Original Source Documentation - Botany

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Issues in botanical documentation

- Herbarium sheets provide an advantage: labels offer a relatively large area in which to associate information with specimen.
- Duplicate specimens, esp. older collections, may not be labeled identically.
- Comparison to field notes (books, slips, photos, etc.) can reveal omissions and contradictions, esp. in older labels.
- Access to field notes often difficult.

Duplicate Specimens – a classic

"The wind was blowing too strong to make specimens in the field. I boxed up enough for 87 sheets . I simply pruned the shrub a little."

I started up the Canyon Diablo at its junction with the Little Colorado River. When I reached a place where I could not go further nor climb out, I saw a shrub about 7 ft. tall with a diameter of 3-4 inches. Goats or sheep could not reach this beautiful specimen. The wind was blowing too strong to make specimens in the field. I boxed up enough for 87 sheets. I simply pruned the shrub a little. This canyon is about 90 miles long. *Ephedra* is common in these parts but in two years in this region few plants could approach this one. About two miles below Two Guns.
Delzie Demaree 38875

SOUTHERN APPALACHIAN BOTANICAL CLUB
Seventh Distribution of North American Plants

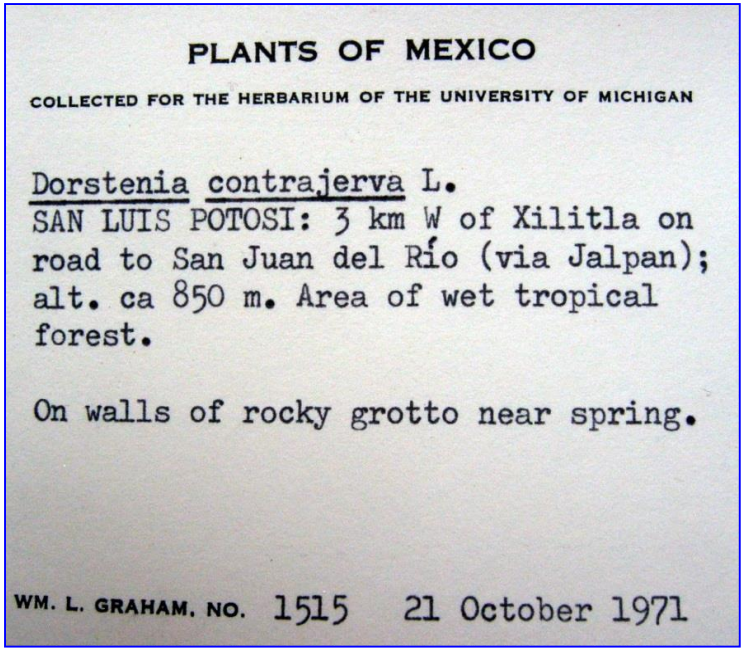
Ephedra viridis Coville

Walls of Canyon Diablo. Goats or sheep could not reach the 7 feet tall, 3-4 inches in diameter near the ground.

About 2 miles below Two Guns, P. O. Leupp, Coconia County, Arizona. Elevation 4900'.

April 6, 1957
Delzie Demaree 38875

Specimen Label vs. Collection Book



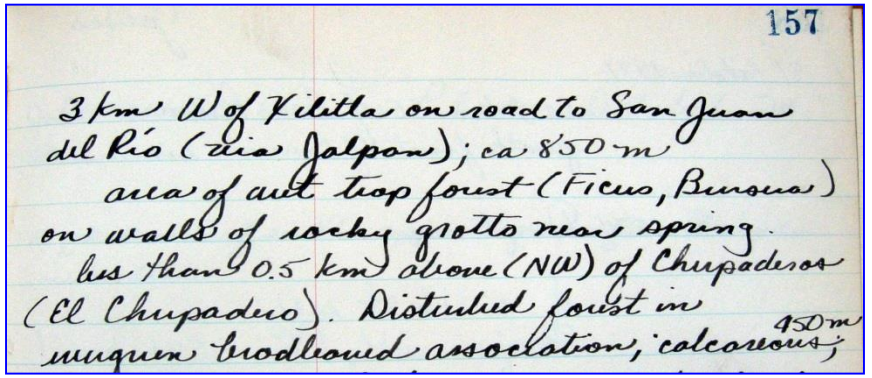
PLANTS OF MEXICO

COLLECTED FOR THE HERBARIUM OF THE UNIVERSITY OF MICHIGAN

Dorstenia contrajerva L.
SAN LUIS POTOSI: 3 km W of Xilitla on road to San Juan del Río (via Jalpan); alt. ca 850 m. Area of wet tropical forest.

On walls of rocky grotto near spring.

WM. L. GRAHAM. NO. 1515 21 October 1971



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3 km W of Xilitla on road to San Juan del Río (via Jalpan); ca 850 m
area of wet trop forest (Ficus, Bursera)
on walls of rocky grotto near spring.
less than 0.5 km above (NW) of Chupaderos
(El Chupadero). Disturbed forest in
mixed broadleaved association; calcareous; 450 m

Previous MICH experience

- Mexican field books of Rogers McVaugh were to be digitized as part of second grant for Mex@MICH specimen digitization project.
- Project was not completed; status of any content that was produced not known.

Elmer Philippine collections

- Adolph Daniel Edward Elmer (1870-1942)
- In the Philippines from 1904 until his death in 1942.
- Collected extensively, named many new species.
- Original set of Elmer specimens deposited at Philippine National Herbarium (Bureau of Science) – destroyed in WWII; “the original field labels were attached to the Manila set, copies to the Univers. Calif. (Berkeley) set.” (http://www.nationaalherbarium.nl/fmcollectors/E/ElmerADE.htm)
- Duplicates were widely distributed; 10 herbaria may each have over 4K sheets.

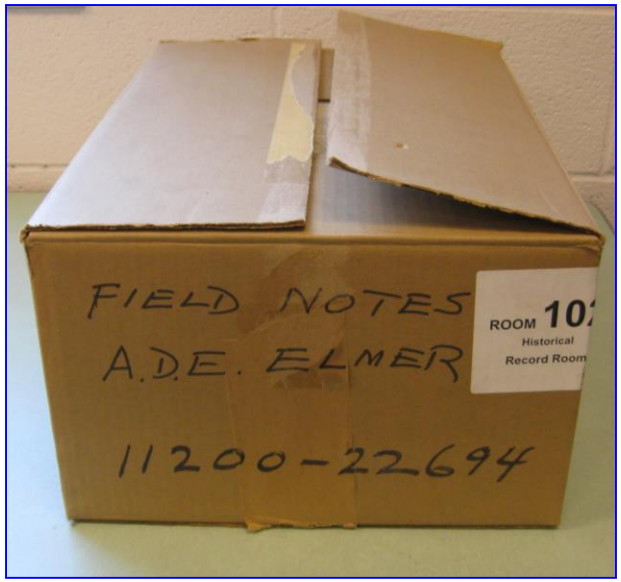
Elmer's field notes

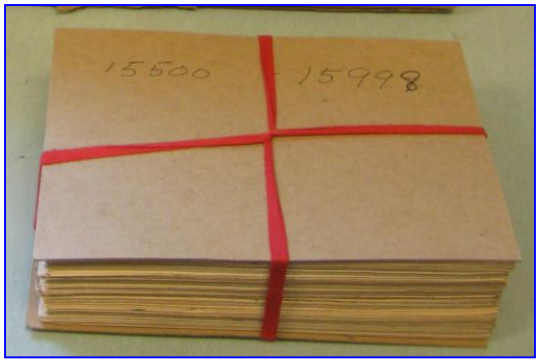
- "A fairly complete set of some 10.000 handwritten original field notes is among the Reliquiae Bartlettianae at Michigan. (5549-6768 very incomplete, 6917-6961, 7037-18480, 20003-22694), obtained from Elmer's widow. Merrill made typed copies of the nos 7037-18477, presumably at Berkeley, Harvard, and Kew." (http://www.nationaalherbarium.nl/fmcollectors/E/ElmerADE.htm)
- A copy of those notes apparently is available (!): http://books.google.com/books/about/Copy_of_his_Field_Notes_Philippine_Colle.html?id=QjCEGwAACAAJ

- MICH also acquired Elmer's personal set of collections – safely stored from the war (!). At least 1400 specimens at MICH; ~450 are types/isotypes.

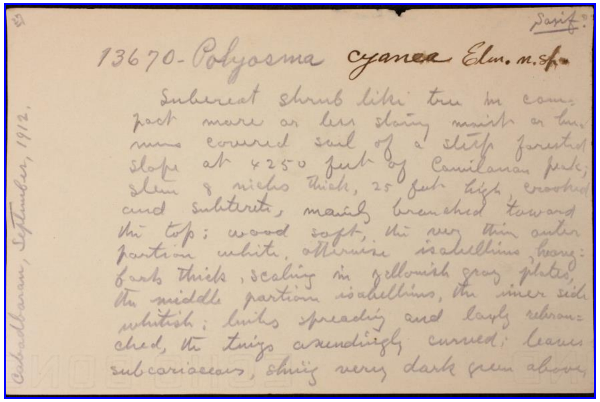
- Most bibliographic references about herbaria do not mention that MICH has ***any*** Elmer collections/field notes.

Elmer field notes: raw material





Elmer Specimen vs. Notes

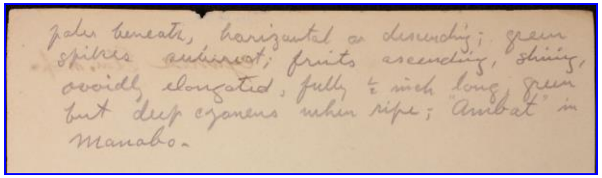


Saxif.

13670 - Polyosma cyanea Elm. n. sp.

Suberect shrub like tree in compact more or less stony moist or humus covered soil of a steep forested slope at 4250 feet of Camilaman peak; stem 8 inches thick, 25 feet high, crooked and subterete, mainly branched toward the top; wood soft, the very thin outer portion white, otherwise isabellinus, heavy: bark thick, scaling in yellowish gray plates, the middle portion isabellinus, the inner side whitish; limbs spreading and laxly rebranched, the twigs ascendingly curved; leaves subcoriaceous, shiny very dark green above,

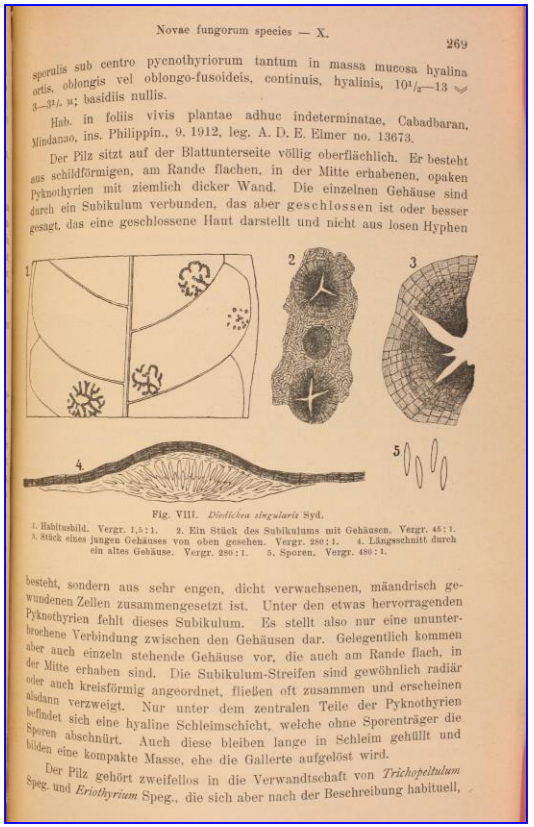
Cabadbaran, September, 1912.



paler beneath, horizontal or descending; green spikes suberect; fruits ascending, shining, ovoidly elongated, fully ½ inch long, green but deep cyaneus when ripe; "Ambat" in Manobo.

Diedickea singularis – Elmer 13673

- A tiny fungus (Ascomycota) described by Sydow from collection that Elmer sent to Sydow (in Berlin) in 1913.
- Which Elmer collection was the host?



Novae fungorum species — X. 269

sporulis sub centro pycnothyriorum tantum in massa mucosa hyalina ortis, oblongis vel oblongo-fusoideis, continuis, hyalinis, 10½—13 × 3—3½ μ; basidiis nullis.

Hab. in foliis vivis plantae adhuc indeterminatae, Cabadbaran, Mindanao, ins. Philippin., 9. 1912, leg. A. D. E. Elmer no. 13673.

Der Pilz sitzt auf der Blattunterseite völlig oberflächlich. Er besteht aus schildförmigen, am Rande flachen, in der Mitte erhabenen, opaken Pyknothyrien mit ziemlich dicker Wand. Die einzelnen Gehäuse sind durch ein Subikulum verbunden, das aber geschlossen ist oder besser gesagt, das eine geschlossene Haut darstellt und nicht aus losen Hyphen

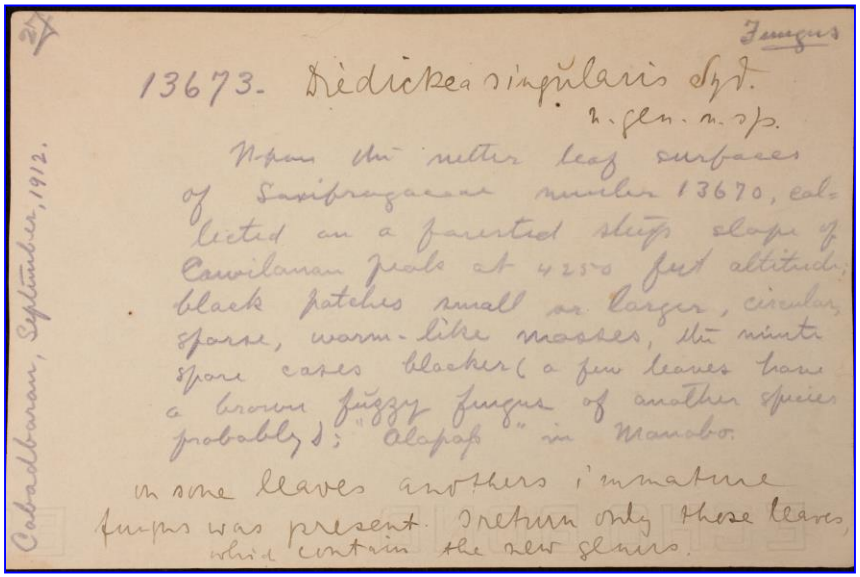
Fig. VIII. *Diedickea singularis* Syd.

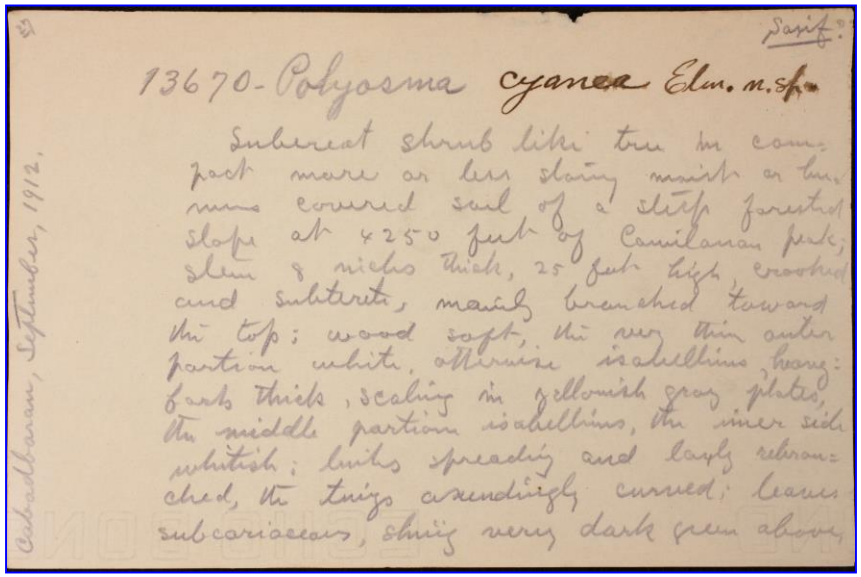
1. Habitusbild. Vergr. 1,5 : 1. 2. Ein Stück des Subikulums mit Gehäusen. Vergr. 45 : 1. 3. Stück eines jungen Gehäuses von oben gesehen. Vergr. 280 : 1. 4. Längsschnitt durch ein altes Gehäuse. Vergr. 280 : 1. 5. Sporen. Vergr. 480 : 1.

besteht, sondern aus sehr engen, dicht verwachsenen, mäandrisch gewundenen Zellen zusammengesetzt ist. Unter den etwas hervorragenden Pyknothyrien fehlt dieses Subikulum. Es stellt also nur eine ununterbrochene Verbindung zwischen den Gehäusen dar. Gelegentlich kommen aber auch einzeln stehende Gehäuse vor, die auch am Rande flach, in der Mitte erhaben sind. Die Subikulum-Streifen sind gewöhnlich radiär oder auch kreisförmig angeordnet, fließen oft zusammen und erscheinen alsdann verzweigt. Nur unter dem zentralen Teile der Pyknothyrien befindet sich eine hyaline Schleimschicht, welche ohne Sporenträger die Sporen abschnürt. Auch diese bleiben lange in Schleim gehüllt und bilden eine kompakte Masse, ehe die Gallerte aufgelöst wird.

Der Pilz gehört zweifellos in die Verwandtschaft von *Trichopeltulum* Speg. und *Eriothyrium* Speg., die sich aber nach der Beschreibung habituell,

Diedickea/Polyosma: a “tie” in the field notes



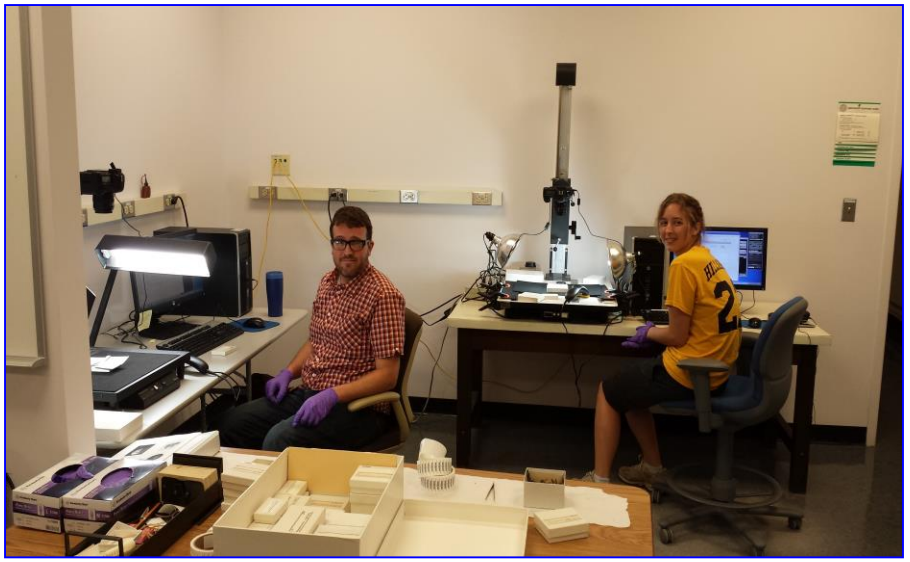


Elmer field notes

- A likely treasure trove for Philippine botany
- Not a priority at MICH; a small fraction were transcribed at US in 1979 and the typed copies of some exist elsewhere.
- No current curator at MICH is working on Philippine botany.
- So they sit…..

Current MICH effort: Macrofungi Collection Consortium

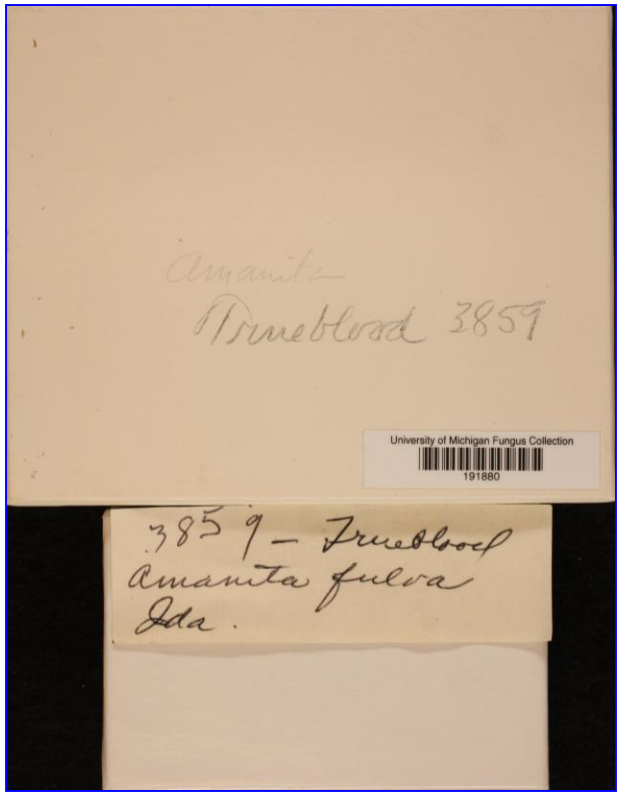
- Digitization of labels, and accessory information + imaging selected specimens
- Advantage of large specimen format not available for fungi

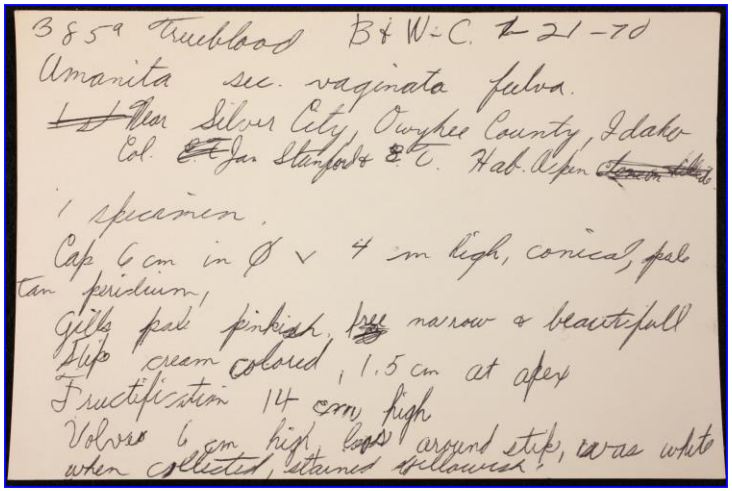


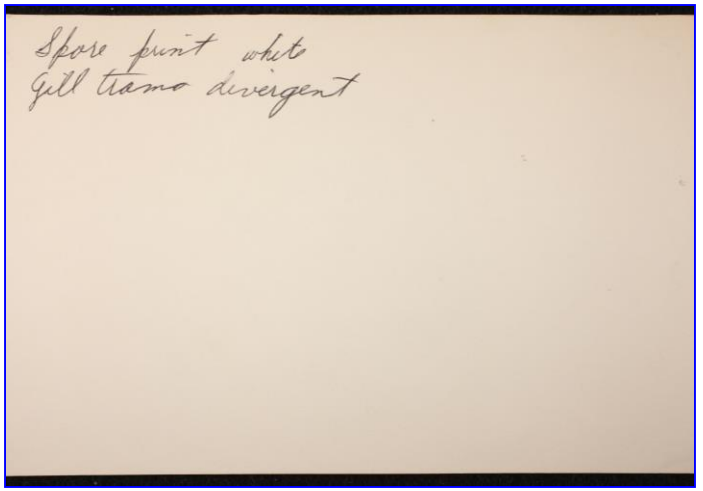
MICH fungus collection

- About 280K specimens.
- One of the four largest collections in the Macrofungi TCN.
- Extensive collection of photos, negatives, field notes, cards, etc.

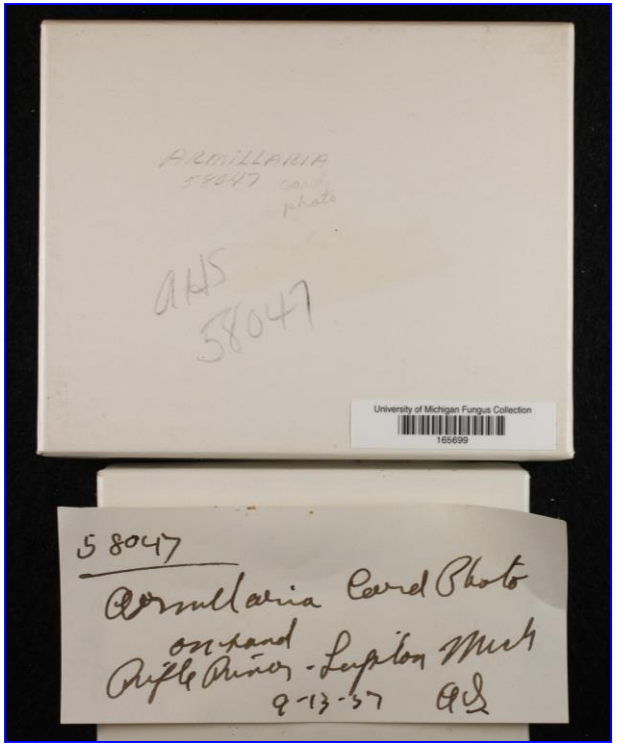
Specimen label: minimal information

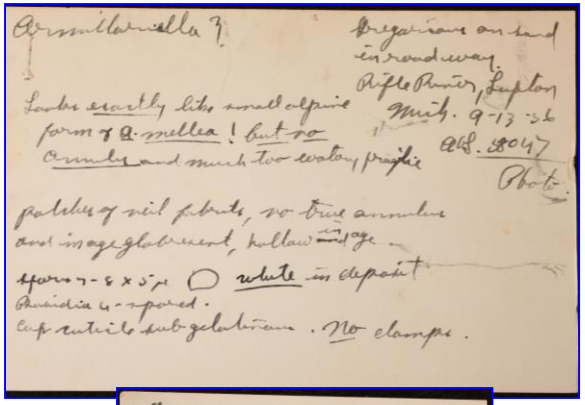


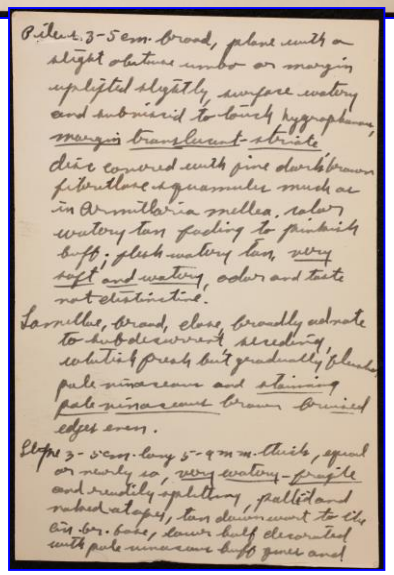




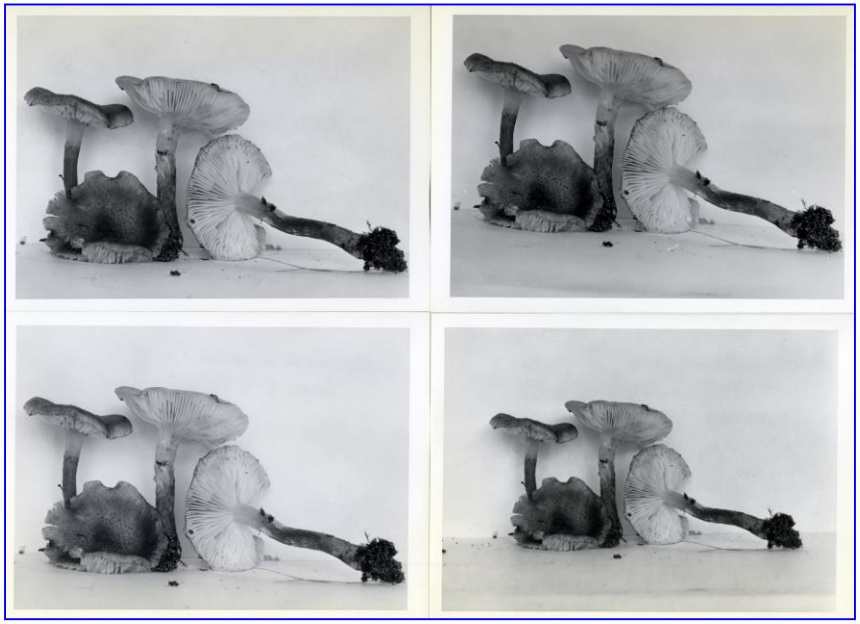
Collection with photos, card, and a spore print.







The photos and spore print



Acknowledgements

- Award 1206134 to University of Michigan: **Digitization TCN: Collaborative: The Macrofungi Collection Consortium: Unlocking a Biodiversity Resource for Understanding Biotic Interactions, Nutrient Cycling and Human Affairs**