

The Herbarium Daily Digest

Science Festival Edition

Michigan State University

April 2021

Missing *Cobaea* Specimen!

Dr. Alan Prather, director of the herbarium, has researched *Cobaea* for over twenty years. With the help of his colleagues, Dr. Prather has explored the jungles of south and central America in search of these plants.

Cobaea is a genus of flowering plants that grow as vines and is mostly found in south and central America. Dr. Prather has been studying these species to get their DNA to create a "phylogeny"—an evolutionary tree showing how the *Cobaea* species are related.

Earlier today when his research assistant went to look for the *Cobaea* specimen she needed to work on, she ran into a problem. "Hmmm that's weird. The specimen is not in the folder where he said it would be. Maybe he already set it out for me." She said to herself. When she checked at her workstation the specimen was nowhere to be found.

She took out her phone, "Hi Dr. Prather, did you put the *Cobaea* specimen in your office? I can't seem to find it on the workbench or in the folder, do you know where it could be?"

"That's odd, I specifically remember seeing it in the folder last night. I am sure of it! Are you sure it's not in there?" He asked.



Pictured above:
the missing *Cobaea* specimen

"Yes. I checked multiple times; I'm positive. I have no idea where it is." She replied.

"That specimen is the last extraction we need in order to finish creating the phylogeny!" He exclaimed, "You have to find it!"

The specimen is missing, and we need your help to find it!

We believe it is in one of the buildings on MSU's campus. Follow the clues to get a word from each clue, then using all the highlighted letters from the words found, rearrange them to get the name of the building that the specimen can be found. **Then, claim your reward!**

Clues:

1. Start by visiting the Herbarium website herbarium.natsci.msu.edu. At the MSU Herbarium our focus is to preserve the history of specimens, make new discoveries, and teach science to others. To do this we try to center our outreach activities on our "three main pillars". On the homepage of the website you'll find these three pillars front and center. What are they?

Stewardship, _____ AND _____

2. Click on the "General Information" page on the Herbarium website, it should lead you to a page that says, "What Is an Herbarium?" at the top. Take a moment to read through the page and learn about herbaria! Towards the bottom of the "what is an herbarium" section there is a sentence that says, "To read about some of the many ways herbarium specimens can be used, please [click here](#)."

Click on the hyperlink, which will open a word document titled "100 Uses for an Herbarium (Well at Least 72)" How Cool! Herbarium specimens are used in so many different ways! Here at the MSU Herbarium we use our materials for as many teaching opportunities as possible.

Look at #47. In what field are they used for teaching purposes?

"Botany, taxonomy, field botany, plant communities; ethnobotany; _____; dendrology, forestry"

3. Go back to the Herbarium website, hover over the "General Information" tab and click on the "History of the MSU Herbarium" tab below it. This page contains some of the MSU Herbarium's history how it came to be, and its past directors.

In the 1880's, this botanist became the director of the MSU Herbarium and brought thousands of specimens with him. Even though there was a fire in the herbarium during his time, all the specimens were saved except for a few private collections. By the time he retired there were over 100,000 accessioned specimens in the herbarium. The Botanical Gardens at MSU are also named after him. Who was he?

Dr. _____ James _____.

4. Once again, hover over the "General Information" tab and click on the "Collections" Tab. The MSU Herbarium houses over half a million specimens! In this collection there over 2,000 "type specimens". You can recall from the "What is an Herbarium" page, names and descriptions of species are based on type specimens.!

Read through the page until you reach the "Lichen collection" subheading. The MSU Herbarium doesn't only house vascular plant specimens, but lichens too. Lichens are a complex organism that are made of the symbiosis between fungi and algae. Who was the curator of the Cryptogamic Herbarium that gathered most of these specimens?

Dr. Henry A. _ _ _  _ _ _ _

5. Hover over the "General information" tab again and choose "Get Involved". Read through the page and toward the bottom you will find a video titled "Recipe for a Perfect Specimen". This animated video was created by our very talented intern Ben and explains the best way to collect and preserve a specimen! Watch through the video, what are the 5 steps in creating the perfect herbarium specimen?

1)Collection

2)Prepare & Deliver

3)Mounting

4)Accessioning

5) _ _ _ _ _ 

6. Hover over the "Research" tab on the website and click on the "Research Spotlight" Tab that appears below it. You can read through this page to learn more about just a few of the cool research projects related to the MSU Herbarium! Look at the project under the subheading, "MUTUALISM BETWEEN BENEFICIAL MITES AND MICHIGAN'S WOODY PLANT SPECIES IS WIDESPREAD." This research project was done to study the presence and benefits of mites who live in "domatia" on red maple leaves. Red Maple is a well-known type of tree, but "red maple" is its common name in the US, not its scientific name—which is used around the world. What is the scientific name of red maple? (Hint: you can google this.)

Name: A _ _ _ **r** _ _ _  _

7. One of our big projects at the MSU Herbarium is to digitize specimens. We are putting them in an online database, so others can use them for research. Click on the "Digitization" tab. Under the "Database" Section there is a table that includes the type of specimen and links to the databases. Click on the "Symbiota" link, this should open up a new tab in the website "Consortium of Midwest Herbaria".

Click on the "Specimen search" button. This will give you a list of all the Herbaria that use this database that have uploaded specimens. Click the "deselect all" check mark, and then scroll down until you see Michigan State University (MSC) and click the check mark next to it. Then hit the "search" button. This will take you to a page where you can search all the specimens MSU has uploaded. Search for red maple using the scientific name you found in #6. Hit "List Display". Click on the specimen with the accession number **MSC0161942** (It should be the second one). Open the picture of this specimen and look at the label. Which Michigan county was it found in?

█ _ _ _ _ _ County

Congratulations! Now that you've found all the missing words, write out all the highlighted letters and rearrange them to locate the building the specimen is in (Hint: use the MSU online campus map to find the building, it should be 8 letters and two words, with a hyphen in between)

Thanks for your help! You found the missing specimen and the missing link in the *Cobaea* phylogeny! The specimen was found in a display case in the █ █ █ - █ █ █ █ █. Someone must have grabbed the wrong specimen to use for the Herbarium SciFest display in the building!

To access your reward, please enter the code you created into the prize URL here with no spaces:

[http://herbarium.natsci.msu.edu/outreach/
scavenger-hunt/____-_____](http://herbarium.natsci.msu.edu/outreach/scavenger-hunt/____-_____)

Thanks for playing!