



The Newsletter of the Pikes Peak Mycological Society      1974-2019      Vol. XLVI      April 2019      Issue 1

## SPRING IS HERE!

*President's Notes by Mike Essam*

Well, another trip around the sun means another year to revel in the excitement storm clouds ultimately bring. If this winter was a sign of what's to come, I eagerly await. Oyster mushrooms began fruiting this month. It is always a joy to gaze upon the first mushrooms of spring. Morels to follow soon.

I would personally like to thank Jennifer Bell, Ben Kinsley, Jessica Langley, Pat Gaffney and Brian Barzee for their dedicated service in 2018 to PPMS, we had an awesome year that would not have been possible without their efforts. PPMS is comprised entirely of volunteers, so please consider giving some of your time and talents back to make PPMS the best mushroom club it can be.

The board of directors recently met and developed our programs for the year. We have some excellent speakers lined up you will not want to miss, all topics for meetings are posted under the events tab on our website. I'm also excited to have a new meeting space, beginning with our May meeting, at the Bear Creek Nature Center. The address is 245 Bear Creek Road, 80906. This meeting place is off 26th street, but it is different then the place we met a couple of years ago which is off 21st street. Our first meeting will be on Monday, April 22nd at 6:30 at the Ent Center for the Arts (Sheppard Arts Learning Studio). Remember to come a bit early and check out some cool mushroom inspired art from PPMS officers Ben and Jessica. We'll be going over some mushroom basics from safety in the woods to some general identification. I look forward to seeing you all soon.



*photo by Mike Essam of Spring Oysters and Morels!*



**PIKES PEAK  
MYCOLOGICAL SOCIETY**

**2018 PPMS OFFICERS:**

The 2017 officers met in November of last year to vote on 2018 officers

<b>President</b>	Mike Essam
<b>Vice -President</b>	Ben Kinsley
<b>Treasurer</b>	Jessica Langley
<b>Secretary</b>	Jennifer Bell
<b>Hospitality</b>	TBA
<b>Foray Coordinator</b>	TBA
<b>Newsletter Editor</b>	Jennifer Bell
<b>Newsletter Designer</b>	Jessica Langley
<b>Webmaster</b>	Ben Kinsley
<b>Herbarium Liaison</b>	TBA
<b>Librarian/ Archivist</b>	Brian Barzee

**WEBSITE**

[www.pikespeakmyc.org](http://www.pikespeakmyc.org)

**CONTACTS**

**President:** [president@pikespeakmyc.org](mailto:president@pikespeakmyc.org)

**Vice President:** [vicepresident@pikespeakmyc.org](mailto:vicepresident@pikespeakmyc.org)

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**Treasurer:** [treasurer@pikespeakmyc.org](mailto:treasurer@pikespeakmyc.org)

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**Webmaster:** [webmaster@pikespeakmyc.org](mailto:webmaster@pikespeakmyc.org)

**CONTENTS:**

President's Letter	Pg. 1
News & Events	Pg. 3
Travel Report	Pg. 4
Cordyceps for Health	Pg. 6
Front Range Fungi	Pg. 8
Recipe	Pg. 14

**Membership Options**

Individual Membership: \$25.00

Individual Membership + printed newsletter by mail: \$30.00

Family Membership: \$30.00

Family Membership + printed newsletter by mail: \$35.00

Lifetime Individual Membership: \$250.00

Lifetime Family Membership: \$300.00

To Pay Online via PayPal: <http://pikespeakmyc.org/join/>

Send renewal checks to:

Treasurer c/o Jessica Langley

Pikes Peak Mycological Society

1010 N. Logan Ave.

Colorado Springs, CO 80909

Please make checks payable to PPMS.

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*All statements and opinions written in this newsletter belong solely to the individual author and in no way represent or reflect the opinions of the Pikes Peak Mycological Society. To receive this publication electronically or by mail, contact Jessica Langley at: [treasurer@pikespeakmyc.org](mailto:treasurer@pikespeakmyc.org)*

*Archive copies of the newsletter are available in the Newsletters section of our website.*

*Submissions for the next issue of Spore Addict must reach the editor, Jennifer Bell, by May 15 2019.*

[editor@pikespeakmyc.org](mailto:editor@pikespeakmyc.org)

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## 2019 UPCOMING EVENTS

### Wednesday, May 22 @ 6:00pm

Mushroom Cultivation - Michael Williams, PPMS

**Location:** Bear Creek Nature Center, 245 Bear Creek Rd.

Colorado Springs, CO 80906

### Wednesday, June 26 @ 6:00pm

Hyperfocused Distractions with Mycophilia, Mycophobia, and Ethnomycology - Greg Sanchez, Colorado Mycological Society

**Location:** Bear Creek Nature Center, 245 Bear Creek Rd.

Colorado Springs, CO 80906

### Wednesday, July 24 @ 6:00pm

Lecture: *Title TBA* - Teresa Egbert

**Location:** Bear Creek Nature Center, 245 Bear Creek Rd.

Colorado Springs, CO 80906

### Tuesday, August 20 @ 6:00pm

Lecture: *Title TBA* - Jill Easterday

**Location:** Bear Creek Nature Center, 245 Bear Creek Rd.

Colorado Springs, CO 80906

### Wednesday, August 21 @ 6:00pm

Lecture: *Title TBA* - Britt Bunyard, PhD, Founder, Publisher, and Editor-in-Chief of the mycology journal *Fungi*

**Location:** Bear Creek Nature Center, 245 Bear Creek Rd.

Colorado Springs, CO 80906

## NEWS

### GUESTS ON FORAYS

Board members voted to allow members to bring guests on forays for a suggested donation amount of \$5. We want to allow out-of-town visitors and friends of members to try out mushroom hunting with the Pikes Peak Mycological Society and to instill a welcoming atmosphere. It is important to note that non-members must be accompanied by a member, or they are required to sign up to attend a foray. Meetings are always free and open to the public.

### SEEKING VOLUNTEERS

As the season is ending, we are planning ahead for next year. We are seeking volunteers to do a number of things. Please contact Jennifer Bell: [info@pikespeakmyc.org](mailto:info@pikespeakmyc.org) if you are interested in:

- coordinating forays
- writing for the newsletter
- leading a foray
- hosting an event
- hospitality
- serving on the board

## MEMBERS CHECKLIST:

### *Is your email & phone number up to date?*



Send contact info to: Jessica  
[treasurer@pikespeakmyc.com](mailto:treasurer@pikespeakmyc.com)

### *Have you paid your DUES?*



If not, please send to:  
Jessica Langley  
1010 N. Logan Ave.  
Colorado Springs, CO 80909

### *Care to Volunteer?*



Reach out to: Jennifer Bell  
[info@pikespeakmyc.org](mailto:info@pikespeakmyc.org)

## FINANCIAL REPORT

### YOUR MEMBERSHIP DUES AT WORK

How were your membership dues spent?

<b>Balance at Start of 2018</b>	<b>\$5,807.72</b>
Income from Membership dues	\$1,965.00
Sticker sales	\$125.00
<i>Total Income</i>	<i>\$2,090.00</i>
Promotional items	-\$794.32
Paypal Fees	-\$35.63
President's gift	-\$69.59
Denver Botanical Gardens Membership	-\$155.00
NAMA fee	-\$30.00
Lecture fees and expenses	-\$533.50
<i>Total Expenses</i>	<i>-\$1,618.04</i>
<b>Balance at end of 2018</b>	<b>\$6,279.68</b>

## TRAVEL REPORT

### *Brian Barzee goes to the Santa Cruz Foray*

*The long winters of Colorado are a wonderful time to travel and drop in on mushroom seasons elsewhere. That is why I have come to discover the joy of California's mushroom time. While Los Angeles and San Diego are arid, Northern California is a whole different climate with a rainy season from November to March. That is almost directly opposite to what we see and experience here in the Rocky Mountains.*

*In January there are two excellent myco-events you may consider attending. One is Soma Camp which Jennifer Bell wrote about in last years newsletter and the other is the Santa Cruz Mushroom Fair. Santa Cruz is south of San Jose and boasts a club, the Santa Cruz Fungus Federation which is steeped in history, with welcoming members and an incredible collection of mushrooms, organized by genus.*

*The art show blew my mind! Far West Fungi hosted a unique display with human face masks sprouting with reishi antlers. I particularly enjoyed the displays of fungi in habitat panoramas just like you'd see in a natural history museum. I perused the photos with name cards & was able to learn more about growths we don't see commonly in Colorado.*

*We left Santa Cruz for a foray with the Mycological Society of San Francisco, which was especially fun because we were joined by one of this state's most famous dirty wood nymphs.*

*I will share the story & photos with you in our next newsletter!*



*Out mushroom hunting  
dangerously close to caught in  
late autumn showers*

Matsua Basho  
(1644-1694)







*William Padilla-Brown in his laboratory*

## CORDYCEPS FOR RESPIRATORY HEALTH

by William Padilla-Brown

As mushrooms are becoming sexier in pop culture, and as we see a flood of shroom content via social influencers, Cordyceps are becoming an in demand, popular mushroom in the United States. In 2015, I began my journey of teaching myself how to grow *Cordyceps militaris*, since that time I have self published *The Cordyceps Cultivation Handbook*, and have dedicated the last 4 years teaching classes on Cordyceps cultivation all around the country. In the past year there has been an influx of *Cordyceps militaris* growers in the United States, with more people growing Cordyceps and bringing them to market the public is getting more exposure.

So why Cordyceps? Cordyceps produces a compound called Cordycepin that is so similar to ATP, it can provide us with sustained energy at a cellular level. On top of the energy production, Cordyceps are known as Himalayan Viagra due to its aphrodisiac properties. Cordyceps have powerful antiviral compounds, and some of the most interesting properties are those that are beneficial to respiratory health.

In August 1993, the Chinese Olympic women's running team broke three world records at the World Outdoor Track and Field Championships in Germany. The team had been utilizing *Ophiocordyceps sinensis* regularly during training.

Research from the Department of Food Science and Technology in Tainan Hsien, Taiwan has show cultivated *Cordyceps militaris* has higher levels of Cordycepin, and adenosine than *Ophiocordyceps sinensis*. Understanding the value of *Cordyceps militaris* is important, as *C. militaris* is the most commonly available cordyceps in the United States.

Double-blind, placebo-controlled research from UNC Chapel Hill in 2016 has shown acute daily supplementation of *Cordyceps militaris* over a 3 week period may improve maximal oxygen consumption, and ventilatory threshold. In speaking with more experienced *Cordyceps* cultivators in Thailand I came to the understanding that one gram a day is a sufficient dose to directly experience the effects of cordyceps. A quarter to half a gram a day is sufficient to experience the effects over a long period of time.

Both *Cordyceps militaris* and *Ophiocordyceps sinensis* are powerhouse adaptogens in many regards, but focusing on them for their capacity to aid in respiratory function is quite magical! At high altitudes the body may experience hypoxia or lack of oxygen to certain parts of the body. For those into hiking, or those living in high altitudes *Cordyceps* mushrooms can increase hypoxia tolerance. The increased hypoxia tolerance will be incredibly helpful for combating altitude sickness. The improved maximal oxygen consumption, and ventilatory threshold will prove to be incredibly beneficial for individuals who regularly work out or train for Olympic type events, or challenges like ninja warrior.

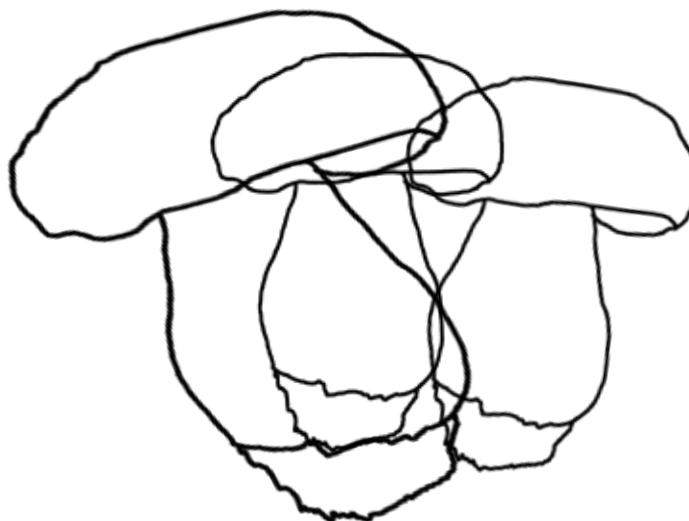


*Cordyceps militaris*

*William Padilla-Brown is a renowned mycological-renaissance man, a teacher, scientist, philosopher and businessman. He is a world-class expert on cordyceps militaris and the first person in the world to grow this strange fungus commercially, all while rocking his original hip hop music, raising a son, and trying to make the world a better place. Pretty good for a high school drop-out! Wonder what amazing things he'll achieve next year—when he turns 25. He will be presenting at the Telluride Mushroom Festival this summer.*

*If you are interested in learning more about Willy and his products, go to [mycoshop.net](http://mycoshop.net) or [cognitivefunction.net](http://cognitivefunction.net)*

*photos courtesy of William Padilla-Brown*





*Drying table. Photo by Danny Mulaney*

## GETTING TO KNOW THE FUN GUYS AT FRONT RANGE FUNGI

By Mercedes Perez Whitman

April 15, 2019

Front Range Fungi is a small commercial gourmet mushroom farm in Castle Rock. It's run by business partners Jacob Marlega, the head grower, and Jake Borkow, the initial investor who is in charge of marketing, sales and distribution. The business consists of two four-hundred square foot trailers and a smaller one that stores picked mushrooms. Last month I met with Jacob at the farm to tour the space and was unexpectedly hooked up with tasty oyster, lion's mane and shiitake mushrooms, tissue cultures and as many spent mushroom blocks as I could fit in my car.

Jacob got his start mushroom growing about four years ago when he left Wisconsin for Colorado. He got an internship at the mushroom farm at Denver's GrowHaus, the nonprofit indoor food production and justice advocacy hub. After that he returned to Wisconsin to work at a commercial agaricus grow. Now he's back in Colorado and dedicated to Front Range Fungi, which just started production in December.

Front Range Fungi is not a sleek, modern, fancy farm. It's rugged! In fact, the company has minimal electricity and Jake & Jacob are trucking in their water and pumping it into holding tanks. The holding tanks then feed everything requiring moisture that lives in the trailers. Their unique setup lends itself to some rather inventive and innovative design. One trailer is split into three tiers. The first consists of the packing and bagging area with a steam sterilizer unit. A dry bagging system is employed. A gusseted bag is placed under the funnel of one tank and a measured amount of soybean hull is added. Then from another tank the guys add the proper ratio of wood shavings. Now a pre-measured jet of water is released from a pump that connects from a holding tank. A



few valves fill the hose, then recharge it automatically to the calculated amount. Then the bag is passed on for sealing and finally put in the sterilizer. Jacob notes that the system isn't the most ideal but it's the one they have space for.

The growers, mainly consisting of Jacob and volunteer Brian Donovan, use the industry standard master's mix for their growing substrate. This is a 50:50 mix of soybean hull and wood shavings. In an effort to source locally and try something different, they've been experimenting with a local producer's hemp seed hulls instead of soybean. So far they've noticed that these hulls don't absorb water as well since they're whole, which means a reduction in mushroom flush yields. They're continuing to experiment, however.

The sterilizer is a converted commercial fridge that fits about two-hundred bags. More pumps are connected to it, filling a stainless steel pot with a flow valve on it and boiling water to off-gas steam. It has to reach a hundred-seventy-five degrees and must maintain that temperature for up to fifteen hours. The bags cool in the sterilizer and are then moved to the shelves in the third tier, the incubator room. In the middle of the two is where they have their flow hood and prefilter, impulse sealer, and other lab equipment.

Connecting one trailer to another is a portal where the bags, once the mycelium has colonized the substrate, are transported from the incubator room to the fruiting chamber. It's a standard setup of shelves packed with blocks and logs, adapted to fit in the hallway of the trailer, a timed misting system and controls for temperature, humidity, and CO2 exhaust. Right outside the trailer is a swamp cooler which allows for cooling, fresh air intake and some humidity.

Michael Ring, contracted by Borkow, owns a company called Cleantec that designed and built the facilities. Having a background in systems engineering and technological knowledge, he set up these self-contained units to be operated by Z-Wave technology. This is a mesh network connected to an online central router which allows for wirelessly making certain adjustments to increase efficiency. This means that when connected to WiFi, they can track and adjust the elements that factor into ideal growing conditions.

Constantly motivated by their desire to increase yields without expanding the infrastructure they currently have to work with, the farm's been innovating as they go. The two



*Jacob Merlega in fruiting room with Oysters*



*Shitakes in fruiting room*

... continued from page 9, FUN GUYS AT FRONT RANGE FUNGI

trailers they're working in are just ten feet tall, nine feet wide and fifty-three feet long. When I returned to Front Range Fungi a week after my initial visit, they were finishing up a final flush of shiitake logs growing horizontally on trays while setting up trellises to grow the logs vertically, so that more of them fit per square foot. Shiitake is the one substrate they don't prepare in house. Instead, they buy pre-colonized logs, and have a tank outside for them to soak in before putting them in the fruiting trailer.

Given the farm's scale, they manage to grow an impressive amount of gourmet mushrooms that they've been selling in the Denver area since mid January. Some clients are the restaurants City, O' City, Bamboo Sushi and Acorn, as well as the market, Marczyk Fine Foods. Front Range Fungi currently produce elm (*Hypsizygus ulmarius*) and blue oyster (*Pleurotus ostreatus* var. *columbinus*), king oyster (*Pleurotus eryngii*), chestnut (*Pholiota adiposa*), lion's mane (*Hericium erinaceus*), and shiitake (*Lentinula edodes*) mushrooms. They focus on these types largely because chefs and customers are more familiar with them, though at some point they'd like to try others. Colonization rates are another factor. With such a small space to work in mushrooms with mycelium are needed so that the substrate will colonize quickly.

Finding clients is a challenge! The Jakes have to bring samples of each mushroom to chefs and offer prices comparable to out of state wholesalers'. The benefit of having a fresher, locally grown product means a lot to the restaurants, the patrons & the Castle Rock economy. These fungi & their growers are generating money in the local economy and significantly reducing fossil fuel footprint when sourcing from the Front Range. Mr. Marlega describes a typical route from growing to distribution of commercial mushrooms by big distributors--believe it or not, it's common for them to go from New Jersey to Florida, then to California, then to Colorado. Front Range Fungi, on the other hand, started selling twelve pounds a week, then fifty, the following one-hundred, and recently it's leveled off at two-hundred-fifty pounds. That's

continued on page 12...



Jacob Merlega in fruiting room with Chestnuts





*Jacob in the incubation room*



*fruiting chambers (left), Drying table (right). Photos by Danny Mulaney*

... continued from page 11, FUN GUYS AT FRONT RANGE FUNGI



*view of farm at Front Range fungi*

two-hundred-fifty pounds of fresh-picked, delicious, locally-sourced & grown edible mushrooms.

The company is just about to break even and are eager to scale up as soon as they can afford to. They're operating on a Net 30 basis, meaning they don't get paid for their mushrooms until 30 days after they give them to a client. It's not ideal, but again it's a system that is working well for now.

Something I appreciate greatly is FRF's environmental concerns. They aim to close more loops in terms of sourcing and have also just switched to Unicorn biodegradable bags. Many growers are employing Unicorn's polypropylene containers because they offer less chances of contamination in addition to improved sealing and more consistent yields. These biodegradable single-use sacks leave much less of a footprint.

Another loop to close is utilizing spent grow bags from Front Range Fungi. I was encouraged to take as many as I wanted from them, and welcomed back to do so anytime. There are so many applications for these, as they contain nutritious organic matter. They're a carbon source, contain nutrients like potassium and are a great soil amendment. I've been experimenting making passive outdoor mushroom beds by removing the plastic and burying the whole blocks and covering them with a new food source of straw and wood chips. I've been watering them regularly to help the mycelium spread and see if they'll refruit. I've also broken up the blocks and layered the spent mushroom substrate (SMS) with those same sources, have added the blocks to my compost piles, feed them to my chickens and worms in the vermicompost, and add them to homemade soil starting mixes.

You can learn more about Front Range Fungi by visiting [frontrangefungi.com](http://frontrangefungi.com). And check out their social media (instagram: [@front\\_range\\_fungi](https://www.instagram.com/front_range_fungi), facebook.com/[frontrangefungi](https://www.facebook.com/frontrangefungi)). But the best thing for you to do is visit these hard-working guys! (where otherwise noted, all photos by Mercedes Perez Whitman)





*Photo by Danny Mulaney, Oysters (left). Jacob in the storage trailer (right)*



*Brian Donovan in the fruiting room*

RECIPE from Eugenia Bone

**Osso Bucco with Boletus  
Mushrooms**  
**Serves 4**

I learned how to make this simple, savory osso bucco recipe from my father, who is 93 and still cooking. The leftovers, including the bones and bits of gelatin and fat, make an awesome base for a lentil, chickpea, or bean soup. Just add dried lentils or rehydrated beans and water and cook until the beans are tender. (Throw in any leftover mushrooms and the gremolada, too.) I've made this recipe with beef and elk shanks as well. Elk is excellent, though it needs to cook a bit longer. You can substitute the Boletus for cultivated mushrooms. I like portobellos best in this dish.

**4 pieces veal shank, 1 ½ to 2 inches thick  
(about 2 pounds)**

**Flour for dredging**

**2 tablespoons olive oil**

**2 garlic cloves**

**1/2 large onion, chopped (about 1 cup)**

**1 large carrot, chopped (about 1 cup)**

**2 tablespoons fresh basil, chopped (or 2  
teaspoons dried)**

**Salt and freshly ground black pepper to  
taste**

**1 cup white wine**

**2 cups crushed tomatoes**

**2 tablespoons butter**

**½ pound fresh Boletus mushrooms,  
sliced (about 2 cups)**

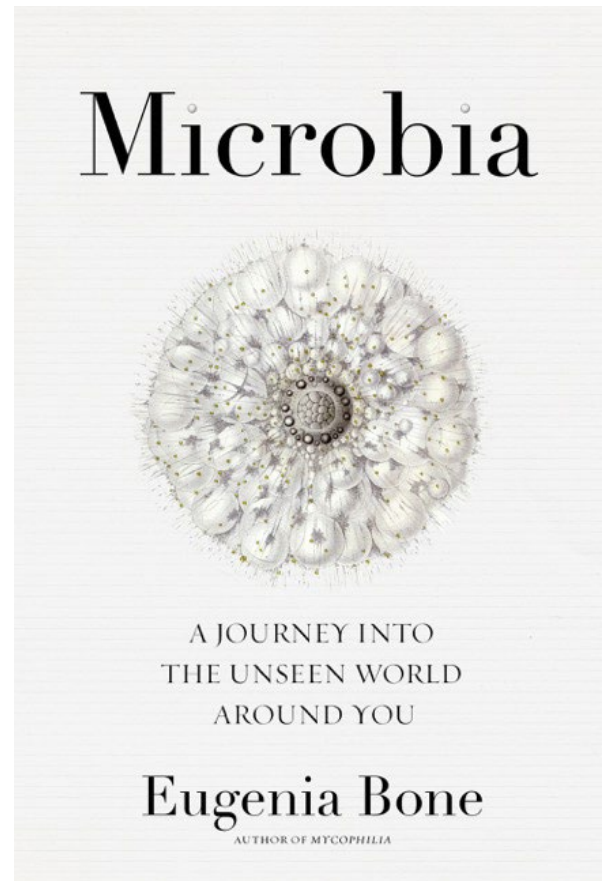
**For the Gremolada**

**2 tablespoons minced flat-leafed parsley**

**1 tablespoon minced garlic**

**1 tablespoon minced fresh sage or 1  
teaspoon dried**

**1 teaspoon lemon zest**



*Ms. Eugenia Bone is the author of Mycophilia: Revelations from the Weird World of Mushrooms. She is a regular at the Telluride Mushroom Festival. Last year she lectured on her new book called Microbia: A Journey into the Unseen World Around You. You may know her writing from the New York Times, Wall Street Journal, Saveur, Food & Wine, Sunset & the Denver Post. A former president of the New York Mycological Society, Ms. Bone splits her time between New York & the Western Slope of Colorado. Check out her blog, [kitchenecosystem.com](http://kitchenecosystem.com).*





*photo courtesy of Eugenia Bone*

### **Preheat the oven to 400°F.**

Place about 1/2 cup of flour on a plate and dredge the veal. Heat the oil in a large oven-safe pot with a fitted lid (I use a 12-cup Le Creuset pot). Brown the veal shanks, about 5 minutes on one side, then add the garlic cloves. Brown the shanks for about 5 minutes on the other side, then add the onion, carrot, basil, salt and pepper to taste. Continue browning the shanks, cooking until the onions are soft, about 5 minutes more. Add the wine, lower the heat to low and cook for 10 minutes, until the wine evaporates, then add the tomatoes and butter. Cover and simmer the osso bucco for a few minutes to meld the flavors, and then place the pot in the oven. Cook for 30 minutes.

Remove the pot and add the mushrooms. Lower the heat to 350°F and return the pot to the oven. Cook for another 30 minutes until the shanks are meltingly tender.

In the meantime, prepare the gremolada. Combine all the ingredients in a small bowl. Remove the shanks and serve garnished with the gremolada.

PIKES PEAK  
MYCOLOGICAL  
SOCIETY



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