscaria* (Linnaeus) Lamarck has been used for religious purposes due to its hallucinogenic properties, especially in Siberia (see above right). It also has been referenced in popular culture, such as the dancing toadstools in Walt Disney's *Fantasia* and Lewis Carroll's *Alice's Adventure in Wonderland*, in which the affects of this amanita, which can cause the sensation of things seeming larger or smaller than they really are, may have inspired Alice's transitions from a giant to the size of



Red mukhomors [*Amanita Persoon*, *Amanitaceae*], gouache on paper by Alexander Viazmensky (1946–), 1988, 36 × 23 cm, HI Art accession no. 7542.

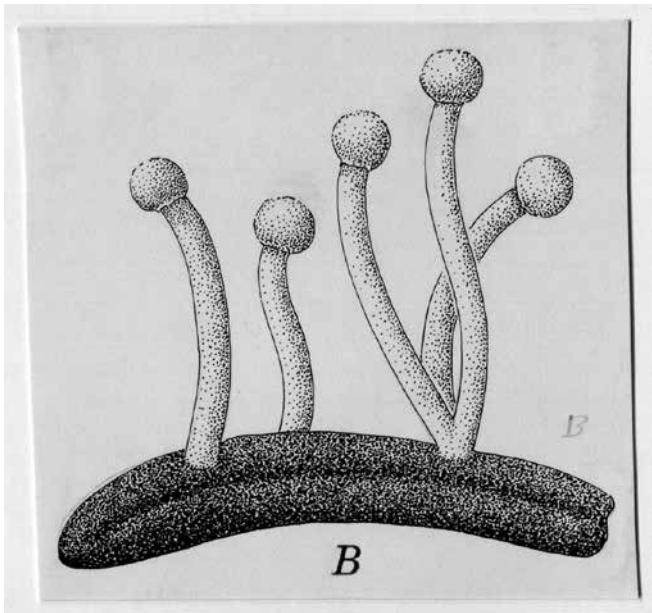
During the reception Richard Tribone looks at John Wilkinson's *Amanita phalloides* (Vaillant ex Fries) Link, Hunt Institute gallery, 17 September 2015, photograph by Michael Roy.





Morel (*Morchella*, *Mithrophora* [sic], *Verpa*), Truffle (*Tuber*) [*Morchella* Dilleni ex Persoon, *Morchellaceae*; *Tuber* P. Micheli, *Tuberaceae*; *Verpa* Swartz, *Morchellaceae*], watercolor on paper by Marilena Pistoia (1933–), ca.1973, 31.5 × 23 cm, for Francesco Bianchini and Francesco Corbetta, *I Frutti della Terra* (Verona, Arnaldo Mondadori, 1973, p. 119), HI Art accession no. 6771.52.

Detail of B. Germinating sclerotium of ergot [*Claviceps purpurea* (Fries) Tulasne, *Clavicipitaceae*], ink on paper by Gilbert Morgan Smith (1885–1959), ca.1938, for his *Cryptogamic Botany*, ed. 1 (New York, McGraw-Hill, 1938, p. 454, fig. 256), HI Art accession no. 6865.230.



a caterpillar after eating a few small bites. The ingestion of the deadliest and most innocuous looking fungi, *Amanita phalloides* (Vaillant ex Fries) Link (see below far left), brings symptoms of nausea and severe diarrhea lasting 6–24 hours and resulting in dehydration and weakness. Meanwhile the toxins are actively damaging the liver and kidneys, and without treatment, the individual may experience organ failure and death within three to nine days.

The edible species of the fungal delicacies *Morchella* and *Tuber* P. Micheli, or morels and truffles, have yet to be commercially cultivated (see left). Morels have either mycorrhizal or saprotrophic relationships with deciduous trees, and truffles are found underground and disperse their spores through animals that eat fungi. The latter contains a compound similar to the sex pheromones of boars, making the sow an excellent hunter and a rambunctious gatherer. In contrast, *Agaricus bisporus* (J. E. Lange) Imbach is now the most commonly cultivated mushroom in the world. The classic white button mushroom is the result of a natural mutation observed by a Pennsylvania mushroom farmer in 1926 and deemed more attractive than its brown form. The mutation was bred selectively in future crops and has since become a rather tasteless staple in mushroom cultivation. In more recent years, the richer flavor of the natural brown form of *A. bisporus*, commercially known as crimini and portobello, has become more popular.

The reproductive spores are dispersed through diverse and fascinating methods. They are released with the opening or the auto-digestion of gills on the underside of capped fungi; in a puff when a dried-out form is disturbed; or propelled from the tip of a structure, known as a sporangium. The latter method of spore dispersal is illustrated (see cover) with the watercolor of *Pilobolus* Tode by Carmen Sylvia Zocchio-Fidalgo (1941–). In this fungus the asexual fruiting structure (sporangiophore), consisting of a transparent stalk topped with a balloon-like subsporangial vesicle, is often found on or very near dung in fields and has the ability to orient itself toward direct light sources. The vesicle acts as a lens, magnifying the light it absorbs and swelling with water as it does so. A single, black sporangium develops on top of this vesicle and, when mature and enough pressure has developed within the vesicle, is shot up to two meters away and onto a plant substrate, such as a blade of grass or leaf. This sporangium is then eaten and expelled by an herbivore, surviving the digestive tract to germinate in the fresh dung and begin the process again.

Wheat stem rust, *Puccinia graminis* Persoon, is one of the largest threats worldwide to cereal grains. Because much of our modern industrialized agriculture is based on monocultures, it becomes easy for this fungus to quickly take over an entire field and then move on to the next a few

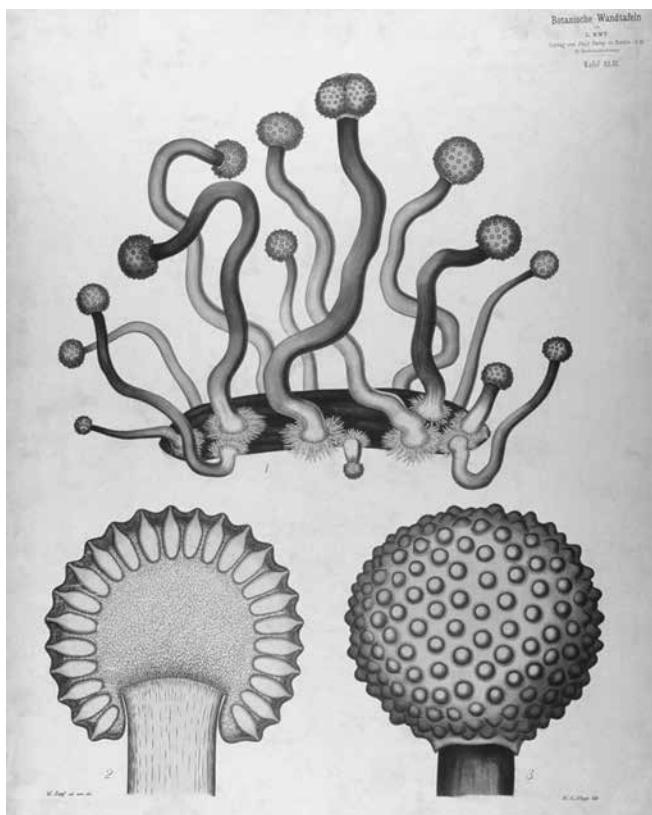
(continued on page 4)

News from the Art Department

miles away. *Puccinia graminis* can be recognized by the rust-colored pustules that appear on the leaves, stems and leaf sheaths of grain plants. It is unique in that it produces all five spore stages in its life cycle (macrocyclic) and requires two unrelated host plants (heteroecious), most often wheat and barberry, to complete its life cycle. When the rust pustules break through the epidermal layer of the host plant, the host loses the ability to metabolize nutrients and loses structural stability due to vascular tissue damage, and the grains shrivel and die. In contrast ergot, *Claviceps purpurea* (Fries) Tulasne, can damage crops and harm people, yet its active ingredients have been synthesized in modern times for medicinal use (see below and page 3). Primarily affecting rye, but also other grains, the fungus spore infects the floret, its mycelium taking over the ovaries and absorbing the nutrients intended for seeds. A soft tissue develops, which drops out of the fungus full of asexual spores ready to move on to other plants, and then hardens into a sclerotium inside the husk of the floret. In early agriculture farmers mistook this sclerotium as a natural part of the grain development, and outbreaks of ergotism would occur. The lysergic acid and ergometrine present in ergot affect circulation and neurotransmission



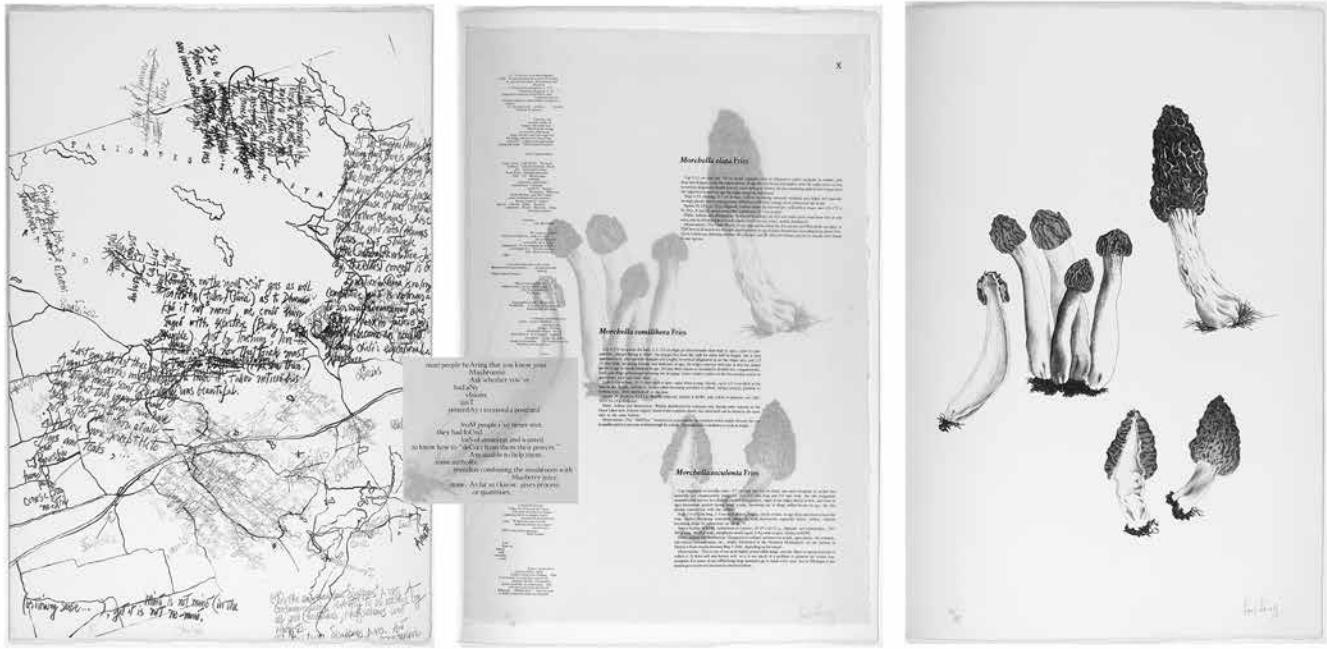
From left, Assistant Curator of Art Carrie Roy and the Western Pennsylvania Mushroom Club's President Richard Jacob and Vice-President Jim Wasik talk with a student at the opening reception, Hunt Institute lobby, 17 September 2015, photograph by Michael Roy. During Carnegie Mellon University's Cèilidh Weekend festivities, the Institute offered curator-led tours of the exhibit and Jacob's talk "Mushroom clubs: Citizen science in action!"



Entwickelung von Claviceps purpurea (Fries) [Claviceps purpurea (Fries) Tulasne, Clavicipitaceae], color lithograph by W. A. Meyn (fl.1874–1911), 81.5 × 66 cm, after an original by W. Zopf (fl.ca.1874–1911) for Leopold Kny (1841–1916), *Botanische Wandtafeln* (Berlin, Paul Parey, 1874–1911, pl. 43), HI Art accession no. 6699.043.

causing symptoms such as seizures, painful contortions or severe vascular constrictions that can lead to gangrene in the extremities, which become so diseased they fall off. These symptoms are accompanied by delusions, hallucinations, burning sensations and confusion. Through the early 19th century, some of these symptoms were seen as beneficial by physicians and midwives, and extracts were administered in small doses during long and difficult labors. Ergometrine has since been used to reduce postpartum blood loss and in treating migraines.

A history of mycology section, curated by Assistant Librarian Jeannette McDevitt with text assistance by Librarian Charlotte Tancin, features four important botanists and their publications that were formative to the current understanding of fungi. This includes the Dutch botanist Carolus Clusius (1526–1609), who published the first substantial study of fungi in his *Rariorum Plantarum Historia* (1601); the Italian botanist Pier Antonio Micheli (1679–1737), who was the first to carry out scientific studies on fungi and discussed his experiments on growing agaric mushrooms and various molds in his *Nova Plantarum Genera* (1729); the Romanian botanist Johannes Hedwig (1730–1799), who made the most detailed and scientifically accurate illustrations of the microscopic structures of cryptogams in his *Descriptio*



From left, folder exterior with lithographic handwritten text by and compiled by John Cage (1912–1992), 57 × 38 cm; lithographic type-set text overlay by and compiled by Cage and Alexander H. Smith (1904–1986) on Japanese Kitakata paper, 53.5 × 36.5 cm; and [*Morchella elata* Fries, *M. semilibera* de Candolle, *M. esculenta* (Linnaeus) Persoon, Morchellaceae], color lithograph by Lois Long (1918–2005), 57 × 38.5 cm, for Cage, Long and Smith, *The Mushroom Book* (New York, Hollanders Workshop, 1972, edition 16/75, pl. 10), HI Library call no. DQ2 C131M.

ed *Adumbratio Microscopico-Analytica Muscorum Frondosorum* [1785]–1787–1797; and the South African botanist Christian Hendrik Persoon (1761–1836), who is considered the father of systematic mycology and who developed a natural system of fungi classification based on the fruiting structures rather than on microscopic detail, which he published in *Synopsis Methodica Fungorum* (1801).

Featured in the Cabinet of curiosities in the Institute's lobby is an unusual item from the Library collection. John Cage (1912–1992), the 20th-century American avant-garde composer, writer and visual artist, was also an avid, amateur mushroom forager and co-founder of the New York Mycological Society with the visual artist Lois Long (1918–2005) in 1962. Together they published a limited-edition portfolio titled *The Mushroom Book* (1972). The example exhibited includes the outside of folder 10 with Cage's word drawings overlapping a drawn overview of the artist Lois Long's property where they would often hunt for morels; a tissue overlay of text, of his and others prose, over a lithograph of morel mushrooms by Lois Long. Cage wanted the search for words and meaning to simulate the experience of foraging in the woods for mushrooms. He compared the role of chance in finding mushrooms to the chance that occurred while creating music and art.

Upcoming exhibitions

Great Expectations will be on display 17 March through 30 June 2016. There is great expectation in the promise and energy held within a bud or a seed, and each stage of development is filled with wonder. What by many is considered the beginning and the end of a plant's growing season is instead a continuous cycle of emergence, growth and dormancy. Observations made of these moments will be illustrated with items from the Hunt Institute's permanent collection. We are in the process of organizing related talks and tours for our annual Open House.

The 15th International Exhibition of Botanical Art & Illustration will be on display 15 September through 15 December 2016, with a reception on 13 October coinciding with the American Society of Botanical Artists educational conference in Pittsburgh. The submission deadline has passed, and we are in the process of finalizing the selection of artworks from artists representing 15 countries.

—Lugene B. Bruno, Curator of Art,
and Carolina L. Roy, Assistant Curator of Art

Recent publications

Huntia volume 15 published

I am pleased to announce the long-awaited publication of volume 15 of *Huntia*, our journal of botanical history. While *Huntia* is published irregularly, there was a longer than normal time between issues since I was focusing on the redesign and content review of our Web site. With the launch of the site in fall 2014, I was finally free to begin work on the volume. I greatly appreciate the patience of everyone involved, especially that of the authors, during the extended publication process for volume 15. Given the scope of topics covered, this one was well worth the wait.

Roger L. Williams returned for the 15(1) issue with a paper about Dominique Villars and his botanical disciples during the French Revolution. Michael Witty began a series of translations of papers on plant fertilization by Wilhelm Hofmeister that was continued in the 15(2) issue. Both issues featured papers

by M. E. Mitchell in his fascinating, ongoing lichen history series, which began in the 11(1) issue. Since we have added PDFs of all issues to the Web site, you can reread the earlier papers before delving into these two. In the 15(2) issue A. F. Dyer explored the technique of nature printing practiced by William and Henry Bradbury.

We are currently seeking submissions for the 16(1) issue. Topics and submission guidelines are available on the *Huntia* Web page.

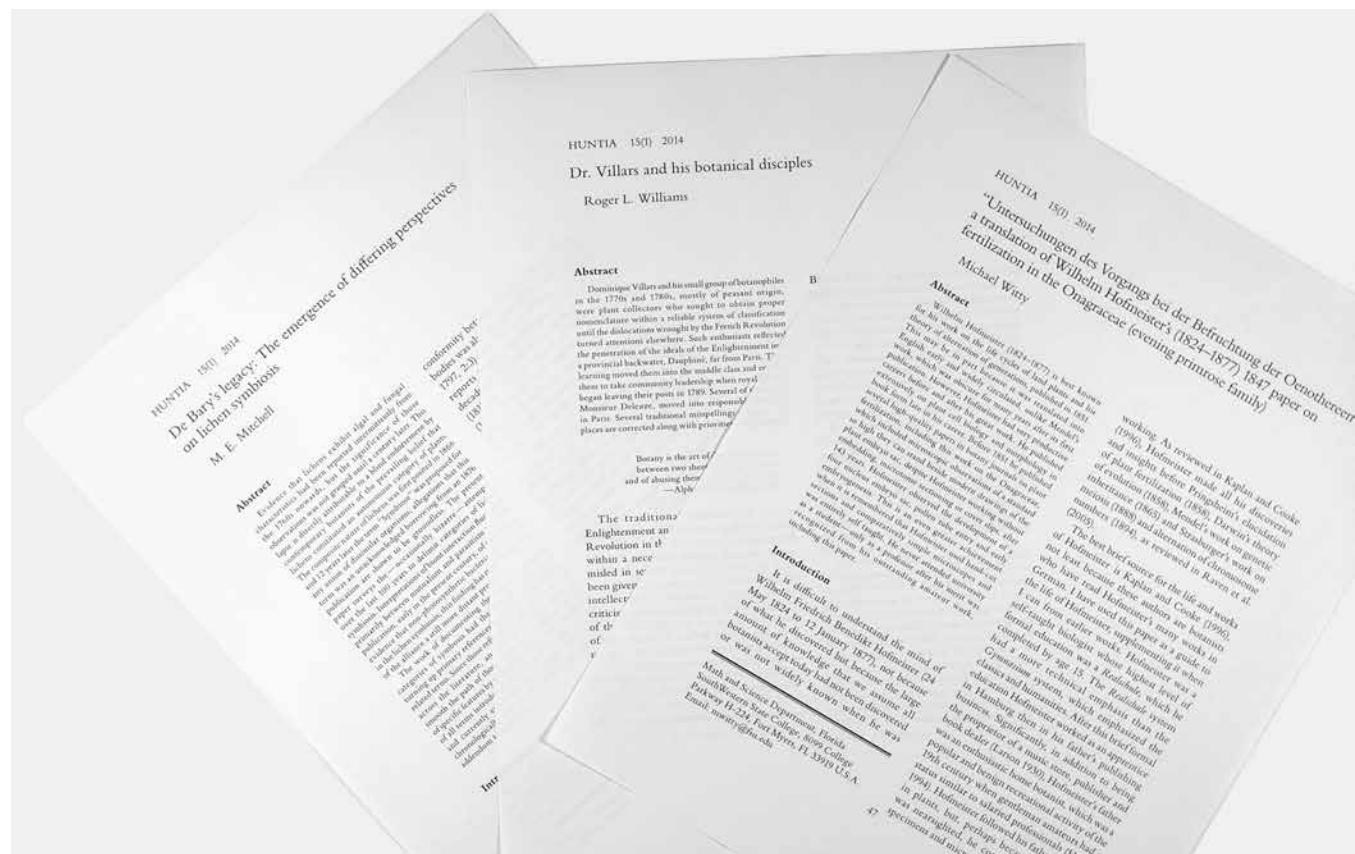
Huntia: A Journal of Botanical History

Volume 15, no. 1, 2014. 70 pp.; 15 figs.; 6½ × 10"; 1 lb. Paper cover, \$33.00 plus shipping and handling. ISSN 0073-4071.

Contents: M. E. Mitchell, "De Bary's legacy: The emergence of differing perspectives on lichen

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symbiosis”; Roger L. Williams, “Dr. Villars and his botanical disciples”; Michael Witty, “Untersuchungen des Vorgangs bei der Befruchtung der Oenothereën”; a translation of Wilhelm Hofmeister’s (1824–1877) 1847 paper on fertilization in the Onagraceae (evening primrose family); Book Reviews and Announcements.

Volume 15, no. 2, 2015. 168 pp.; 89 figs.; 6 $\frac{1}{2}$ " x 10"; 1 lb. Paper cover, \$33.00 plus shipping and handling. ISSN 0073-4071.

Contents: Michael Witty, "Pollen development, membranes and features of the nucleus in *Tradescantia* and related genera; a translation of Wilhelm Hofmeister's 1848a paper 'Ueber die Entwicklung des pollens'"; M. E. Mitchell, "Autonomy's long shadow: A report on issues concerning lichen classification, 1870 to 1981"; Michael Witty, "Comparing pollen

development in the Commelinaceae with those of the Passifloraceae; a translation of Wilhelm Hofmeister's 1848b paper 'Ueber die Entwicklung des pollens'; A. F. Dyer, "The life and craft of William and Henry Bradbury, masters of nature printing in Britain"; Michael Witty, "Development of pollen in the Pinaceae and conclusions; a translation of Wilhelm Hofmeister's 1848c paper 'Ueber die Entwicklung des pollens'; Book Reviews and Announcements.

Hunt Institute publications are available directly from the Institute. Hunt Institute Associates receive a 25% discount on up to four publications. Everyone receives a 40% discount on purchases of five or more publications. For a listing of our publications and ordering information, visit our Web site.

—Scarlett T. Townsend, Publication
and Marketing Manager

Back Shelf

Tales from the Archives

Constantine J. Alexopoulos

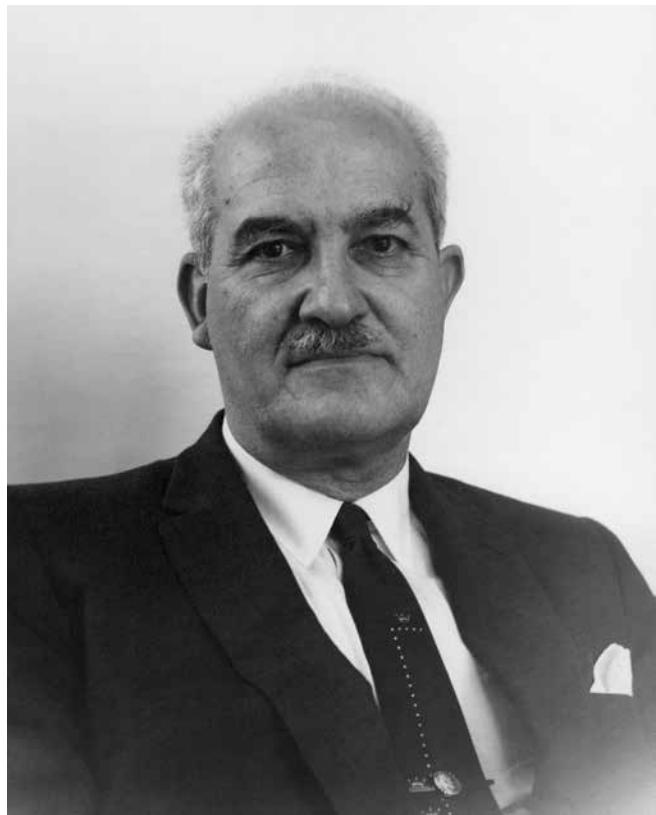
The Hunt Institute Archives recently received some incredibly unique materials from Meredith Blackwell, Boyd Professor of Biological Sciences, Emerita, at Louisiana State University. One of these items is an unpublished manuscript by highly regarded mycologist Constantine J. Alexopoulos (1907–1986) written under the pen name Alex Kosta. The manuscript, titled “Collector’s Items,” contains autobiographical accounts of Alexopoulos’ travels, including some collecting trips. A digitized copy of the manuscript will soon be available on our Web site. The collection also contains approximately 900 of his mycological reference images. Blackwell was kind enough to write the following introduction to the manuscript and to Alexopoulos.

—J. Dustin Williams, Archivist

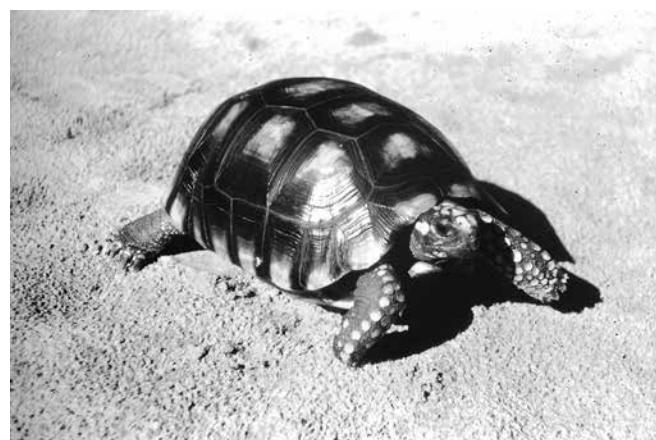
C. J. Alexopoulos as Alex Kosta

Constantine John Alexopoulos was born in Chicago, Illinois, 17 March 1907, the son of Greek parents. His middle name would have been John after his father in the Greek naming tradition, but he actually was given a different middle name, one he apparently never revealed, as he used John. Because his father was drafted into the Greek army at the beginning of the First Balkan War, the parents returned to Greece with their young children, Constantine and his sister, Dora. Young Constantine and his family remained in Greece until 1919 when the family came back to Chicago. His parents and sister later returned to Greece, but Alex, as he was known as an adult, stayed behind to attend university in the United States, where he later married an American. His English was slightly accented, but he spoke science primarily in English. He once remarked that he thought in Greek only when he counted and said his prayers.

He was extremely patriotic, proud of his Greek heritage but always a very loyal American. Soon after World War II began Alex volunteered for the medical corps, but for some reason he never heard from them after the initial contact. As other mycologists at that time, he found a way to help in the war effort as a scientist with the Development Corporation in Amazonian Brazil. Much of his time was spent near the Peruvian border, where he taught field-workers more efficient methods to tap trees and prepare the raw rubber for shipment to the United States. Later he was to work with the United Nations Relief and Rehabilitation Agency (UNRRA) in Greece, followed by other experiences in Greece. After the war recovery he began a long academic career at three universities, Michigan State, Iowa and Texas. He died 15 May 1986 in Austin, Texas.



Constantine J. Alexopoulos (1907–1986), April 1963, 25 × 20 cm, photograph by Walter H. Hodge, HI Archives portrait no. 1.



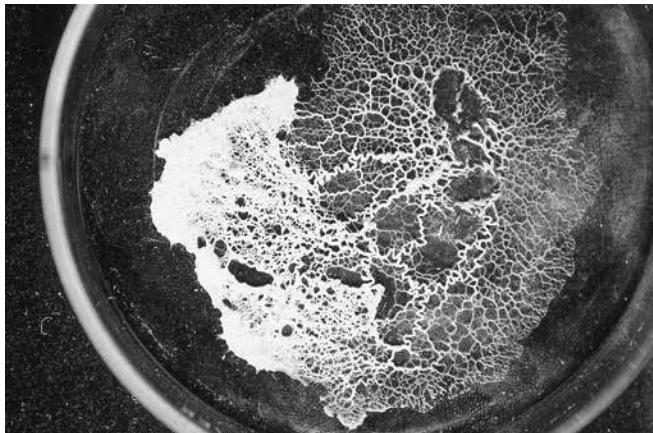
R. Ituhy [a river]—Carmen advancing, photograph by Constantine J. Alexopoulos, HI Archives Constantine J. Alexopoulos collection no. 366.



Rio Curuça—Rubber tapping, 22 May 1943, photograph by Constantine J. Alexopoulos, HI Archives Constantine J. Alexopoulos collection no. 366.

As a dropout ichthyology student at the University of Texas, I was fortunate to be hired by Dr. Alex to grow slime mold plasmodia from air-borne spores. In my spare time during the day I had various jobs, including working on a bibliography for a book on slime mold biology and tiding up his usually fairly messy office. I discovered the “Collector’s Items” manuscript and accompanying photographs in a crammed cabinet. In addition to chapters on the Rubber Development Corporation and several long-term stays in Greece, other chapters describe trips with Mrs. Alex, some of which were collecting trips for slime molds and fungi.

I have no idea why he used the pen name Alex Kosta because he certainly had no hesitation in letting me and others read the manuscript. He had failed to find a publisher long before I arrived in his lab in fall 1962, but the year after his death Mrs. Alex, then over ninety years old, undertook learning to use a computer, obsessed with editing the text for submission after a 30-year break. The computer, however, stymied her, and her revisions were lost. “Publication” of “Collector’s Items” finally has been achieved by the Hunt Institute for Botanical Documentation, and the adventures of Alex Kosta now are widely available.



Physarum Persoon, photograph by Constantine J. Alexopoulos, HI Archives Constantine J. Alexopoulos collection no. 366.



Physarum Persoon, photograph by Constantine J. Alexopoulos, HI Archives Constantine J. Alexopoulos collection no. 366.

C. J. Alexopoulos obituaries were published by the Mycological Society of America and the British Mycological Society; another piece was published in the *Plant Science Bulletin* of the Botanical Society of America; and a memorial written by three University of Texas colleagues is available as a PDF (<http://www.utexas.edu/faculty/council/2000-2001/memorials/SCANNED/alexopoulos.pdf>):

- Brodie, H. J. 1987. Constantine John Alexopoulos. *Mycologia* 79: 163–165.
Blackwell, M. 1988. C. J. Alexopoulos: A short history. *Trans. Brit. Mycol. Soc.* 90(2): 153–158 [+ portraits].
Blackwell, M. and comments from students. 2006. C.J.A.: The last mycologist to be BSA President. *Pl. Sci. Bull.* 52: 2–11.

The slime mold collections of C. J. Alexopoulos are in the U.S. National Fungus Collections (BPI), and most of his mycological correspondence was deposited in the archives of the University of Texas, sealed for 50 years from late December 1985.

—Meredith Blackwell, Boyd Professor of Biological Sciences, Emerita, Louisiana State University

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*We would like to thank
our 2015 Associates for
their generous support
of the Institute's mission
and programs!*

2016 Associates program

We hope that our Regular, Patron and Benefactor Associates enjoyed their memberships in the Associates program during 2015 and took full advantage of their benefits. As you consider renewing for 2016 or joining for the first time, we would like to preview our plans for the upcoming year.

Great Expectations opens on 17 March. Our annual Open House will be held on 26 June in conjunction with the spring exhibition and will include a gallery tour and talk related to the exhibition. The *15th International Exhibition of Botanical Art & Illustration* opens on 15 September with the reception on 13 October during the American Society of Botanical Artists conference. Associates at all membership levels will receive the accompanying exhibition catalogue. For those renewing or joining at the Patron, Sustaining or Benefactor Associate levels, portions of your contributions are tax deductible in the following amounts, \$40 for Patron, \$440 for Sustaining and \$940 for Benefactor.

As always, all members receive our *Bulletin*, invitations to exhibition openings, behind-the-scenes tours by appointment and a 25% discount on our publications, stationery items and PDFs for research purposes. We will also acknowledge all members with a listing in the fall issue of the *Bulletin*. Please complete the Acknowledgment section of the form to let me know if and how you would like your name to appear.

As another feature of the program, we continue to offer the option of receiving the exhibition opening invitations as PDFs via email. It is our small step toward reducing our carbon

footprint. To participate, please provide your email address and check the first box in the Customer Information section of the form. For those wanting to more fully participate in our green initiatives, please check the second box in the Customer Information section to receive an email when the *Bulletin* is posted to our Web site as a PDF instead of receiving the printed version via mail.

For anyone considering a first-time membership, this is the perfect time to join us. We also offer gift memberships in the Associates program. We can send an announcement card to you or directly to the recipient of the membership. A 2016 Associate membership is a great holiday gift for the botanist, historian or botanical art lover on your list.

Those 2015 Associates wishing to renew their own or gift memberships for 2016 should complete and return the renewal form enclosed with their *Bulletins*. Those planning to join or give a gift membership for the first time should contact us or download and complete the Associate form available on our Web site. We hope that you will join us for another exciting year. We appreciate your support of the Institute's mission and programs. If you would like to support us in more specific ways, then please consider our Sponsorship program. Monetary gifts can be directed to our endowment or to other established funds, such as the Anne Ophelia Todd Dowden Art Acquisition Fund, or the Ronald L. Stuckey Endowment for the Preservation of Botanical History. For material or memorial gifts, please consult with our curators. For more information about the Sponsorship program, contact the Institute.

—Scarlett T. Townsend, Publication and Marketing Manager

2015 Lawrence Memorial Award

The Lawrence Memorial Award commemorates the life and achievements of George H. M. Lawrence (1910–1978), founding director of Hunt Institute (1960–1970). The annual (semiannual from 1988 to 2000) award in the amount of \$2,000 is given to an outstanding doctoral candidate for travel in support of dissertation research in systematic botany or horticulture, or the history of the plant sciences, including literature and exploration. The recipient of the award is selected from candidates nominated by their major professors. Nominees may be from any country, and the award is made strictly on the basis of merit—the recipient's general scholarly promise and the significance of the research proposed. The award committee includes representatives from the Hunt Institute, the Hunt Foundation, the Lawrence family and the botanical community. The award is presented at the annual banquet of the Botanical Society of America.

Keir Wefferling, a student of Prof. Sara Hoot at the University of Wisconsin—Milwaukee, is the recipient of the 2015 Lawrence Memorial Award. The proceeds of the award will



Keir Wefferling, with *Caltha leptosepala* de Candolle subsp. *howellii* (Huth) P. G. Smit, Ranunculaceae, and associated species in Lassen National Forest, just outside Lassen Volcanic National Park, California, 1 July 2012, photograph by Lia Woo, HI Archives portrait no. 1.

help support his travel for further laboratory investigation of the evolution and phylogeography of the *Caltha leptosepala* de Candolle species complex of western North America.

Bulletin

of the Hunt Institute for Botanical Documentation

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